Competitive awareness: Accounting for corporate performance in the Europe 170

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Abstract

The objective of the research is to reinstate value added accounting in a capital market context to judge corporate performance and corporate strategy.

The thesis uses a value added format to deconstruct return on capital employed (ROCE) and reviews how income percolates down a value added statement to the bottom line. As expenses are collected by their "nature" this approach avoids the arbitrariness associated with categorising expenses by "function". In addition corporate performance is presented in a pyramid structure of financial key ratios which enables the addition of a capital market dimension, an important consideration when firms and their managers are under pressure to deliver shareholder value.

The framework is used to construct a dataset of firms listed in the main European stock market indices (FTSE100, CAC40 and DAX30), to make similarities and differences of financial ratios visible at the macro, meso and micro level. As such it is possible to judge performance and managerial priorities as well as position individual firms, as done in the case study, into a quintile distribution. The case study also reviews strategic narratives for the case firms and make a more detailed financial analysis than possible for the Europe 170, which makes visible the strength of aligning narratives with numbers.

The contribution to knowledge, besides the dataset itself, is related to the usefulness of the value added accounting format in relation to capital markets by:

- Revealing a complementary set of value drivers to that existing in finance theory by using a nature of expense format.
- Suggesting an "accounting theory of the firm" by integrating the industry and the resource based view of strategy with shareholder value metrics.
- The integration of accounting numbers and strategic narratives enables feedback mechanisms for the reformulation of strategy.

Keywords: Value added statement, nature of expense, IFRS, value drivers, theory of the firm, strategic management accounting.

Preface

This journey for the award of Doctor of Philosophy has not been straight forward, although it might look so as it has taken less than three years to complete. But intellectual journeys do not just emerge, they are the result of curiosity which did not fade away over time, but rather become a passion for knowledge. This has been the case for me and the value added concept.

The idea to this thesis has evolved over the past fifteen years, mainly through my work as a financial analyst. What initially started with the usage of the value added statement as a complementary forecasting tool to the traditional income statement in the early 1990´s, grew over the time to a complex financial analytical tool of corporate performance by year 2000, where value added key ratios revealed changes in corporate performance among those firms that I reviewed as a financial analyst. However, when trying to find out more about similar uses of the value added concept in capital markets the researcher found no relevant literature on the subject. This was especially the case for value added in relation to finance and strategy. The researcher initially thought this was an effect of a limited literature review, but gradually realised that the connection between value added and capital employed, and thus capital markets has not been a central topic in academic research.

After reading the book "Economics in a business context" by Haslam et al (2000) the researcher found evidence of frameworks similar those fundamentally developed for value added key ratios for both industry and firm analysis. Thrilled by this framework the researcher contacted Professor Colin Haslam in late 2001, and the positive response proved to be the starting point of a fruitful intellectual journey that is now documented in this thesis.

Even if this journey had two phases, before and after the enrolment as a PhD candidate, it has not affected the view of the usefulness of value added format in capital markets. Rather it has been two phases; unstructured search of knowledge before the enrolment and structured research after the enrolment. In the quest for knowledge, as a thesis is, that's the difference between having ideas in general and provide evidence of them through research.

Even if this journey now has come to an end through the completion of this thesis, it is not the end of the quest for knowledge regarding the usefulness of the value added concept in capital markets. There are still lose ends that need to be tightened up to existing theory, especially

within strategy and finance. It is the researchers hope and aim to contribute to this in the years to come.

Acknowledgement

Over the past years I have enjoyed the intellectual discussions with Professor Colin Haslam as we have tried to place the value added concept in a capital market context, initially as an academic friend and later as a my principal supervisor. For this I will forever be grateful, as our discussions have often gone beyond supervision of research candidates. As such we share the same passion for the value added concept and possible usage in a business context. I'm also grateful for the help in structuring the chapters as they have progressed and adjusting the complete dissertation in to its final shape.

I am also in debt, to several colleges at my previous employer DnB Nor Asset Management, especially to Dr Dag Lindskog which as my manager encouraged studies in economics and finance as part of our work on "Beyond the business cycle". Without these encouragements I would probably not have set time aside and outside business hours to understand the value added concept in economics and thus discovered the work of Professor Haslam during my many visits to bookshops and libraries in search of relevant literature in economics, accounting, finance and strategy. Also the encouragement during the Skandia future team work, an internal strategy project during 1996, by visiting Professor Leif Edvinsson affected my curiosity about strategy and how firms might create their future through foresight. This renewed my interest for strategy from my time as product manager at Ericsson and my curiosity how it might be related to finance and accounting.

I also want to thank those in the academic society, besides my supervisors, who have contributed to find references and insights on the value added concept before my enrolment and during the literature review as Dr van Staden (Massey University at Albany), Professor Riahi-Belkaoui (University of Illinois at Chicago) and Professor Stolowy (HEC Paris).

In retrieving accounting data for my study I'm also grateful for the help from Standard & Poors, Thomson, Deutsche Bank, Ericsson and Nokia. In terms of specific data I also thank Mr Bråtenius at ABG Sundal Collier for usage of his compressive mobile communication

market data, which I have enjoyed for many years as a financial analyst. I also thank Citigroup for the usage of Davenport's graphs on Ericsson and Nokias "food chain".

I would also thank those who have made this thesis possible at the University of Hertfordshire Business School. My thanks also go to Dr Nicholas Tsitsianis for his statistical support and Professor Michael Broadbent for his help with the structure of this thesis.

I also want to thank my family for their patience when I have been writing this thesis, as I have not always been as available as my family have required.

Uppsala in November 2006

Tord Andersson

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Glossary and abbreviations

Glossary

Capital intensity index is defined as capital employed divided by sales, where capital employed is defined as total long-term debt plus shareholder funds.

Capital intensity of value added is defined as capital employed divided by value retained, where capital employed is defined as total long-term debt plus shareholder funds.

Cash Return on income (cash ROS) is calculated by dividing operating result before depreciation and amortisation (i.e. EBITDA) into sales and expressed as a per cent.

Cash share of value retention is calculated as operating result before interest (i.e. EBITDA) into value retained and expressed as a per cent.

EBITDA is defined as earnings before interest, taxes, depreciation and amortisation. In a value added context this implies sales less procurement and labour costs.

Labour's share of value retained is defined as labour costs in relation to value retained.

Profit share of total income (Profit ROS) is defined as pre-tax profit divided into sales revenue and expressed as a per cent age

Purchase in sales is defined as sales minus value retained as a per cent of total sales.

Total shareholder return is defined as dividends and change in share price for one year in relation to previous years share price.

Value added can be defined in two ways, either as sales less procurement (subtractive calculation) or as the sum of wages, depreciation, taxes, interest payable, dividends payable and retained earnings (additive calculation). These eight elements were suggested by the Corporate Report (ASSC 1975).

Value added growth is defined as current year value added in relation to base year multiplied by 100.

Value retention is the same as value added and can be defined in two ways, either as sales less procurement (subtractive calculation) or as the sum of wages, depreciation, taxes, interest payable, dividends payable and retained earnings (additive calculation). These eight elements were suggested by the Corporate Report (ASSC 1975).

Value retention rate is the value added divided by sales.

Abbreviations

AACP	Anglo American Productivity Council.
AMPS	Advance Mobile Phone Service
APB	Accounting Principles Board.
APT	Arbitrage Pricing Theory.
ASP	Average Selling Price.
BEA	Bureau of Economic Analysis.
CAGR	Compound Average Growth Rate.
CAP	Committee on Accounting Procedure.
CAPM	Capital Assets Pricing Model.
CCAdj	Capital Consumption Adjustment.
CDMA	Code Division Multiple Access
CDMA 1X	Code Division Multiple Access 1XTREME
CDMA200	Code Division Multiple Access 2000
CFROI	Cash Flow Return on Investment.
CROCI	Cash Return on Capital Investment.
CVA	Cash Value Added.
DAMPS	Digital Advanced Mobile Phone Service
DCF	Discounted Cash Flow.
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation.
EDGE	Enhanced Data rates for Global Evolution
EMH	Efficient Market Hypothesis.
EPS	Earnings per Share.
EVA	Economic Value Added.
F20	20-F SEC-filing in US.

FASB	Financial Accounting Standards Board.
FUM	Funds under Management.
GDP	Gross Domestic Product.
GNP	Gross National Product.
GSM	Global System for Mobile communication.
IAS	International Accounting Standards.
IASB	International Accounting Standard Board.
IASC	International Accounting Standard Committee.
IPO	Initial Public Offering.
IRS	Internal Revenue Service.
ISI	International Surveys Industry.
IVA	Inventory valuation adjustment.
J-TACS	Japan Total Access Communication System
MV	Market Value.
NBER	National Bureau of Economic Research.
NDP	Net Domestic Product
NIPA	National Income and Product Accounts.
NMT	Nordic Mobile Telephone system
NNP	Net National Product.
NPV	Net Present Value.
PDC	Personal Digital Cellular
ROCE	Return on Capital Employed.
ROIC	Return on Invested Capital.
SEC	Securities and Exchange Commission.
SNA	System of National Accounts.

SV	Shareholder Value
TACS	Total Access Communication System
TSR	Total Shareholder Returns.
US GAAP	US Generally Accepted Accounting Principles.
WACC	Weighted Average Cost of Capital.
WCDMA	Wideband Code Division Multiple Access

Chapter 1 , Introduction

The objective of this chapter is to provide an introduction to the thesis and put the thesis into a capital market context, as it is believed that such a background is helpful in understanding the overall research effort.

The chapter is structured into four sections; where the first section describes the researcher's motivation, the aim and structure of the thesis. The second section describes the lack of integration between national and business accounts whereas the third section describes the difficulty of aligning strategic narratives with financial numbers at the firm level. The last section states the research question and the contribution to knowledge.

Aim and structure of thesis

This section starts by describing the researcher's motivation for conducting the research and the aim of the thesis as to provide some insights into the ontological and epistemological assumptions for the thesis. These assumptions will be further explored in the methodology chapter later (chapter 3). The section ends with a description how the content of the thesis has been structured.

The researcher's motivation

The thesis is motivated by my personal experience as a financial analyst for some of the major investment banking and asset management companies in Sweden, where two issues in finance related to accounting and strategy was encountered, namely:

- The lack of an accounting link between national accounts and business accounts in the finance literature. In this regard I was initially told in the early 1990's that there were no links between national and business accounting, but gradually realised that the value added concept could provide such a link despite the fact that the format has not

been accepted in capital markets research, mainly due to its lack of standardisation. However, the introduction of IFRS/IAS accounting standards for public group accounts from 2005 in Europe indirectly provides such a standardisation, as IAS1 states that the income statement should disclose expenses according to their nature (even when the more traditional function of expense format is used). In particular the disclosure of labour costs and depreciation and amortisation allows the researcher to calculate the value added obtained from the firm's factors costs as the sum of labour costs, depreciation and amortisation and operating income. The value added may also be calculated from the firm's product markets, i.e. as sales less procurement costs. Both of these calculations avoids double counting which is an important prerequisite in the national accounts and a necessary condition for aggregation of firm accounts into sector and country analysis as done for the Europe 170 firms in this thesis.

Value added is an important concept in economics and provides the foundation for national accounts, which informs capital markets about the overall economic conditions for growth and productivity accounting. However, in the literature review it is noted that the national accounting project was not completed at the firm level and as such one observes a rather disconnected agenda between business and national accounting. Instead, business accounts were developed as an income minus expense format, where arbitrary judgements may affect the accounting numbers and thus reduce the correlation between accounting numbers and market values. These arbitrary judgements are not so pronounced when the nature of expense format is employed, for example, in IAS1.

- Secondly, the lack of integration between financial frameworks and a strategic theory of the firm results from the fact that finance focuses on numbers and strategy more on narratives. An example of this can be seen in Copeland et al (1994, 2000) where several models for evaluation of the firms strategic position are suggested in forecasting future performance, namely customer segmentation analysis, customer/competitive business system analysis, industry structure analysis (with dynamics revealed by the structure-conduct-performance-model) and Coyne/Subramanian industry model. Each of these models provides narratives that need to be translated to numbers as formulated strategies need to be measured and evaluated employing various shareholder value metrics. This is not easy when

traditional accounting employs the function of expense format in the computation of profit as income minus expenses. Although the value added has much to contribute as a technique to take corporate strategy forward (see Bryant 1989) the value added accounting concept is rarely reported on in strategy texts and, as the researcher argue later, are in some cases also dismissed (see Porter 1985, Shank 1989).

Aim of thesis

The aim of this thesis is about making the usefulness of the value added concept in capital markets more visible as a way of describing corporate performance at various levels of the economy in a consistent way. As such the objective in this thesis is to deconstruct corporate performance to describe how one arrives to a bottom line of Return on Capital Employed (ROCE) developing the idea that it is the journey not the arrival that matters. Along the way the researcher also shows the usefulness of the value added concept for finance and strategy. The research aim is thus to "show the usefulness of the value added format in a capital market context for evaluation of financial performance and strategy evaluation."

The first part of the aim is fulfilled by adding a capital dimension to the value added statement, which allows a value added deconstruction of the DuPont ROCE-tree into key ratios. As such the similarities and differences is shown for a sample of firms (Europe170) both in terms of key ratios (growth trajectories, operating ratios, capital intensity and ROCE itself) as well as a quintile distribution of these key ratios. This is triangulated in the case study, which also enabled a finer detail of financial performance analysis in terms of production capital employed versus financial capital employed.

The second objective was not fulfilled as planned as it was not possible to evaluate strategy on narrative alone at the level of the firm, where strategy is formulated. However, the nature of expense format provides a complementary set of value drivers which can be used to evaluate and reformulate strategy as narratives can be combined with numbers using the value added format through its connection to stakeholders and their related markets.

Accounting research so far has regarded the value added format as a social disclosure (van Staden 2000c), mainly aimed to employees, and not as a source to inform managers and

investors. Although there are some examples where a value added format may be useful (see for example DTI 2002-06, Häkiö 2002), the statement and its key ratios rarely occur in financial and strategy texts to inform managers and investors in capital markets about value creating strategies. Because accounting numbers are used to describe social realities, the use of the value added format (c.f. nature of expense) provides a complementary perspective to the traditional accounting format (c.f. function of expense). By using the value added format it is possible to reveal the accounting relation between the firm and its primary stakeholders. Another advantage of the value added format is that it is not affected by the arbitrary judgements about allocating expenses between categories often required by the traditional accounting format (see IFRS 2003).

Structure of thesis

The thesis is structured into seven chapters in addition to the introduction, conclusion and bibliography. This set of seven chapters has been grouped into three themes:

- Chapters 2 to 4 contain the literature review, the methodology and the data collection. The objective of the literature review is to reveal why there is a disconnected agenda between national and business accounts regarding the value added concept and its implication for strategy. The research method and the data collection chapters are about how one can re-discover the value added concept and reinstate its usefulness in capital markets.

- Chapter 5 and 6 contains the Europe170 study. The objective is to reinstate the usefulness of the additive characteristics of the value added format (i.e. avoiding double accounting) in capital markets by revealing similarities and differences of corporate performance at the country and sector level of analysis.

- Chapter 7 and 8 contains the case study of Ericsson and Nokia. The objective is to reinstate the usefulness of the value added format at the firm level, where strategy is formulated and evaluated, revealing how it is possible to compare and contrast firm performance and reveal how variable product and resource conditions impact on corporate financials.

The next section sets the scene for the literature review where a rather disconnected agenda is observed between national and business accounting. As such the object is to understand why the value added accounting format is present at a macro and meso level, but increasingly absent at a micro level.

National and business accounts

Accounting for corporate performance

In capital markets company performance is evaluated and market value (MV) imputed to underwrite the stock of invested wealth for households. It is argued that those firms that pursue clever strategy are rewarded with both higher growth and higher return on capital employed, and is as such more deserving of a higher market valuation. The critical issue in the thesis is therefore how one account for the financial outcome of clever management moves. In the strategy texts a firm's performance is often assessed in relation to profit as the index of a firm's competitive advantage (Porter 1980, 1985). Profit here is less to do with accounting profits but "economic profit". Given that analysts operate with accounting data one need to operate in accounting rather than economics.

One also finds that many strategy texts have not, until recently, factored in the need to generate a sufficient return on capital employed, namely the funds provided from investors. With the rise of shareholder value metrics, strategy and financial performance is increasingly about the return on capital employed. Thus any account of corporate performance needs to include a capital market dimension. The existing metrics in the shareholder value literature and the calculations employed by analysts to be informed about corporate performance and make valuation adjustments are rather reductionist. An alternative is to employ a framework which allows the researcher to deconstruct corporate performance into its various elements: income growth, and the distribution of income to external and internal stakeholders and what cash and profit is retained to generate the required rate of return on capital employed. The objective in this thesis is to deconstruct corporate performance to describe how to arrive to a bottom line measure of performance. Often the attention is drawn to the bottom line profit or return on invested capital (ROIC) or EVA-spread. Whilst these key ratios and bottom line

figures are important one also need to construct an account of how to arrive to the bottom line. Whilst this type of analysis can be undertaken from a conventional set of annual report and accounts, presentational weaknesses frustrate evaluation of performance. In particular it is important to know what proportion of total income is retained as wealth which is generated by a company for its own use.

This deconstruction of corporate performance will inevitably result in an account which reveals similarities and differences between firms. To account for differences or a distribution of corporate performance one would need to be able to aggregate firm, industry and corporate sector accounts without losing analytical qualities. This is not a comprehensive list of the conditions one would wish to see in place to help structure accounting and accounts of performance. The literature review in the next chapter describes the extent to which these conditions are in place at various levels of the corporate economy.

The accounts at different levels of the economy

This thesis is also about constructing a method which can account for corporate performance when from a financial analyst's perspective a firm's performance is gauged by its ability to generate increased profit, earnings and dividends per share in the next few quarters relative to the last few quarters. This type of analysis suffers from a loss of memory because medium and long-term direction is lost. Additionally it is difficult to establish relativities for example how one firm in an industry is performing relative to its peer group, other industry groups and the national economy. It is hard to avoid a sense of disorientation when one firm's analysis is decoupled from its own business history and relative comparisons are rarely made.

The need to account for corporate performance has changed over time and this too has impacted on the way in which one collect and constructs accounting formats. In an earlier period the main priority was to construct national accounts which did not double-count the product of other industry sectors or include the product of other countries in the national calculation of output. Describing the national product and its calculation was solved by the use of a value added concept, which deducted the product of other countries (imports) but counting in the value of product exported. This principle of "netting" off was also carried down into the industry level accounts which ensured that the value of purchases from outside

the industry were also deducted from gross output to obtain the value added of an industry sector. As seen in the literature review the construction of national (macro) and industry-level (meso) accounts can vary because it can be consolidated at different points in the circular flow of money using income or expenditure methods or it can be aggregated by type of industry or institution.

At a macro level accounts are employed to reveal growth and productivity, where productivity is estimated as the change in "real financial" variables which have been adjusted to reflect prices for industry sectors or national output deflators. Growth accounting helps to identify where resources may need to be deployed and what actions might need to be taken at a national level to facilitate a re-direction of factor resources. Productivity accounting serves to reveal which industries are reducing unit costs so that resources (both labour and capital) are being released from one industry to provide factor resources that can support the development of other industries.

If the picture of macro and meso accounting is somewhat similar there is more difficulty when one arrives at the micro-accounting level or firm level accounts. Here the development of accounting was not tied into the national accounting project and its associated presentational formats. In the US for example the SEC was during the 1930's concerned that the accounts filed by US firms were insufficiently developed to provide a sensible review of financial performance. Especially important here being the need to report profit as all recorded income minus all recorded expenditures adjusted for accruals. The 1929 crash and its aftermath strengthened the case for a reporting format that records profit and balance sheet items. It is a format which does not easily fit into the needs of national and industry-level accounting and is not a value added format but an income minus expenses format.

Running alongside the development of financial reporting in the US during the immediate aftermath of the 1929 crash one also observe a developing literature in management accounting. This is not to say that the use of costing did not appear earlier than this in individual firms like Ford in the 1910's. But that a formal literature is established in journals like the American Machinist which outline the importance of "cost control". Management accounting and budgeting must be put in the service of controlling costs (Knoeppel et al 1937) because if costs are allowed to slip and cannot be recovered in price then profit margins will deteriorate. In the Anglo American Productivity Council (AACP) visits in the period

immediate to and after the World War II there are 34 studies produced on various industries in the US. These look at the auto industry, telecommunications etc but two of the reports relate to financial and cost management. These became the best selling reports from the AACP visits (Europe to America). That is US firms keep a well ordered presentation of their profit and loss accounts and comprehensive balance sheet report and also a tight control of their costs, setting standard costs for control and budgets so that they can plan profits ahead.

The literature review in the next chapter reviews the development of financial reporting for performance at a macro, meso and micro-level. It shows that rather than developing in a coherent fashion one observes a disconnected agenda between national accounting and firm level reporting. The two formats of value added and income-expenditure method grow apart from each other. The income-expenditure format takes on an increasingly complex identity reflected also in a complex development of accounting conventions that widen the scope for the presentation of financial information.

If there was a project that would have integrated financial reporting between the macro, meso and micro –levels then this has been lost. This complicates the world in which analysts operate because it is often difficult to compare one firm against another in a similar industry and one cannot reconcile the levels i.e. add up the micro to get to a meso layer and then macro aggregate account in a capital market context. If accounting at the firm level has centred on a bifurcation between management and financial accounting and later corporate finance, business strategy is very much grounded in economics. If accounting has lost the relevance of the value added format so too has the strategy literature which is grounded in economics and brings with it the concept of input-output (value chain) and resource management theory – without a financial conceptual framework that would help reveal the value chain and the structure of factor cost. The observation that presenting financial information within a value-added format could help to reveal the structure of a firms value chain and factor cost structure has been made earlier by a number of academics (see Vilen 1991, Haslam et al 2000).

In the next section an argument about the usefulness of the value added accounting approach is made and how this might be re-instated to judge strategy and value corporate performance.

Financial numbers and strategic narratives

This section starts off by describing a number of value added concepts as to distinguish the value added concept used in accounting compared to other areas. It then turns to the value added information content.

The value added concept

The researcher observes that the value added concept can be confusing as it has different meanings within the finance and strategy literature, as it has been used to describe various phenomena. According to Vilen (1991) the concept of value added has been used in several different ways as:

- "Internal to company approach", which is focusing on the activities inside the company (see Porter 1985).

- "The value added statement", which reflect the creation and distribution of value added among stakeholders. Where the firm is a value generator with the goal of increasing the purchasing power of shareholders.

- "All linkages from-raw-material-to-consumer", which is addressing the value chain as a system of different participants with different economic contributions in relation to each other. The value added partnership (Johnston et al 1988) can be seen as example of this kind of approach.

To Vilen´s list one can also add various value added shareholder metrics such as Economic Value Added (EVA), Cash Value Added (CVA) and Shareholder Value Added (SVA). However, in this thesis the researcher will use the value added concept described by the value added statement and how this can be used to describe the linkages in the product transformation chain from raw material and supplies into finished product or service for consumers. In particular the researcher is interested in the information content that can be derived from the value added format at various levels of the economy.

The value added information content

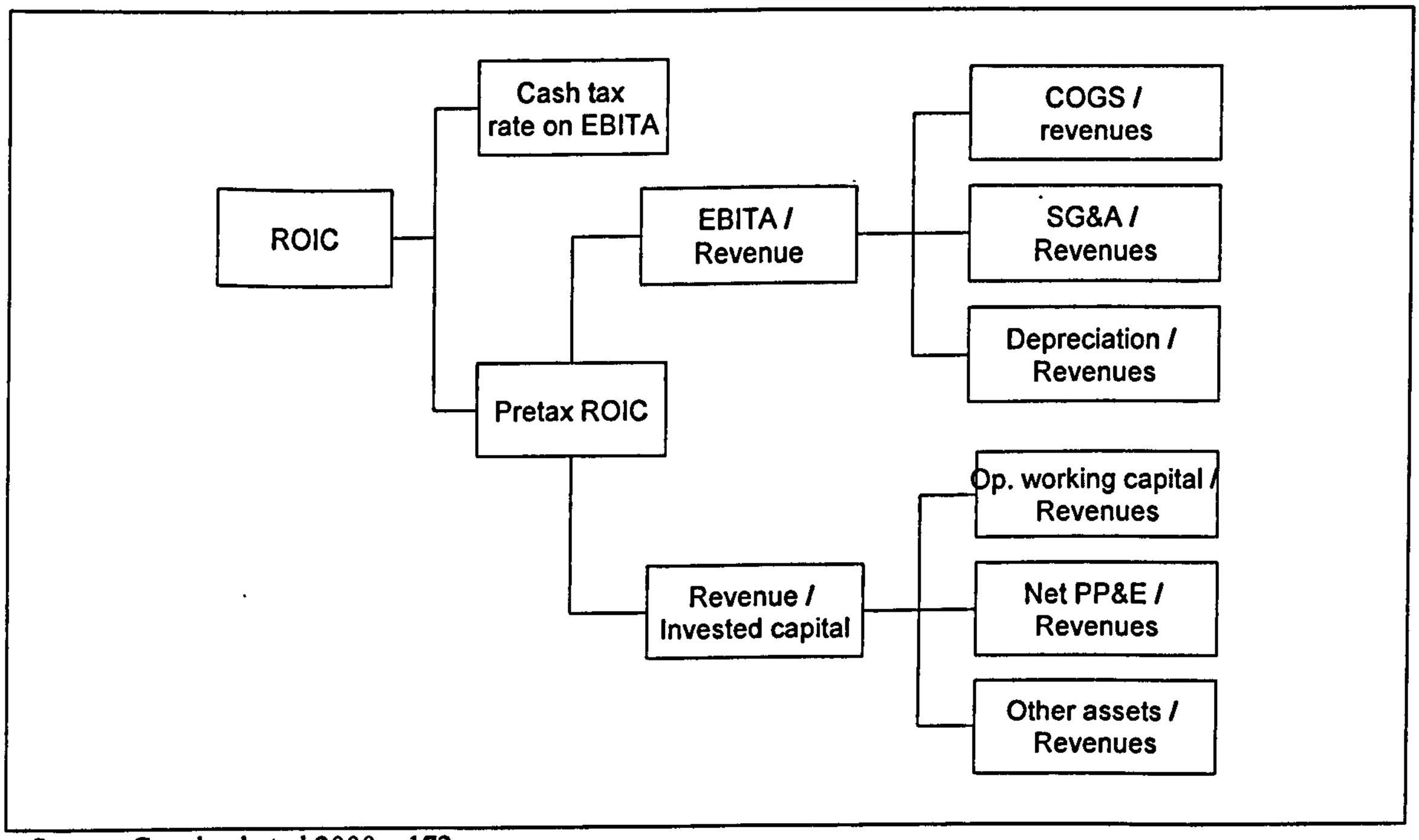
The value added statement can be structured in two different ways depending on if sales or production values are used as a starting point for the income statement. The difference between value added on sales and value added on production are if changes in inventory are taken into account, as for value added on production, or not. Of these two concepts the value added on sales are more widely known, due to the influence of the Corporate Report (ASSC 1975).

The only additional information content provided by the value added statements compared to traditional accounting are the labour costs and the procurement costs (often indirectly calculated) when value added is calculated as labour costs plus operating income before depreciation and amortisation or as sales less procurement. This additional information can be used to calculate various key ratios, such as the degree of financial integration (value added to sales). Even if these costs are important information in relation to the firm's stakeholders these computations are rarely made visible in the financial and strategy texts as it will be argued in the literature review. As a result the information content provided by the format and its ratios are limited because it is rarely employed to evaluate corporate performance in capital markets. Contrary to this position the researcher will make a positive case for its relevance because it provides additional information about labour and procurement costs revealing differences in operational conditions among firms which are lost when a traditional accounting of expense format is utilised by analysts.

It is argued that the lack of standardisation limits use of the value added statement in company reports. But this argument is now less relevant, at least in Europe, as from 2005 the IFRS/IAS accounting standards have been introduced for public group accounts. The researcher observe that both the value added on sales as well as the value added on production format can be revealed from the "nature of expense" format in the IAS1 standard of IFRS/IAS. Even if companies chose to use the function of expense format (i.e. traditional accounting) instead of the nature of expense format they are required by IAS1 to "disclose additional information o the nature of expense, including depreciation and amortisation expense and staff costs" (IASB 2003 p 1-30). This makes the nature of expense format the only common format for European public corporations for measurement and evaluation of corporate performance in capital markets.

Although the information to construct the value added presentational format is available, it is not used in analysing corporate performance and value creation in capital markets, rather the frameworks of corporate finance use more traditional accounts when evaluating corporate performance. An example of this is Copeland et al (2000), which use the function of expense format rather than a value added format (or a nature of expense format).

Figure 1.1, The return on invested capital (ROIC) tree



Source: Copeland et al 2000 p 172.

The researcher argue that these traditional accounts provide little insights into a socially constructed world where firms compete for their share of value added in product markets to cover factor costs in labour and capital markets. To make value added visible one need labour costs as well as depreciation and amortisation cost to reconstruct the traditional accounts and in the case of US and Japanese companies this is serious a problem as they "do not give enough information in their group accounts to enable value added to be calculated" (DTI 2006a p 15). However, because labour costs are available and disclosed by European companies the researcher is able to construct a value added format for the Europe170 (FTSE 100, DAX 30 and CAC 40). Using this financial format one can reveal the financial

performance of the European corporate sector in terms of: product market growth, resource costs, cash and profit generated per unit of capital employed at country, industry or firm level.

Research question and contribution to knowledge

The research question

The literature review is used to construct and inform the problem definition, which is revealed as an absence of a value added accounting format, at the micro and meso- corporate sector level, as a method of accounting for corporate performance, even though the literature review reveals the usefulness of the value added accounting format for performance measurement at the macro and industry level in national accounts. A rather disconnected agenda is observed between national accounts and business accounts in terms of performance measurement for wealth and value creation. It is also an agenda where accounting numbers provide useful inputs to other research areas which helped underwrite significant shifts in research focus in both accounting and finance over the past century.

The research question can now be formulated as: "How can the value added statement be useful for evaluation of performance and thus strategy in a capital market context?". As such the usefulness of the value added format is about:

- "how accounting numbers can be employed at various levels of the economy to inform us about corporate performance"
- and "support strategic decision making by managers and investors in their quest for value at the firm level".

Thus, the critical issue for this thesis is to employ a research method that can best account for corporate performance which is the outcome of corporate strategy. Because strategy is increasingly about delivering shareholder value and return on capital employed the research method will be located in finance and accounting. In addition the research method should also be able to deconstruct corporate performance into the contribution from product, capital and factor market conditions. Finally, the research method adopted should be able to reveal

differences and similarities between firms and describe corporate performance at the firm, industry and macro level of analysis and how this evolves over time.

However, to be able to know something about our social constructed reality one needs to make choices as a researcher in the process of acquiring knowledge, where these choices need to be explained and negotiated (see chapter 3).

Contribution to knowledge

By constructing a large data set it was possible to reveal differences and similarities at various levels of the economy (macro, meso and micro). As such, it is argued that the value added format make visible how income percolates down to the bottom line of ROCE and how income is distributed amongst primary stakeholders of the firm. This financial framework of analysis technically reveals similarities and differences in business conditions in product, labour and capital markets through value added key ratio analysis. It is also argued that this financial format can add value to existing strategic business models and also finance theory.

The construction of the dataset on its own can be seen as a contribution to knowledge, as data for construction of the dataset was not available from one single source. By revealing similarities and differences it was possible to judge performance and tradeoffs made by firm managers as well as position firms into a quintile distribution (cf rating system).

The contribution to knowledge is also related to the usefulness of the value added accounting format in relation to capital markets by:

- Revealing a complementary set of value drivers to that existing in finance theory by using a nature of expense format. This set of value drivers differs from those revealed by the function of expense format thereby providing a new complementary perspective of the firm in relation to its primary stakeholder, their markets and the circular flow of income.

- Integrating the industry and the resource based view of strategy with shareholder value metrics through the value added concept it is possible to describe an "accounting

theory of the firm" with allows an integration of accounting numbers with strategic narratives within a socially constructed universe of primary stakeholders.

- The integration of accounting numbers and strategic narratives enables feedback mechanisms for the reformulation of strategy. Because the financial framework provides the basis for both formulating and feeding back information about product, factor and capital markets it is possible to recalibrate strategic initiatives.

The dataset constructed for this thesis can also be used for other research projects, and the researcher has some suggestions of such projects as strategy arbitrage as resolving product, labour and capital market demands.

Summary

The research objectives of this thesis are to reinstate the usefulness of the value added concept which can make corporate performance visible and provide capital markets with a complementary framework for judging performance and value. In the literature review one finds that the value added format is rarely employed in the finance and strategy literature, this is not helped by the fact that the national accounting project stopped short of accounting for the corporate sector and firm level financial performance.

With the rise of shareholder value metrics, strategy and financial performance is increasingly about the return on capital employed. Thus any account of corporate performance needs to include a capital market dimension as well as to account for differences or a distribution of corporate performance and it would need to be able to aggregate firm, industry and corporate sector accounts. Presenting financial information within a value-added format could help to reveal the structure of a firms value chains, factor cost structure, capitalisation rates and return on capital.

In comparison to the traditional accounting format the value added format make visible how income is distributed to external and internal stakeholders and how variable product, factor and capital market conditions combined to improve or frustrate corporate return on capital

employed. As such the contribution to knowledge of this thesis, besides the construction of the dataset itself, is related to the usefulness of the value added accounting format in capital markets as the researcher is able to:

- Reveal a complementary set of value drivers to that existing in finance theory by using a nature of expense format.
- Integrating the industry and the resource based view of strategy with shareholder value metrics through the value added concept it is possible to suggest an "accounting theory of the firm".
- Suggest the integration of accounting numbers and strategic narratives enables feedback mechanisms for the reformulation of strategy.

Chapter 2 , Literature Review

The objective with this chapter is to understand why the value-added accounting format is present at a macro and meso level but generally absent as a micro-level account of firm performance. Along the way an argument is developed about the usefulness of the value added accounting approach and how this might be re-instated to help us judge the financial outcomes of strategy at the firm level and thereby value corporate performance.

The literature review start with a consideration of the historical development of national accounting in the first section before turning to industry and firm level accounts in the two sections that follows. If the picture of macro and meso accounting is somewhat similar there is more difficulty when one arrives at the micro-accounting level as the development of business accounting was not tied into the national accounting project and its associated presentational formats. A rather disconnected agenda is observed between national accounts (at macro and meso level of the economy) and business accounts in terms of performance measurement for wealth and value creation. If accounting has lost the relevance of the value added format so too has the strategy literature, as strategy and its associated narratives is not well integrated with accounting numbers used in finance for formulation and evaluation of strategy.

The last section turn to the link between strategy and finance in terms of accounting information. Here, too one observes that the accounting link is not clear as it is viewed that traditional accounting systems are not just unhelpful for value chain analysis, they can also get in the way of it (Porter 1985).

Macro – National income accounts

In view of its importance in their work economists might still be expected to have an interest in accounting but accounting rarely figures in the discourse of economics apart from introductory macro-economics texts which discuss the construction of the national income and expenditure accounts. Very few economists now discuss the interaction between economics and accounting. (Klamer et al 1992)

At the start of the twentieth century the relation between accounting and economics was far more intimate than one find today. Finding the accounting concepts to match the needs of economics at the macro level kept economists pre-occupied through the 1920's and 1930's (Klamer et al 1992). This national accounting framework provided the platform upon which macro-economic theories of growth and productivity were constructed and the basis for "management of the economy". The influence of the accounting – economics couplet at a micro-level is less clear in terms of the "management of firms". Micro-economics employs rather abstract concepts of profit and costs to construct the perfectly competitive theory of the firm and its associated variations based on the assumption that there are various forms of market imperfection. Accounting for management develops as a separate discourse within what is broadly described as "management accounting". To understand why this evolution occurred one need to reveal the history of national income and as such the inflection point for the modern national accounting, where systematic clarifications of methods and enhanced data collection enabled the rise of national accounting.

Estimating wealth of nations

The modern system of detailed national economic accounts has its origins in early primitive estimates of national income, which goes back at least 300 years. Kendrick (1970) traces early efforts to develop estimates of national income to the latter part of the seventeenth century and the work of Sir William Petty and Gregory King in England and Pierre Boisguille in France.

The importance of Petty's work is his "political arithmetic", which raised the question of how to understand and measure the wealth and power of different nations. In doing so Petty defined the "income of the people" as the sum of the "annual value of the Labour of the people", the "annual proceeds of the stock or wealth of the Nation" and the "wealth, stock, or provision of the nation, being the effect of the former or past labour..." (Studenski 1958 p 13). Since then income distribution among the suppliers of labour, land and capital has been a main topic in economics.

In estimating the national income early estimators divided the population into broad social groups and for each group an average income was assigned on the basis of whatever information that was available to them (Ruggles 1984). As the field of economics developed in the eighteenth and nineteenth century's economic accounts and systems of economic measurement was the subject of growing interest in society. Prior to World War I, published national income estimates was the work of individual investigators but interest in national income estimates spread during World War I and in the 1920's, as the estimates were increasingly prepared by organisations rather than individuals (Carson 1975)

In the United States, the institutional measurement of national income had its roots in work undertaken at the National Bureau of Economic Research (NBER). Among its first publications, the NBER issued a study in 1920 prepared by Mitchell, King, Macaulay, and Knauth entitled *Income in the United States*. This line of work was advanced further at the NBER through the 1920's. (Stockton 2004)

The development of national-income estimation over the past centuries can be divided into two main phases (Kendrick 1970):

- The first phase lasting up to and through the First World War. According to Kendrick (1970 p 284) this phase:

  > "...was characterised by the preparation of national-income estimates by a secession of individual investigators in a small number of advanced countries. In addition to intellectual curiosity, the motivation of the individual scholars was heavily tinged with nationalism – the desire to compare the economic performance of rivalry nations and the need to build quantitative bases for analysis of the effect of proposed tax polices and other polices meant to strengthen and reform national economics."

- The second phase starts after World War I and is characterised by a takeoff into self-sustaining institutional development of national income statistics throughout the world. Progress was accelerated according to Kendrick (1970 p 285) by:
  - The demand for a better quantitative background for devising countercyclical polices and by the pressure of the Second World War.
  - The development of macroeconomic theories of demand and employment.

> Interest during at least the earlier part of the inter-war period was centred on measuring the total national income (Ohlsson 1953).

Of interest to the researcher is the interwar period, where systematic clarifications of methods and enhanced data collection enabled the rise of national accounting.

Systematic clarification of methods

Estimating national income in the 1920's took place against a background of a "systematic clarification of methodological problems involved in the definition of the basic concepts as net income, investments, final versus intermediate products, the value of government output and the like ..." (Patinkin 1982 p 249). These systematic clarifications in estimating national income were generally related to problems regarding periodisation, valuation and selection. In the 1920's estimates of national income were almost exclusively based on the income method and the production method whilst the third method, based on the relationship between households and government, private and public investments and export minus import, was not used because statistical difficulties were as yet unsolved (van Eijk 1993).

This choice of methods can also be seen in the classification of national income in the research produced at NBER, see for example Bulletin 49 (Kuznets 1934), which was focused on national income paid out (i.e. by types of payment) and national income produced (i.e. by industrial source). There is limited trace of any Keynesian revolution in measuring national income from the demand side until Bulletin 59 (Kuznets 1936), where "national income consumed" was mentioned. Also these measurements were conditioned by the accounting practice of the countries business establishments.

Enhanced data collection

The early attempts to calculate the nation's resources suffered under considerable difficulty with regard to accuracy (Studenski 1958). These problems were identified as early as 1770 by Young in trying to calculate the national income of England (Miller 1986). At this time the information provided was either not on a frequently reported basis or was rather partial and incomplete. In the US it is not until mid-19th century, that studies on measurements of

national income appeared, where the decennial census was the major data source for estimation of national income and most estimates were compiled as the sums of value added by industry (Carson 1975).

Kendrick (1970) also points out that data in these early computations was often fragmented but things gradually improved as statistical requirements of governments for purpose of administration and regulation grew. Much of the potential usefulness of the estimation was also lost in early calculations as they were not part of a continuing time-series, nor had the details required for complex analysis as most of the authors were interested in specific analytical purposes of their own. These difficulties were also encountered by economists when undertaking economic research in the 1920's and 1930's, when the system of national accounts did not exist. Only isolated data on some specific aspects of the economic process were available, generally not collected with the purpose of providing information for macroeconomic research (van Eijk 1993).

The macroeconomic data needs of the 1930's were well summarised by Ruggles (1987 p 377) as:

> "In response to pressing policy needs and taking advantage of concurring developments in economic theory, statisticians began to convert the aggregate national income time-series into a system of national income statistics, where the components – consumption, investment and savings, on the one hand; wages and profits, on the other – were looked upon as necessary ingredients in explaining the whole, and of as much interest as the aggregate figures."

She also recognises that the statistical development in some cases preceded the theoretical. For example Kuznets provided the financial data well before Keynes theory of national income, but both reflected the same need and as such they reinforced and stimulated each other (Ruggles 1987). In Keynes "A Treatise on Money" (1930), similar problems were encountered when it came to testing the hypothesis that the difference between saving and investment was an important determinant of business cycles as the data needed on national income, savings and investments were not available (van Eijk 1993). Kuznets also noted in 1933 (Carson 1975) that no country had continuous and reliable series on the volume of consumer expenditure or savings. As data was not generally available the method of estimating national income by expenditure type was used less than the two other methods, namely by industry and by income type. During the early and mid 1930's quantitative

analysis using national income estimates was essentially micro-economic but in the late 1930's greater sophistication in the uses is apparent, reflecting the impact of macro-economic theory (Carson 1975). The salient point is that although expenditure components were discussed around 1940, the supporting data were drawn from several sources. For example, retail sales, auto sales and department store sales reported provided the basis for evaluation of consumption. Consequently, the data did not provide complete or consistent coverage, and certainly were not in a form that could be aggregated to give a total picture of the economy (Carson 1975). These problems, i.e. methods and data collection, were solved through the rise of national accounting and the growing role of government in managing the economy.

The solution – the rise of national accounting

The great depression led to the development of national accounts, through the growing role of government, as comprehensive measures of the national income and output did not exist at the time (Landefeld 2000). The finance of the Second World War enhanced the development of national accounts, particularly in UK (Suzuki 2003). The idea of income and product accounting, which emerged in the early 1940s, made its debut almost simultaneously in the statistical offices in US, Canada and England as it grew out of the practical needs of economic mobilisation for the Second World War (Jaszi 1986).

The post-war era of national accounting has also been characterised by major new developments, among these Kenessey (1994) notes: the internationalisation of methodological developments, double entry accounting, and the application of policy driven macro-economic theory. The international standardisation of national accounts was initiated in 1947 with the United Nation (UN) report "Measurement of national income and the construction of social accounting". As such it was a landmark in the history of national accounting (Bos 1994) as it contained the first fully elaborated and detailed national accounting system and contained international recommendations on compiling national accounts. Since then several international guidelines have been published and these guidelines have been of great practical importance governing the process of harmonising the national accounting concepts employed throughout the world. As a result "there are hardly any differences in the value-added definitions and the computation methods throughout the world and this leads to a high degree of comparability of countries economic performance" (Haller et al 1998 p 26). In order to

provide macroeconomic information national accounting does not incorporate economic events, but uses accounting process or information generated by different entities (Lande 2000). This is similar to the construction of consolidated group accounts, which do not start from economic events, but consolidate the accounting records of different companies which make up the group. However, in contrast to business accounting, national accounting employs a value added format to avoid double counting.

The importance of double-entry accounting

There would undoubtedly be double counting in estimation of the national product as Ohlsson (1953) points out, if both the value of final goods (e.g. bread) and the value of a semi-manufactured goods used for it (e.g. flour) are included in the computation of output. This is well recognised in national accounting, but less so in business accounting. Double-entry bookkeeping is thus a system for arranging and organising accounting information, rather than with scope and content (Yamey 1987). This system requires that each transaction must be recorded twice, and for the same amount, once in the form of debit and once in the form of credit.

The reason for accounts being presented twice is simply that the national economy is divided into sectors and an inflow of a sector is posited as an outflow of a counter sector. Copeland stated in 1935 (p 378) that "although the process of measurement of these basic concepts is partly a statistical one, it is also in an important sense an accounting process, an attempt to portray the economic condition and operation of society in terms of double-entry bookkeeping". As such the double-entry system implies that the income statement should show both the value of products and the costs of the various factors of production. Double-entry bookkeeping makes it possible to analyse the internal structure of an accounting entity in the forms of the balance sheet and the income statement, which was not the case in early national accounting (Suzuki 2003). It was also indispensable for the systematic integration of statistical macro aggregates as it permits relating flows of expenditure to incomes, production to consumption, or savings to investments (Kenessey 1994).

The idea of double entry accounting for the purposes of national income, product and expenditure grew out of Fishers work at the beginning of the last century, and was expanded

in the 1930's by Copeland and Martin (Kenessey 1994). Although, the theoretical roots of the double entry accounting can be traced to "theory of the economic circle", described by Quesnay in "Tableau Èconomique" around 1760 (Haller et al 1998), the value added concept was first devised in the eighteenth century by Trench Cox in the US to avoid double counting, as he proposed to take comprehensive census of all business, by attributing a part of GDP to each industry when measuring GDP through production (Cox 1979). But it was not until the 1850 that the concept was incorporated into the US census.

The researcher will now turn to review the concepts of gross value added and net value added which have important analytical implications in terms of factor shares and accounting for productivity led growth.

The gross and net value added

The value added technique has been adopted by most industrial nations in the calculation of the Gross Domestic Product (GDP) as production in different industries. Today it is one out of three methods used to measure GDP, besides spending on goods and services by different groups and the total wages and profit income earned by different groups (Hall et al 1997). All these three methods measure the same flow of money and provide a variable perspective on economic growth and performance.

The historical development in terms of clarification of methods, the enhanced data collection and international standardisation has resulted in the measurement of national income as it is today, employing all three methods. The relation between the methods was revealed through the circular flow of money, where Keynes argument that savings were the result of investments was crucial (Gilchrist 1971). The three approaches for measurement of Gross Domestic Product (GDP) are defined by UN (2003 p 19) as:

- The expenditure approach, where GDP is obtained by adding final uses together (i.e. domestic plus rest of world).

  GDP = domestic final uses + export

  Where domestic final uses is equal to the sum of final consumption and gross capital formation minus imports.

- The production approach, where GDP is obtained by adding taxes less subsidies on products to the total gross value added (GVA).

  GDP = GVA + taxes less subsidies on products

  Where the gross value added is derived by subtracting intermediate consumption from output.

- The income approach, where GDP is also obtained by adding taxes less subsidies on products to the total gross value added (GVA).

  GDP = GVA + taxes less subsidies on products

  But in this case the gross value added is obtained by adding together all the income components that make up value added. Note, that GDP in the income approach only covers the incomes generated within the domestic economy.

As all three approaches should, in theory, yield the same result, this implies that the gross value added calculations in the production and income approaches provide both a subtractive and additive definition of gross value added (GVA), namely:

- GVA = output – intermediate consumption
- GVA = sum of all income components.

This is an important observation as it allows separating in the national accounts in terms of what is produced by others from the value added income distribution to stakeholder. Where the gross value added in the income approach is calculated as the sum of factor costs (UN 2003 p 19-20):

- Compensation to employees is the total remuneration in cash or in kind payable by employers to employee for the work done. Direct social transfer from employers to their employers or retired employees and their family, such as payment for sickness, educational grants and pensions that do not set up an independent fund, are also imputed to compensation of employees.

- Other taxes less subsidies on production are taxes payable by employers to carry out production, irrespective of sales or profitability. They may be payable as license fees or as taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed or on the compensation of employees paid. They are not taxes paid on values of sales or produced outputs, which are called taxes on products.

- Consumption of fixed capital is the cost of fixed assets used up in production in the accounting period.

- Gross operating surplus is the residual obtained by deduction the above components from value added. Thus, gross operating surplus include interest payable to lenders of financial assets, or rent payable to rentiers of non-produced assets, such as land and sub-soil assets.

  Gross operating surplus of corporate enterprises can also be calculated as the sum of the subtraction of the following items (UN 2003 p 20):
  - Additions to retained earnings.
  - Depreciation and depletion
  - Bad debt allowance.
  - Property income payable.
  - (-) Property income receivable.
  - Current transfer payable.
  - (-) Current transfer receivable.
  - (-) Gains (net of loss) on sales on fixed assets and securities.

Economists have long accepted that for many purposes the concept of Net National Product (NNP) or Net Domestic Product (NDP) is a better measure of true economic production than the corresponding Gross Domestic Product (GDP) or Gross National Product (GNP). The reason for this is that final output net of asset depreciation is a better measure of society's capacity to service the present and future needs of its members (England et al 1998). The net value of output is often called the "value added" or the "income produced" originating in an economic division and since it is identical with the sum of wages, salaries, supplementary labour incomes, interest, profits, and net rent paid or accrued, it can also be calculated directly by aggregating these shares. Direct calculations are really an adaptation of the income-distributed method to the net output approach, rather than an application of the method itself. (Studenski 1958)

Net value added is defined as the gross value added less the consumption of fixed capital, where the gross value added may be calculated using the production or the income approach above. As such the product method is calculated in three stages (Studenski 1958 p 264):

.a) Estimating the gross value of domestic output of the various branches of production.

b) Determining the costs of material used and the services rendered in these branches by other branches as well as of annual depreciation on the physical plant.

c) Deduction of these costs and depreciation from gross value to obtain the net value of domestic output in these branches, and then adjusting the

later for net capital income from abroad.

In connection with the development of National Accounting, Pigou (1920) stated that the value of production requires that from gross output is subtracted what is purchased from others in the process of transforming product for sale. Gross output whilst a measure of value it does not accurately represent value created or added by a firm or business activity. Rather all the input that has been purchased from others should be subtracted from gross output to obtain the so-called net income figure. It is out of this financial sum that the business should operate to cover its internal labour cost and cash requirements. In line with Pigou, Ruggles et al (1965 p 50) state that "the value added by a firm, i.e., the value created by the activities of the firm and its employees alone, can be measured by the difference between the market value of the goods that have turned out of the firm and the costs of those goods and materials purchased from other producers".

The additive and the subtractive calculation of value added provide important insights into the circular flow of money among various institutions in the society and enable one to analyse the behaviour of these institution, such as consumption by households.

The importance of National Accounts

The provision of financial data in national accounting is important as the formats reveals:

- *Cost structures / factor shares*

  The share of labour and capital in national income is important as explained by Cobb et al (1928) in the production function and Rucker who in 1932 revealed the link between value added and wages (Smiths 1976). Later Wood (1976) showed that "added value per £ wage and salary does remain constant for an industry" (Smiths 1978 p 68). For the last fifty years (1948-2004) the factor shares for corporate business in US have been fairly stable, see table 2.1 below.

Table 2.1, Type of income as % of US corporate business (1948-2004)

As % of national income	Average	Median	Standard deviation
Compensation to employees	71,4%	71,9%	2,2%
Corporate profits with IVA and CCAdj	16,2%	15,6%	3,6%
Net interest and miscellaneous payments	1,9%	2,0%	1,6%
Taxes on production and imports less subsidies plus business current transfer payments	10,5%	10,5%	0,5%

Source: BEA table 1.13, National income by sector, legal form of organisation, and type of income (A).
www.bea.gov/bea/nipaweb/TableView.asp?SelectedTable=293&FirstYear=2001&lastyear=2002&Freq=Year

- *Productivity-led growth*

Growth accounting was influenced by Cobb et al (1928) work on the production function, where factor inputs are released by technology and productivity so these released labour resources can add to additional growth elsewhere in the economy.

This use of accounting data to generate economic relationships has been criticised by Brown (1957), Samuelson (1979) and more recently by Felipe et al (2004). The argument here is that one cannot infer causalities when employing an accounting identity, as the accounting identity results from the way in which national accounts are constructed out of "circuits" or "double-entry booking" which accounts for both income and expenditure. The economist's employ this criticism to then justify dropping the notion of productivity led growth, explaining total factor productivity residuals are a "distribution effect" or that at a macro level factor cost shares are stable. The researcher, however, wish to retain the accounting identity because one can deconstruct the identity to reveal the components of performance and the researcher also wish to retain organising concepts such as growth/trajectory, distribution and factor shares within the accounting framework (see chapter 3 on research method to be employed).

The second section of this chapter covers the meso level or industry sector accounts, where the national accounting can be used to describe the corporate sector, as in the US. Here also

the usage of the Input-Output accounting system is important because one sector (s) output is another sector (s) input.

Meso – Industry sector accounts

Sector level accounts

The production method of national accounts are the aggregation of industry or sector level accounting formats which use the concept of net income of value added as previously described but for the purpose of analysing industry or sectors such as the corporate sector. Firms are classified into industry groups on the basis of their share of income and profits generated in their main industry segments. For example the industry classifications used by Bureau of Economic Analysis (BEA) for national income surveys uses 197 individual International Surveys Industry (ISI) classifications, where the main 20 industry groups are (BEA 1997 p 3-4):

- Agriculture, forestry, fishing, and hunting.
- Mining.
- Utilities.
- Construction.
- Manufacturing.
- Wholesale trade, durable goods and non-durable goods.
- Retail trade.
- Transportation and warehousing.
- Information.
- Finance and insurance.
- Real estate and rental and leasing.
- Professional, scientific and technical services.
- Management of companies and enterprises.
- Administrative and support, waste management, and remediation services.
- Educational services.
- Healthcare and social assistance.
- Arts, entertainment, and recreation.
- Accommodations and food services.
- Other services.
- Public administration.

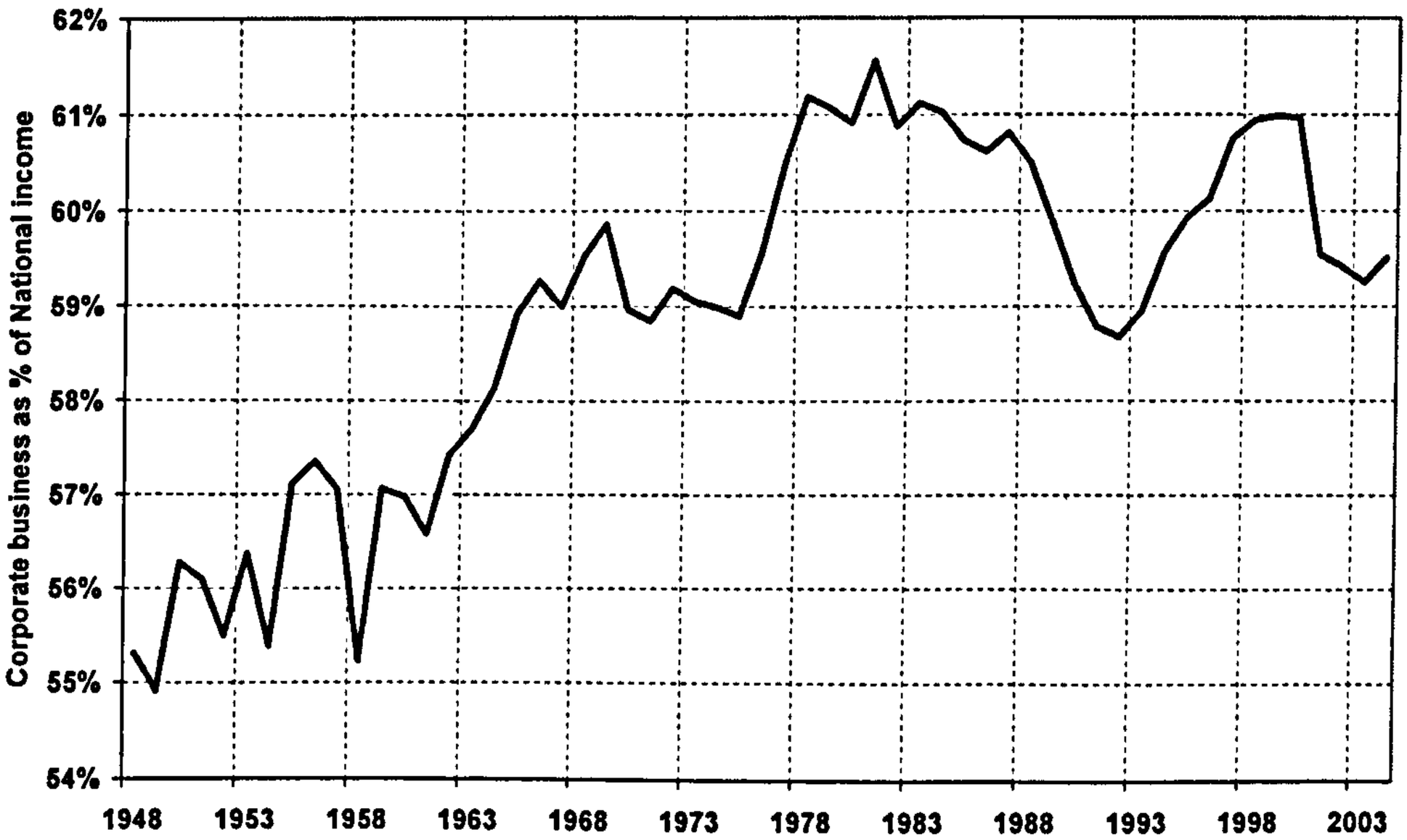
These are also sector classifications that can be found in capital markets indexes. The importance of these industry-sector accounts is that they reveal industry differences / distribution of performance including: trajectory /growth and employment, cash and profit

share in value added (or factor cost shares in value added). However, they also suffer from the fact that one cannot easily "marry up" the income with the capital / stock of assets – which is important for the shareholder value evaluations e.g. return on capital employed. Despite this the corporate sector is an important yardstick for the financial community.

The corporate sector

Corporate business, as defined in the US national accounts, is often used as a proxy for the quoted firms on the domestic stock market and as such it is used for predicting profits in US capital markets. This can be understood as the portion of value added coming from big business has increased over time. According to Chandler (1977) the two hundred largest industrials in the United States accounted for 61% of value added for manufacturing in 1968, which was an increase from 30% in 1947 and 56% in 1963. Corporate business has consistently contributed to around 60% of US national income over the past decades and slightly less during the first decade after 1948, see figure 2.1. This is in line with UK figures, where corporate business accounted for around 50% of GDP in the 1980`s and 1990´s (Froud et al 2000).

Figure 2.1, US Corporate business share of national income



Source: BEA, table 1.13 National income by sector, legal form of organisation, and type of income. www.bea.doc.gov/bea/dn/nipaweb/SelectTable.asp?Selected=N

The researcher's interest with the corporate sector is because it generates profit and contains companies that have issued shares and are publicly quoted. For example, in the UK stock market quoted companies account for at least 80% of the corporate sectors output (Froud et al 2000).

The term corporate business is one of several legal forms of organisation measured by US Bureau of Economic Analysis (BEA) and is part of the sector domestic business. Other sectors of the National Income and Product Accounts (NIPA) also breakdown national income into: "household and other institutions" and "general government" besides the "rest of world". In the domestic business sector, income and its components, are shown for four legal forms of organisation (BEA undated M-20):

- Corporate business, are all entities required to file Federal corporate tax returns (IRS Form 1120 series). These entities include mutual financial institutions and cooperatives subject to Federal income tax, non-profit institutions that primarily serve business, Federal Reserve Banks, and federally sponsored credit agencies.

- Sole proprietorship and partnerships:
  - Sole proprietorships, are all entities that would be required to file Internal Revenue Service (IRS) Schedule C (Profit or loss from Business) or Schedule F (Farm Income and Expenses) if the proprietor met filling requirements.
  - Partnerships, are all entities required to file Federal partnership income tax returns, IRS Form 1065 (US Partnership Return of Income).

- Other private business, are all entities that would be required to report rental and royalty income on the individual income tax return in IRS Schedule E (Supplemental Income and Loss) if the individual met the filling requirements, tax-exempt cooperatives.

- Government enterprises (employee compensation only), are government agencies that cover substantial proportion of their operating costs by selling goods and services to the public and that maintain their own separate account.

For each of these sectors it is noted that the value added in a sector means the value added by all the factors of production which are organised in the sector in order to produce certain goods and services (Ohlsson 1953). For example the national income or value added by US corporate business of national income is measured as the sum of (BEA table 1.13):

- Compensation to employees:
  - Wages and salary accruals.
  - Supplements to wages and salaries.
- Corporate profit with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj).
- Net interest and miscellaneous payments.
- Taxes on production and imports less subsidies plus business current transfer payments.

Of interest to this thesis is that factor costs proportions in value added tend to stay stable over considerable periods of time (see table 2.1 earlier), at least as long as national income has been measured on this detailed level. In addition it is also observed (in figure 2.1 earlier) that structurally the US corporate sector, having increased its share of US national GDP over the period 1948 to the mid to late 1970's, now has simply maintained share of national GDP. From 1970 to 2004 the share of GDP accounted for by the US corporate sector remains held in a narrow band that is between 59-61 per cent on average.

Corporate profits are one of the most closely followed economic indicators in US, as it serves as an essential indicator of economic performance (BEA 2002). Therefore, if the corporate share of GDP (as well as value added) does remain steady then reducing factor costs proportions will have a positive impact on reported profits. However the puzzle is that within the national accounts factor costs proportions also remain relatively constant (see table 2.1 earlier).

This suggests that all firms cannot be winners as the fortune of one firm must be on the expense on another firm. However, the stability on the macro level of the corporate sector share of GDP as well as factor shares is a puzzle and needs to be contrasted with the industry and firm level. Here the aggregation of firm accounts will provide an important key as one need to aggregate firm accounts to describe the corporate sector, where the input-output

accounting system as well as the micro level of firm accounts will provide insights into how to construct an accounting format that allows the researcher to describe the corporate sector.

The Input-Output accounting system

Leontief's (1936) input-output accounting system implied considerable simplification regarding the functional forms of the building blocks associated with national accounting as compared with earlier work. The core of Leontief's model consisted of a description of the network of intermediate relations between industries. The interdependence of industries described in terms of mutual deliveries through an input-output table. (Steenge et al 1993).

The input-output model is set to describe a matrix of relations which shows for each industry or type of product (Ruggles 1987): in the columns, what type of product are used in its production and/or which industries supply them (the sources of its inputs) and in the rows, what becomes of its products in terms of the industries or final users which purchase them (the disposition of its outputs).

The theoretical basis for the Input-Output analysis is rather simple, as the economic activity in the whole country is visualised as if it were covered by one huge accounting system, where for example each business enterprise is treated as a separate accounting unit using the expenditure and revenue account. The nature of economic transactions implies that each revenue item of an enterprise must reappear as an outlay item in the account of some other enterprise. This enables the presentation of the whole system of interconnected accounts in a single two way table. (Leontief 1936).

Input-output accounting system can be viewed as an extension of the national income accounting system depicting the flows of intermediate transactions. Quesnay "Tableau Economique" can also be interpreted as a Leontief closed static accounting system and in this way his analysis of the circular flow of economic activity becomes clearer (Mercado 1984). The statistical implementation of Leontief's model usually meant that the outputs of multi-product enterprises had to be broken down into a number of categories to approximate homogeneity (Steenge et al 1993). However, as a commodity can be produced in more than

one way the concepts of both "commodity" and "industry" become inappropriate. This was solved by introducing a production process that can be defined as a technological transformation of a number of goods into other goods (Steenge et al 1993).

The next section review the usefulness of the value added format at the micro level as the value added format has been found useful at the macro- and meso level for management of the economy.

Micro – Business firm accounts

This section starts off by observing that firm performance in the national accounting project is generally invisible despite the fact that the majority of accounting practice was already in place by 1925. In particular it is observed how the accounting profession in the aftermath of the great depression 1929 did not align with the national accounting project, particularly in US, which have influenced the perception of firm accounting in capital markets until recently. However, the introduction of IASC standards in Europe change this, and particularly the presentation of financial statements in IAS1, and are important for this thesis as one can indirectly provide a standardised value added format using the nature of expense format for individual firms. Although the provision of a value added format was suggested in the Corporate Report (1975) this did not become a statutory requirement.

The invisibility of firm performance

Firm performance is invisible in the National Bureau Economic Research (NBER) project because this was centred on accounting for macro and industry-level and not individual firms. Often the statistical disclosure of individual firms is hidden (or made confidential) so as to encourage the submission of returns. This absence of firm level accounts made the work at NBER complicated, for example, in NBER Bulletin 44 where Epstein (1933 p 1) states in relation to the study "Industrial profits in Prosperity and Depression 1919-1932" that:

> "We have had surprisingly little information concerning the rates which industries in the United States earn profits on their capital investment. For governmentally

> regulated fields, such as railroads and public utilities, rather complete figures have been available; but few comprehensive studies of competitive industry, covering years of depression as well as of prosperity, have been made"

Data on profits, particular for individual companies, were exceedingly sparse before the revolution in public corporate reporting brought about by the establishment of the Securities and Exchange Commission (Fabricant 1984). Even if data on industrial activity was available from 1919, to monitor the most cyclically sensitive portion of the economy, it was not intended to paint a broad picture of the macro economy (Stockton 2004).

Internal relevance lost

The majority of the practices employed by firms in the early 1980's and explicated in leading cost accounting textbooks had already been developed by 1925, as a consequence of the great importance cost and management control information had to support the growth of large enterprises during the 1850-1925 period (Kaplan 1984). As such it provided information upon which the internal efficiency of large organisations could be evaluated (Loft 1995).

The practices and procedures in modern management had their beginning in the enterprises formed by merger, which required systematic evaluation of managerial performance besides centralised administration and vertical integration (Chandler 1977). In terms of corporate interest "a profit statement was little used in 1900 but, by middle of the century, it had overtaken the balance sheet and become the centrepiece of interest or focus in the corporate report" (Morley 1981 p 251). Chandler (1977 p 417) also argues that "nearly all the basic methods that are currently used in managing big business" was already in place 1910 at DuPont. Kaplan (1986 p 196) also recognises in his "accounting lag" that:

> "In the past 70 years, however, the operation of the firms accounting system has been delegated to professional accountants frequently separated from plant operations. During this time, there has been a great growth in the importance of the financial reporting system for external constituencies (stockholders, investors, lenders, public regulatory and tax authorities). The firms accountant became more concerned with recording transactions and allocating costs in a consistent and objective manner for those external constituencies. They became removed from concern as to whether the numbers they were objectively and consistently recording held any relevance for describing, motivating, and controlling the firms manufacturing performance"

The decades following 1925 is clearly a different business environment than the cost reporting and estimation schemes which by the 1880's focused exclusively on direct labour and materials (Kaplan 1984) and as such reporting was thought on as reporting only to management (Flanders 1959).

Once standardised national accounting came to be employed in many advanced nations, the focus shifted at the firm level from management accounting to financial accounting. For example in the UK, "national accounting started as management accounting to find and allocate possible sources of finance for the war, but it gradually turned into means of regular reporting to the public" (Suzuki 2003 p 26). Management by numbers has increasingly led to business losing sight of the processes by which employees and customers make a firm competitive. According to Johnson (1994) the relevance has been lost in the case of US as processes are no longer defined in terms of work people do or the satisfaction customers receive, as such managing by the financial numbers may explain why US firms have lost competitiveness. Williams et al (1994) question Johnson's assumption that management calculation is to blame for the decline of American manufacturing. Rather, they argue that structural variables such as wages and hours worked set limits of what management can achieve.

The emphasis on external reporting and the de-emphasis on internal relevance were also reflected in the academic training of accounting professionals. As a result financial accounting, auditing and tax courses have undergone major changes in response to changes in the regulatory and legal environment. However, cost accounting remains focused on the simple production models from the turn-of-the-century (Kaplan 1986). Hopper et al (1991) explain "the stagnation of management accounting after the mid 1920s by making reference to the increased dominance of financial reporting and the failings of the academy, they import issues which fall outside the transaction cost framework" (Roslender 1996 p 19).

The general picture of accounting thinking is not clear at all according to Yu (1966) as there are: professional accountants trying to defend the image of conventional accounting and accountants (mainly academicians) who have begun to wonder whether there is indeed something basically wrong with conventional accounting. As such the main attack of financial accounting concentrates on two important aspects, namely the inadequacy of research methods and the lack of a basic theoretical framework. In particular, a sign of the

dissatisfaction has been with the use of conventional accounting data for managerial, investment and analytical purposes. Historically, accounting was for internal or managerial purposes, but times have changed and financial accounting has gradually become primarily an external reporting tool under a set of rigid rules. The demand for additional information for managerial, investment, and analytical purposes points to the need for more constructive and creative thinking in accounting according to Yu (1966).

The researcher now turn to the role of the accounting profession before the presentation of financial statement is reviewed and the efforts of introducing a value added format in business accounting is located.

The role of the accounting profession

If the macro-economists needed national accounts for the development of their theoretical frameworks employed to describe aggregate performance –the same motivations did not drive down the production / formatting of accounting information at the level of the firm. Here the accounting profession and its representative associations and federations have kept a hold on the preparation and formats required. As such accounting practices in Europe have, until recently, been influenced by the accounting procedures used in US.

In US there were no authoritative or enforceable standards before the 1930's governing corporate financial reports because a lack of any statuary underpinning, as such the accounting profession had no authority to establish ground rules which corporations had to follow in their financial statements. However, the abuse in stock exchange practices, financing of securities and corporate reporting which were revealed after the 1929 stock market crash led the US Congress to enact the Securities Act of 1933, the Securities Exchange Act of 1934, and several other securities laws. The Securities and Exchange Commission (SEC) was created under the 1934 Act to enforce and administer the federal securities law. They were also given statutory power to set US generally accepted accounting principles (US GAAP) and have with limited exceptions allowed the private sector to present financial accounting standards. As such, SEC has been concerned with disclosure and classification, rather than the establishment of basic measurement principles. (Pereira et al 1994).

Since 1939, there have been three private sector standard-setting bodies in the US for accounting (Pereira et al 1994):

- The Committee on Accounting Procedure - CAP (1939-1958) was established in response to the creation of SEC and the view of the US accounting profession that the detailed accounting standard-setting process belonged to the private sector.
- The Accounting Principles Board - APB (1958-1973) was established as response to the criticism of the CAP regarding its failure to deal with contemporary accounting issues such as leasing and business combinations.
- The Financial Accounting Standards Board - FASB (1973-) was established after continued criticism in 1971 of the APB due to lack of a conceptual framework and a growing interest in accounting standards within the financial community. The FASB was also aware of that accounting standards had to regain the credibility of public opinion which had been lost as a result of the many perceived abuses of financial reporting during the 1960´s.

In the case of Europe a change is noticed after 2005 as IASC standards are introduced for group accounting of public firms and the presentation of financial formats providing an interesting point of separation with US GAAP which enables the researcher to indirectly construct a standardised value added format employing a nature of expense format.

Presentation of financial statements

At an European level only large groups and firms listed on foreign stock exchanges have shown interest in greater harmonisation of accounting procedures (Lande 2000). These European public firms (around 7000) are now required to disclose their consolidated group accounts according to the International Accounting Standards (IAS) from the financial year starting on or after the January first 2005, as the European Union have decided to import the standards regulated by the International Accounting Standards Committee (IASC) (van Hulle 2004). As such the formats of financial statements to be used for group accounts in Europe by public firms is now regulated by IASC, which in IAS1 state that a complete set of financial statements include the following components (IASC 2003):

- Balance sheet.

- Income statement.
- A statement either showing all changes in equity or changes in equity other than those arising from capital transactions with owners and distribution to owners.
- Cash flow statement.
- Accounting policies and explanatory notes.

Enterprises are also encouraged in IAS1 to present a financial review by management and many enterprises also present additional statements, such as environmental reports and value added statements (IASB 2003). Despite the mention of the value added statement in IAS1 the researcher will later focus on the two formats of recording expenses, but as for now it is noticed that according to Ding et al (2003) little research has been done on the financial statements presented by firms. This is surprising given that IAS1 states that expense items can be provided in one of two ways, namely by nature or by function and this is one of the differences between the US and the European accounting tradition. These formats and their associated data are also important for academic research outside accounting as accounting numbers are the foundation on which theory is built, such as in finance and strategy.

IAS1 states that as a minimum, the face of the income statement should include line items that present the following amounts (IASB 2003):

- Revenue.
- The results from operating activities.
- Finance costs.
- Share of profits and losses of associates and joint venture s accounted for using the equity method.
- Tax expense.
- Profit or loss from ordinary activities.
- Extra ordinary items.
- Minority interests.
- Net profit or loss for the period.

Additional line items, headings and sub-totals should be presented on the face of the income statement when required by an International Accounting Standard (IAS), or when such a presentation is necessary to present fairly the enterprise's financial performance.

IAS1 does not provide a strict format for presentation of the primary financial statements, instead it provide illustrations in appendix A to IAS1 (IASB 2003) of the ways in which the requirements for the presentation of the income statement, balance sheet and changes in equity might be presented. As such it provides two income statements illustrating the two alternative classifications of income and expenses, by nature and by function.

Despite a common belief that there is essentially one format for the income statement, an analysis of financial statements and annual reports on an international basis indicates that income statement presented "by nature" are widespread and are found, even in countries where the format "by function" is the general practice (Baker et al 2004). Even if "the link between the traditional form of reporting ... and the value added format" was disclosed by Cox (1979 p 94-95) it has not influenced the accounting research significantly. The researcher will now review the similarities and differences between these two expense formats before turning to the efforts of introducing the value added statement.

Two formats for classification of expenses

Of interest for this thesis is that the classification of expenses in the income statement can use two formats (IASB 2003 p 1-29 - 1-30), namely:

- The nature of expense method, where expenses are classified in the income statement according their nature, for example; purchases of materials, salaries and depreciation. As such the expenses are not allocated between the various functions of the firm.

  A preference for classification "by nature" may reflect the requirements of government agencies that need such information to prepare national income accounts, which is often the case in Europe. The classification of expenses by nature also allows for calculating value added by an enterprise to the overall economy of a country. The concept is also important for calculation of value added tax. (see Baker et al 2004).

- The function of expense method (or cost of sales method), where expenses are classified according to their function as part of cost of sales, distribution or administrative activities. The perception of this presentation is that it often provides more relevant information to users than the nature of expense method according to IASB, but the allocation of costs by functions can be arbitrary and involves considerable judgement.

A preference for classification "by function" often reflects an emphasis on the needs of capital markets. As such the format is the preferred method in North America, and it is used by most firms listed on the New York Stock Exchange. (see Baker et al 2005).

The researcher argue that arbitrary judgement associated with the allocation of costs by function may set up analytical concerns about the consistency and reliability of financial information content for external users. However, this arbitrary judgement for allocation of costs is less of a problem when costs are allocated into a "nature of expense format" such as: depreciation, employee costs and operating result. This is recognised in financial reporting literature which promotes the use of the value added statement, but is not well recognised within other areas such as finance theory and corporate financial performance. The value added format is not only a useful tool revealing how stakeholder interest are satisfied but also technically how income is variably distributed to cover the expense of stakeholder claims. This issue will be further explored in the literature review in relation to strategy.

It is important to notice that that independent of the method used (i.e. by nature or by function) the sum of total operating expenses must be the same. Otherwise, the income statement would yield different results dependent on method chosen. As such the difference between the formats is related to operating expenses, as illustrated in appendix A of IAS1 (IASB 2003). If the two common items in operating income are excluded in the two formats, i.e. "other operating income" and "other operating expense", the difference between the two expense methods becomes clear as:

- In the function of expense method the sum of :
  - cost of sales,
  - distribution costs,

- administrative expenses

- must be equal to the sum, in the nature of expense method, of:
  - change in inventory of finished goods and work in progress,
  - work performed by the enterprise and capitalised,
  - raw material and consumables used,
  - staff costs,
  - depreciation and amortisation.

From an analytical point of view this duality of the income statement is important, but not well recognised according to Baker et al (2003 p 179) as:

> "One practical difficulty that arises in comparing income statements "by nature" with income statements "by function" is that the transformation of an income statement "by nature" to an income statement "by function" (and vice-versa) is a very difficult exercise because it requires knowledge of information (concerning inventory, detail of personal expenses, etc) that is typically not available to the financial analysts".

This distinction between classifying expenses "by nature" or "by function" is not addressed in US GAAP, even though US Government regulations do address the distinction (Baker et al 2004). It is thus interesting to note that IAS1 (IASB 2003 p 1-29) has highlighted the distinction by stating that:

> "Expense items are further sub-classified in order to highlight a range of components of financial performance which may differ in terms of stability, potential for gain or loss and predictability."

By tradition or regulation different countries may be more familiar with one of these income statement presentation methods (Baker et al 2004). For example, the "by function" format is well known in North American, while the "by nature" format is practiced in several European countries. As a result the alternative formats (here nature of expense) may not be familiar and thus not well recognised to the financial community which is dominated by US finance literature and US investment banks.

As information on the nature of expense is useful in predicting future cash flows, additional disclosure is required when the function of expense method is used. IAS1 (IASB 2003 p 1-

30) states that "enterprises classifying expenses by function should disclose additional information on the nature of expenses, including depreciation and amortisation expenses and staff costs". This implies that it is possible to reconstruct an income statement according the nature of expense method, even if the functional of expense method is used. It also implies that the only common income statement format, published or reconstructed, for firms following the IAS standards is the nature of expense method, as the arbitrary nature of the functional expense format makes it impossible to reconstruct.

Before the researcher turns to strategy at the firm level and the lack of an accounting format that can reconcile financial numbers with strategic narratives in the next section it is important to review the efforts of introducing the value added format in business accounting in general and the harmonisation of national and business accounts in France.

The importance of the Corporate Report

After a period of interest in value added and other forms of distributional accounting in the late 1940's and early 1950's, which waned during the prosperous years of the 1950's and 1960's, the value added concept had a renaissance in the 1970's and the beginning of the 1980's (Burchell et al 1981). This was a time when "social responsibility" of a company and the term 'social accounting'" came into focus in academia and practice (Haller et al 1998), as the focus shifted from how to measure income to whose income to measure. The renewed interest in the value added accounting increased significantly with the publication of the Corporate Report in UK 1975. According to the Corporate Report (ASSC 1975) the value added statement can be constructed out of seven financial elements namely:

- Sales (S),
- Bought-in-material and services (B),
- Employees wages and benefits (W)
- Dividends payable (Div),
- Interest payable (I),
- Taxes payable (T),
- Amount retained for reinvestment (R).

To this list depreciation (Dep) can also be added, illustrated by the example in the Corporate Report (ASSC 1975), as it provides the ability to differentiate between gross and net value added.

Figure 2.2, A manufacturing company: statements of value added.

		Year to 31 Dec 1974 £M		Preceding year £M
Turnover		103,9		102,3
Bought-in-materials and services		-67,6		-72,1
Value added		36,3		30,2
Applied in the following way:				
To pay employees				
wages, pensions and fringe benefits		25,9		17,3
To pay providers of capital				
Interest on loans	0,8		0,6	
Dividends to shareholders	0,9		0,9	
		1,7		1,5
To pay government				
Corporate taxes payable		3,9		3,1
To provide for maintenance and expansion of assets				
Depreciation	2,0		1,8	
Retained profits	2,8		6,5	
		4,8		8,3
Value added		36,3		30,2

Source: ASSC 1975 p 50.

The eight financial elements are arranged in the Value Added Statement as follows to obtain value added (VA):

$$VA = S - B \tag{2.1}$$

$$VA = W + Depr + T + I + Div + R \tag{2.2}$$

Where:

S = Sales
B = Bought-in-material and services
W = Employees wages and benefits
Dep = Depreciation

T = Taxes payable
I = Interest payable
Div = Dividends payable
R = Amount retained for reinvestment

In practice, value added is usually calculated by using equation 2.2. As a result bought-in-material and services (B) can be determined as a residual if sales (S) and value added (VA) are known in equation 2.1. Note, that the value added created is obtained by equation (2.1) and equation (2.2) describes how the value added is distributed among the firm's internal stakeholders. There is no perfect match between the value added format for companies and that used in national accounting, as some differences exist regarding items such as depreciation. However, the presentation of information contained in firm's income statement simplifies the work of statisticians in the preparation of national accounting (Lande 2000). Despite this the "links between business accounting and national accounting" as described by UN (2000) starts with the function of expense format, rather that the nature of expense format, which is arranged in the national accounts into intermediate accounts and System of National Accounts (SNA) accounts.

The voluntary, and as such unregulated, nature of the value added statement open up scope for variability in disclosure and these inconsistencies have been confirmed by research studies examining the value added statement (Renshall et al 1979, Gray et al 1980). After the Corporate Report was published the value added statement has mainly been regarded as a social disclosure aimed for employees, and therefore socially related arguments have been used to establish a theoretical case for its publication. These social theories indicate that management has an obligation and an interest to report to other stakeholders, which is also suggested in most of the accounting frameworks e.g. IAS1 (see IASB 2003). However, the significance of the value added statement varies with shifts in the socio-economic landscape (Burchell et al 1985). In contrary to this position the researcher argue that the value added statement has indirectly been standardised though the IAS1, and to the same level as the more common function of expense format. Also it is well recognised that the function of expense format is useful in capital markets. However, this argument is related to the commonality accounting data using both formats rather than identifying the specific importance of using the nature of expense format unique data which can align firm data with national accounts. As such it is crucial to show the analytical qualities for the corporate sector of employing a value added / nature of expense format to aggregate publicly quoted firm accounts at the macro and

the meso level in order to investigate the extent to which this will provide complementary and valuable information on corporate performance and value in a capital market context.

Besides the value added statement, the Corporate Report also suggests that future statutory accounts should also include a number of key ratios given in a separate section called "The employee report" (ASCC 1975, Cox 1979). Even if most of the literature on the value added statement indicates that it was aimed at the employees, it is surprising that after 30 years the literature on the value added statement contains almost no other evidence on the usefulness of the statement for other stakeholders including shareholders (van Staden 2000c).

What happens between the purchase of the factors of production and the sale of goods that are produced by these factors is an area largely ignored according to Coase (1992). This comment is important as Coase and others have contributed to view the firm as a set of interrelated contracts among various factors of input suppliers and the purchasers of the final product (Cornell et al 1987). From this perspective the firm's claimants go beyond stockholders and bondholders to include customers, suppliers, providers of complementary services and products, distributors and employees. Despite the view of the firm as a contractual coalition that includes investor and non-investor stakeholders, the traditional emphasis in corporate finance has been on the firm's investors, and their evaluation of and responses to the firm's changing economic circumstances. It is Cornell et al (1987) belief that stakeholders other than investors and management play an important role in financial policy and constitute a vital link between corporate strategy and corporate finance.

Besides the Corporate Report's failure to introduce the value added accounting concept in the UK, there is also the alignment effort between national and business accounts in France.

The harmonization efforts of accounting in France

The development in France is interesting as the harmonisation between national accounts and the enterprise accounts was strong through the "Plan Comptable" after the Second World War as well as later in the "Productivity surplus accounting" (French "Comptes de surplus de productivité"). The purpose of productivity surplus accounting was to calculate how income from productivity increases is distributed among the participants in the business over time. According to Nichoe et al (1997) it is the only attempt to build a relationship between accounting and macroeconomics by giving a true view of the contribution of a firm.

The link between cost accounting and financial accounting in France was forged through the accounting information system introduced by the first "Plan Comptablé" in 1947. The task of financial accounting was to group cost according to their nature, whereas the task of cost accounting was to group costs according to their purpose. Also the French "tableau de bord" did not spring from the use of accounting data for management but from the need for engineers to control a firm's production process. As such it places the emphasis on non-financial variables and reflects how a firm views its own operations as well as its relationships with its environment. (Nioche et al 1997)

For private sector companies in France, the income statement is organised by nature of expense method and as such it highlights cumulative amounts such as value added or gross operating surplus, which are used for national accounting purposes. This format has also the advantage of enabling the calculation of cash flow from operating activities, an important item in national accounting of firms. (Lande 2000)

After reviewing the disconnected agenda between national accounting and business accounting and efforts of introducing the value added format in this section the researcher now turns to the discourse of management strategy, which is formulated, evaluated and executed at the firm level. Here too the absence of the value added format is observed, although the researcher knows that accounting numbers provide the basis for measurement and evaluation of strategy. There are also examples in the strategy literature where the value added concept is misunderstood and thus dismissed as a useful accounting framework for informing strategy and evaluating financial outcomes.

Linking strategy to finance and accounting

In this last section of the literature review the researcher starts by reviewing some of the efforts to integrate strategy with finance and accounting. It will be argued that by situating value chain analysis in a value added perspective it is possible to reveal the degree of financial integration and thereby recognise that firms compete for their share of value added along their value added chain to cover their internal factor costs. This also implies that not only shareholders are important in the strategy formulation process, but also other stakeholder such as: customers, suppliers and employees play an important role in adding costs and value recovered. The more recent literature on shareholder value metrics, which employs an income less expenses format, does not consider how income can be split into external and internal income and how internal income is then distributed to various stakeholders of the firm to satisfy financial claims.

Bromwich (1986) observed that management accounting lacks an underlying theoretical framework, as such, "management accounting is represented in journal and text books as a set of weakly-related subjects which have not been integrated at a theoretical level" (Bromwich 1998 p 27). This view is supported by Yu (1966) in relation to the dissatisfaction of using conventional accounting data for managerial, investment and analytical purposes. The demand for additional information for managerial, investment, and analytical purposes points to the need for more constructive and creative thinking in accounting.

Earlier in the literature review it was noted that Cornell et al (1987) argued that stakeholders other than investors and management play an important role in financial policy and constitute a vital link between corporate strategy and corporate finance. Also the notion that the value added concept has much to contribute in corporate strategy (Bryant 1989 p 42), as "it is the only technique which clearly separates product or service costs into those produced or controlled by the firm and those provided by others outside of their immediate control". These arguments suggest that value added more accurately than sales or gross output describe the total influence that a firm has in its product markets and domestic economy. As such the formulation of strategy can be fruitfully viewed as placing bets on certain product markets

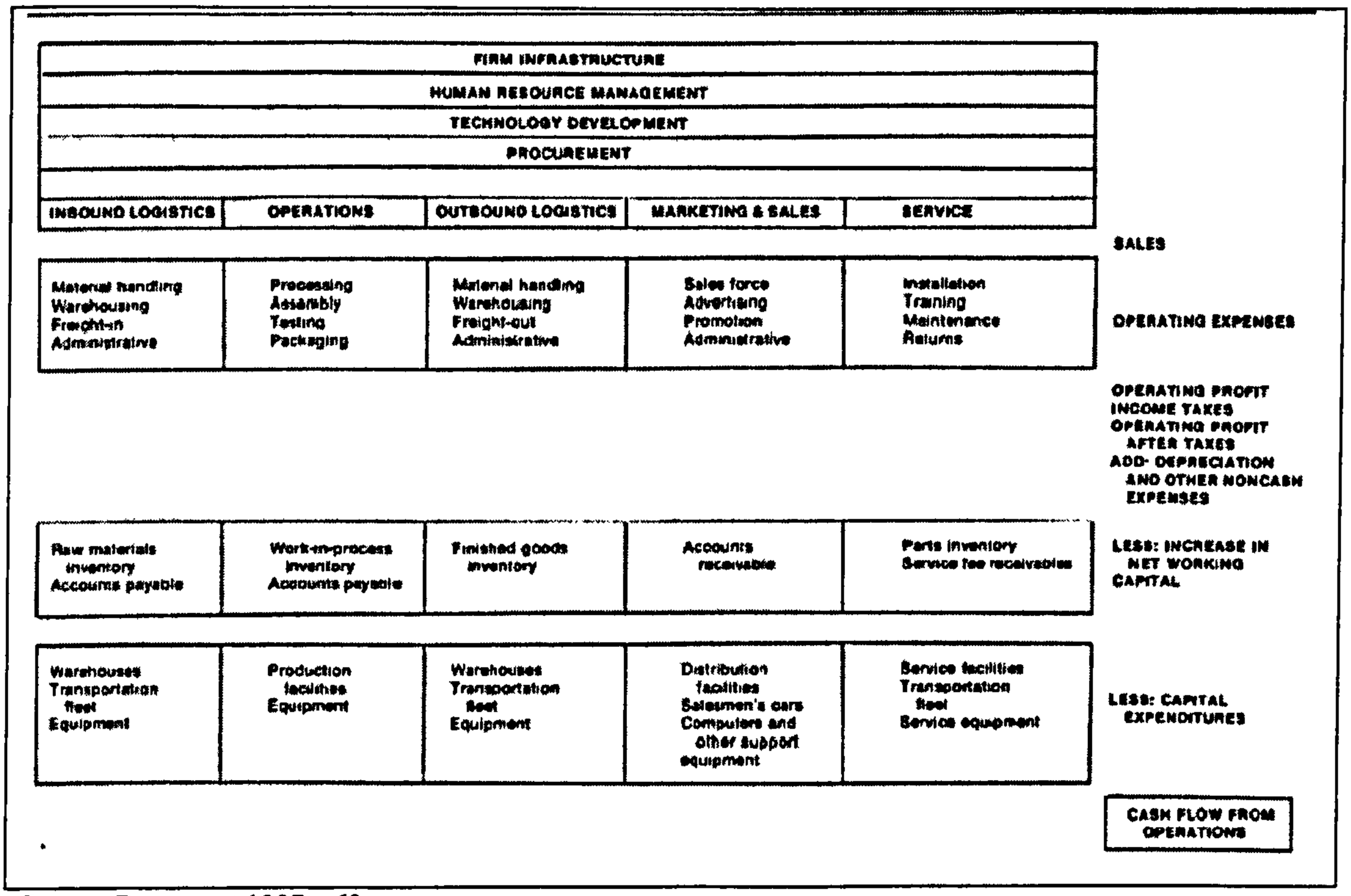
and on certain links in the value-added chain (Kogut 1984). Where a value added chain is described as "the process by which technology is combined with material and labour inputs, and then processed inputs are assembled, marketed and distributed" (Kogut 1985 p 15). Although Kogut makes this insightful observation he makes no reference to the value added statement and accounting, instead he refers to Porter's (1985) concept of the value chain. Despite these insights the links between strategy, value added and corporate finance are not clearly articulated.

It is observed that the strategic management accounting is a rather fragmented literature and that "there is still little or no agreement about what constitute strategic management accounting" (Roslender et al 2003 p 255). Even though there have been several efforts to integrate the field of strategy and finance, for example Rappaport (1987) and Amit et al (1993), one still lack a theory at the firm level which integrates narratives with number for strategy formulation and evaluation.

Some integrating efforts in strategy

Rappaport (1987) argues that the link between competitive strategy analysis and the shareholder value metrics is through the value chain (see Porter 1985) and the cash flow fundamentals (see figure below). As such his argument is that managers need to understand the behaviour of costs as well as the basis for differentiation, which can be done by disaggregating the firm into its constituent strategic activities.

Figure 2.3, Link between value chain and cash flow



Source: Rappaport 1987 p 63.

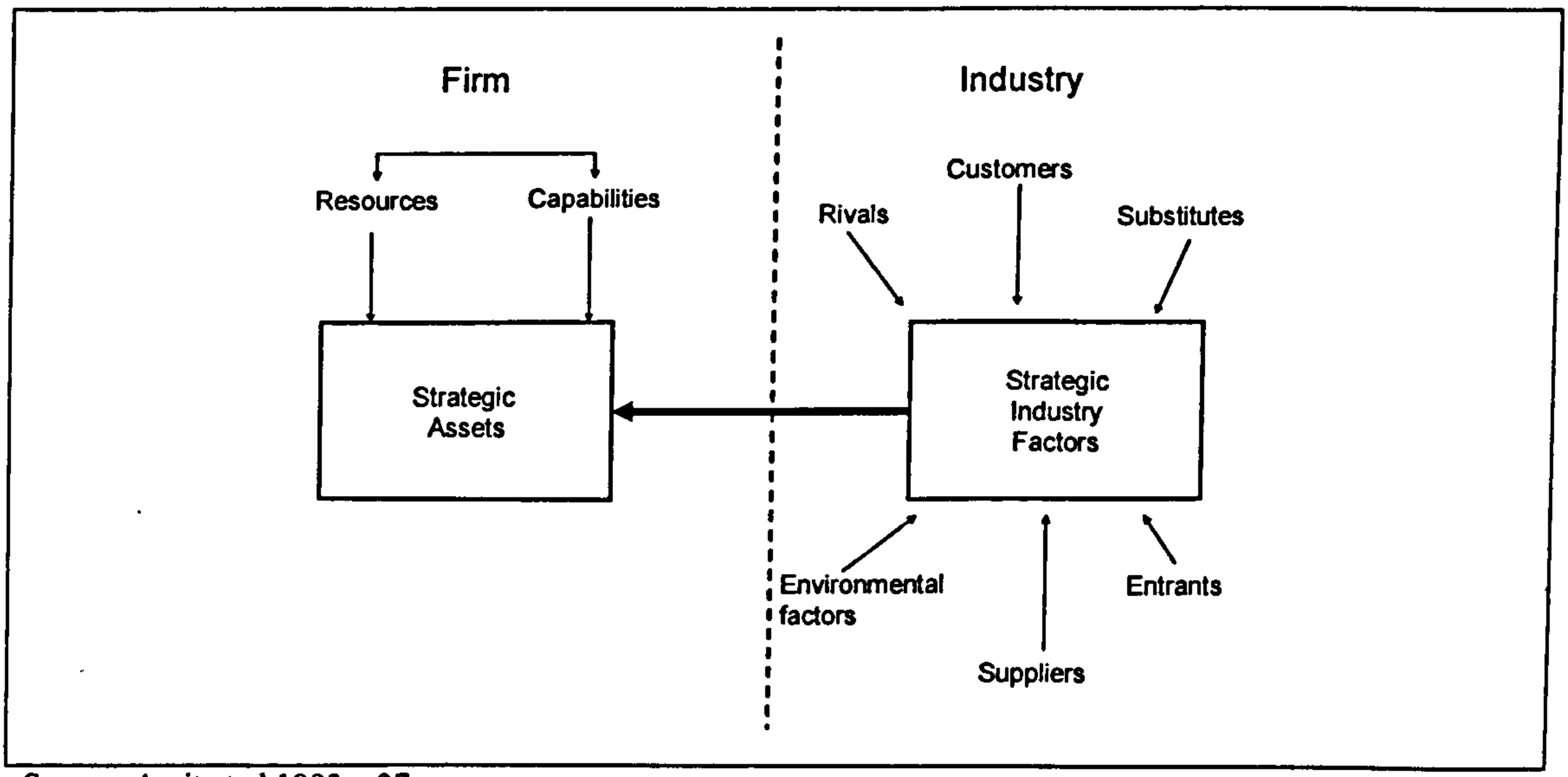
Rappaport also argues that "management is often characterised as balancing the interest of various corporate constituents, such as employees, customers, suppliers, debt, and stockholders" (ibid p 59). This argument aligns with Treynor (1981), which is that the firm's existence depends on the financial relationship with these stakeholders and the ability to satisfy these claims. Despite this insight into the importance of stakeholders for value creation, the cash flow from operation (in the above figure) uses the traditional accounting format, i.e. sales less operating expenses. As such one can argue that Rappaport ignores what happens between the purchase of production factors and sales (see Coase 1992), and as a result the value added format is invisible.

The strategy literature has over the past decade narrowed finance as strategy has been included in various financial evaluation techniques. This can be seen in techniques as the balanced scorecard and intellectual capital, which justifies the inclusion of certain financial and non-financial indicators (Mauritsen et al 2005). However, balance scorecards and intellectual capital differ with respect to theory of strategy as (ibid p 10):

- The balance scorecard builds on competitive strategy and it is consistent with the "industry and competitive analysis" articulated by Porter (1980, 1985).
- The intellectual capital builds on competency-based strategy, which generates value through the knowledge, skills, talents and know-how of employees (Hamel et al 1994).

The lack of integration between strategy and finance, as observed above, may be related to the fact that there is still a search for an integrated financial "strategic theory of the firm" (see Rumfelt 1984). Researchers have suggested several theories of the firm as they moved towards "a strategic theory of the firm", but economists have been very critical of these approaches (Phelan et al 2000). Amit et al (1993), within the field of strategy, propose a theoretical approach that explicitly seeks to integrate the competitive forces at the industry level and the resource based paradigm of competitive advantage at the firm level (see figure below).

Figure 2.4, Integrated theory of strategy



Source: Amit et al 1993 p 37.

They suggest that the competitive forces and resource-based views are in fact two sides of the same coin and are fundamentally interrelated, where the two key constructs defined in the model are:

- Strategic industry factors are the key determinants of firm profitability in an industry and "are determined at the market level through complex interactions among the firm's competitors, customers, regulators, innovators external to the industry, and other stakeholders" (Amit et al p 36).

- Strategic assets are "the set of difficult to trade and imitate, scarce, appropriable and specialized *resources* and *capabilities* that bestow the firm's competitive advantage" (ibid p 36).

However, after this effort there is still a debate on what a strategic finance theory of the firm would look like (see Phelan et al 2000). In the remaining sub-sections the researcher will review the importance of the value added concept for value chain analysis and its ability to add value to the understanding of how to formulate strategy which represents the financial interests of various stakeholder groupings.

Value (added) chain analysis

The notion of balancing the interest of multiple stakeholders has a long tradition in Japan and continental Europe. As such, there is a recognition that the firm is a social institution that pursues the interest of multiple groups and provides the case for a stakeholder approach to strategy and thus defining the goals of the firm (Grant 1998). However, the value added accounting format barely figures in the strategy literature as a useful mechanism through which one could account for strategy and performance. Some texts reveal its calculation (e.g. Grant 2002) but Porter is less positive about the use of this accounting format, which can be seen in a comment made by Porter in "Competitive advantage" (1985 p 39) where he states that:

> "An analysis of the value chain rather than value added is the appropriate way of examine competitive advantage. Value added (selling prices less the cost of purchased raw materials) has sometimes been used as the focal point for cost analysis because it was viewed as the area in which a firm can control costs. Value added is not a sound basis for cost analysis, however, because it incorrectly distinguishes raw material from the many other purchased inputs used in a firms activities. Also, the cost behaviour of activities cannot be understood without simultaneously examining the costs of the

> inputs used to perform them. Moreover, value added fails to highlight the linkages between a firm and its suppliers that can reduce costs or enhance differentiation."

Even if the additive characteristics of value added have been described in the business literature, e.g. Besanko et al (2000) illustrates how jeans are produced and distributed, the value added format and how this can contribute to formulating and evaluating strategy is missing. For example the "value chain" concept used in strategy is regarded as fundamentally different from the value added concept, where Shank (1989) argues that from a strategic perspective that the value added concept has two big problems:

- It starts too late. Starting cost analysis with purchases misses all opportunities for exploiting linkages with the firm's suppliers.
- It stops too soon. Stopping cost analysis at sales misses all the opportunities for exploiting linkages with the firms customers

It is possible to disagree with Shank, noting that firms compete for value added along a value added chain to cover factor costs. As such it is not only important to understand the determinants of internal factor costs but also to understand where in the value added chain the firm is and how the environmental conditions change the financial configuration of value chains.

The researcher notice that the value chain analysis is central to the strategic management process, see Shank et al (1992). Here the concept of value chain is employed more extensively than with other writers, stretching from basic raw material sources of a business through the ultimate end-user product delivered to the end customer. Although Shank et al (1992) dismisses the value added concept, their exhibit 2 reveals the additive characteristics of value added as well as how it is distributed along a value chain.

Figure 2.5, Value added as a process flow value chain

			Value added components	
Supermarket				
Price to customer	**16704**			
- Price to store	-14976			
= Store gross margin	1728		1728	Profit
Processor of Customer Products				
Price to store	14976			
- Cost of processing	-12528		12528	Internal costs
- Cost of Carton	-1152			
= Processor profit	1296		1296	Profit
Carton Converter				
Price to Processor	1152			
- Freight to Processor	-10		10	External costs
- Converting cost	-234		234	Internal costs
- Price to Converter	-640			
= Converter profit	268		268	Profit
Extruding Plant				
Price to Converter	640			
- Freight to Converter	-35		35	External costs
- Extruding Costs	-91		91	Internal costs
- Price to Extruder	-486			
= Extruder Profit	28		28	Profit
Paperboard Mill				
Price to Extruder	486			
- Freight to Extruder	-3		3	External costs
- Production Cost	-105		105	Internal costs
- Pulp Cost	-319		319	External costs,
= Mill Profit	59		59	Profit
		Total value added in the chain	**16704**	

Left side of exhibit 2, with the assumption that internal costs are labour and depreciation as well as that profit is an operating profit. As such the rights side of the above figure is the researcher's structure of these costs from a value added chain perspective.
Source: Shank et al 1992 p 187.

Accounting data can be used to reveal the additive characteristics of the value added chain, when there is a split of income into profit, external costs in income and internal costs. It is the researcher's view that Shank et al (1992) wrongly dismiss the additive characteristics of value added when they note that the "value added concept starts too late" and "it stops too soon" as they probably only viewed the subtractive calculation of value added (i.e. sales less procurement).

The value added chain employed in this thesis will be employed to reveal firm, industry and county level value added which contrast Porter (1985 p 35) that argues that "an industry- or

sector wide value chain is too broad, because it may obscure important sources of competitive advantage". A different view is taken by Vilen (1991) which emphasis the outside-in approach. By doing this he argues "that before any company commits itself to major investments, it is of vital importance to specify the vertical linkages involved in the process of getting the product from the raw-material stage to the final user in order to find out the vertical competition benefits within each firm's reach" (ibid p 70). The researchers argument is that competitive advantage, and thus competitive awareness, is about how firms capture intra industry and extra-industry value added chains which financially add to a firm's value added, cash and return on capital.

The value chain described by Porter (1985) depicts the firm as a collection of value-creating activities, such as production and sales, as goods move along the vertical chain. He distinguishes between five primary activities (inbound logistics, production operations, outbound logistics, marketing and sales as well as service) and four support services (firm infrastructure, human resources, technology development as well as procurement). However, a firm that concentrates on the internal value creation process only will neglect the strategic opportunities emerging in its environment according to Vilen (1991). Analyzing competitive advantage involves not only the firms own value chain, but also the entire vertical chain of production. The value created depends on judicious make-or-buy decisions that are sensitive to conditions of technology and transaction costs (Besanko et al 2000). It is also worth observing that traditional accounting systems, according to Porter (1985), are unhelpful for value chain analysis, they can also get in the way of it. This is not the case with the value added format, which because of its additive characteristics and subtractive characteristics can both help to formulate strategy and evaluate performance outcomes as it aligns product markets with labour and capital markets.

Adding value to strategy through stakeholders

The value added concept has much to contribute in corporate strategy according to Bryant (1989 p 42), as "it is the only technique which clearly separate product or service costs into those produced or controlled by the firm and those provided by others outside of their immediate control". The reason for this is that value added more accurately than sales describe the total influence a firm has on its product markets.

Since Adam Smith, the dominant view of the firm has been an organisation that obtains its resources from its investors, employees and suppliers to produce goods and services to customers (Donaldson et al 1995). In doing so each contributor expects to receive appropriate compensation. A theoretical justification for value added can be found in the extended enterprise theory (see Surjanen 1954), which views firms profit as the result of a collective effort (Prudy 1983). As such the value added is a measure of the wealth created by the firm's productive activities before the distribution to the various stakeholders. Using a value added statement it is possible to analyse the ability a firm has to reward all agents and to consider how the residual income is to be distributed (Gallizo et al 2002).

The formulation of strategy can be fruitfully viewed as placing bets on certain markets and on certain links of the value chain (Kogut 1984). The creation of added value also requires a continual search for new products, new processes and new materials. It also means offering the customer more tangible benefits for money. Creating added value is a fundamental objective of good management according to Wood (1978), which sets two objectives in terms of value added for firms, namely to:

A). Generate the maximum possible amount of value added per person employed and, at the same time, the maximum possible value added per unit of capital employed.

B). Share out the value added in such a way that employees and investors are rewarded adequately, and, at the same time, to retain sufficient added value in the business to replace assets and to finance future growth.

After reviewing the value added chain and the importance of stakeholder's relation in adding value to strategy the researcher turns to the use of shareholder metrics used in capital markets. These metrics focus only on shareholders, and as such they neglect other stakeholders participation in the process of wealth creation at the firm level.

Use of shareholder value metrics

A key feature of the post-war period has been that individual shareholders progressively ceded responsibility for managing their share capital and this, coupled with the growth in occupational pension schemes, has led to a pooling of assets under management. Investment banks such as JP Morgan-Chase, Merrill-Lynch and Goldman Sachs manage large blocks of corporate share capital, for example JP Morgan Chase (see Annual Report, 2005) manages over $1 trillion dollars of equity funds. Asset management is concentrated in a few large companies and their fund managers are paid generous bonuses if they can drive up the market value (MV) of their portfolios and beat the market index. This is an industry which is dependent on raising fee income which is calculated as a percentage of the aggregate MV of funds under management (FUM). In a highly competitive market where fee structures have eroded (McKinsey 2003) there is additional pressure on the corporate sector to increase return on capital which, it is generally argued, will strengthen share prices and aggregate MV of FUM.

Financial incentives and the threat of corporate takeover focus managerial attention on the objective of increasing return on capital employed (ROCE) for shareholder value (SV). Rather than rely solely on managerial competence(s) what is required are mechanisms, monitoring systems and incentives around the shareholder value metrics that serve to align management behaviour with investor interests. Managers are encouraged to deliver SV and are paid bonuses or are allocated share options when they increase return on investor's capital (see Jensen et al 1976, Fama et al 1983). If managers do not secure increased return on capital for investors there is an active market for corporate control that will discipline poorly performing management (Manne 1965, Jensen 1986).

Froud et al (2002) observed that accounting numbers are important because they are used to construct and support "accounts" of corporate performance presented by management in their financial reports and investor presentations. Accounting numbers also figure in the stories constructed by investment analysts who have influence, in their role as independent advisers, to asset managers. Typically, these accounts focus on SV metrics which include: return on capital employed (ROCE), value spread (such as return on invested capital (ROIC) minus weighted average cost of capital (WACC)) and Economic Value Added (EVA™). These

financial metrics have a common platform in that they all employ earnings and capital employed in their computation.

The need to generate a sufficient return on capital employed is an increasingly important issue for mangers as well as investors in capital markets through the notion of shareholder value creation. According to this wealth is created on new invested capital only if the return on invested capital is expected to be above the weighted cost of capital, i.e. ROIC > WACC (Copeland et al 2000). As such finance theory offers managers as well as investors a guide for choosing investments through the Net Present Value rule (NPV>0).

The increased focus on shareholder value creation has led to the development of several SV metrics in the financial community over the past decade, such as Discounted Cash Flow (DCF), Economic Value Added (EVA), Cash Value Added (CVA), Cash Flow Return on Investment (CFROI) and Cash Return on Capital Investment (CROCI). All these approaches have led to a pressure for an increasing return on invested capital, both among managers as well as investors such as asset managers.

The corporate sector is therefore not only obliged to generate a surplus profit and cash resource out of income but also to increase the cash or profit return on invested capital. In chapter 3 the financial model of analysis developed, for the purpose of revealing corporate performance, incorporates a capital market dimension.

Summary

The literature review started with a consideration of the historical development of national accounting before turning to industry and firm level accounts. The object was to understand why the value-added accounting format is present at a macro and meso level, but increasingly absent from a micro-level account of corporate performance. Along the way an argument about the usefulness of the value added accounting approach was developed as it avoids double counting and how this might be re-instated to help us judge strategy and value corporate performance by adding a capital dimension to the value added statement..

In view of its importance in their work economists had an interest in accounting because it provided the platform on which macro-economic theories of growth and productivity were constructed and was the basis for "management of the economy". If the macro-economists needed national accounts for the development of their theoretical frameworks employed to describe aggregate national economic performance –the same motivations did not drive down the production / formatting of accounting information to the level of the firm. Once standardised national accounting came to be employed in many advanced nations, the focus shifted from management accounting to financial accounting. As a result there is no perfect match between the value added of companies and that used in national accounting. However, the presentation of information contained in firm's income statement simplifies the work of statisticians in the preparation of national accounts.

In the early 1970's value added accounting gained popularity within accounting in most European countries when the focus shifted from how to measure income to whose income to measure. In particular, the renewed interest in the value added accounting format increased with the publication of the Corporate Report in UK 1975. After the Corporate Report the value added statement has mainly been regarded as a social accounting format which discloses stakeholder interest especially related to employees. Even if the literature on the value added statement indicates that it was aimed at the employees, it is surprising that after the Corporate Report was published the literature on the value added statement contains almost no evidence on the usefulness of this financial format for other stakeholders including shareholders. Even if he format appears in relation to social responsibility reports, see for example Ericsson (SR 2005), no connection to corporate performance or market value is made and thus the potential usefulness of the format in a capital market context.

The voluntary, and as such unregulated, nature of the value added statement allows for inconsistencies in the disclosure. However, the nature of expense format in IAS1 now introduced in Europe can be viewed as an extended value added statement as it discloses staff costs and procurement costs, which are the main characteristics of the value added statement when compared to the traditional accounting format. The importance of the value added format is that it reveals what happens between the purchase of the factors of production and the sale of goods that are produced by these factors, an area largely ignored according to Coase (1992).

Despite the view of the firm as a contractual coalition that includes investor and non-investor stakeholders, the traditional emphasis in corporate finance has been on the firm's investors, and their evaluation of and response to the firm's changing economic circumstances. But stakeholders other than investors and management play an important role in financial policy and constitute a vital link between corporate strategy and corporate finance.

It is observed that accounting numbers are important because they are used to construct and support "accounts" of corporate performance presented by management in their financial reports and investor presentations. Accounting numbers also figure in the stories constructed by investment analysts who have influence, in their role as independent advisers to asset managers. Financial incentives and the threat of corporate takeover focus managerial attention on the objective of increasing return on capital employed for shareholder value. Rather than rely solely on managerial competence(s) what is required are mechanisms, monitoring systems and incentives around the metrics of shareholder value that serve to align management behaviour with investor interests. The increased focus on shareholder value creation has also led to the development of several shareholder value metrics in the financial community over the past decade, which has led to a pressure for an increasing return on invested capital, both among managers as well as investors. The link between strategy and finance in terms of accounting information is not clear as it is viewed that traditional accounting systems are not just unhelpful for value chain analysis, they can also get in the way of it.

It is also observed that researchers in the strategy field have been searching for "a strategic theory of the firm", which must ultimately blend strategic and economic considerations. There have even been proposals (see Amit et al 1993) that the competitive forces view of strategy at the industry level and the resource based view of strategy at the firm level should be integrated. The researcher will argue in the thesis that the link between these two approaches is the value added concept because it allows us to analyse both industries and firms using a common shared accounting procedure. The value added statement reveals what happens between the purchase of the factors of production and the sale of goods that are produced by these factors, an area which is largely ignored according to Coase (1992).

Strategy formulation is as much about narratives employed to justify corporate performance as accounting numbers. As such the value added concept has much to contribute to strategic

narratives because it can describe the influence a firm has on its product market and how an effective management of factor resource help support higher returns on capital employed. Corporate strategy is thus how firms are able to capture value added and return on capital employed within a national and global economy.

In the following chapter the research methods available to the researcher is outlined and after reviewing each in turn the researcher justify the particular choice of research method to be used in this thesis, one that is grounded in accounting. The focus is on how to evaluate corporate performance and how this might strengthen the link between company financials, strategy and market value. Of central importance in a shareholder value economy is the return on capital employed (ROCE). This is a summary ratio which captures in the numerator the earnings of a company pre interest and tax and in the denominator the capital employed. The ROCE can be deconstructed into its constituent elements and into what basic accounting textbooks describe as the "pyramid" of ratios. Deconstructing the elements that make up the ROCE is used in the thesis to reveal how financial performance is the results from product, factor and capital market interactions recorded in the annual report and accounts.

Chapter 3 , Defining the research method

The objective of this chapter is to describe the choice of research method for the purpose of researching the issues and problems that arise from the literature review in terms of methodology and method. From the literature review the lack of a developed financial framework is revealed for evaluating corporate performance at the level of the firm based on value added. There is also an absence of a value added format for strategy formulation and evaluation of corporate financial performance.

The chapter is structured into four sections. The first section is an introduction that sets the quest for knowledge against the problems identified from the literature review. The thesis then continue with two further sections which review issues of research philosophy and research method employing the concept of the research onion to organise choices in the quest for knowledge. The lasts section outlines the specific accounting framework of analysis that will be employed in this thesis to reveal corporate performance and add to knowledge.

Introduction

To put the research method to be used in this thesis into perspective, it is useful to have an overview of the development of research in accounting and adjunct areas so as to understand the evolution of paradigms as learning cycles. As such one might better understand the paradigm shifts that occurred in economics and accounting which provide the foundation of current perspectives in accounting and finance as well as why there might be an absence of demand for the value added accounting format at the micro level.

The thesis then turns to review the various research methods available and establish the choice of research method to apply and how these are appropriate in addressing the research questions that arise from the literature review undertaken in Chapter 2.

Accounting paradigms as learning cycles

The modern empirical social science began little more than 100 years ago (Punch 1998), with the exception of economics which has a much longer history as revealed in the literature review. Early social science was influenced by progress in natural science and imitated their scientific methods of building knowledge through experiment and measurement. As such the early social science paradigm was quantitative and positivistic. However, social science today is multidimensional and pluralistic in terms of paradigms, where the main inquiry paradigms are positivism, post-positivism, critical theory and constructivism (Punch 1998). The researcher will later in this chapter return to paradigms as philosophy of inquiry, but will first look at the meaning of paradigms as learning cycles.

Accounting is a multiple-paradigm science according to Riahi-Belkaoui (2000), provided that the "Statement on Accounting Theory and Theory Acceptance" by American Accounting Association in 1977 is accepted, which describe six competing paradigms within accounting (see figure 3.1 below). Accounting also qualifies as a science according to Wells (see Riahi-Belkaoui 2000), since events in accounting seem to follow an evolutionary pattern. Kuhn's view (ibid) is that science is dominated at any given point by a specific paradigm, which after a stage of anomalies and crisis may end in a scientific revolution where the reigning paradigm is replaced by a new paradigm, which was the case in economics after the interwar period. .

Figure 3.1, Competing accounting paradigms

	The anthropological/ inductive	The true-income/ deductive	The decision-usefulness/ decision model	The decision-usefulness/ decision-maker/ aggregate-market-behaviour	The decision-usefulness/ decision-maker/ individual-user	The information/ economics
The subject matter	Existing accounting practice and management attitude towards those practices	Construction of an accounting theory on the basis of logical and normative reasoning and conceptual rigor and a concept of ideal income	The usefulness of accounting information to decision models	The aggregate-market responses to accounting variables	The individual-user response to accounting variables	Information is an economic commodity and the acquisition of information amounts to a problem of economic choice
Main theories	Information economics, the analytical/ agency model, the income smoothing/ earnings management hypothesis, the positive theory of accounting	Price-level adjusted accounting, replacement -cost accounting, deprival-value accounting, continuously contemporary accounting, present-value accounting.	Business decision-making models (such as EOQ or PERT), and economic events that may affect a going concern (such as bankruptcy or takeover)	Theory of capital market efficiency.	Often borrowed from other disciplines.	Draws on insights from the "theory of teams", on statistical decision theory and on the economic theory of choice
Methods	Techniques used in: Income smoothing research, earnings management research and positive theory research.	Analytical reasoning to justify the construction of theory or argue the advantages of a particular asset-valuation/ income-determination model other than historical-cost accounting.	Empirical techniques to determine the predictive ability of selected items of information.	The market model, the beta estimation model, the event study methodology, the Ohlsons Valuation model, the price level balance sheet evaluation models, the information content of earnings model, the model of the relation between earnings and return	Behavioural observation techniques, interviews, and questionnaires, and experimentation.	Analytical reasoning based on statistical decision theory and the economic theory of choice.

Source: Riahi-Belkaoui 2000 p 275-86.

Researchers have also employed these different methodologies and theories to examine possible issues in the accounting field, and these are often related to other areas of the social sciences and this diversity can be seen in management accounting, financial accounting and finance (Ryan et al 1992):

- Management accounting

  Before the Second World War the primary focus in management accounting was the determination of costs and the control of direct labour, direct materials and overheads and most of the innovators were practitioners (Ryan et al 1992). After the Second World War there was a shift from cost accounting to managerial decision making and the usefulness of accounting information for both planning and control. However,

around 1980 there was a recognition of a growing gap between the theory and practice of management accounting, with focus on descriptive research exploring the nature of practice and analytical work to provide theories which can explain the practice. The expansion of management accounting research has also led to that "the subject has now become so widely differentiated that much of the coherence of a single intellectual discipline ... has been lost" (Ryan et al 1992 p 64).

- <u>Financial accounting</u>

Although financial accounting extends back many centuries, it was the increased business activity brought by the industrial revolution which was responsible for much of the development in the area (Ryan et al 199). As such accounting theory arose out of accounting practice and in the 1920s and 1930s accountants were interested in distilling principles of existing practise (i.e. empirical inductive approach), whereas economists were interested in deriving measurement of "true income" (i.e. deductive approach). After the Second World War these different approaches began to converge and lead to the golden age of "a priori" research during the 1960's. The focus on decision usefulness around 1970 moved financial accounting research away from "the search for 'true-income' and towards a consideration of the utility of accounting methods to the various user groups" (Ryan et al 1992 p 75).

- <u>Finance</u>

Prior to the work of Markowitz (1953) on portfolio theory and Modigliani et al (1958) on capital structure, research in finance was largely institutionally oriented and a descriptive subject (Ryan et al 1992). Since then it has evolved into a highly technical subjective with research areas as the Capital Assets Pricing Model (CAPM), the Arbitrage Pricing Theory (APT) and the Efficient Market Hypothesis (EMH). The focus in finance literature has typically been the capital market perspective rather than an intra-firm or managerial perspective. This being so when much of the theoretical work in finance is based upon neo-classical economics and assumptions about rational economic agents, perfectly competitive markets and freely available information. As such the research framework used in finance has strong positivistic traditions, as it "entails the development of theoretical models which are then tested by confronting hypothesis derived from these models" (Ryan et al 1992 p 26-27). However, research

in finance has not been successful in the area of equity analysis according to Nissim et al (2001). Once the mainstream of finance, equity valuation has not advanced much beyond the applying the dividend discount model, while enormous steps have been taken in derivative pricing.

In contrast to the theoretical sophistication found in finance texts and journal articles the "linkages between theory and empirical results have not always been well articulated" (Ryan et al 1992 p 26). There are still many problems to be resolved and the area has been subject to criticism both at the technical and the methodological levels where "numerous sophisticated attempts to link the theoretical terms embedded within financial models with empirical observations" (ibid p 40).

Modern research in accounting and finance has become pluralistic in terms of paradigms mainly through the revolutionary pattern of science. It has also been revealed that research in accounting and finance shifted from: cost accounting and "true income" to managerial decision making, portfolio theory and capitals structures and thus from an intra-firm perspective to a capital market perspective.

The above shifts in business research after the Second World War added to our understanding of markets, both in terms of product market strategy and capital market values. But one has at the same time lost an intra firm perspective which accounts for corporate performance and how stakeholder interests are satisfied. Coase notes (Williamson et al 1993 p 7) that the financing of the firm "by acquiring, leasing and borrowing capital was not examined" in his paper –"The nature of the firm". This implies that economists have neglected the main activity of the firm, namely running a business, and need to go beyond an explanation of "Why there were firms". Specifically what functions are performed by firms and how these are divided up among them and the extent to which corporate strategy can deliver strong financial results.

It is the researcher's view that the integration of these intra-firm and the market perspectives through the value added concept may provide valuable insights into the interaction between firm's strategic allocations of production factors for product markets. Such strategic choices can be made on various grounds, but in a capitalistic society the choices are based on profit expectations by corporate managers and demands for return on capital employed.

The researcher now turn to formulating the research question as the researcher have revealed an absence of the value added format for performance evaluation and strategy in the literature review and thus a loss of an intra firm perspective.

The research effort

The research question

The literature review is used to construct and inform the problem definition, which is revealed as an absence of a value added accounting format, at the micro and meso- corporate sector level, as a method of accounting for corporate performance, even though the literature review reveals the usefulness of the value added accounting format for performance measurement at the macro and industry level in national accounts. A rather disconnected agenda is observed between national accounts and business accounts in terms of performance measurement for wealth and value creation. It is also an agenda where accounting numbers provide useful inputs to other research areas and which helped underwrite significant shifts in research focus in accounting and finance over the past century.

The research question can now be formulated as: "How can the value added statement be used for evaluation of performance and strategy in a capital market context?". As such the usefulness of the value added format is about:

- "how accounting numbers can be employed at various levels of the economy to inform us about corporate performance"
- and "support strategic decision making by managers and investors in their quest for value at the firm level".

Performance in capital markets is about total shareholder return (TSR), which is a result of clever strategic moves by individual firms in completive industry environments. The evaluation of strategy is complex as both the accounting as well as the strategy area is searching for a "theory of the firm".

The general picture of accounting thinking adds to this, as it is not clear at all due to the inadequacy of research methods and the lack of a basic theoretical framework (Yu 1966). As such, the demand for additional information for managerial, investment, and analytical purposes points to the need for more constructive and creative thinking in accounting, which could be the case by adding a capital dimension to the value added statement for performance evaluation.

In terms of strategy one observes some efforts of both integrating various views of strategy into one theory (see Amti et al 1993) as well as integrating finance and strategy (see Rappaport 1987). There is also the view that traditional accounting systems are unhelpful for value chain analysis according to Porter (1985). Even if this is related to traditional accounting, the value added format has been dismissed (see Porter 1985, Shank 1989), possibly due to the fact that only the subtractive calculation for value added has been observed. As such, the researcher focus on both the subtractive as well as the additive calculation of value added and how it can be used by adding a capital dimension.

What are we trying to understand?

The research question has a logical priority over the research method, i.e. content precedes method and as such there is a need to establish what can be found out, and then consider how it will be done. There is also the option to do things other way around, i.e. methodolatry, which requires learning the methodology and then search for a research question (Punch 1998). In this thesis content will precede method where the literature review is used to construct and inform the problem definition, which is revealed as an absence of a value added accounting format at the micro and meso-level as a method of accounting for corporate performance, even though the literature review reveals the usefulness of the value added accounting format for performance measurement at the macro and industry level in national accounts. As such a rather disconnected agenda is observed between national accounts and business accounts in terms of performance measurement for wealth and value creation. It is also an agenda where accounting numbers provide useful inputs to other research areas and which helped underwrite significant shifts in research focus in accounting and finance over the past century.

The usefulness of the value added format is about how accounting numbers can be employed at the level of the firm to inform one about corporate performance and support strategic decision making by managers and investors in their quest for value at the firm level. Thus, the critical issue for this thesis is to employ a research method that can best account for corporate performance which is the outcome of corporate strategy. Because strategy is increasingly about delivering shareholder value and return on capital employed the research method will be located in finance and accounting. In addition the research method chosen should be able to deconstruct corporate performance into the contribution from product, capital and factor market conditions. Finally the research method adopted should also be able to reveal differences and similarities between firms and describe corporate performance at the firm, industry and macro level of analysis and how this evolves over time.

However, to be able to know something about our social constructed reality one need to make choices as a researcher in the knowledge acquiring process, where these choices need to be explained and negotiated. To guide the researcher through this process the so-called "research onion" has been used.

The acquisition of knowledge

According to Denzin et al (1994 p 99) methodology focuses on "how we gain knowledge about the world" and as such good research questions indicate gaps in the scope or the certainty of our knowledge. To answer a research question there is a need to understand what the researcher want to know as well as how to apply investigative methods to illuminate new understandings (Ghauri et al 1995). Guba et al (1994 p 108) view the methodological question as "how can the inquirer (would-be knower) go about finding out whatever he or she believes can be known?" .

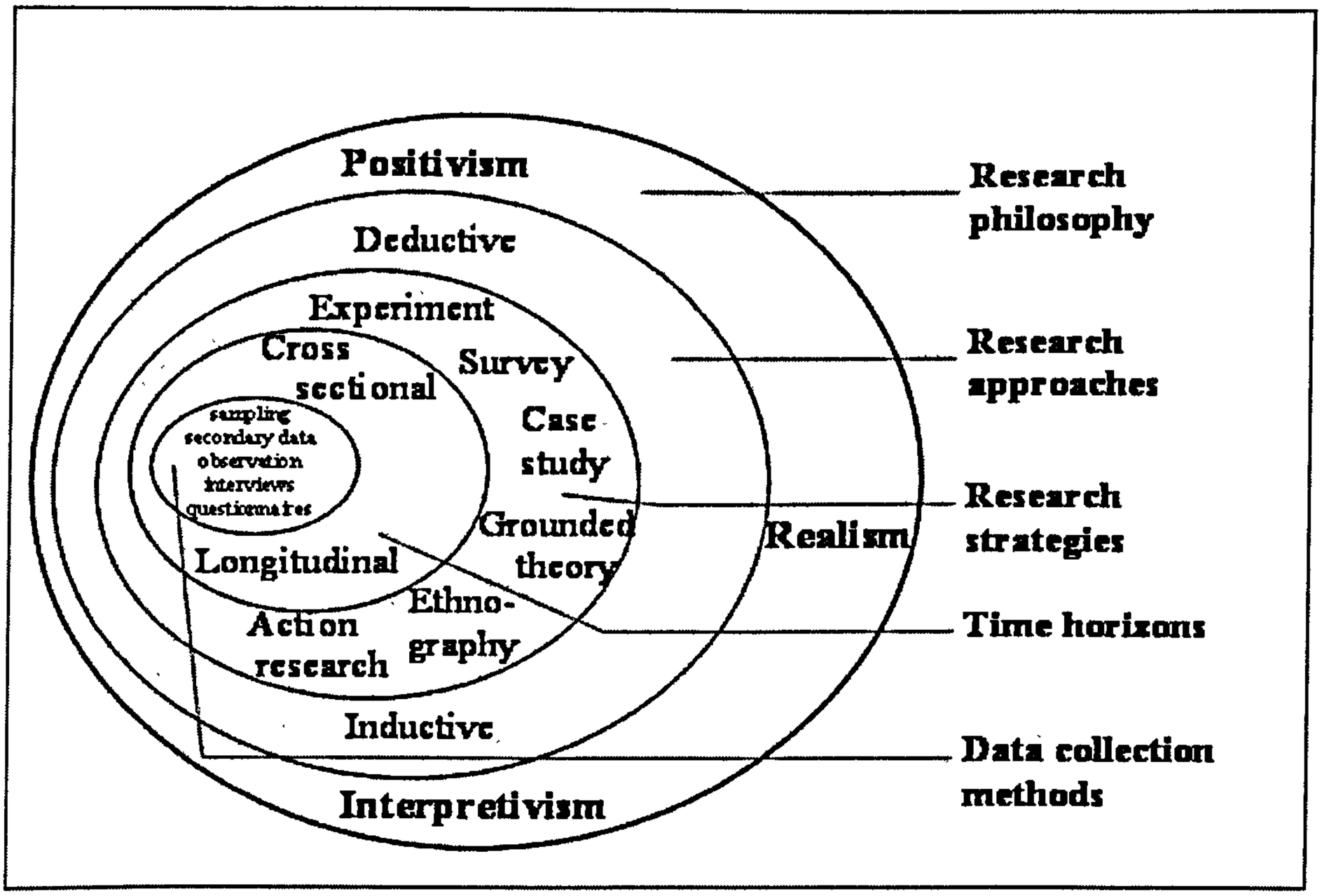
Saunders et al (2003 p 3) defines research as "something that people undertake in order *to find out things* in a *systematic way*, thereby increasing their knowledge" (emphasis added). This suggests that research is based on logical relationships (not just beliefs) and that there may be multiplicity of purposes of research. Research methods refer to the systematic collection of data for the purpose of obtaining information from the data to answer the research question (Ghauri et al 1995). By methods are meant data and information collection through the use of

research strategies, which is different from the techniques of data collection. Techniques are the step-by-step procedure used to gather data, analyse it and commentaries that illuminate and support the research question. Thus a technique is about how to do things and methods is about what or why to do it.

Management research is regarded as a systematic research directed towards finding out things about business and management practice (Saunders et al 2003). Where a research method is "a systematic and orderly approach taken towards the collection and analysis of data so that information can be obtained from those data" (Jankowikcz 2000 p 209). The research method, and thus the development of knowledge, is closely associated with the view of the researcher's social interpretation of reality (Saunders et al 2003). It is therefore important to understand the research approach and strategy chosen compared to alternative approaches when conducting a research study. As such the research method is the tool to retrieve knowledge and the choice of an appropriate method depends how well it can help answer the research question.

However, in structuring the knowledge acquisition process there is several choices to be made relating to both research philosophy and research strategy. In the following sections of the methodology chapter the researcher has chosen to follow the knowledge acquisition process suggested by the research onion.

Figure 3.2, The research onion



Source: Saunders et al 2003 p 83.

The research onion will remind the researcher about the choices to be made and in which order. The "research onion's" knowledge acquisition process has been structured into three parts:

- The first section covers the research philosophy and research approach chosen, where the researcher argue for a middle ground approach as a research philosophy because this investigation is located in a socially constructed world where accounting numbers are used to inform managers and investors about firm's strategic choices and corporate performance. Because there is limited theory in the research area to build hypothesis the researcher will employ an inductive research approach.

- The sections to follow cover the research strategy and the time horizon, as well as the accounting framework, which will be used to construct observations and narratives. This research strategy is very much tied with the process by which data is to be collected and will as such describe the considerations that led to the choice of research strategy in terms of a partial grounded theory and a case study.

- A more extensive description of the data collection procedure can be found in chapter 4 for the data collection in the country and sector analysis (see later chapter 5 and 6) as well as the case study. It should be noted here that the dataset for the country and sector analysis has been difficult to obtain and could not be retrieved from one single source and multiple sources were used. At each stage in the process the researcher account for assumptions and estimates made which in many ways show similarities to the problems encountered in national accounting during the 1930´s. Another similarity is the need to systematically clarify the accounting method in terms of the accounting framework of analysis.

The researcher now turns to the first layers of the research onion to review the research philosophy and research approach chosen.

Research philosophy and research approach choices

The research philosophy is about our basic belief system and how this shapes the quest for knowledge, whereas the research approach is related to the deductive and inductive way of generating theory.

The nature of research paradigms: The basic belief system

The basic belief system of humans can be made explicit by answering three interconnected questions dealing with three elements (Guba et al 1994), i.e. the ontological, the epistemological and the methodological question. Depending on how these questions are answered different belief systems, or paradigms, can be revealed. Guba et al (1994) analyse four paradigms that compete for acceptance as the paradigms of choice informing and guiding inquiry in terms of these questions (see table below).

Table 3.1, Basic beliefs (metaphysics) of alternative inquiry paradigms

Item	Positivism	Post-positivism	Critical Theory et al.	Constructivism
Ontology	Naïve realism - "real" reality but apprehendable	Critical realism - "real" reality but only imperfectly and probabilistically apprehendable	Historical realism - virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; crystallized over time	Relativism - local and specific constructed realities
Epistemology	Dualist/objectivist; findings true	Modified dualist/ objectivist; critical tradition/ community; findings probably true	Transactional/ subjectivist; value-mediated findings	Transactional/ subjectivist; created findings
Methodology	Experimental/ manipulative; verification of hypothesis; chiefly quantitative methods	Modified experimental/ manipulative; critical multiplism; falsification of hypothesis; may include qualitative methods	Dialogical/ dialectical	Hermeneutical/ dialectical

Source: Guba et al (1994 p 109)

As such they analyse the responses that they believe proponents for each paradigm would make in response to the three questions. This is also in line with Denzin et al (1994) who argues that a paradigm encompasses theses three elements of epistemology, ontology and methodology. From the above table Guba et al (1994) also suggests that the ontological position differentiates constructivism from the other three paradigms and that the epistemological position differentiates critical theory and constructivism from the other two paradigms. As such differences in paradigm assumption have important consequence for the practical conduct and interpretation of research.

The nature of organisation as a social reality affects business research because research methods are firstly closely tied to different visions of how organisational realities should be studied. Methods are not neutral as they are linked to views on the nature of social reality and how it should be studied. Secondly, it relates to how methods and practice are connected with the wider social scientific enterprise as research data is collected in relation to something,

such as an organisational problem. This means that the social ontology positions cannot be isolated from issues concerning the conduct of research as ontological assumptions and commitments will affect the way in which research questions are formulated and research is carried out. (Bryman et al 2003)

Creswell (1994 p 1-2) discusses the inquiry process of understanding social or human problem in terms of two competing paradigms: first the qualitative paradigm, which is based on "building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting" and second the quantitative paradigm, which is based on "testing a theory composed of variable, measured with numbers, and analysed with statistical procedures, in order to determine whether the predictive generalisation of the theory holds true".

The quantitative paradigm comes from an empirical tradition established by such authorities as Comte, Mills, Drukheim, Newton and Locke, whereas the qualitative paradigm began as a countermovement to the empirical tradition by writers as Dilthey, Weber and Kant (Cresswell 1994). The understanding of the assumptions of each paradigm provides direction for designing all phases of a research study.

Table 3.2, Quantitative and qualitative paradigm assumptions

Assumption	Question	Quantitative	Qualitative
Ontological	What is the nature of reality?	Reality is objective and singular apart from the researcher	Reality is subjective and multiple as seen by participants in a study
Epistemological	What is the relationship of the researcher to that researched?	Researcher is independent from that being researched	Researcher interacts with that being researched
Axiological	What is the role of values?	Value-free and unbiased	Value-laden and biased
Rhetorical	What is the language of the researcher?	Formal, based on set of definitions, impersonal voice, use of accepted quantitative words	Informal, evolving decisions, personal voice, accepted qualitative words
Methodological	What is the process of research?	- Deduction process - Cause and effect - Static design – categorise isolated before study - Context free - Generalisation leading to prediction, explanation, and understanding, - Accurate and reliable through validity and reliability	- Inductive process - Mutual simultaneous shaping factors - Emerging design – categories identified during research process - Context-bound - Pattern, theories developed for understanding, - Accurate and reliable through verification

Source: Creswell 1994 p 5.

The above table is a matrix that describes the ontological, epistemological and methodological assumptions that condition quantitative versus qualitative research methods.

According to Ghauri et al (1995) the main difference between qualitative and quantitative research is procedure and thus a reflection of different perspective on knowledge and research objective. The difference in emphasis between the two methods is illustrated in the table below.

Table 3.3, The difference in emphasis in qualitative versus quantitative methods

QUALITATIVE METHODS:	QUANTITATIVE METHODS:
- Emphasis on understanding. - Focus on understanding from respondent's or information's point of view. - Interpretation and rational approach. - Observation and measurements in natural settings. - Subjective "insider view" and closeness to data. - Explorative orientation. - Process oriented. - Holistic perspective. - Generalization by comparison of properties and contexts of individual organism.	- Emphasis on testing and verification. - Focus on facts and/or reasons of social events. - Logical and critical approach. - Controlled measurement. - Objective "Outsider view" distant from data. - Hypothetical-deductive; focus on hypothesis testing. - Result oriented. - Particularistic and analytical. - Generalization by population membership.

Reference: Ghauri et al 1995 p 84.

Parry (1998 p 88) also makes the point that "a consistent theme running through much recent research methodology literature is that neither qualitative research nor quantitative research is clearly better than the other, rather, they are complementary". As such the combination and triangulation of methods is recommended.

In making the choice of research philosophy, the alternatives available are reviewed in terms of qualitative (positivistic framework) and qualitative methods.

Positivist frameworks of analysis

It is possible to employ a positivist approach where accounting numbers are used to understand the link between factor inputs and corporate outputs where a series of hypothesis about the relationship between inputs and outputs are assumed. Using sophisticated mathematical techniques the researcher is then trying to establish a relationship between variable X and Y and also establish the degree of significance and correlation between these variables. For example, a great deal of work has been undertaken on establishing the relationship between corporate performance and investment in research and development (R&D), capital investment and training.

Capital market research employs information revealed from financial statements to help determine stock prices but this line of research has not produced a convincing financial statement analysis for equity valuation (Nissim et al 2001). Modern equity analysis is also influenced by portfolio theory that involves the analysis of prices, beta estimation and asset allocation to help price equity. The relationship between accounting numbers and stock returns has also been studied within the market efficiency literature (Worthington et al 2000). According to the semi-strong form of the Efficient Market Hypothesis publicly available financial information is reflected in the capital market values of firms suggesting that there exists a correlation between accounting numbers and market returns. However, West et al (2001) observes that the empirical literature reveals no single accounting-based measure which can explain changes in shareholder wealth, despite the fact that such a measure would prove invaluable for the parties interested in firm performance.

Studies on market efficiency have historically focused on accounting profits, earnings and accruals, whereas recent studies have focused on cash flow and residual income (Worthington et al 2000). The empirical literature suggests that whilst accounting based information can potentially influence share prices it is reported earnings that generally dominate most other measures used to help explain stock returns. Lev (1989) also calls for an examination of the return/earnings relationship after elaborating on the usefulness on earnings and earnings research where he concludes that the correlation is very low between earnings and stock returns and that the instability of return/earnings parameters over time is considerable. Moreover refinements aimed at improving the theoretical and methodological specifications of the returns/earnings relationship have yielded very modest results in furthering our understanding among users. The weak relationship between earnings and stock returns may be associated with a misspecification of the return/earnings relationship, investor irrationality or low quality of reported earnings. As such Lev (1989) calls for investigating the process of financial information dissemination in capital markets and improvements in accounting measurement and valuation techniques.

The returns/earnings relation literature is "characterised by continual attempts at defining the analysis, often exhibiting considerable ingenuity and methodological sophistication" (Lev 1989 p 169). To avoid over fitting Lev (1989) suggests that research to identify firm classifications, within the returns/earnings correlation, that should be subject to at least two constraints. First that the classification employed should be clearly motivated by economic

theory and second the stability of the returns/earnings relationship within the proposed classification should be verified on holdout samples from different industries as well as different time periods. However, even when these two criteria are met, the research on earnings usefulness has to address the issue of incremental information and its contribution to earnings.

The relationship between value added productivity performance and corporate value has been reviewed by Bao et al (1989), which tried to empirically demonstrate that value added productivity is positively associated with firm values in certain industries (US oil refining and apparel) and that it is stronger than the association between firm value and earnings measure. Despite the definition and measurement problem of value added their study suggests that productivity affect firm's security prices.

Riahi-Belkaoui (1993) showed that the incremental information content from the value added concept dominates both earnings and cash flows and argues for the disclosure of the underlying data needed to compute value added variables in US. Riahi-Belkaoiu et al (1994a) showed also that net value added performance measures had lower variability and higher persistency than earnings and cash flow of US firms. Riahi-Belkaoui et al (1994b) provided evidence that both relative changes in earnings and net value added are associated with the relative change in security prices. They also found that both the levels of net value added and the changes in net value added play a role in security valuation. Riahi-Belkaoui (1996) later compared the use of linear and non-linear models in specifying the relationship between value added and market returns. Finding that models relating accounting and market returns have more explanatory power when, firstly, the accounting returns are expressed by the relative changes in net value added, and secondly, the relation is nonlinear convex-concave function.

In evaluating this positivist research van Staden (2000a) finds that there are some factors limiting predictability: first, that the value added statement is not standardised and therefore differences in calculation could lead to different results when testing against external indicators. Second, the value added statement is not published in the US and the studies done by Riahi-Belkaoui calculate value added from publicly available data. Third, that the sample used had either not been large enough or not been statistically selected and finally that the additional information content of value added is limited, being generally about salaries and wages information.

Despite the fact that accounting based measures are intended to inform shareholders of their wealth "the association between these measures and the share price is at best imperfect and often weak" (Young 1999 p 14). Over the past 20 years there is also a systematic decline of the association between market value and accounting information (Lev et al 1999).
There are some plausible explanations as to why usefulness deteriorated; firstly because of increasing rate of business change (Lev et al 1999), secondly the increased reporting of losses and one-time or special items (Collins et al 1997) and thirdly the increased economic importance of unreported intangible assets (Collins et al 1997, Lev et al 1999). Research into the impact of these variables on earnings and value is limited because of the discretionary nature of information disclosure.

However, in this thesis the relevance problem is more fundamental than just reporting new accounting numbers rather it is about a deeper understanding of how the social reality of firms is constructed and reflected in financial statements.

Qualitative research

All qualitative research is based on the philosophical assumption that reality is socially constructed by individuals interacting within their social worlds and this implies that qualitative research is interested in how people make sense of their world and the experience they have in the world (see Merriam 1998). Thus, qualitative research methods are appropriate when the researcher is interested in; understanding the meaning people have constructed where the researcher is the primary instrument for data collection, and analysis employing field work for inductive and descriptive analysis.

Qualitative research is a mixture of the rational, explorative and intuitive, where the experience and skills of the researcher in the analysis of the data play an important role (Ghauri et al 1995). As such it focuses on the social process rather than the social structure which would be the case in quantitative research. Qualitative research can also be seen as an "umbrella concept covering several forms of inquiry that help us to understand and explain the meaning of social phenomena with as little disruption of the natural setting as possible" (Merriam 1998 p 5)

The main reasons for performing qualitative research are the objective of the study and the background of the researcher. According to Ghauri et al (1995) several authors suggest that the major components of qualitative research are that the data is collected through interviews and observation which are subjected to an interpretative procedure resulting in a written or verbal report. Qualitative researchers often argue that relying on quantitative methods "neglect the social and cultural construction of the variables which quantitative researchers seek to correlate" (Silverman 2000 p 5).

The choice of research philosophy and method for this study

The choice of research method as between quantitative and qualitative depends to a great extent upon the belief system and how one answer a series of questions relating to the choice of research paradigm. In this thesis the research philosophy to be used lies somewhere between positivism and constructivism because the researcher want to use accounting numbers in the calculations but not lose the complexity of a world that is socially constructed. Employing a pure positivistic approach would require the researcher to make assumptions about numbers and thus formulate a methodology for testing of numbers and their relationships. In taking this reductionist approach the researcher would lose the richness of the universe to be investigated and at the same time limit the explorative characteristics of the study. The researcher also know that the business reality is a social construction based on accounting concepts and as such it is a reality that is affected by beliefs and a social interpretation of accounting concepts. It is also a reality based on numbers in terms of income statements, balance sheets and cash flow statements used for performance analysis and management interventions.

As far as epistemology is concerned one cannot claim I'm an independent researcher, disconnected from the method, because the value added concept and related key ratios have been employed in my work as a financial analyst. At the same time the researcher is dependent on the value added concept for the construction of the accounting framework. To be fully independent as a researcher from the issue being researched the researcher would need to unlearn or at least not use knowledge and insight on the value added format as a contribution towards justifying the usefulness of value added accounting. These numbers are also socially constructed, which means that they can also interact with a socially constructed world. Therefore to be fully independent as a researcher of the object that is being researched

means that the researcher would not be able to go beyond already known facts about the usefulness of value added and explore other possibilities.

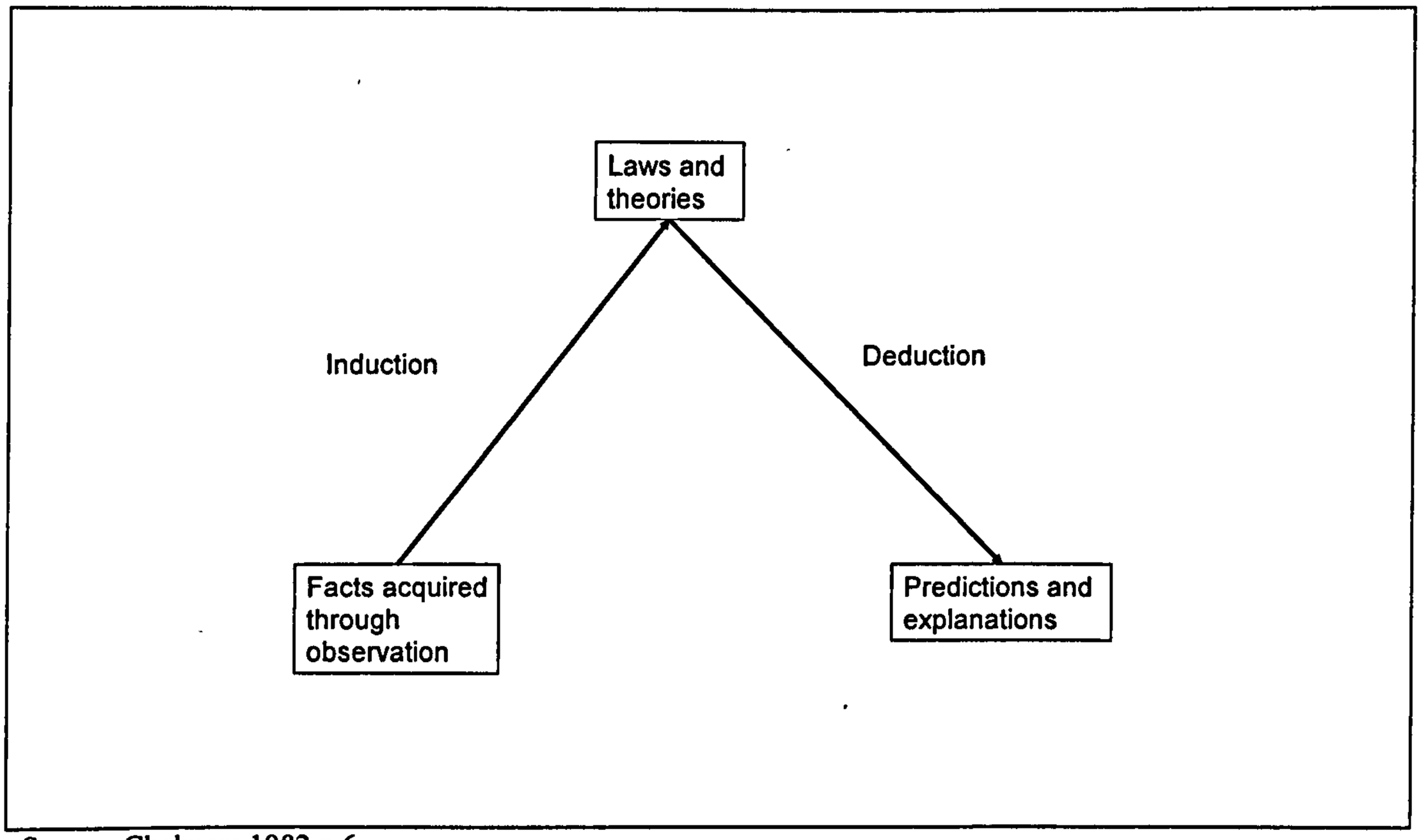
The view of the research process is influenced by the insights as a researcher into the usefulness of the value added concept and as such a social interpretation of reality. The researcher also believes that the research findings in terms of theories may be integrated into more encompassing theoretical frameworks within the field of strategy and financial theory. Thus, the integration component is an important aspect of the research study, as the researcher want to go beyond explanation of a limited range of observations. The choice of methodology is also influenced by the literature review which revealed the limited use of value added accounting for performance measurement at the micro level. Whereas value added accounting is to be found in national and sector accounts there is a limited theoretical framework upon which to build an understanding of how corporate financial performance can be evaluated at the level of the micro, meso and macro.

The research philosophy used in this thesis employ socially constructed numbers using a middle ground approach. It will also use a multi-method approach (see section on research strategy and time horizon) because this helps triangulate findings at the macro, meso and micro level as suggested by Saunders et al (2003) bearing in mind how numbers are used and socially constructed when making interpretations. The researcher now turns to ways of generating theory.

Research approach: Ways of generating theory

There are two research approaches (Saunders et al 2003, Bryman et al 2003), namely the deductive and the inductive approach. The deductive approach owes more to positivism and thus natural science, whereas the inductive approach owes more to interpretivism and social science. These two research approaches enable the researcher to establish what is true or not and as such draw conclusions about natural phenomena. The difference between the approaches is illustrated by Chalmers (1982) below, where the left side refers to the derivation of scientific laws from observation and the right side refers to the derivation of scientific laws from logical reasoning.

Figure 3.3, Induction and deduction



Source: Chalmers 1982 p 6.

The two research approaches present the researcher with two alternative ways of building theories and the differences between the approaches are that with induction facts are acquired through observation, which leads us to theories and hypothesis, whereas deduction use logical reasoning to accept or reject hypothesis, which is the consequence of a theory (Ghauri et al 1995). Punch (1998) states that an emphasis on theory verification is sensible when a research area has lots of unverified theories. On the other hand, an emphasis on theory generation is sensible when a research area is lacking appropriate theories.

Deductive theory builds on a research process where hypotheses are deduced from existing theory and empirically verified through data collection and findings. As a result a revision of theory may occur depending on if the hypotheses is confirmed or rejected. The deductive research approach goes through a number of stages including deduction of a hypothesis from the theory and expressing the hypotheses in operational terms that is proposing a relationship between two specific variables. Then testing this operational hypothesis and examining the specific outcome of the inquiry, and if necessary modifying the theory in the light of the findings. (Robson, 1993).

Inductive theory builds on a research process where a theory is developed based on the analysis of collected data and one draws general conclusions from empirical observations through a process from assumption to conclusion (Ghauri et al 1995).

The literature review revealed a limited use of value added accounts on the micro level when it is possible to employ a value added financial format to assess performance at a macro-level The literature review revealed that the value added accounting for performance was not extended to a corporate sector (meso) and firm (micro) level. As such there is limited theoretical framework to build hypothesis that enable the researcher to review corporate performance at all three levels of analysis (macro, meso and micro) using accounting numbers. The absence of the value added accounting framework to inform us about corporate performance at these levels forces the researcher to choose an inductive approach which will be employed to develop new knowledge based on the analysis of collected data. This implies that the accounting framework as well as the data collection in connection with the chosen research strategy are of importance, and these are described separately in the last section of this chapter (the accounting framework) as well as in chapter 4 (data collection). The researcher now turns to the second section of the research onion to review the research strategy and the time horizon.

Research strategy and time horizon

This section starts with a review of possible research strategies before turning to time horizons.

Research strategy

Research strategies that can be employed to answer research questions may include (Saunders et al 2003): experimentation, survey, case study, grounded theory, ethnographic and action research. Yin (2003) describes five different research strategies, namely experiment, surveys, case studies, histories and the analysis of archival information. Where, each strategy has its own way of collecting and analysing empirical evidence and specific strengths and weaknesses. Creswell (1994) classifies experimentation and surveys as a quantitative method,

whereas qualitative methods include ethnography, grounded theory, case studies and phenomenological studies.

Merriam (1998) distinguishes research strategies from each others by disciplinary orientation (ethnography, phenomenology), function (grounded theory) and format (case study, basic or generic qualitative study). Each research strategy is distinguished by three conditions according to Yin (2003): first the type of research question posed, second the extent of control an investigator has over actual behavioural events and finally the degree of focus on contemporary as opposed to historical events.

Figure 3.4, Relevant situations for different research strategies

Strategy	Form of Research Question	Requires Control of Behavioural Events?	Focuses on Contemporary Events?
Survey	Who, what, were, how many, how much?	No	Yes
Archival analysis	Who, what, were, how many, how much?	No	Yes/No
History	How, why?	No	No
Case study	How, why?	No	Yes
Experiment	How, why?	Yes	Yes

Source: Yin 2003 p 5.

The first condition concerns the type of research question being asked in terms of "whom", "what", "where", "how" and "why". For example "why" like "how" questions are more explanatory and likely to use case studies, histories, and experiment as a preferred research strategy. These questions deal with operational links which need to be traced over time, rather than mere frequencies or incidence (Yin 2003).

A further distinction according to Yin (2003) is the extent of the investigators control over an access to actual behavioural events. If an investigator can manipulate behaviour the preferred strategy is experiment, whereas the case study is the preferred strategy when there is little control over behavioural events.

Each of the available main research strategies are described and reviewed below to fit our research objective:

- Experiment inquiry strives to reduce the number of variables used to test the effects of manipulating other variable and it is a classical form of research used in the natural

sciences, which typically involves (Saunders et al 2003): defining a hypothesis, collecting sample data from a population and allocating samples to different experiments. Variables are adjusted and measurement based on a small number of variables with significant explanatory weight whilst other variables are controlled. An experiment will probably not suit the study to be undertaken in this thesis because there is limited knowledge on which to build hypothesis on and thus perform testing. An experiment based study would also reduce the richness of the socially constructed reality that the researcher wants to study through accounting numbers.

- Surveys are a form of deductive research because they facilitate economical collection of a large amount of data from a sizeable population (Saunders et al 2003). Using a survey strategy provides control over the research process, but requires time to be spent in designing the questionnaire (including piloting) and analysing the results. Again the survey approach is not applicable to this research because awareness of the value added concept is limited and as such one cannot expect to receive valuable information about the usefulness of the value added concept. Such a view is also consistent with the result of a questionnaire survey conducted by van Staden (1998), where little evidence of actual use of the value added statement was found.

- Ethnography is an inductive research approach which emanates from anthropology, where the purpose is to "interpret the social world the research subjects inhabit in the way in which they interpret it" (Saunders et al 2003 p 93). Here the researcher studies an intact cultural group in a natural setting during a prolonged period, the research strategy is time consuming and the research process needs to be flexible (Creswell 1994, Saunders et al 2003). Ethnography is characterised by its commitment to cultural interpretation through the study and understanding of cultural and symbolic aspects of human behaviour as well as the context of that behaviour (Punch 1998). Ethnographic studies of human activities are carried out to satisfy the simultaneous requirements for: empirics that remain open to elements that structure the codification of the study and a concern for grounding the phenomena observed in the field (Baszanger et al 2004).

Ethnography is not an appropriate approach for this thesis because ethnographic study is not possible across the spread of companies and industries to be examined. At the

same time it requires that the value added accounting concept is known in the group of firms that is to be studied, which is rare and because one are dealing with accounting numbers it is also questionable if such a study would reveal the knowledge that the researcher is looking for. In addition to this it also being a time consuming research strategy.

- Action research differs from other forms of applied research due to it explicit focus on action, which is also its strength (Saunders et al 2003). This is also stated by Coghlan et al (2001) as "the purpose of research and discourse is not just to describe, understand and explain the world but also to change it". As such the researcher is involved in the action of change. Again action research is not appropriate for this study because the researcher don't want to change the social reality of that which is to be observed. On the contrary the researcher wants to observe the performance and value creation of clever strategy moves to gain insights in the usefulness of the value added concept.

- Phenomenological studies examine human experiences through a detailed description of the people being studied. The understanding of "lived experience" is important in phenomenology, as the researcher "brackets" their own experience in order to understand those of the informants (Creswell 1994). Phenomenology goes beyond participant observation and ethnography as it emphasis the search for reality, which is given in the structure of consciousness of humans (Riahi-Belkaoui 2000). Phenomenological studies are useful for understanding behaviour, but this research project is about revealing corporate performance and capital market responses in terms of how they value performance.

- Grounded theory is described as a "research strategy whose purpose is to generate theory from data" (Punch 1998 p 163). Here "grounded" means that the theory will be grounded in data, with the objective to generate "theory" from collecting and analysing research data. Grounded theory contrasts other research strategies in terms of style, which aim is to verify theory rather than generate theory. As such no upfront theory is proposed in grounded theory, nor is any hypothesis formulated for testing (Punch 1998).

Grounded theory may be an appropriate method of inquiry because it builds on data collection and is an iterative process, but the method is generally associated with qualitative data rather than numbers as well as strict procedures. Despite this the researcher views this method as a way forward for a study of macro and meso level numbers, due to its inductive characteristics. Instead of using the method in a strict sense the researcher will use what might be described as a "partial ground theory" (see the following section).

- Case study is defined by Robson (2002 p 178) as "a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence". As a research strategy "The case study is not a specific technique; it is a way of organising social data as to preserve the *unitary character of the social object being studied*" (Goode et al 1952 p 331). The case study is a research strategy to gain rich understanding of the context of the research and the process being enacted (Saunders et al 2003). As such it strives to include as many variables as possible to provide a rich description on reality.

  In this thesis the researcher wants to employ the case study because it allows a triangulation of findings from the macro and meso level analysis and also make visible aspects that can only be accounted for at a micro-firm level, such as strategic priorities. A case study facilitates a more detailed collection of accounting data, for example, how corporate financial performance is the outcome of mix of both financial assets and non-financial (i.e. production) capital employed.

The research strategy chosen based on the above review is a multi-method research study which employs a process of triangulation. Two possible research strategies have emerged as suitable, namely:

- Partial grounded theory where the researcher wants to collect and analyse corporate financial data so as to reveal financial performance as the outcome of strategy. Constructing a financial performance profile of the corporate sector in Europe allows the researcher to assess the usefulness of a value added format for gauging corporate performance. This since financial outcomes from firm's strategy matter in a capital market, as the objective is to earn market value though improved corporate performance. The researcher is also aware that accounting numbers are constructed in

a social context and this posse a difficulty when grounded theory is relatively new method in accounting research (see Kirk et al 2001).

- Case study, because not all aspects of corporate performance can be made visible from a macro or meso financial dataset, such as to capture narratives about strategic priorities and also reveal a level of financial detail that for practical reasons cannot be obtained from a macro/meso dataset due to is size and thus time constraint.

Both of these research strategies are techniques that can be located in a middle ground approach somewhere along a spectra between pure qualitative and quantitative techniques where the datasets that are obtained reveal a rich understanding of corporate financial performance in a stakeholder context.

Partial grounded theory

Central to grounded theory is the identification of a basic social process to explain the social phenomenon under investigation (Glaser et al 1967, Glaser 1992). Grounded theory is also a good example of an inductive research approach although it is better to think of it as building theory though a combination of induction and deduction (Saunders et al 2003). Here theory is developed from data generated by a series of observations and where the theory is tested in further observations which may or may not confirm existing understandings. As such the major difference from other approaches is the emphasis on theory development and a central feature of the approach is the "method of constant comparative analysis" (Strauss et al 1994 p 273). This research method is also conducive to this particular thesis because the researcher is using rich datasets to develop a theoretical understanding. As the researcher earlier stated grounded theory may be an appropriate way of inquiry, as it builds on data collection but the method is generally connected with qualitative data rather than numbers. As grounded theory is a relative new method in accounting research, researchers also face barriers due to lack of familiarity, resistance or misunderstandings of the methodology (Kirk et al 2001).

In particular, compared to the perception of how the grounded theory should be used the researcher makes the following observations:

- The researcher has some experience of the value added concept, which influences the organisation and presentation of the data collected. This approach focuses on a subset of all accounting data, i.e. financial information that can be used to construct a value added statement using either an additive or subtractive approach. Grounded theory does not require the researcher to enter the field with limited knowledge (Goulding 2002). On the contrary reading is vital for ideas and conceptually connects these to the developing theory. It also avoids bringing into the field preconceptions and expectations brought from the work of others (Goulding 2002 p 71).

- It is possible to use both numbers and narratives to construct interpretations because the world operates with narrative combined with numbers. As such the research differs from information collected in grounded theory, which collect narratives of a socially constructed world. However, grounded theory allows for a wide range of data according to Goulding (2002). Such as company reports, secondary data and even statistics, provided that the information is relevant and fit the study.

Important for the researchers choice of grounded theory is Parry's (1998) observation that the term "grounded theory" is often used to imply that theory was derived from data and that the whole approach was not implemented. As such the researcher has found a way forward as Parry identifies two types of grounded theory:

- Full grounded theory, which builds on the work of Glaser et al (1967) and Glaser (1978) in which the iterative process is played out in full.
- Partial grounded theory, where data are collected and then theorized upon.

The partial grounded theory is the most common used grounded theory approach (Goulding 2002), despite this Strauss et al (1990) comment that the partial method may fail to meet the precision and rigor demanded in scientific research as the theoretical coding component of data analysis is not fully undertaken. These issues relating to the partial method are (Patty 1998, Goulding 2002): the analytical processes by which concepts are built up to collect information are seldom described and the relationship between concepts is not explained sufficiently so that historical events are often ignored in relation to data collection. Rather than using a full grounded theory the researcher has chosen a partial grounded theory, despite

these critical observations but not ignoring their ramifications. This since there is limited theory in the area of investigation and because grounded theory "applies a pragmatic approach, combing qualitative and quantitative data and data-gathering methods to encourage a rich understanding of the situation" (Kirk et al 2001 p 176). The problems raised by the critics of partial grounded theory have been taken into account and accounted for by describing in detail: the accounting framework used (see later in this chapter) and the care and attention associated with data collection (see chapter 4).

The research method to be used in this thesis sits somewhere along the spectra positivist and interpretivist, it has characteristics which are similar to a partial grounded theory approach which seeks to describe the universe using rich datasets. The construction of the research method in this way addresses the problems arising from the literature review which finds that there is an absence of an accounting framework which can describe corporate performance from a multi-dimensional stakeholder perspective. That is a financial model of business analysis that reveals corporate financial performance as the outcome of management strategy which attempts to manipulate product, capital and factor market conditions.

The financial dataset to be constructed will need to employ an account for corporate financial performance both statically and dynamically and at a micro, meso and macro level of analysis. However, there are practical limits facing the researcher in the construction of such a large dataset where specifically there are limits as to the number of data items that can sensibly selected for each individual company and the time period that can be sensibly covered.

The rich data set to be used was initially going to be the S&P500 constituent dataset, which had been used by the researcher in an earlier publication (see Anderson et al 2006, Andersson et al 2007). However, due to the limited disclosure of labour costs in US it was not possible to calculate value added for large portions of the S&P500 data set as required in this thesis. Instead the researcher had to turn to European corporate financial data, where the disclosure of labour costs is more common. The data collection process for the European dataset is described in more detail in chapter 4. However, it is important to note that the European firms chosen are those listed in the FTSE (100), CAC (40) and DAX (30) or the Europe (170)

Case study and triangulation

According to Punch (1998) a case study is characterised by: its boundaries, i.e. it is a "bounded system" and it is about something where there is an explicit attempt to preserve the wholeness of the research object and where multiple sources of data and multiple data collection methods are likely to be used. "The need for case studies arises out of the desire to understand complex social phenomena" (Yin 2003 p 2), and thus the aim of the case study in this thesis are to understand corporate financial performance in more depth and its relation to strategy, in its natural setting, context and complexity.

A common criticism of the case study method concerns the ability to draw general conclusions from just one case. However, the understanding of a case and its complexity and context may be as important as the ability to generalise. There is also the logic of "negative case", where one can learn about the typical by studying the atypical (Punch 1998). In this thesis the researcher will employ the case study because it will allow him to triangulate findings from the macro and industry level of analysis and also make visible aspects of corporate strategy and financial performance that cannot easily be accounted for at a macro level. Specifically the researcher have in mind how the case study can be used to employ more detailed financial data and incorporate managerial narratives from interviews and corporate publications on strategic priorities and the connection to corporate performance.

The use of triangulation, or multi-method approach, refers to how one may employ a combination of methods in the research study, which enable a more complete, holistic and contextual portrait of the objective under study (Ghauri et al 1995). Triangulation assumes that viewing the research objective from more than one point of view and provides researchers with more comprehensive knowledge about the object (Miller et al 2004). The assumption behind triangulation is that the ideographic quantitative and qualitative methods overlap and contribute to each other (Riahi-Belkaoui 2000).

The use of more than one method can lead to more confidence in the result revealing the deviant or off-quadrant dimensions of a phenomenon helping the researcher to synthesise or integrate theories and subject these to critical review. However, there is also a number of

health warnings associated with this method of doing research; first, it may be difficult to judge if results are consistent and, second, it may also deliver contradictory findings.

The Case study

The two company pair case study, on Nokia and Ericsson, is employed because one can review the corporate and managerial narratives associated with corporate performance which cannot be done when constructing a macro financial dataset. This is because strategy is a characteristic one associate with the individual firm, not something that is collectively visible at a macro and meso level. The case study is important because it can help triangulate and help confirm the usefulness of the macro financial dataset but it will also incorporate narratives about strategy and more detailed financial numbers The literature review drew attention to the connection between strategy and corporate performance and the case study is employed to reveal connections.

Using narratives from managers either disclosed in corporate documentation, which is publicly available, or from company interviews with senior executives it will be possible to review major strategic priorities undertaken by managers in the companies as well as the managerial system used for strategic and financial evaluation. This allows the researcher to compare to what extent has the strategies of these two firms operating in similar product markets been variable and how has this impacted on their corporate performance.

It is argued in this section that the case study will allow the researcher to investigate the connection between strategy and corporate performance in more detail and undertake analysis that could not be done within the macro dataset for the European 170. Specifically the case studies allow the researcher to:

A] Review the strategic priorities undertaken by the two companies over the period 1990 to 2005 employing corporate documentation and conduct interviews to summarise the main similarities and differences in corporate strategic initiatives between the two firms. The structuring of this review has been guided by the literature on shareholder value metrics for improving corporate financial performance (see appendix 4)

B] Obtain finer financial detail that is not possible to obtain from the macro dataset which for practical purposes cannot include a complete income statement, balance sheet and cash flow statement data. For example, the researcher considers the extent to which minority interests, short term debt and other financial considerations impact on the financial evaluation of corporate performance.

C] Triangulate the findings of a more detailed financial analysis of corporate performance with the more aggregate position taken in the European 170 datasets. The objective is to consider the extent to which the more aggregate analysis is sufficient for the purposes of gauging corporate financial performance and that excluding additional financial detail does not dilute the analysis.

Time horizons

An important issue in designing a research strategy is the time horizon (Saunders et al 2003), which can take the form of cross sectional studies of a particular phenomenon at a particular time and longitudinal studies study of change and development over time.

The time horizon chosen in this study are longitudinal, although cross-sectional observations are possible, as the researcher want to understand performance changes over time at the macro, meso and micro level. The longitudinal analysis is expected to document through time series analysis how value added ratios typically evolve over time and give typical number for the ratios at each level of analysis (i.e. micro, meso and macro). The longitudinal use of value added key ratios is not new as the "aim of value-added calculation by external analysts in Germany was to compute appropriate ratios and to investigate their development over the years or compare them with other companies" (Haller et al 1998 p 36). Also cross sectional use has been recently been employed, see DTI (2002, 2003, 2004, 2005, 2006). Despite these insights the value added financial accounting format still does not inform the finance and strategy literature.

After reviewing the research methods available the researcher now turns to the accounting framework to be used in the thesis to construct the financial dataset for the Europe 170 and the case study.

The accounting framework of analysis

In this section the researcher turns to outline the accounting framework of analysis to be employed to construct the corporate financial database which will be employed to evaluate corporate performance. The construction of this framework of analysis and how it is to be employed to describe corporate performance is a method of research which, the researcher has already argued, is situated somewhere between a positivist and interpretivist approach sharing the qualities of a partial grounded theory approach but incorporating financial numbers.

The value added accounting format

In the literature review the absence of a value added metrics of corporate performance was observed at the micro level, although national accounts have been constructed to review the performance of the national economy and industry sectors. The researcher also outlined in the literature review the finance model that underpins the construction of these accounts namely the concept of "value added". This accounting framework cleverly avoids double-counting because it subtracts from gross output all intermediate consumption and so the national accounts are additive that is one can add together industry sectors to compute national macro economic output. However, the research programme of accounting for national output did not extend downwards into the firm at the micro level. Rather, the methods of accounting for the firms financial results became the responsibility of accounting regulatory framework and professional bodies with responsibility to meet regulatory requirements and shareholder demands and priorities. The value added format did not for various reasons become incorporated into the annual report published by firms.

The framework of analysis to be constructed and used in this thesis is based in the concept of value added accounting, as described in the literature review by the Corporate Report (ASSC 1975), rather than the traditional income and expenditure format.

The value added format, which employs expenses classified by their "nature", are used in some European countries, whereas the conventional income statement classifies expenses by their "functional" category which is commonly used in the US and UK (Baker et al 2004). Allocating costs and expenses into functional categories is not clear-cut and individual firms will make a series of arbitrary decisions about how to allocate expenses into particular functional categories and this discretion means that it is not easy to undertake firm comparison or aggregate financial information so as to account for corporate performance. For example some firms may decide that particular developmental expenses are more to do with marketing than the development side of Research and Development (R&D). Using R&D financial data to compare performance is thus complex and aggregating R&D figures to obtain macro benchmarks problematic. To avoid these particular issues one can use the value added statement which has the advantage of classifying expenses by their nature and thereby avoids much of the ambiguity associated with using expenses classified by their function (see IASB 2003). The nature of expense method, as used in IAS1, has also been prescribed by the European Union as one of four layouts for the income statement in the fourth council directive (EEC 1978 article 23). It should be noted that the nature of expense format is not new in connection to computation of value added (see Renshall et al 1979, Gray et al 1980).

The classification of expenses by nature allows a calculation of value added at the level of the enterprise and also for industry and corporate sector as a whole. This is because the calculation of value added facilitates additive computations from micro to macro as it avoids double counting. At the level of the individual firm value added is computed as gross output (sales revenue) minus all external expenses (or other company income) and therefore represents the value or wealth created by the firm (Wood, 1978). Aggregating one firm's value added to another within the same industry facilitates a computation of industry-level value added and at a macro level corporate sector value added. At each level of aggregation double-counting is avoided because value created by other industries or outside of the corporate sector is excluded from this financial computation.

Table 3.4 presents a simplified outline of the value added statement which shows value added as the sales revenue minus all external purchases and what Cox (1979) describes as the subtractive method. It is also possible to compute value added by adding together all the

internal expenses of the firm including labour costs, depreciation and operating profit (pre interest and tax) the so-called additive approach (Cox, 1979).

Table 3.4, The value added on sales format

	£	Comment
Sales Revenue (gross output)	**1000**	**Total income of the firm from product markets**
Less bought in material and services	**-600**	**All external expenses and supplies**
Value Added	**400**	**What is retained for the firm's own use**
Less employee wages and benefits	**-280**	**Total payments to employees including social costs**
Less depreciation	**-50**	**Provision for capital replacement**
Operating Profit	**70**	**Profit before payable interest, payable tax, payable dividends and amounts retained for reinvestment**

Source: Author. See also equation 3.1 and 3.2 earlier.

This accounting format is relatively simple and as the researcher has already argued, it collects expenses by their nature so avoiding the problems associated with arbitrary allocations into functional categories. In addition because one subtract out that which is purchased in by the individual firm one avoid double-counting other firms output and hence financial performance. Moreover if firms are added together, to construct industry sector or country-level analysis, the output of other firms can be excluded in the aggregation analysis. The proportion of total sales revenue or gross output that is out-sourced is of interest to the thesis because firms that do have a large proportion of their income netted off to cover external expenses also retain, for internal purposes, less of the financial value chain.

After deducting labour costs from value added what remains is an approximate calculation of cash from operations (operating income plus depreciation and amortisation) and this is an important but also fragile residual because it is what remains in the business after external costs and total employee expenses have been deducted from income. The argument is that

cash is important for renewing the business into the future and servicing capital employed on the balance sheet, that is, payments of dividends to shareholder and serving debt in terms of interest and repayments.

However, the value added format suffers from one particular weakness which is the absence of a capital market dimension linking cash and profit to capital employed in the balance sheet. In the literature review the researcher argued that firms are under increasing pressure to deliver shareholder value and that corporate performance is judged by analysts and investors using a combination of income and capital measures and ratios. In order to complete the framework of analysis one need to incorporate a capital market dimension and this is done by including long-term debt and shareholder equity which together compute the main elements of firms' capital employed from the balance sheet.

The choice of income statement format

The fact that value added is not well defined is a problem and one need to decide how to define value added in accounting terms. The value added accounting format used in the Corporate Report is a value added out of sales format but there are alternatives including value added from production which adjusts for changes in inventory (see Renshall et al 1979, Gray et al 1980). The simplicity of the value added out of sales format is that one can divide into sales the main components of value added including: procurement costs, staff costs and operating profit before depreciation and amortisation and this makes it suitable for analysing the value added structure of the corporate sector.

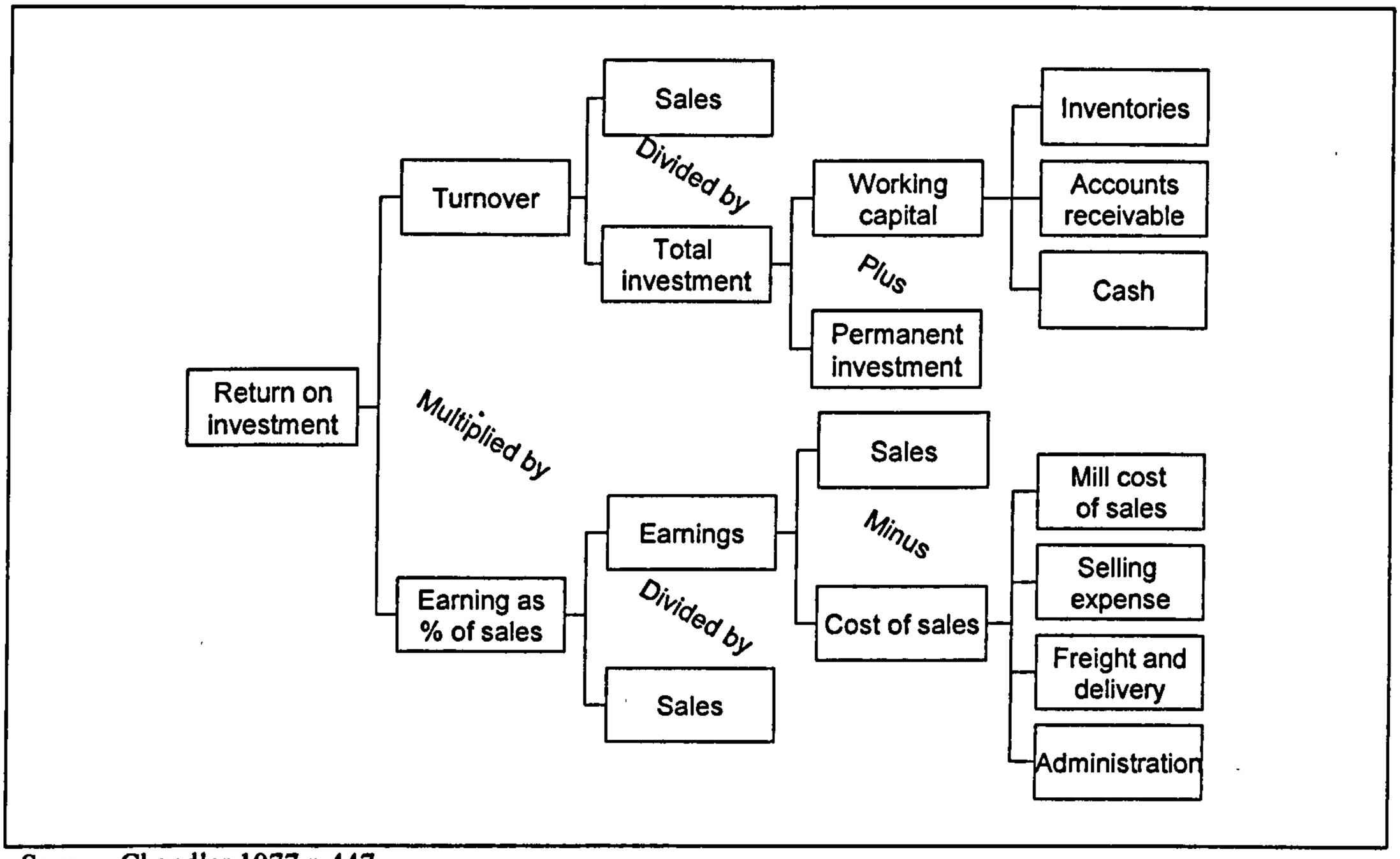
In order to evaluate corporate performance one also need to add a capital dimension, and this is done with the inclusion of a DuPont pyramid of financial ratios which deconstructs corporate return on capital employed (ROCE) into its constituent elements.

The DuPont pyramid of financial ratios and adding a capital market dimension

Nearly a century ago the DuPont Company began to use a pyramid of financial ratios, which linked a range of financial ratios to return on investments. By 1910 the DuPont Company had

developed accounting methods and controls that were to become standard procedure among industrial enterprises (Chandler 1977). The DuPont scheme was developed as a response to a more precise definition of profit and criterion for evaluation financial performance than was the standard at that time. Of significance is that this included a capital market dimension because the objective was to increase profit and cash generated out of capital employed.

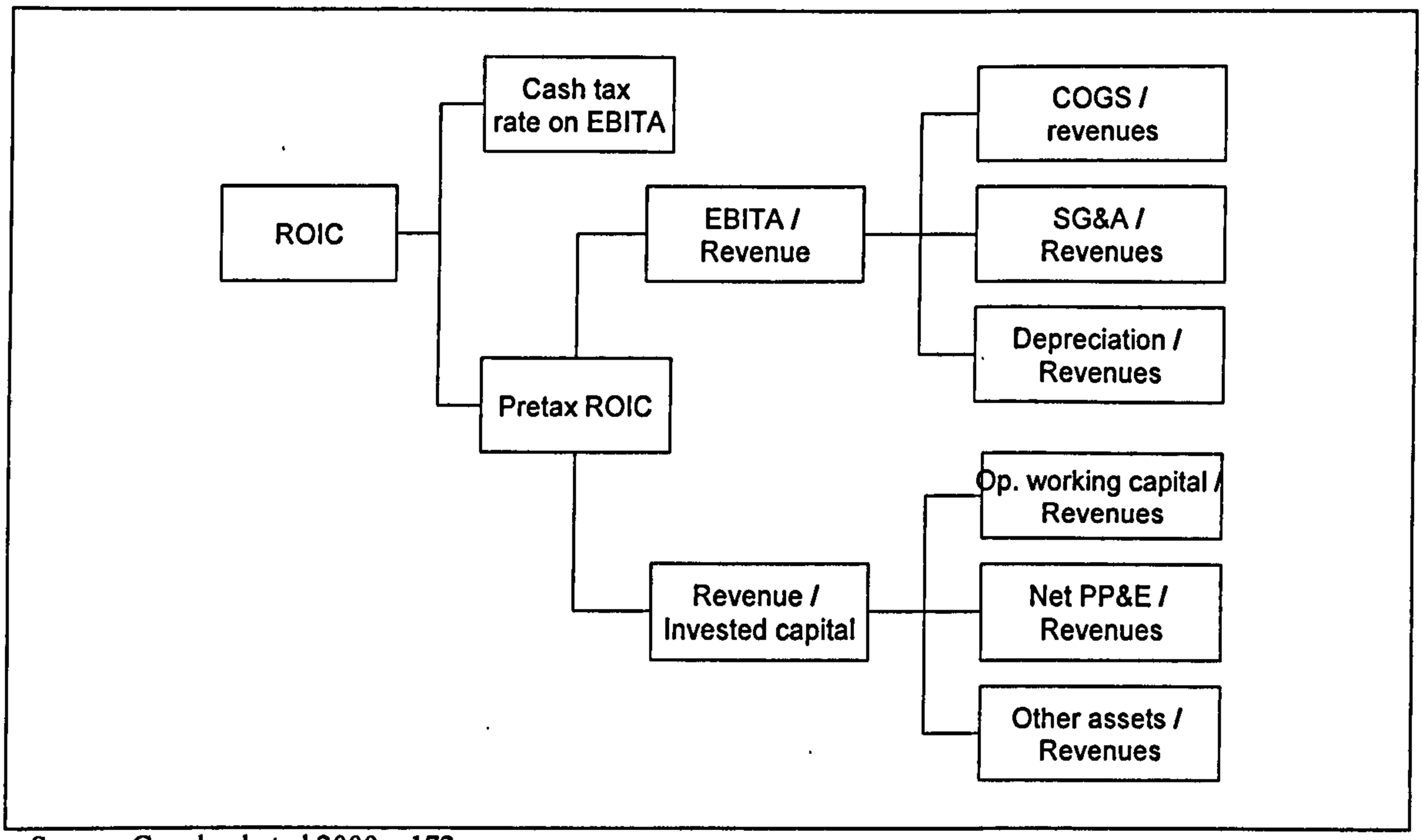
Figure 3.5, DuPont Company: relationship of factors affecting returns on investment



Source: Chandler 1977 p 447.

The accounting innovations at DuPont lay the foundation for modern asset accounting through the combination and consolidation of three basic types of accounting, namely financial, capital and cost. These innovations helped to establish "the visible hand of management" and, for Chandler, replace "the invisible hand of market forces in coordinating and monitoring economic activities" (Chandler 1977 p 448). The basic technique developed at the DuPont Company occurs in various versions in most standard textbooks, whether these are rooted in finance or accounting. For example the Return on investment capital (ROIC) tree in Copeland et al (2000) illustrate how the pyramid structure of corporate financial ratios is still employed in the texts covering finance topics. It is also an illustration of how the traditional accounting format is divided into key ratios to inform managers and investors about the sources of corporate performance.

Figure 3.6, The ROIC tree



Source: Copeland et al 2000 p 172.

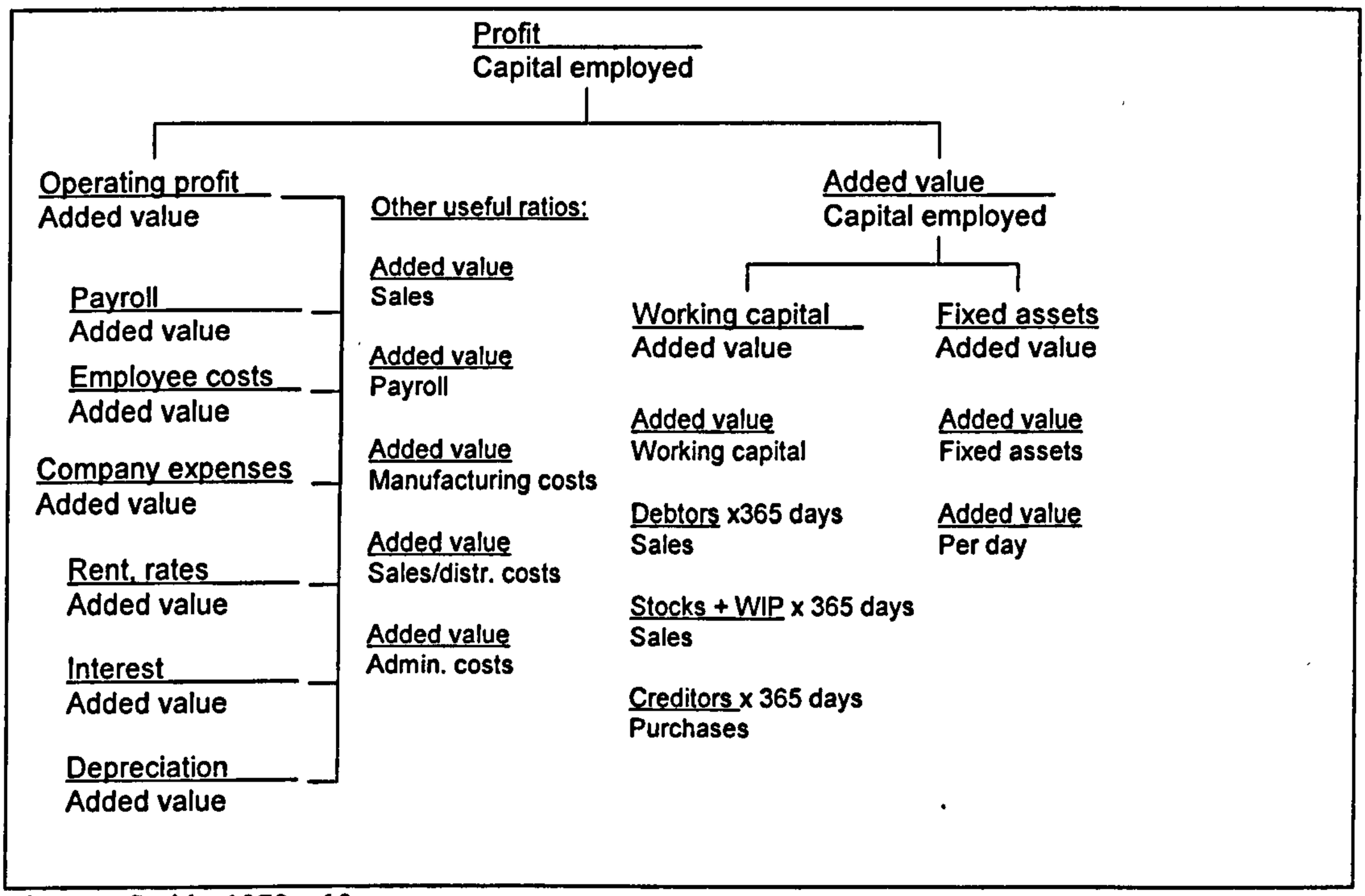
The advantage of the "pyramid" structure of ratios is that they facilitate a deconstruction of corporate performance so that it is possible to construct "accounts" of how one get to the bottom line of Return on Capital Employed (ROCE) and as such reveal how firms have improved (or not as the case may be) their ROCE. Pizzey (1994) suggest in his ratio diagram that the ROCE can be broken down into a tree structure of primary, secondary and tertiary rations. The primary ratio is ROCE itself, whereas the secondary ratios provide possibility to analyse ROCE further in terms of: profit to sales (profit ratios) and sales to capital employed (the turnover ratio). The tertiary ratios provide further breakdown of profit and turnover ratios. The traditional pyramid of ratios outlined in the DuPont formula and re-presented later by Copeland et al (2000) categorise expenses by function because, as the researcher has already argued, this is how accounting information is generally organised. The DuPont organisation of accounting information has influenced investors and managers how to perceive the socially constructed world, but as this information does not take into account stakeholder interest it has not succeeded in creating an integrated theory of the firm (see literature review).

There has been suggestions to solve this decomposition of ROCE thorough the use of value added. However, the idea of the ROCE-decomposition based on value added has received little attention although it was raised by Cox (1979) in relation to the Corporate Report, based on his observation of the work of Westwick in 1973. Westwick (1987) looked on the primary and secondary level of the decomposition logic of secondary ratios as:

$$\frac{\text{Operating profit}}{\text{Operating assets}} = \frac{\text{Operating profit}}{\text{Value added}} \times \frac{\text{Value added}}{\text{Operating assets}}$$

The idea of decomposing the value added ROCE-tree was also described by Gilchrist (1971) and later by Smiths (1978), where both of them connected various key ratios also on the third level of the ROCE-tree to value added.

Figure 3.7, Pyramid of added value ratios



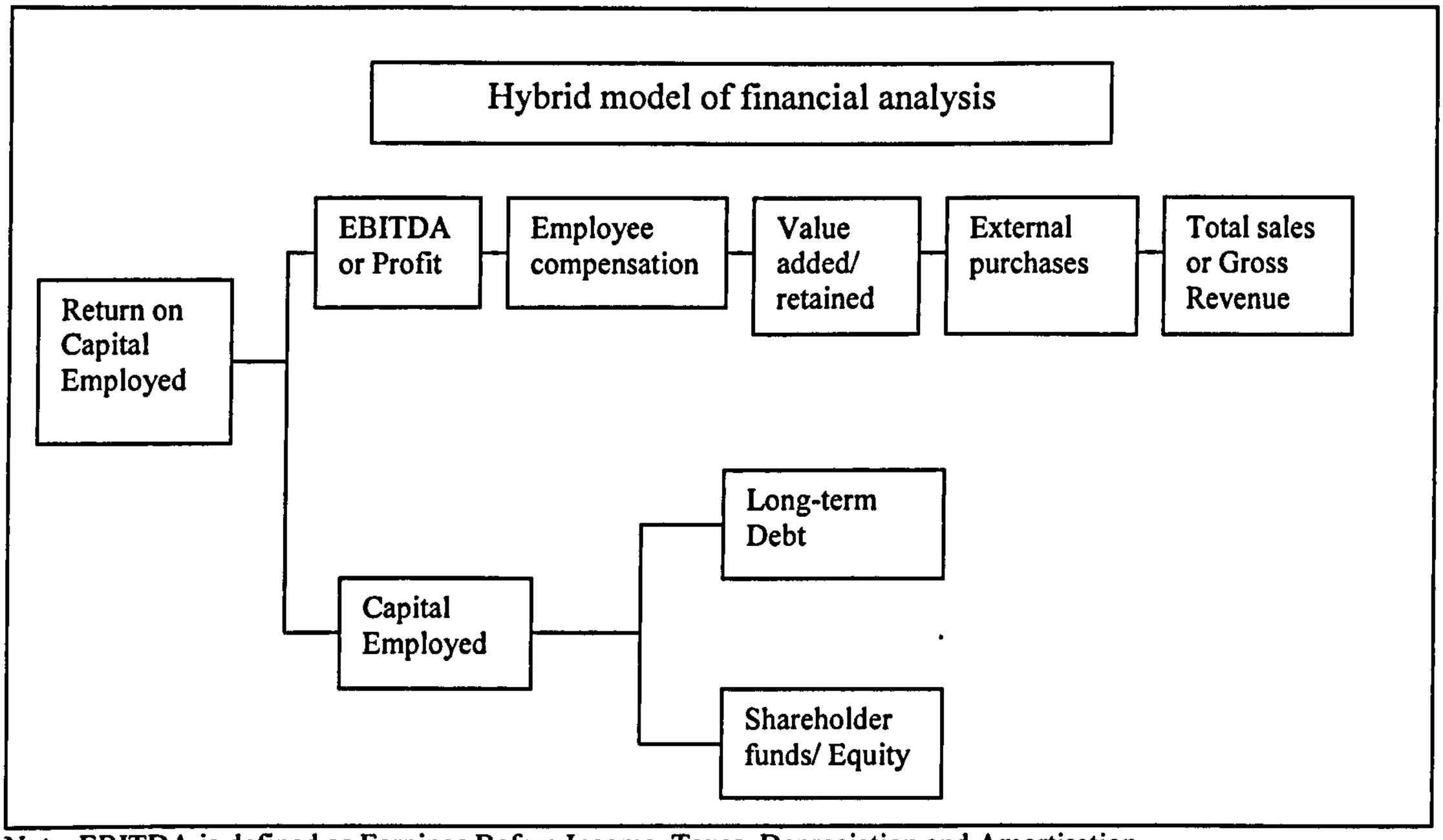
Source: Smiths 1978 p 19.

However, despite the suggestion of a value added ROCE-tree the focus within value added research has been on individual key ratios rather than the DuPont tree. These ratios are related to performance, productivity, structural analysis and the appropriation of value added. Haller et al (1989) also observe that these ratios are used by companies for benchmarking

competitors. Despite these insights about the value added statement, its key ratios and their relation to the DuPont tree, it is not possible to find evidence on the usefulness of these insights for managers or investors in capital markets. This is surprising as these insights in combination provide the basis upon which it is possible to reveal corporate performance using the value added statement plus capital employed. This deconstruction of the ROCE into its key ratios can be consistently undertaken at a micro, meso and macro level because value added is additive at each level and so are the stock of capital employed in the balance sheet.

In this thesis the researcher wish to combine the "pyramid" structure of ratios but employ a value added format which categorises expenses by their nature and includes capital employed from the balance sheet so that one can deconstruct corporate return on capital employed (ROCE) into its elements. The object is to construct a "hybrid" framework of analysis for the macro and meso level study which combines the best of both worlds the "pyramid" structure of ratios which allows the researcher to deconstruct bottom line performance and includes a capital market dimension and the value added format which classifies expenses by nature and does not double-count. This model of analysis is that used by Andersson et al (2006) and is outlined in figure below.

Figure 3.8, Hybrid model of financial analysis



Note. EBITDA is defined as Earnings Before Income, Taxes, Depreciation and Amortisation.
Source: Constructed by researcher based on Anderson et al (2006).

Using this framework it is possible to track how various expenses are deducted from total income to leave a residual of cash out of total income where all the deductions are expressed as a per cent of total income or related to value added. For example purchases as a per cent of total income, value retained as a per cent of income, labour costs as a per cent of value retained and cash or profit as a per cent of income. Income side ratios can be combined with the capital side to obtain income generated per financial unit of capital employed, value retained per unit of capital employed and profit and cash residuals as a per cent of capital employed. In this way one uses the pyramid structure to deconstruct the bottom line cash or profit return on capital employed into its constituent elements. This assessment of corporate performance does not simply rely on a bottom line residual but on a range of operating ratios that describe how one get to the bottom line.

The object of this thesis is to employ the above financial framework to collect key operating financials for the European 170, which is the FTSE 100, CAC 40 and DAX 30 group of companies. These groups of firms are significant because they are the main country corporate stock indexes in Europe and firms included in the constituent lists represent a large proportion of corporate market value in Europe. From this group of 170 firms it is possible to construct a

rich dataset which can be used to describe corporate performance at a macro, meso and micro-level over a period of 15 years. Collecting and constructing this dataset presented the researcher with a series of challenges. These challenges and how they were overcome are described in the following chapter.

Summary

In this chapter the logics governing the choice of research method was outlined for the purpose of researching the issues and problems that arise from the literature review. From the literature review the lack of a developed financial framework for evaluating corporate financial performance at the level of the firm based on value added was revealed. Analysts who review corporate performance tend to concentrate on bottom line ratios to inform their judgements and these reviews tend also to be very short-term covering the last few quarters and extrapolating the next few ahead. In the strategy literature financial performance is judged on the basis of a firm's ability to generate profits but this too is left under developed apart from the work of Kay (1993) and Grant (1998) but this work does not compare firm performance with industry and country aggregates.

There is a history of national accounting which is used to evaluate the financial performance and growth of national economies and industry sectors and this uses, as its basis, the concept of value added. The researcher has chosen to apply this particular financial framework to construct a rich financial dataset (see next chapter) for the European 170 (i.e. FTSE 100, CAC 40 and DAX 30) but have also added to this a capital or balance sheet dimension. This is required because the corporate sector is under increasing pressure to deliver shareholder value where profit and cash generated by a business per financial unit of capital employed is of importance. From this financial information one are able to deconstruct the bottom line operating ratios into their constituent elements. Rather than present the large amount of financial data the researcher is also summarising this into quintile bands which slices the data into five groups representing twenty per cent of the overall sample of firms.

The way in which the framework of analysis is constructed and its associated dataset also reflect the choice of research method as outlined in this chapter. Rather than employing a

positivist framework of analysis that would try to prove or disprove hypothesis based on the significance of relationships between variable X and Y the researcher is, instead, trying to maintain a rich presentation of the data which allows him to describe corporate financial performance. At the other extreme one might have employed an interpretivist approach which relied on description without numbers. However, the researcher has tried to approach the middle ground where he wishes to maintain a rich dataset which employs financial numbers to describe corporate performance in a social context. The researcher is aware that the numbers employed are socially constructed and that care needs to be taken when interpreting this information. At each stage the researcher employs a process of deconstruction and triangulation to help strengthen the arguments developed. The process of deconstruction and triangulation are employed to ensure that a range of perspectives are consolidated into the narrative and accounts of corporate performance. In addition the fact that this research will also construct a unique financial dataset for the European 170 establishes the basis for a grounded development of existing theory.

In the following chapter the researcher turns to the construction of the dataset that will be employed within this thesis to reveal corporate performance in the Europe 170 and the case study. This chapter outlines the difficulties associated with collecting this financial information and how the financial data is structured into the dataset. Using the hybrid model described in figure 3.8 in this chapter a yearly financial profile for each of the Europe 170 firms will be built up for the period 1990 to 2004 though data collection. The researcher now turns to the data collection in the next chapter and the difficulties in retrieving complete and consecutive firm years for a large number of firms over a period of 15 years.

Chapter 4 , Constructing the financial and non-financial datasets for analysis of corporate performance

The objective of this chapter is to describe how financial information has been collected to profile corporate performance for the Europe 170 and for the paired case study on Ericsson and Nokia. As such this chapter reveals the general problems and issues the researcher needed to resolve in order to ensure the financial data collected is consistent and how particular elements of the dataset have been selected, for example, to construct benchmark groups. This chapter is structured into three sections and starts with the framework of analysis and the choice, as to which key ratio are to be employed to construct the accounting framework described in the previous chapter. The two sections that follow describe the difficulties in collecting data for the Europe 170 and the paired case study.

The researcher had started with the idea of extending the data set used in Andersson et al (2006), which used the S&P500 index in US. However, this dataset suffered from a limited disclosure of labour costs and so the researcher turned to European data, where labour costs are disclosed more frequently. The researcher initially wished to construct a dataset for the Europe 350 which is the main corporate value index employed by Standard and Poor, and tracks the rise and fall of market value (MV) of European firms. However, not all the financial data for these firms was available from various sources and so this led the researcher to narrow the range of firms to concentrate on the Europe 170 which is made up of the major country indexes in Europe (FTSE 100, CAC 40 and DAX30). The Europe 350 index is one of the largest indexes of corporate stock market value, accounting for 4.5 Trillion Euro at the end of 2004 and the market value of the sub-set the Europe 170 was around 3.3 Trillion Euro by end of 2004, of which FTSE100 accounted for 1.8 Trillion Euro, CAC40 for 0.8 Trillion Euro and DAX30 for 0.6 Trillion Euro.

Even with this more restricted group of firms, it was clear that no one source could provide the data for the period covered namely 1990 to 2004 and so multiple sources have been used to source the financial information used in this thesis. It should also be noted that a great deal of care has been taken to ensure that although variable sources have been used to construct the financial dataset employed this was to be as consistent as possible.

The framework for analysis

Because the size of the dataset is so large, for practical purposes the researcher has chosen to extract key financial data from each company's annual report and accounts. Moreover the size of the firm sample has also forced the researcher, for practical reasons, to choose key ratios to use at the macro and meso level using the hybrid model outlined in the previous chapter. Overall the data collection and the choice of summary ratios to be employed has not been an easy task, as many practical considerations had to be taken on individual data items.

Table 4.1, Raw financial data items for the Europe 170 database

Income statement data	
Sales revenue	**Total income for each firm**
Labour costs	**Total employee compensation which also includes social charges**
Depreciation	**Depreciation and amortisation**
Operating profit	**Profit after depreciation and amortisation**
Pre tax profit	**Profit pre tax but after interest charges**
Income tax	**Tax from income statement**
Net Income	**Profit after tax**

Balance sheet data	
Shareholder funds	**Equity plus reserves**
Long-term debt	**Debt with a maturity of over 1 year**

Source: Author

Starting with the hybrid model, as outlined in Chapter 3, the researcher has chosen to extract the following raw financial information from each company annual report and accounts for the period 1990-2004 (see table 4.1). However, in contrast to the work in Andersson et al (2006), this study also includes labour costs which enable the calculation of value added as well as procurement costs. This raw financial data is then employed to construct a series of

financial calculations which are employed to interpret corporate performance. These financial calculations employed to profile corporate performance are split into four sub-sections: growth trajectory, value added operating ratios, capital intensity and return on capital ratios.

Growth trajectory

The researcher is first of all concerned with understanding the growth trajectory of companies within the overall set of firms in the European 170 dataset and also to reveal differences in growth rates between countries, industry sector and between individual firms. Using revenue or value added growth one can establish the degree to which firms, industry sectors and country-based indices show variable patterns of growth over the period 1990-2004. For each company, sector or country the Compound Average Growth Rate (CAGR) is computed.

Value added operating ratios

Morley (1979) argues that some of the advantages associated with the value added statement are that value added based ratios provide useful diagnostic and predicative tool. It is also possible to use these ratios relative to other firms "within industries to establish a norm against which to test the relevant proportion for any particular firm" (Rutherford 1981 p 33). Of interest, besides value added to sales ratio, are the value added distribution ratios because they reveal the residual of cash after most of the firm's primary stakeholders have been satisfied. The table below describes the main ratios that can be obtained from the value added statement and the academic articles in which these appear.

Table 4.2, Presence and absence of value added key ratios in the literature

	Renshall et al	Haller et al	Cox	DTI
Value added to sales	**Sales to value added**	**Yes**	**Yes**	**Yes**
Value added to production		**Yes**		
Wages and salaries to value added	**Yes**	**Yes**	**Yes**	**VA to empl. & depr. costs**
Depreciation to value added	**Yes**	**Yes**	**Yes**	**VA to empl. & depr. costs**
Operating profit to value added			**Yes**	
Financial charges to value added		**Yes**		
Taxes to value added	**Yes**	**Yes**		
After tax profit per value added	**Yes**	**Profits to value added**		
Dividends to value added		**Yes**		
Not distributed earnings to value added		**Yes**		
Value added to capital employed			**Yes**	
Value added to operating assets			**Yes**	
Value added to capital expenditure	**Yes**	**Value added to production investment**	**Yes**	
Variation in value added to value added		**Yes**		
Value added to number of employees	**Yes**	**Yes**	**Yes**	**Yes**
Value added to direct hours			**Yes**	

Source: DTI 2002, 2003a-b, 2004a-b, 2005b p 2-3, 2006b p 2-3, Haller et al 1998 p 38, Renshall et al 1979 p 35 and Cox 1979 p 67.

The analysis to be employed is structured upon the above studies but also simplifies the number of ratios to be computed so as to reduce complexity when one is operating with such

a large firm dataset covering the period 1990-2004. The first ratio is the purchase to sales ratio which describes how much of a firm's total revenue is deducted to pay the cost of all external services and supplies. This is an important calculation because after one has deduct the value of purchases from sales one is left with a residual of value retained which is employed to cover internal firm expenses or value added as a per cent of total income.

The next calculation is to compute how much of the value retained (or value added) is distributed to cover employee expenses, that is, labour costs as a per cent of total income. This tells how much of a firms' internal value retained is used to pay employees because the larger the share of labour costs is the lower will the share of cash and profit in value added be. The residual after labour costs are deducted from value added is cash from operations which is found by adding together depreciation and amortisation to operating profit.

Capital intensity

It has been argued in both the literature review and the research method chapter that firms are under pressure to deliver shareholder value and so the financial performance metrics used must include a capital dimension. The researcher has therefore chosen to compute what is termed a capital intensity index which is computed by dividing a simplified capital employed (long-term debt plus shareholder funds) into sales revenue and has been previously employed by Andersson et al (2006). This index shows whether a firm, industry and country index of firm's are increasing the value of capital employed to generate a unit of income.

Return on capital employed

Following on from this one is then able to calculate the cash and profit return on capital employed which are central to the computation of shareholder value because cash, profit and capital employed figure in the majority of the main shareholder value metrics.

Table 4.3, Financial performance profile for European 170 firms

Sales revenue	**Compound average growth rate (CAGR)**
Value added	**Compound average growth rate (CAGR)**
Purchase or external costs in income	**100 – (value added as a per cent of total income)**
Value added/retention in income	**Value added as a per cent of total income. Where value added is the: sum of labour costs, depreciation & amortisation and operating profits**
Labour's share of value retained	**Total employee compensation as a per cent of total value retained**
Cash share of value added or sales	**Value added minus labour costs equals cash from operations expressed as a per cent of value added or total income**
Capital employed divided by value added or total income	**A measure of capital intensity or how much capital is employed to generate a unit of value added or total income.**
Cash return on capital employed	**Cash from operations as a per cent of total income**
Profit return on capital employed	**Pre-tax profit as a per cent of total income**

The group of summary calculations are employed to describe firm trajectory and growth and how income percolates through the firm to generate more of less cash as a per cent of income and in relation to capital employed in the balance sheet for the purposes of generating more or less shareholder value.

The Europe 170 dataset

Sample selection

Although value added (VA) is not a complicated calculation, US and Japanese companies "do not give enough information in their group accounts to enable VA to be calculated" (DTI 2006a p 15). As such the researcher is restricted to European corporate accounts as he want to observe differences and similarities on the country and sector level of aggregated group accounts. The researcher is also aware of that value added may not be calculated for European firms following US accounting practice.

The analysis in the thesis is to some extent similar to the concept of the value added scoreboard (DTI 2002, 2003a, 2003b, 2004a, 2004b, 2005a, 2005b, 2006a, 2006b), which uses European corporate financial data. However, the purpose of this thesis is to employ financial data for publicly quoted firms only as so as to reveal the usefulness of the value added format to inform capital markets by also adding the capital dimension (which is not done by DTI). In addition the thesis also cover a longer time period that the DTI scoreboard and the researcher do not mix ratios that use expense by function with expenses classified by their nature, for example R&D as a per cent of value added.

The data for the construction of this database was supplied by Standard and Poor's and augmented with other databases and annual reports and accounts to ensure as complete a coverage as possible.

Data collection main sources and coverage

In retrieving financial data for the initial sample of Europe 350 the researcher encountered a number of difficulties associated with obtaining complete financial information for all companies back to 1980 as been done by Andersson et al (2006) for the S&P500 in the US. Although the range of financial data to be collected was kept as simple as possible including: sales revenue, labour costs, operating result, depreciation and amortisation, profit pre and post tax, long-term debt and shareholder funds a lot of financial data for individual companies was not available from key data sources such as Standard & Poor and later Worldscope. These difficulties forced the researcher to reduce the size of the data sample and thus economise the research effort and so it was decided that it was only practically possible to reproduce the operating financials for: the German DAX 30, the French CAC 40 and the British FTSE 100 representing 170 firms out of the S&P Euro 350 index over a fifteen year period.

The sector coverage of the dataset is defined by the Standard & Poor industry classifications (see appendix 1, table 1.1 "Classification of firms"). For some of the sectors in the index the researcher has aggregated these sectors into new sectors due to limited number of firms, namely;

- Energy & utility, where the energy sector had 5 firms and the utility sector 15 firms.

- IT & Telecom, where the IT sector had 6 firms and the telecom sector 6 firms.

It has also been taken into account that in the utility sector there has been significant Initial Private Offerings (IPO), de-merger and merger activities, which means that the number of survivors is limited.

Data collection for the case study in terms of financial numbers was a little more straightforward although old annual reports were at times difficult to obtain, however, this problem was solved through extensive help from company archives. For the collection of narratives on strategy for the case study it was at times difficult to find references that explained important events, turning points, and the timing of strategic adjustments made by the firms. Nokia also declined to participate in the semi structured interview due to time constraints, however, this was compensated for by a comprehensive review of corporate documentation which revealed insights into both strategy (see strategic intent by Laitinen et al 2000) and the strategic importance attached to key financial key ratios (see value added index in Häkiö 2002).

Keeping track of data sources

As already noted the researcher started initially with the data from Standard & Poor for Europe 350, which did not provide enough coverage in terms of complete firm years. This was most pronounced for labour costs, but as also other data items where missing thus increasing the number of incomplete years the collection of Europe 350 became too large to handle practically. Selecting the sub-set of the Europe 170 reduced the data collection size and when supplemented with the Worldscope corporate database this increased the number of complete firm years. To extend the number of years of coverage for labour costs the Deutsche Bank publication "Running the numbers" (2002, 2004, 2005), was also employed which has published corporate labour costs since 1990 for a large number of European publicly quoted firms. To further improve data coverage the researcher has also made use of annual reports as well as other Internet sources as the Edgar data base. In some specific cases, where labour costs were not found, companies were requested directly for this information.

In collecting the data from the above sources there was also a need to keep a track of each data item and its source using a colour coding system. Each major update also received a

different background colour to keep track on when the data was collected in time. Subsequently new ways of tracking information were also discovered during the process, such as searching the Edgar database for 20-F reports.

The researcher also encountered the problem of pro forma data, where firms either merged or de-merged. In cases where such data has been encountered the researcher has chosen historical data that reflect the new structure of the firm, provided that this was reflected in all data items collected to get a complete firm year. Also that databases employed slightly different definitions for collecting financial data was observed and these can be found in appendix 2. In most cases the numbers were the same, but there was also cases where the numbers did not match and the researcher need to decide which data would best fit the definitions used in table 4.1 above.

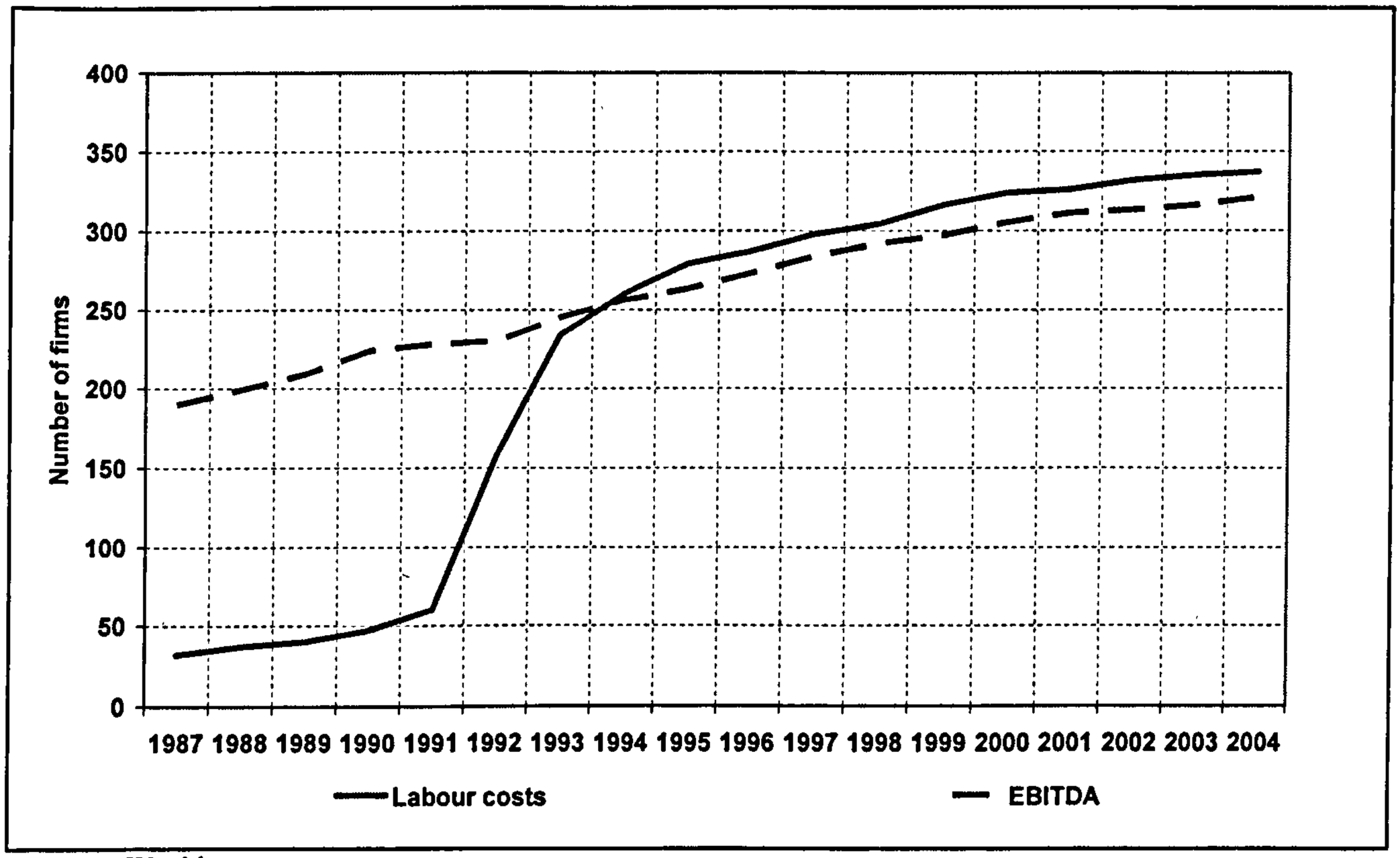
The database obtained, although limited in terms of the number of data items collected, is thus the result of a significant effort in tracing data and making choices that concerned how the time series was to be constructed.

The time period selected for the European data sample

The time period over which the financial data has been selected covers a fifteen year period from 1990 to 2004 and this time period was chosen because it covers two recessions in the period 1991-1992 and 2001-2002. Prior to 1990 the financial data is even less complete, for example, labour costs are missing from databases and it is also not possible to recover annual reports and accounts easily for such a large sample of firms.

In figure 4.1 below the problem of coverage is revealed using the example of labour costs and the coverage obtained in the dataset. Labour costs are an important component in the financial evaluation the researcher needs to undertake and although, for example it is possible to reconstruct operating profit before depreciation and amortisation (i.e. EBITDA) from Standard & Poor and Worldscope for most companies, it was not possible to obtain the same degree of information on labour costs. In order to try and fill in gaps the researcher has used other data sources including original annual reports and accounts where possible.

Figure 4.1, Labour costs and EBITDA data coverage in Worldscope



Source: Worldscope

To improve coverage Deutsche Bank's "Running the Numbers" (2002, 2004 and 2005), which covers approximately 800 European companies was used and whilst not completing the dataset it increased the coverage of labour costs data to the level of EBITDA for the period 1990-2004.

Company coverage

The financial dataset therefore covers 170 firms out of the S&P Europe 350 index and spans the period 1990-2004. In terms of industry representation these companies provide good diversity, see appendix 1 (table 1.1 "classification of firms") as they cover all major sectors. From this one can assume that the group of 170 firms also provides a good representative sample of the larger S&P Euorpe350 index.

The selected sample in this thesis covers 170 firms over a period of 15 firm years or in total 2,550 firm years. This provides a strong platform on which to base the analysis and findings contained in this chapter and subsequent chapters that employ the dataset to analyse corporate

performance. More critically the researcher has managed to obtain labour costs for 85 per cent of the sample and over 70 per cent of firm years in the early 1990's. In terms of the country indexes the average coverage of labour costs is 83 per cent in FTSE 100, 87 per cent in DAX 30 and 89 per cent in CAC 40. Beyond this the researcher has also increased the coverage in some firm years by filling gaps between one year and the next with estimates (see appendix 1, table 1.4 "Estimation of data points"). The estimation has been made by connecting adjunct years with estimated data and assuming that ratios such as labour costs to sales are stable in the short term. For example for Fresenius Medi in DAX 30 it is assumed that the labour share of sales in year 1995-96 is the same as in 1997, and an estimate of labour costs for 1996 is obtained as labour share of sales in 1997 multiplied by sales in 1996.

Within the Europe170 sample nearly 30 per cent of the firms in the DAX 30 (9 out of 30), CAC 40 (9 out of 40) and FTSE 100 (29 out of 100) have entered the capital market since 1990 through IPO's or de-merger. Most of these corporate finance activities have occurred during the second half of the 1990's and in all major sectors (see appendixes 1 table 1.1 "classification of firms"). Of the surviving firms 80 per cent are industrial firms and 20 per cent are financial firms, where the surviving firms are well covered in terms of firm years for the calculation of value added. The distribution of the surviving firms by country and sectors is illustrated in the table below.

Using this differentiation between "survivors" and "non-survivors" it was possible to construct a benchmark group of firms to which had survived throughout 1990-2004 and thereby provide a consistent platform against which new entrants can be compared.

Table 4.4, Number of survivors by country and sector

	DAX30	CAC40	FTSE100	
Consumer discretionary	4	8	13	25
Consumer staples	1	4	13	18
Energy & utility	2	2	7	11
Financials	4	6	13	23
Health care	2	2	3	7
Industrial	3	4	9	16
IT & telecom	1	3	4	8
Materials	4	2	6	12
	21	31	68	120

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

However, the survivor group of firms also contained firms for which there was missing data and so to resolve this problem the "yardstick group" was constructed, which contains firms with a complete consecutive set of financial information covering a period of 15 years. This group contains the list of firms shown in appendix 1 table 1.5 and it provides a good benchmark against which to compare the performance of new entrants or individual firms.

Selection of company data

The data retrieved for the purposes of analysis in this thesis follows the same approach as that employed by Andersson et al 2006 (mimeo) which covered S&P500 composite firms, with the exception that the financial data for European firms also includes labour costs (see also figure 4.1). Because the European financial dataset also includes labour costs it is possible to calculate value added, which was not possible for the S&P500 firms because of limited disclosure of labour costs. For the Europe 170 it is now possible to calculate value added and as such also account for the degree of financial integration and how it affects value retention, cash residuals and degree of capital intensity relative to value added.

The data set retrieved includes: Sales revenue, labour & related expenses, operating income before depreciation & amortisation, depreciation & amortisation, pre-tax income, income taxes, net income, dividends paid, stockholders equity and long term debt. Appendix 2 provides a detailed description of the data types retrieved for Europe 170 including definitions

and data sources. In aggregate around 25,500 data points have been searched to construct the corporate financial dataset for the Europe 170.

Overcoming difficulties associated with variable accounting formats

In retrieving the financial data it was also clear that the nature of expense format is not a natural choice for the financial analyst, for example, the Worldscope database (Thomson 2003) tend to employ a function of expense format and do not present labour costs in the context of a value added statement (see appendix 2). In terms of the income statement, financial services companies do not always disclose items which would enable the reconstruction of the income statement according to the nature of expense format and thus calculation of value retained.

The definition of sales for financial companies cause a difficulty as both a gross revenue as well as a net revenue can be used in the calculation of key ratios. The gross revenue definition includes gross interest income rather than a net interest income and as a result there is an interest expenses recorded as "procurement costs", whereas a net revenue definition the interest expense is netted out. The researcher view is that the gross revenue better aligns to the contractual transactions made by financial firms than a net revenue approach. This since it reveals the size of income arbitrage made by financial firms through active financial market interventions. As a result key ratios including sales as a nominator or dominator for financials may be different than normally perceived in economics.

Dealing with Currency issues

For the time period before 1998 most companies in DAX30 and CAC40 used DEM or FRF as their accounting currency and so a conversion to Euro's was needed for the years 1990-2000, with some few exceptions. The US Dollar is also used as accounting currency among some European companies listed in DAX30 and CAC40, namely Fresenius Medical and STM. The only other accounting currency in these two indexes is the Belgian France which was used by Dexia prior to 1997 in the CAC40. Within the FTSE100 eleven companies use other currencies than the British Pound of which ten use the US Dollar and one (SABMiller) the South African Rand. Of the companies that employ the US Dollar as an accounting currency,

six out of the ten changed from British pounds to US Dollar during the period 1998-2002, i.e. a period where many European firms changed their accounting currency to Euro. For the years where the accounting currency has been DEM or FRF, i.e. 1990-2000, the following conversion rate to Euro has been used as recommend by EU (1998);

1 EUR = 1.95583 DEM

1 EUR = 6.55957 EUR

For conversion of company data in DAX30, CA40 and FTSE100 where the accounting currency is different from the DEM, FRF, GBP or the EUR the following exchange rates have been used, see table below.

Table 4.5, Exchange rates used to convert accounting data to British pound and EUR

	US Dollar to British pound	**SA Rand to British pound**	**US Dollar to EUR**
1992		**0.195**	
1993		**0.216**	
1994		**0.199**	
1995		**0.180**	
1996		**0.177**	**1.23**
1997	**0.611**	**0.124**	**1.02**
1998	**0.604**	**0.125**	**0.89**
1999	**0.618**	**0.103**	**0.89**
2000	**0.661**	**0.100**	**1.01**
2001	**0.694**	**0.100**	**1.18**
2002	**0.667**		**1.11**
2003	**0.612**		**1.24**
2004	**0.546**		**1.27**

Accounting for fiscal and calendar year

Of the Europe170 data sample 46 companies (i.e. 27 per cent of sample) operated with a different fiscal year than the calendar year and of these companies 43 are in FTSE100, three are in DAX30 and none in CAC40, which implies that the calendar year is more pronounced in FTSE100 than in the DAX30. In the FTSE100 these 43 firms represent 27 per cent of total sales (see the appendix 1 table 1.2 "Firms with fiscal year different from calendar year") and the firms in DAX30 (i.e. Siemens, Infineon and Thyssen Krupp) represent 14 per cent of total sales for year 2004.

In the DAX30 the three companies are back-end loaded as their fiscal year ends in September, where as the FTSE100 companies are front end loaded because more than half of the firms have a fiscal year that ends by end of March with only two of the companies in FTSE100 having fiscal years ending the last week in December.

In the case of DAX30 the three companies that have fiscal year end by September have been treated as if they had a normal calendar year for that year. However, for the FTSE100 the treatment of fiscal year varies between the databases used and the researcher has therefore chosen to use the calendar year as used by Standard & Poor, which is in some cases differs from the usage in Worldscope. As a result the researcher has treated companies with fiscal years ending during the first half of the calendar year as belonging to the previous fiscal year and companies which ends there fiscal year during the second half as belonging to that calendar year.

However, here too there are anomalies for some companies, for example, Tate & Lyle, BHP Biliton, B-sky-B and Diago, where S&P has treated them as part of the calendar year despite ending their calendar year during the first half. Also Cadbury Schweppes and Corus which end their years in the last week in December are treated differently in S&P than the general rule applied in the thesis. There are also difficulties in aligning data when companies change their fiscal year, such as International Power which from year 2000 uses a calendar year compared to a fiscal year that ended March 31 earlier. This particular case is also combined with a de-merger, which further creates data difficulties for year 2000 as S&P state sales of 1885 MGBP compared to Worldscopes 416 MGBP and the annual reports 396 MGBP. In this case we have chosen to use the S&P data as the de-merger occurs 2000/01.

Companies identified which have changed their fiscal year to calendar year besides International Power are: Man (year 2000), Muenchen Rueck (1997), RWE (2000), Anglo American (1997), BG Group (1990), Hanson (1996), Intercontinental Hotels (2002), Old Mutual (1997), Reed Elsevier (1991), Royal bank of Scotland (1999), Scottish-Newcastle (2002) and Shire (1997). TUI has changed there fiscal year twice (1989 & 2000), both from and to calendar year. All these companies have been treated as if they operate with a calendar year. There are also companies that have changed from a calendar year to a broken fiscal year during the period 1990-2004, namely Daily Mail & General Trust (1988) and Diago (1998).

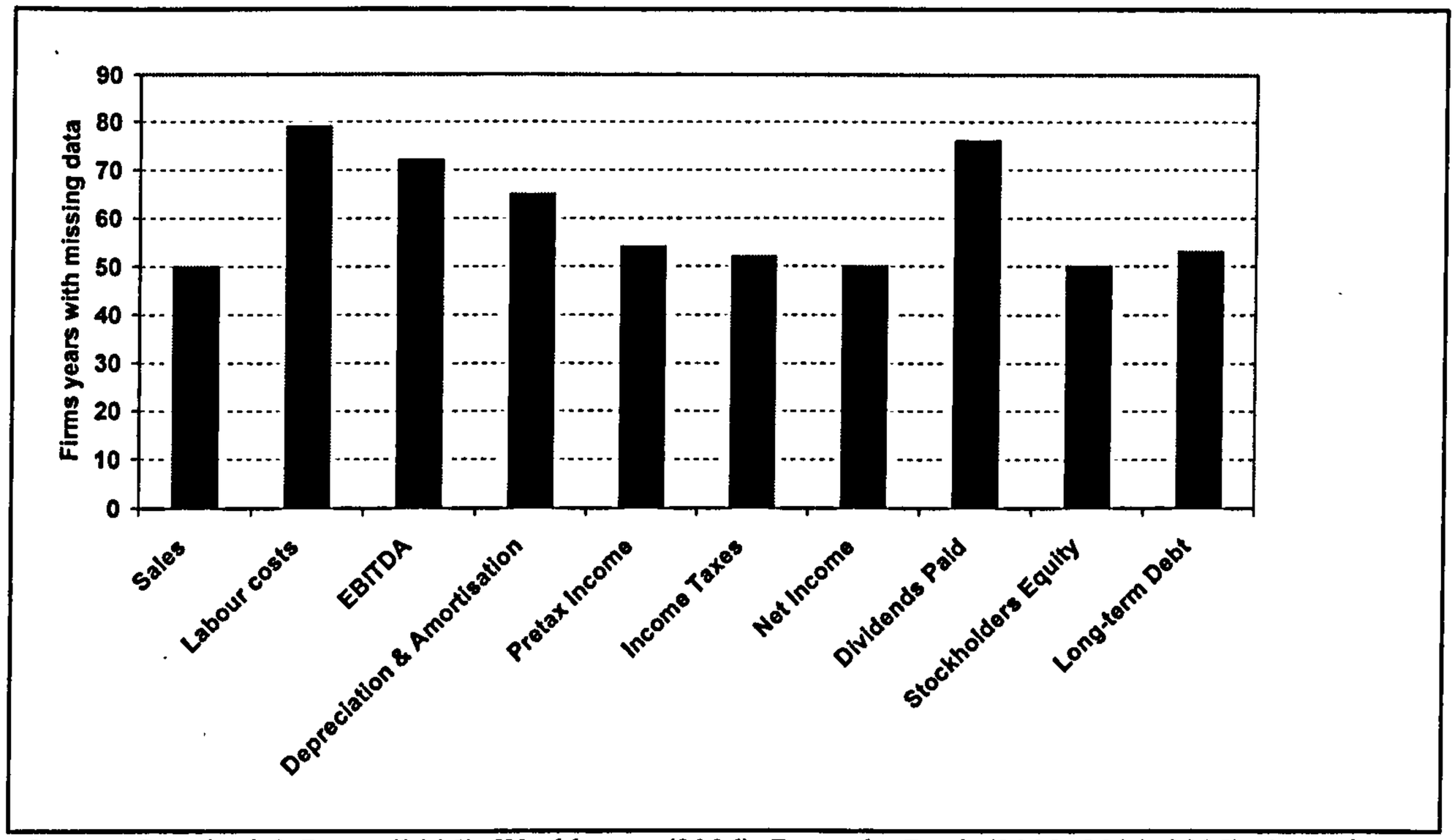
The researcher has also noted a case, namely Pernod-Ricard in CAC40, which have extended their fiscal year to 18 months for the year 2004/05.

The absence of accounting data

In the data sample of 170 firms over 15 years, in total 2,550 firm years, the researcher has encountered the problem of missing accounting data items. Of the accounting data, i.e. sales, labour costs, operating income before depreciation, depreciation & amortisation, pre-tax income, income tax, net income, shareholders equity, long-term debt and dividends paid, the missing data items amounts to 3,080 data points out of 25.500 or 12.1 per cent of the total . Of these data points 2.412 (i.e. 9.5 per cent of sample) related to firms where there are evidence of an IPO or where a de-merger or merger has occurred during the period. Of the remaining missing 688 accounting data points 357 are connected with financial services firms and 311 with industrial firms.

In terms of lost firm years this is more pronounced for labour costs, operating income before depreciation & amortisation (i.e. EBITDA) and dividends paid see figure 4.2 below.

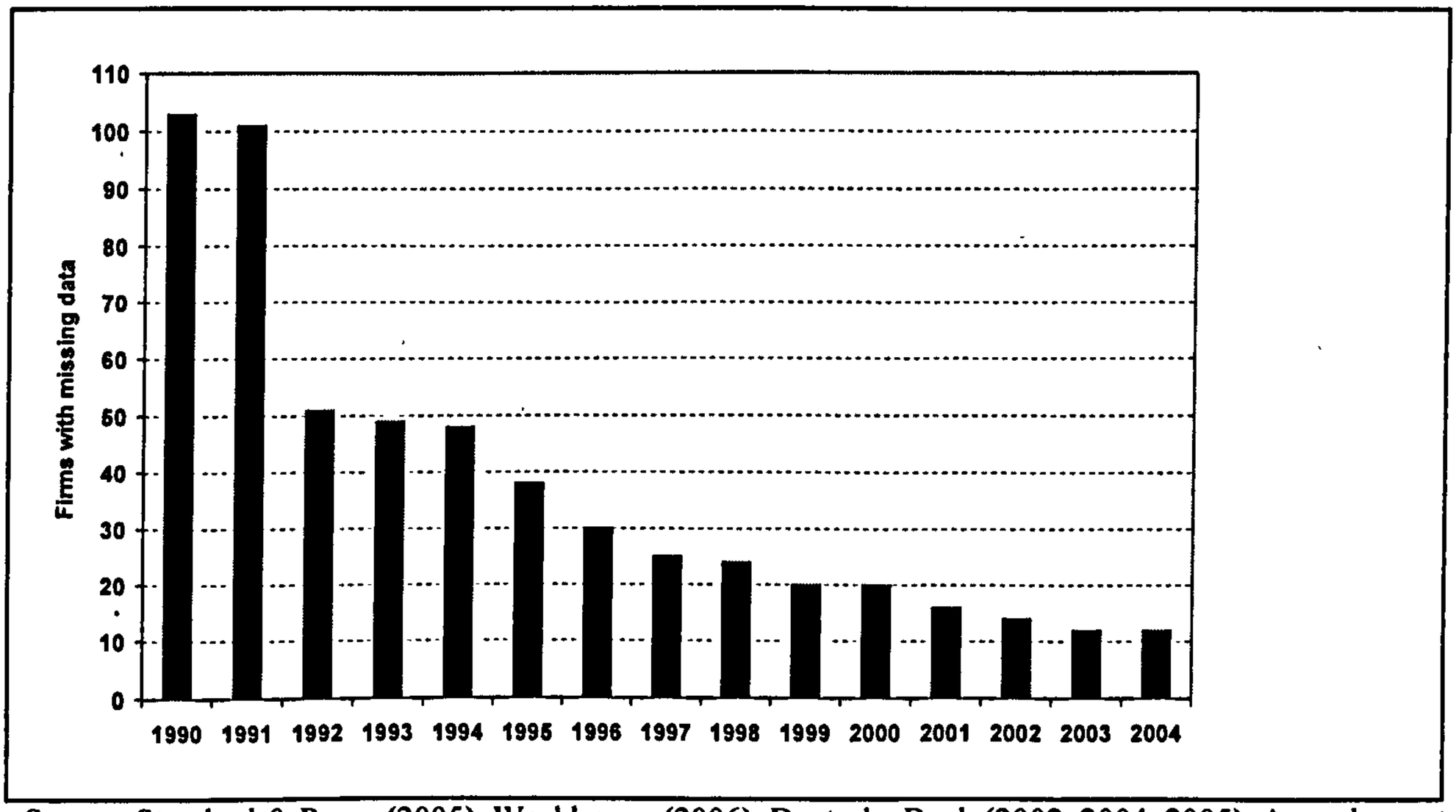
Figure 4.2, Missing accounting data by firm years



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. See also, appendix 1 table 1.3, Missing accounting data.

The loss of firm years is also more pronounced for the earlier years of the data sample, in particular 1990-91, where more than half of the sample has data gaps or is lost entirely.

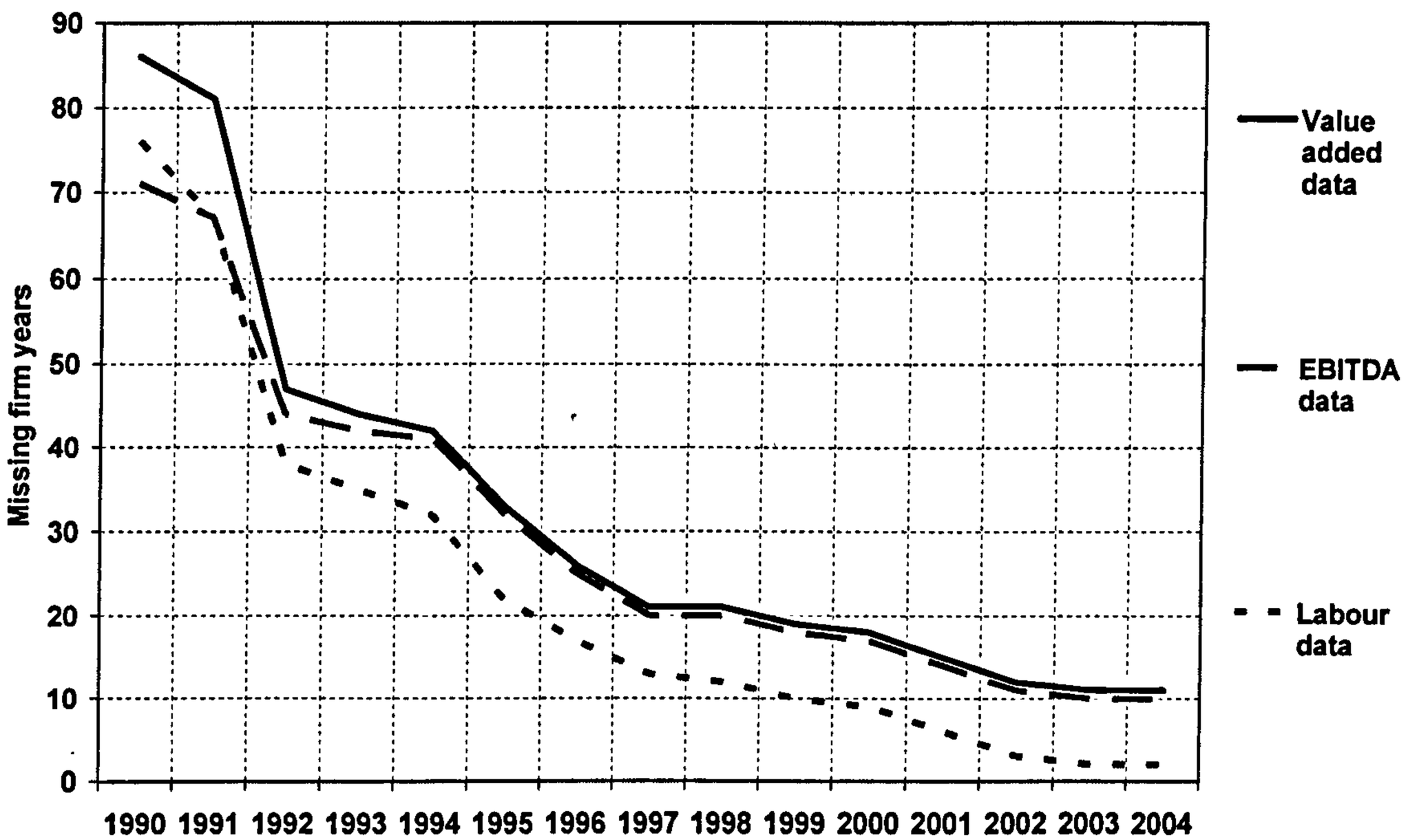
Figure 4.3, Missing accounting data by firm years



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. See also, appendix 1, table 1.3, Missing accounting data.

For this thesis the critical accounting data are labour costs and operating income before depreciation and amortisation (i.e. EBITDA), which forms the basis for the additive calculation of value retained. The loss of labour costs and EBITDA data is more pronounced for the year 1990-91 than thereafter. For year 1990-91 roughly half of the firm years are lost for calculation of value added, either due to loss of labour costs, EBITDA or both.

Figure 4.4, Missing accounting data for calculation of value added



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. See also appendix 1, table 1.3, Missing accounting data.

In terms of countries and sectors the loss of accounting data for calculation of value added is more pronounced for the financial sector than other sectors. In terms of countries it is evenly distributed, provided that the difference in sample size is taken into account.

Table 4.6, Missing accounting data for calculation of value added

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Consumer discretionary	16	16	9	8	8	6	4	4	4	3	3	3	1	1	1
Consumer staples	11	9	4	4	4	1	0	0	0	0	0	0	0	0	0
Energy & utilities	9	8	5	4	4	2	2	2	1	1	1	1	1	1	1
Financials	26	26	18	18	16	15	13	11	12	11	11	10	10	9	9
Healthcare	4	4	2	2	2	2	1	0	0	0	0	0	0	0	0
Industrials	7	7	2	2	2	2	1	1	1	1	1	1	0	0	0
IT & telecom	4	2	2	1	1	1	1	0	0	0	0	0	0	0	0
Materials	9	9	5	5	5	4	4	3	3	3	2	0	0	0	0
Europe170	86	81	47	44	42	33	26	21	21	19	18	15	12	11	11

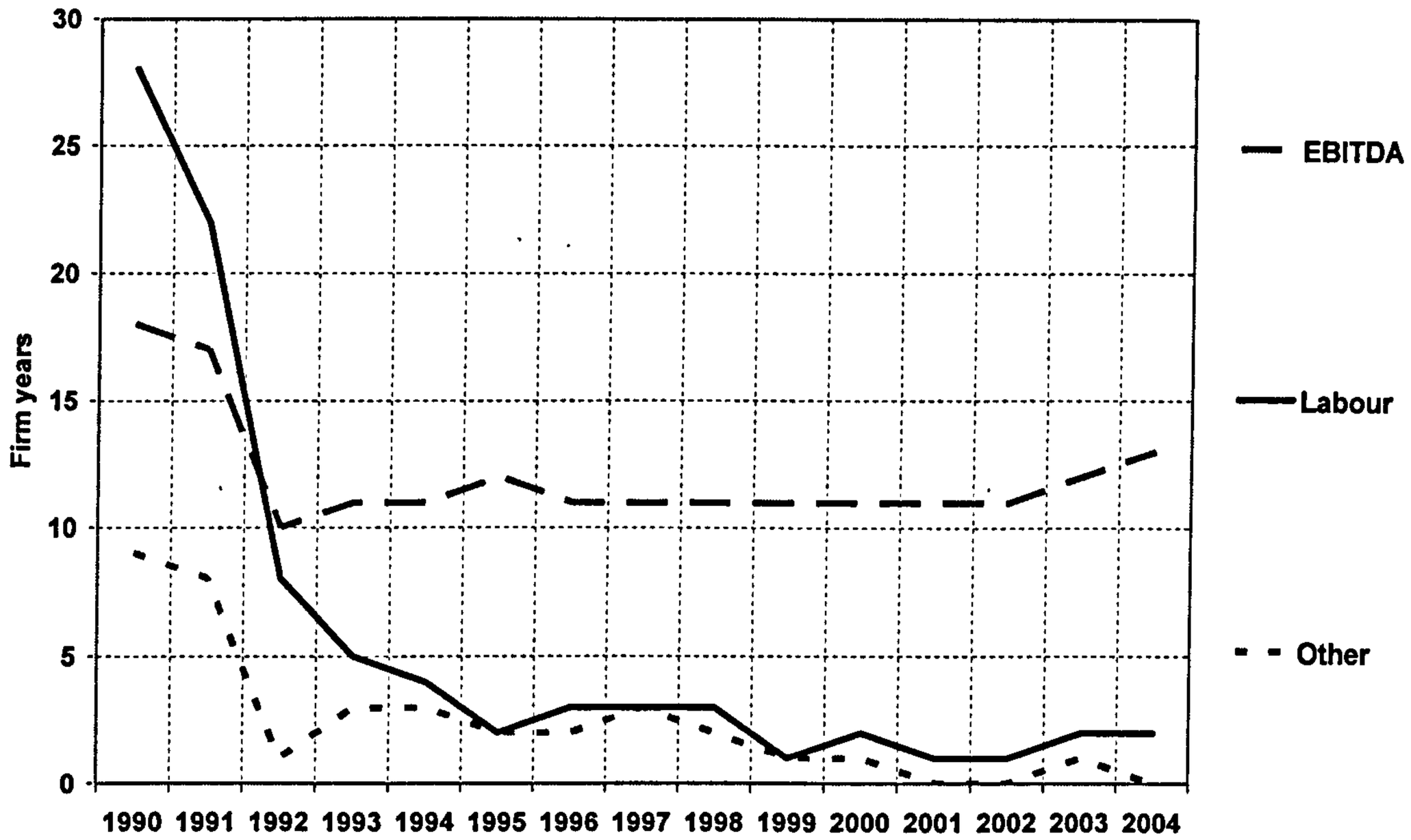
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
DAX30	15	12	12	12	12	8	6	2	2	2	2	2	2	1	1
CAX40	14	14	8	7	7	6	5	5	5	5	5	4	4	4	4
FTSE100	57	55	27	25	23	19	15	14	14	12	11	9	6	6	6
Europe170	86	81	47	44	42	33	26	21	21	19	18	15	12	11	11

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. See also appendix 1, table 1.3, Missing accounting data.

Estimation of some missing data points

In a number of cases, and for companies where the financial data coverage is nearly complete, that is where one or just a few data points are missing, the researcher has chosen to estimate data points based on data available around the missing data points. These estimated data points are also listed in appendix 1 (table 1.4 "Estimation of data points"). Overall the researcher has chosen to make estimates for 281 data points, of which 78 are labour costs, 165 EBITDA and 38 other accounting data, see figure below.

Figure 4.5, Estimated data types



Source: Author

There are also cases where it has been difficult to estimate data, such as shareholders equity. This was the case for Centrica 1993-96 where shareholders equity was missing, although all other data was in place. As a result the firm years 1993-96 has been excluded for Centrica.

All firms, survivors and the yardstick group

The sample of 170 firms has been classified into three groups, initially all firms and survivors and later the yardstick firms. All firms include the 170 firms (FTSE 100, CAC 40, and DAX 30) for which financial information was collected for the period 1990 to 2004. Survivors include that part of the 170 firms that have been publicly traded during the period, i.e. the researcher has not found evidence that they have entered the index during the period. The "Yardstick" group includes those firms for which the researcher has complete financial information for all firm years independent of whether they are survivors or have entered the index. Appendix 1 (table 1.5) include a list of firms classified as survivors or/and yardstick by country.

Why the choice of firm years is used as a basis for coverage

Given the size of the accounting dataset and gaps in time-series the researcher has been forced to use firm years as the central concept for organising and analysing the data. This since the researcher need to ensure that complete firm years was obtained for all the accounting data for each year as otherwise gaps would generate misleading comparisons between countries and sectors when the financial data is aggregated. In addition the data would not give the same aggregation values and weighted averages for the sum of all countries and all sectors. The number of complete firm years for "all firms" is 2,181 out of 2,550 in the data sample, which is 86 per cent coverage of compete firm years within the data sample or 12.8 complete years in average per firm out of the 15.

Table 4.7, Firm years for "all firms"

	DAX30	CAC40	FTSE100	
Consumer discretionary	**87**	**142**	**232**	461
Consumer staples	**27**	**60**	**226**	313
Energy & utility	**30**	**53**	**138**	221
Financials	**70**	**70**	**272**	412
Healthcare	**38**	**28**	**54**	120
Industrials	**56**	**73**	**138**	267
IT & telecom	**37**	**72**	**60**	169
Materials	**58**	**34**	**126**	218
	403	532	1246	2181

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

The number of firm years for survivor firms (i.e. stayed in the MV index) is 1,760 out of 2,550, which is a 69 per cent coverage of compete firm years in the data sample or 14.7 complete years in average per survivor out of the 15.

Table 4.8, Firm years' for "survivors"

	DAX30	CAC40	FTSE100	
Consumer discretionary	**60**	**118**	**184**	362
Consumer staples	**15**	**60**	**193**	268
Energy & utility	**30**	**30**	**100**	160
Financials	**60**	**70**	**199**	329
Healthcare	**30**	**28**	**45**	103
Industrials	**45**	**60**	**135**	240
IT & telecom	**15**	**45**	**60**	120
Materials	**58**	**30**	**90**	178
	313	441	1006	1760

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

The number of firm years for yardstick firms (i.e. complete firm years for 15 consecutive years) is 1,710 out of 2,550, which is a 67 per cent coverage of compete firm years in the data sample.

Table 4.9, Firm years' for the "yardstick"

	DAX30	CAC40	FTSE100	
Consumer discretionary	**60**	**120**	**165**	345
Consumer staples	**15**	**60**	**180**	255
Energy & utility	**30**	**30**	**120**	180
Financials	**60**	**60**	**165**	285
Healthcare	**30**	**15**	**45**	90
Industrials	**45**	**60**	**135**	240
IT & telecom	**15**	**60**	**60**	135
Materials	**45**	**30**	**105**	180
	300	435	975	1710

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Aggregated index and equal weighted indexes

In conducting the analysis of the European data sample the researcher observed a deviation between the aggregated country indexes (i.e. sum of all firms for a data item) compared to the equally weighted indexes (i.e. average). This difference is, for example, found in the purchases in sales ratio for all firms in FTSE100, where the aggregated index is 70 and the equal weighted index is 62. This deviation is surprising given the large sample of firms for

FTSE100, with an average of 85 firms out of the 100 per firm year. Initially the researcher thought that there were faults in the dataset, but no such error has been found. As such the researcher has drawn the conclusion that this might be an interesting observation on its own, as it might suggest that the true pattern (i.e. aggregated values) can only be revealed through an additive procedure. As such statistical analysis of key ratios in terms of average and median may not reveal the true character of the economic development even for a somewhat large data sample. As a result of this deviation the researcher has introduced a quintile banding structure to describe the corporate sector for countries and sectors, besides the usage of aggregated numbers.

Constructing a benchmark group out of the European 170

The benchmark sample of firms used in the this thesis (i.e. the yardstick) consists of 114 companies out of the 170 that provide all key ratios for the full period 1990 to 2004. To describe the spread of performance for this group of firms the researcher employ quintile bandings which included 23 firms per quintile, with the exception of quintile three which contains 22 firms. This benchmark group includes those firms which it was possible to obtain complete firm years for all 15 firm years. Using this benchmark group it is possible to compare and contrast the performance of other firms including the two firms chosen for the case study.

The cut off points of the quintile distribution is shown in the table 4.10 and forms the basis for the quintile banding for judging relative corporate performance between firms.

Table 4.10, Europe 1990-2004: Quintile distribution cut off points

	MIN	20.0	40.0	60.0	80.0	MAX
Sales Growth Compound Rate	-11.7	3.3	6.4	9.0	12.9	34.6
Value Added (Euros)	-9.1	2.8	5.8	9.5	13.3	36.9
Purchases in Sales Rate %	26.2	49.3	58.4	66.5	75.0	95.2
Value Retention Rate %	4.8	25.0	33.5	41.6	50.7	73.8
Labour's Share of Value Retained	6.5	39.9	53.4	61.2	67.2	87.9
Cash ROS Rate %	3.1	8.9	13.6	17.3	25.4	77.7
Cash share in value retention	12.1	32.8	38.8	46.6	60.1	93.5
Profit ROS Rate %	-20.5	3.4	6.3	10.2	14.6	38.6
Sales capital Intensity Rate %	0.2	0.4	0.5	0.7	1.3	14.0
Value retention capital intensity index %	0.33	1.10	1.68	2.16	3.40	29.48
Cash ROCE Rate %	2.4	15.7	20.8	24.3	30.8	103.6

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Sales growth is defined as the geometric average growth for the period of available firm years. Value added growth is defined as the geometric average growth for the period of available firm years. Purchase in sales is defined as purchases in relation to sales. Value retention is defined as value retained in relation to sales. Labours share is defined as labour costs in relation to value retained. Cash ROS is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to sales. Cash share in value retention is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to value retention. Profit ROS is defined as pre-tax income in relation to sales. Capital intensity is defined as the sum of shareholders equity and long-term debt in relation to sales. Value retention capital intensity is defined as the sum of shareholders equity and long-term debt in relation to value retention. Cash ROCE is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to the sum of shareholders equity and long-term debt. All figures are in per cent.

Defining a high performing, or "top quintile", company depends on the type of key ratio, see table 4.11. In the case of purchase in sales, labour share and capital intensity low values implies a top quintile and represent the 20% best companies in the sample. For all other key ratios a high value implies a top quintile score.

Table 4.11, Quintile distribution of the Europe 170 firm key ratios

	Quintile 1 (bottom)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (top)
Sales Growth Compound Rate	<3.3	3.3-6.4	6.4-9.0	9.0-12.9	>12.9
Value Added (Euros)	<2.8	2.8-5.8	5.8-9.5	9.5-13.3	>13.3
Purchases in Sales Rate %	>75.0	66.5-75.0	58.4-66.5	49.3-58.4	<49.3
Value Retention Rate %	<25.0	25.0-33.5	33.5-41.6	41.6-50.7	>50.7
Labour's Share of Value Retained	>67.2	61.2-67.2	53.4-61.2	39.9-53.4	<39.9
Cash ROS Rate %	<8.9	8.9-13.6	13.6-17.3	17.2-25.4	>25.4
Cash share in value retention	<32.8	32.8-38.8	38.8-46.6	46.6-60.1	>60.1
Profit ROS Rate %	<3.4	3.4-6.3	6.3-10.2	10.2-14.6	>14.6
Sales capital Intensity Rate %	>1.3	0.7-1.3	0.5-0.7	0.4-0.5	<0.4
Value retention capital intensity index %	>3.40	2.16-3.40	1.68-2.16	1.10-1.68	<1.10
Cash ROCE Rate %	<15.7	15.7-20.8	20.8-24.3	24.3-30.8	>30.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Sales growth is defined as the geometric average growth for the period of available firm years. Value added growth is defined as the geometric average growth for the period of available firm years. Purchase in sales is defined as purchases in relation to sales. Value retention is defined as value retained in relation to sales. Labours share is defined as labour costs in relation to value retained. Cash ROS is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to sales. Cash share in value retention is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to value retention. Profit ROS is defined as pre-tax income in relation to sales. Capital intensity is defined as the sum of shareholders equity and long-term debt in relation to sales. Value retention capital intensity is defined as the sum of shareholders equity and long-term debt in relation to value retention. Cash ROCE is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to the sum of shareholders equity and long-term debt. All figures are in per cent.

The researcher know from the analysis in table 4.11 that just twenty per cent of firms in the Europe 170 generate a cash return on capital employed which is above 30 per cent. In order to obtain this position this group of firm's must be operating with favourable trajectories and operating ratios. The researcher can employ the quintile distribution of corporate financial performance in the Europe 170 to position high versus low corporate financial performance.

Building the country and sector tables

The tables on countries and sector have been built in several steps, where the first has been the calculation of company key ratios based on accounting data retrieved. These ratios have then been used to build the tables per country and sector, in total 121 tables of key ratios (3 countries plus 8 sectors each with 11 key ratios). These tables and their company key ratios have then been used for the quintile distribution, which create another 121 tables. This exercise in construction tables has been complicated because it is necessary to have complete firm years and that the country and sector averages aggregate and equal weighted averages for all firms, survivors as well as yardsticks are the same. Initially the researcher considering

including these tables as appendixes, but have decided that it would be better to provide an illustration of this analysis in the main body of the thesis. This is done below for the DAX 30.

Table 4.12, DAX30, Purchases in sales %

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
ADIDAS SALOMON		82	86	84	81	79	79	79	80	78	80	79	80	79	77	79,3
ALLIANZ AG	88	88	87	88	88	90	89	89	85	86	84	85	87	83	80	85,8
ALTANA	63	63	61	60	60	57	57	59	56	57	56	51	54	55	54	56,7
BASF AG	63	64	64	63	62	60	61	63	61	63	65	69	66	67	65	63,9
BAY MOT WERKE	69	71	70	70	71	71	72	71	72	73	73	68	71	69	68	70,6
BAYER AG	53	52	52	53	54	53	54	55	54	52	56	60	55	56	60	54,9
COMMERZBANK AG	44	43	44	42	38	45	46	50	51	62	66	72	72	77	68	57,7
CONTINENTAL AG	54	57	56	56	58	58	57	58	59	62	64	67	65	64	60	60,9
DAIMLERCHRYSLER			58	59	62	66	66	67	70	70	73	75	72	70	71	69,6
DEUTSCHE BANK N	61	59	60	62	59	56	58	64	59	60	56	64	54	58	62	59,4
DEUTSCHE POST NA					10	17	18	20	22	40	56	55	56	56	48	43,9
DT BOERSE N								50	55	44	55	53	47	44	38	47,1
DT LUFTHANSA AG	58	62	63	61	62	62	63	61	55	60	60	65	56	60	59	60,3
DT TELEKOM N		11	15	21	18	24	26	23	26	33	26	38	45	41	38	29,8
E.ON AG	77	77	76	74	73	73	73	74	72	76	72	77	69	69	67	73,4
FRESENIUS MEDI								58	50	65	49	56	52	51	50	53,7
HENKEL KGAA VZ	67	67	67	66	66	68	68	67	67	66	67	63	68	67	65	66,5
HYPO REAL ESTATE														97	95	95,9
INFINEON TECH N								60	121	75	57	70	90	76	71	75,3
LINDE AG I	60	60	57	57	64	58	57	57	58	61	57	61	58	57	59	58,8
MAN AG I	66	67	66	66	67	68	68	69	70	67	66	70	69	68	70	67,9
METRO AG				78	79	78	82	82	84	84	84	84	84	84	84	83,3
MUENCH. RUECK N	71	71	71	68	68	69	69	73	77	82	74	87	86	83	80	78,2
RWE ST A	65	65	64	63	62	64	64	68	64	64	75	73	62	62	62	65,7
SAP AG	33	34	34	32	34	35	34	35	38	42	39	39	33	29	29	35,0
SCHERING AG	57	55	53	49	48	48	50	46	49	48	49	51	49	47	46	49,4
SIEMENS N	47	45	49	50	48	49	53	56	58	60	55	64	61	55	56	55,2
THYSSEN KRUPP			64	67	66	68	69	72	71	64	67	66	66	67	66	66,7
TUI N	75	77	72	71	71	74	73	73	78	80	80	81	83	81	80	77,3
VOLKSWAGEN AG	68	70	70	72	69	67	70	70	70	72	70	71	72	74	75	71,3
All firms																
Average	62	61	61	61	59	60	61	61	63	64	63	66	65	65	63	63,8
Median	63	63	64	63	62	63	63	63	61	64	65	67	66	67	65	64,8
Standard deviation	12	17	15	15	18	16	16	16	19	13	13	13	14	15	15	14,6
Number of values	20	22	24	25	26	26	26	29	29	29	29	29	29	30	30	30
Survivors																
Average	62	62	62	61	61	62	62	63	63	65	64	67	65	64	63	63,6
Median	63	63	64	63	62	62	63	64	61	63	66	67	66	67	65	63,9
Standrad deviation	12	13	12	12	12	12	12	12	11	11	11	11	13	13	12	11,1
Number of values	20	20	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Yardstick																
Average	62	62	62	61	61	61	62	63	63	65	64	67	65	64	63	63,4
Median	63	63	64	62	62	61	62	64	60	63	66	68	65	65	63	62,4
Standrad deviation	12	13	12	12	12	12	12	12	11	11	11	12	13	13	12	11,3
Number of values	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Purchase in sales is defined as purchases in relation to sales.

As can be seen from the above table, there is limited deviations between the three sample groups; all firms, survivors and yardstick. In terms of quintiles the purchase in sales % for DAX30 is illustrated below.

Table 4.13, DAX30, Purchases in sales % by quintile

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
ADIDAS SALOMON		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ALLIANZ AG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ALTANA	3	3	3	3	3	4	4	3	4	4	4	5	4	4	4	4
BASF AG	3	3	3	3	3	3	3	3	3	3	3	2	3	2	3	3
BAY MOT WERKE	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
BAYER AG	4	4	4	4	4	4	4	4	4	4	4	3	4	4	3	4
COMMERZBANK AG	5	5	5	5	5	5	5	5	4	3	3	2	2	1	2	4
CONTINENTAL AG	4	4	4	4	4	4	4	4	3	3	3	2	3	3	3	3
DAIMLERCHRYSLER			4	4	3	3	3	2	2	2	2	1	2	2	2	2
DEUTSCHE BANK N	3	4	3	3	4	4	4	3	3	3	4	3	4	4	3	3
DEUTSCHE POST NA					5	5	5	5	5	5	4	4	4	4	5	5
DT BOERSE N								5	4	5	4	4	5	5	5	5
DT LUFTHANSA AG	4	3	3	3	3	3	3	3	4	3	3	3	4	3	3	3
DT TELEKOM N		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
E.ON AG	1	1	1	2	2	2	2	2	2	1	2	1	2	2	2	2
FRESENIUS MEDI								4	5	3	5	4	4	5	5	4
HENKEL KGAA VZ	2	2	2	3	3	2	2	2	2	3	2	3	2	2	3	3
HYPO REAL ESTATE														1	1	1
INFINEON TECH N								3	1	1	4	2	1	1	2	1
LINDE AG I	3	3	4	4	3	4	4	4	4	3	4	3	4	4	4	4
MAN AG I	3	2	3	3	2	2	2	2	2	2	3	2	2	2	2	2
METRO AG				1	1	1	1	1	1	1	1	1	1	1	1	1
MUENCH. RUECK N	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1
RWE ST A	3	3	3	3	3	3	3	2	3	3	1	2	3	3	3	3
SAP AG	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
SCHERING AG	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
SIEMENS N	5	5	5	5	5	5	4	4	4	3	4	3	3	4	4	4
THYSSEN KRUPP			3	2	3	2	2	2	2	3	2	3	3	2	3	2
TUI N	2	1	2	2	2	2	2	2	1	1	1	1	1	1	1	1
VOLKSWAGEN AG	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

All firms	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Average	3,1	3,0	3,1	3,1	3,1	3,1	3,1	3,0	2,9	2,8	3,0	2,6	2,9	2,7	2,9	2,9
Median	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	2,0	3,0	2,0	3,0	3,0
Standard deviation	1,2	1,4	1,3	1,3	1,3	1,4	1,4	1,3	1,4	1,4	1,3	1,3	1,4	1,5	1,4	1,4
Number of values	20	22	24	25	26	26	26	29	29	29	29	29	29	30	30	30

Survivors																
Average	3,1	3,0	3,0	3,1	3,1	3,1	3,1	3,0	2,9	2,8	2,9	2,6	2,9	2,7	2,8	2,9
Median	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	2,0	3,0	2,0	3,0	3,0
Standrad deviation	1,2	1,3	1,2	1,2	1,2	1,3	1,2	1,2	1,3	1,2	1,2	1,2	1,2	1,3	1,2	1,2
Number of values	20	20	21	21	21	21	21	21	21	21	21	21	21	21	21	21

Yardstick																
Average	3,1	3,0	3,1	3,2	3,2	3,2	3,2	3,0	3,0	2,8	2,9	2,6	2,9	2,8	2,8	3,0
Median	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	2,0	3,0	2,5	3,0	3,0
Standrad deviation	1,2	1,3	1,2	1,2	1,2	1,3	1,2	1,2	1,3	1,2	1,3	1,3	1,3	1,3	1,2	1,2
Number of values	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

After reviewing the data collection for Europe 170 the researcher now turns to the case study data in the next section.

Case study data

The section is split into arguments for selecting the firms in the case study, the collection of financial data and conducting the semi-structured interview.

Choice of case study firms

The case study was initially thought of being selected out of the firms that are part of the S&P Europe 350 index, and as such the case study was thought to provide detailed accounting data within the macro and meso level of firms investigated. As the researcher selected the Europe 170 index for the macro and meso study, accounting data had already been collected for the case study and some interesting similarities and differences had been revealed and as a result it was decided to continue the case study as originally planned.

The researcher has chosen to undertake a case study using Nokia and Ericsson as the paired company cases because they share similar product, capital and labour markets as well as mobile communication technologies. The choice has also been influenced by the product market characteristics with a strong growth in the mobile communication industry from less than 1 million users in 1986 to over 2 billion users by the end of 2005. This growth has been enabled through digitalisation and transformed the public telecommunication industry from plain old telephony service (POTS) into new type of services, as mobile communication. As a result there have been winners and losers in the industry, where for example Nokia during its previous CEO (1992 to 2006) had a total shareholder return of over 15000 per cent (Nokia AGM 2006).

Table 4.14, Total shareholder return 1992-2006

	Total return	Annualised return
Nokia	15 779%	43.6%
Ericsson	1 208%	20.1%
Motorola	404%	12.2%
HEX	948%	18.3%
EUROSTOXX 50	237%	9.1%
S&P 500	202%	8.2%

Source: Nokia AGM 2006

This translates to an average annual return of 43.6 per cent compared to the average firm of 8 to 9 per cent. It is also about twice as high as the average total shareholder return that Ericsson had for the same period. Even if the choice of period is arbitrary, it is still a period of strong product market growth where the two companies perform differently based on strategic choices and circumstances. The two companies has also chosen different strategic priorities within their strategies, namely the competitive position view and the resource based view. These two companies and the period chosen are expected to provide insights into how strategy and corporate performance are connected.

This choice of firms has also been influenced by the fact that a value added index is employed to help evaluate performance at Nokia (see Häikiö 2002), which is defined as value added per unit of labour costs. The CEO of Nokia views this as an important financial ratio relative to more traditional key ratios as it is a superior measure of productivity than sales per employee, which can be manipulated by outsourcing production.

Prior to this study, these two companies have been written about individually but normally not used to construct a pair-wise study (see Pulkkinen 1997, Laitinen 2000, Sandowski et al 2003). When they have been used as a pair-wise cases they have not been analysed financially and in depth (see Gustavsson et al 2003). These are also companies which have been represented, in different ways as iconic businesses (see Åsgård et al 2000, Steinbock 2001, Häikiö 2002, Nilsson 2002). Both Nokia and Ericsson occupy similar product markets which are employing similar technologies and it was possible to obtain access to their corporate records.

Financial data obtained for Nokia and Ericsson

The collection of financial data, for Nokia and Ericsson, has been made on an annual basis, as for the European data. Compared to the European data study, the researcher was able to cover the full period 1982-2005 using annual reports and the 20-F SEC-filing (F20) in US for both companies. These documents were not as easy to retrieve as expected because paper based annual reports were not always kept by the companies for external users. However, the researcher was able to reduce the gaps to just a few years for the period 1981-2005 and none of these missing years were sequential, see table below.

Table 4.15, Annual reports and F20

Year	Ericsson Annual report	F20	Nokia Annual report	F20
1981	-	-	paper	-
1982	Paper	-	paper	-
1983	Paper	-	-	-
1984	Paper	-	paper	-
1985	Paper	-	paper	-
1986	Paper	-	paper	-
1987	Paper	-	paper	-
1988	Paper	-	paper	-
1989	-	-	paper	-
1990	Paper	-	-	-
1991	Paper	-	paper	-
1992	Paper	-	-	-
1993	Paper	-	paper	-
1994	-	-	paper	-
1995	Paper	-	paper	-
1996	Paper	-	pdf	-
1997	Paper	-	paper	-
1998	Paper	-	paper	-
1999	Paper	-	paper	pdf
2000	Paper	pdf	paper	-
2001	Paper	pdf	paper	pdf
2002	Paper	pdf	pdf	pdf
2003	Paper	pdf	paper	pdf
2004	Paper	pdf	paper	paper
2005	Paper	pdf	pdf	paper

Source: Ericsson and Nokia.

This enabled the researcher to construct a complete time series of accounting data for both companies for the period 1982-2005, but to ensure congruence with the Europe 170 dataset, the case study also covers the years 1990-2004.

Constructing the financial dataset for the two company cases

The format used to construct the accounting dataset employs the nature of expense format which again aligns with the value added format used to construct the dataset for the Europe 170 group of firms. As argued in chapter 3 this format, based on the nature of expenses, avoids the arbitrariness associated with the functional expense format. However, this is not a common procedure when the researcher has found only one article that used the nature of expense format to compare firms and then in the airline industry (see Baker et al 2005).

Baker et al (2005) is able to construct a much more detailed financial account for airline financial performance than the researcher is able to construct for the Europe 170 firms. The use of the case study allows the researcher to introduce more detail into the financial analysis as Baker et al, for example employing a finer breakdown of balance sheet capital structure. The case study will not only illuminate more detail about corporate performance it is also employed to help triangulate the macro financial study and confirm the degree to which using relatively few financial variables is sufficient to describe corporate financial performance.

The semi-structured interview

A semi-structured interview was planned based on a questionnaire (see appendix 4.1) to explore the extent to which the companies have adopted shareholder value metrics as a main strategic priority and how the companies identifies value drivers for shareholder value and how it modifies strategic moves to maintain their financial objectives. The interview plus other corporate publications was used to establish the extent to which the case study firms Nokia and Ericsson have adopted of shareholder value metrics to drive strategy.
Unfortunately the researchers could not gain access to Nokia for the purposes of carrying out an interview possibly because Nokia soon after completed a joint venture announcement (19th

of June 2006) that Nokia and Siemens were to merge their mobile communication equipment businesses.

Nokia also stated that most of the information for the interview questionnaire could be obtained from the F20, which is correct in relation to the remuneration section of the questionnaire. But other parts of the questionnaire were less covered in the F20. Despite the fact that several questions in the questionnaire remain unanswered, this has partly been compensated by an extensive search in other sources of information than financial reports.

Summary

In order to construct this dataset the researcher encountered several difficulties from retrieving relevant accounting data from databases, obtaining annual reports to obtain complete time series and conducting company information from interviews. Whereas the retrieval of annual reports was solved with the help of companies, the collection of data from data sources and interviews caused difficulties. This was overcome by using several data sources beside Standard & Poors and more extensive document searches besides financial reports that described managerial usage of financial and strategy models.

The accounting data for such a large sample of firms and over several years' posed an additional difficulty as data was not always available in the value added format. This was especially true for labour costs, which are difficult to obtain for European firms prior to 1993. The researcher needed to obtain historical data from other sources, such as annual reports available on the Internet and the Internet proved useful for data gathering from 1993 onward, but not prior that time. Obtaining corporate information on strategy for the two company cases also proved difficult as the researcher relied upon secondary data from the two case study firms Nokia and Ericsson and could not gain access to interview senior managers in Nokia.

In the next two chapters the corporate sector at the macro and the meso level is described in terms of countries and sectors.

The objective of this chapter is to conduct a financial analysis of the country indexes in S&P Europe 170 employing the accounting framework which has been previously described in chapter 3. In aggregating the accounting numbers at a country level it is possible to reveal similarities and differences amongst the major European countries in terms of corporate performance and thus the usefulness of the value added format. The chapter is divided into four sections that analyse the corporate sector in each of the three major European countries (the UK, France and Germany) in terms of: growth trajectory, financial operating ratios, capital intensity and return on capital.

The starting point of the investigation is with the key ratios and describing the patterns within each country to reveal the similarities and differences. These ratios are outlined in the data collection section of this thesis (see chapter 4) and they serve to deconstruct the return on capital employed (ROCE) into its constituent elements employing the nature of expense method to construct individual ratios. The study then focuses on the three country indexes and their patterns in terms of key ratios of ROCE.

The analysis undertaken in this chapter employs financial data collected for the European 170, which includes the FTSE 100, CAC 40 and DAX 30 constituent list. In the analysis that follows in this chapter the data is presented for all firms listed in the index as of December 2004 for which the researcher has complete firm years or has complete firm years for the full period (the "yardstick group").

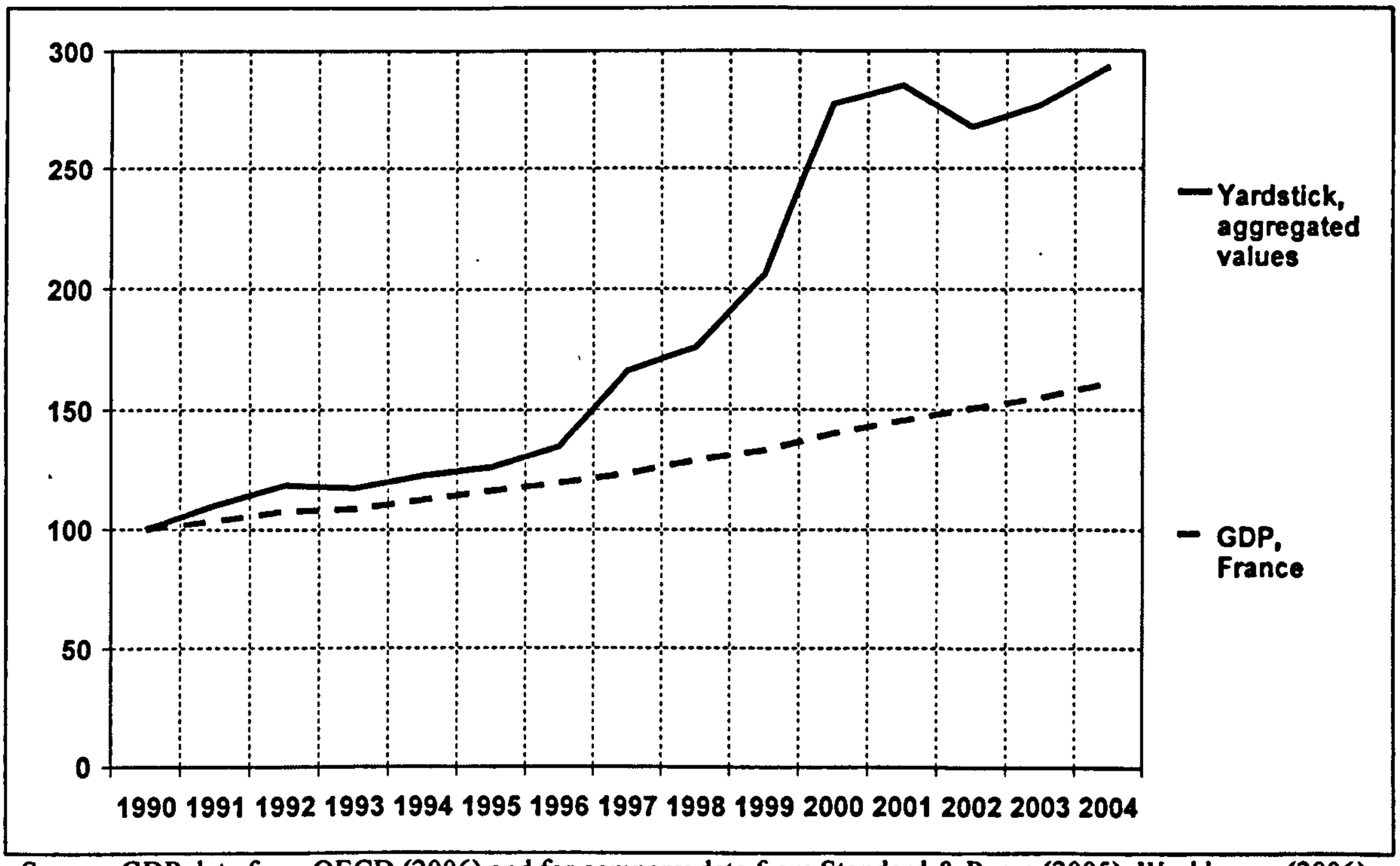
The chapter starts with a consideration of growth trajectories and compares the country index trajectories and also contrasts the growth trajectory of each country index with national GDP. The researcher then turns to differences and similarities in corporate financial operating ratios and capital intensity of the corporate sector.

Growth *trajectories by country*

In order to review growth trajectories it would be possible to use the sales revenue for all companies in each of the index's the FTSE100, CAC 40 and DAX30. However, rather than use a gross output measure to review the trajectory and growth of each of the country index's the researcher has instead employed the calculation of value added. The researcher has argued (chapter 2 and 3) that the calculation of value added, as income net of purchases made from outside the companies, avoids double counting production value which is accounted for by other firms. As such the calculation of value added is also to a large degree consistent with the calculation of national nominal GDP which is itself a value added computation.

The researcher starts with a review of the growth trajectory of companies within each national index and compares this to national GDP where both sets of financial information are in current market prices.

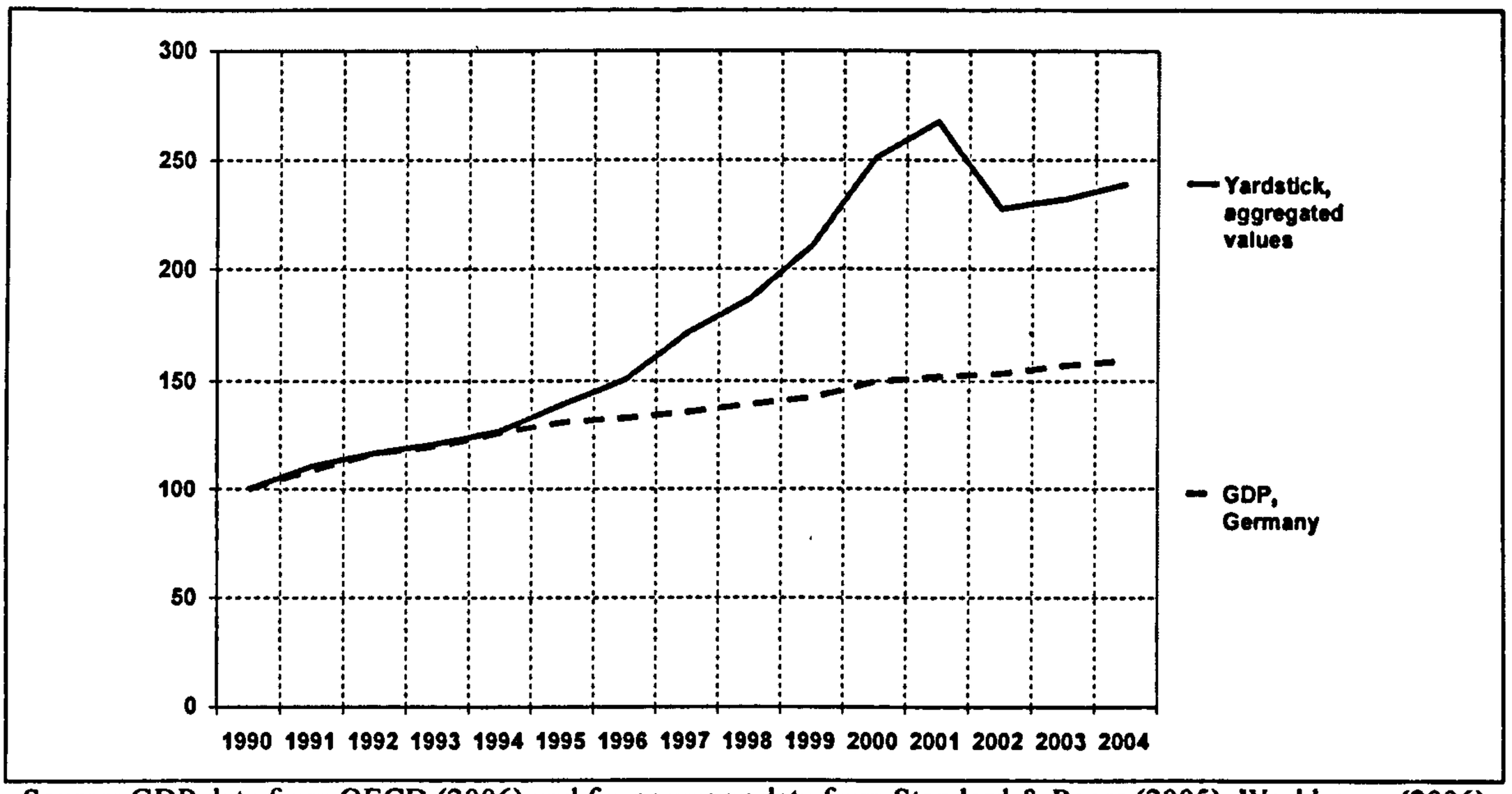
Figure 5.1, CAC 40 and National GDP 1990=100.



Source: GDP data from OECD (2006) and for company data from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value added growth is defined as current year value added in relation to base year multiplied by 100. For company data used in calculations see appendix 3.

During the period 1990 to 1996 the CAC 40 group of yardstick firms gently track the growth in French GDP but from 1997 to 2000 the growth rates of the CAC 40 firms runs ahead of national growth rates. This could be due to a series of mergers and acquisitions for the yardstick group, which consolidated the growth trajectory of acquisitions before growth rates again start to level off and again track national GDP albeit at a higher level.

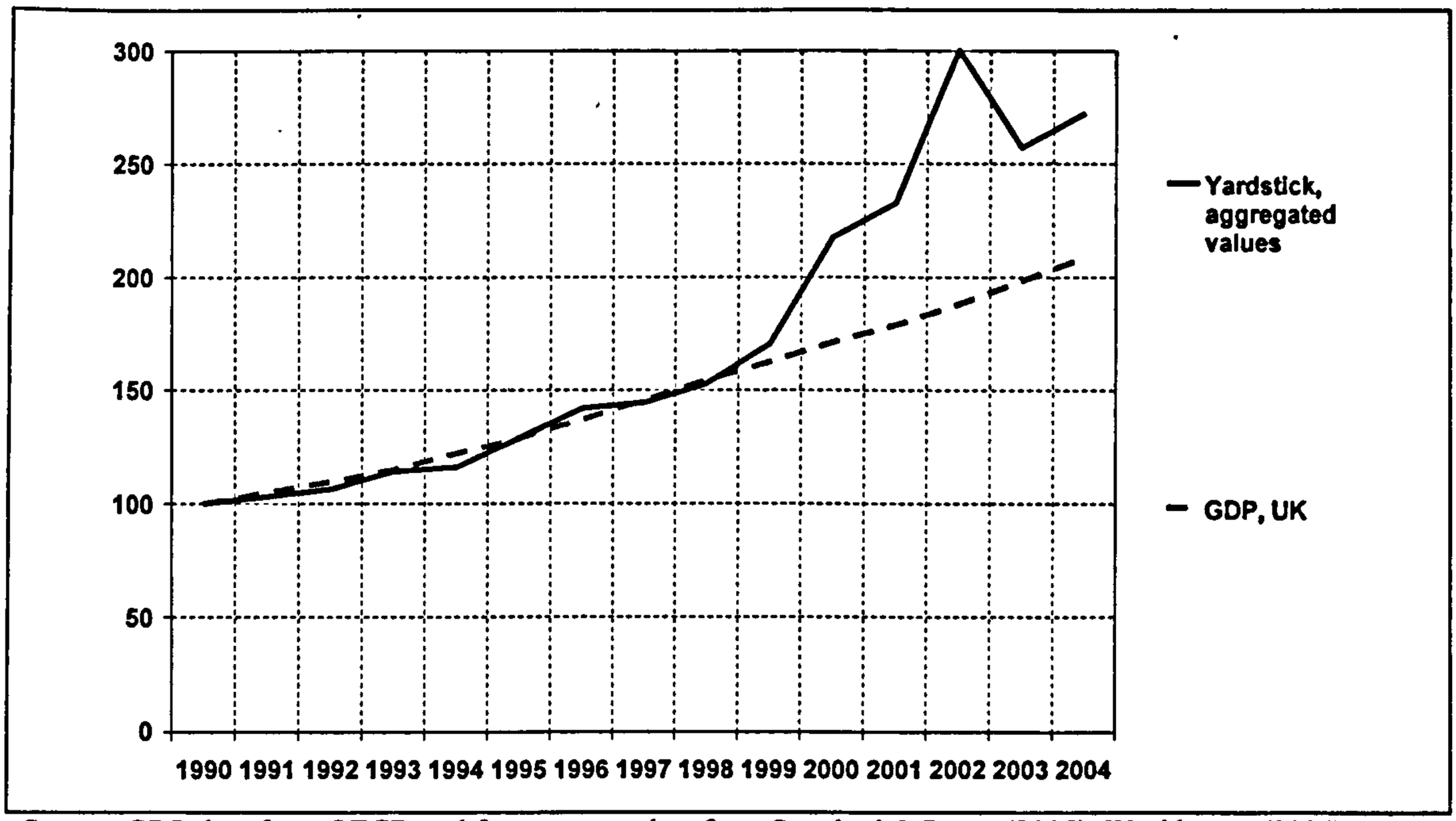
Figure 5.2, DAX 30 and National GDP 1990=100



Source: GDP data from OECD (2006) and for company data from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value added growth is defined as current year value added in relation to base year multiplied by 100. For company data used in calculation see appendix 3.

With the DAX 30 there is also a similar observation that until the mid 1990s the rate of growth of national GDP corresponds with that for value added growth of the DAX 30 yardstick firms. After 1996 there is a widening gap as the growth rate of value added in the DAX yardstick group runs ahead of national GDP and again this plateaus off in the period after 2000 and the recession but at a higher level.

Figure 5.3, FTSE100 and national GDP 1990=100

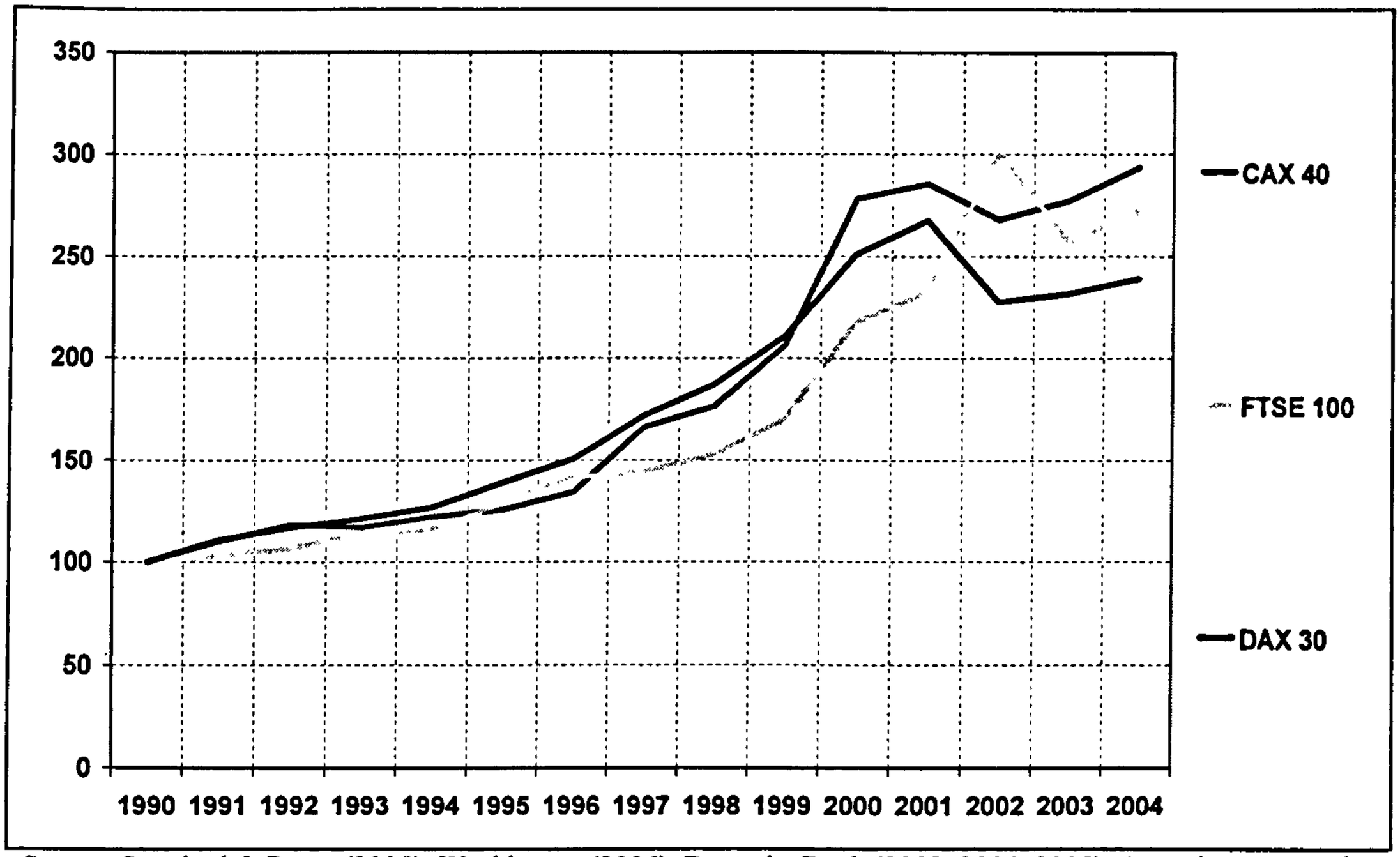


Source: GDP data from OECD and for company data from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value added growth is defined as current year value added in relation to base year multiplied by 100. For company data used in calculations see appendix 3.

With the FTSE 100 there is a different picture because value added growth of the yardstick firms breaks with the pattern of national GDP growth later than the CAC 40 and the DAX 30. From 1999 onwards the growth rate of the FTSE 100 has consistently run ahead of that for national GDP. So although national GDP in current market values doubled in the period 1990 to 2004 the value added output of the FTSE 100 yardstick group increased nearly 3 times or 1.4 times as fast as national GDP.

The researcher now turn to compare the trajectories of the three countries indexes where in each case the researcher has used the total value added in "yardstick companies" where the base year is 1990 and figure 5.4 reveals the patterns for these country based index's.

Figure 5.4, The CAC, DAX and FTSE Growth Rates 1990=100



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value added growth is defined as value added of current year in relation to base year value added multiplied by 100. For company data used in calculations see appendix 3.

The analysis of value added growth trajectories reveals that for the period all the yardstick firms located in three major countries based index's tracked each other in terms of value added growth. What is clear is that the overall compound average growth rates (CAGR's) are similar across the major country index's over the period 1990 to 2004 even though in recent year's growth the country growth patterns have moved apart.

The compounded average annual growth rate for the yardstick group (see table below) is in line with or slightly above the nominal annual rate of 5% which was found by Andersson et al (2006) for the S&P500 survivors in the US, even if this was for the period 1980-2003.

Table 5.1, Compound average annual value added growth rates for CAC 40, DAX 30 and FTSE 100

	1990-2004 all firms	1990-2004
CAC 40	**9.4**	**6.9**
DAX 30	**9.2**	**5.6**
FTSE 100	**8.8**	**6.9**

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value added growth is defined as value added geometric annual growth rate for the period. For company data used in calculations see appendix 3.

The analysis now moves on to consider how the value added accounting framework that was developed in the chapter 3 can help to deconstruct and describe the financial performance of the three country based indexes. The researcher is interested in how revenue percolates into organisations, how it is distributed to the various external and internal stakeholders and what cash and profit residual is available in relation to the total capital employed for shareholder value. To what extent have recent variable growth trajectories impacted on the operating financials of firms in the major European stock market indexes?

Financial operating ratios

In the analysis that now follows the researcher reveal the similarities and differences in the financial operating ratios for all firms in the CAC40, DAX30 and FTSE100 covering the period 1990 to 2004. It starts with the purchase to sales ratio which is calculated as sales minus value added (or value retained) and represents the degree to which firms in these indices are financially integrated or disintegrated.

Table 5.2, Purchase in sales for the main country index's for certain years and period average

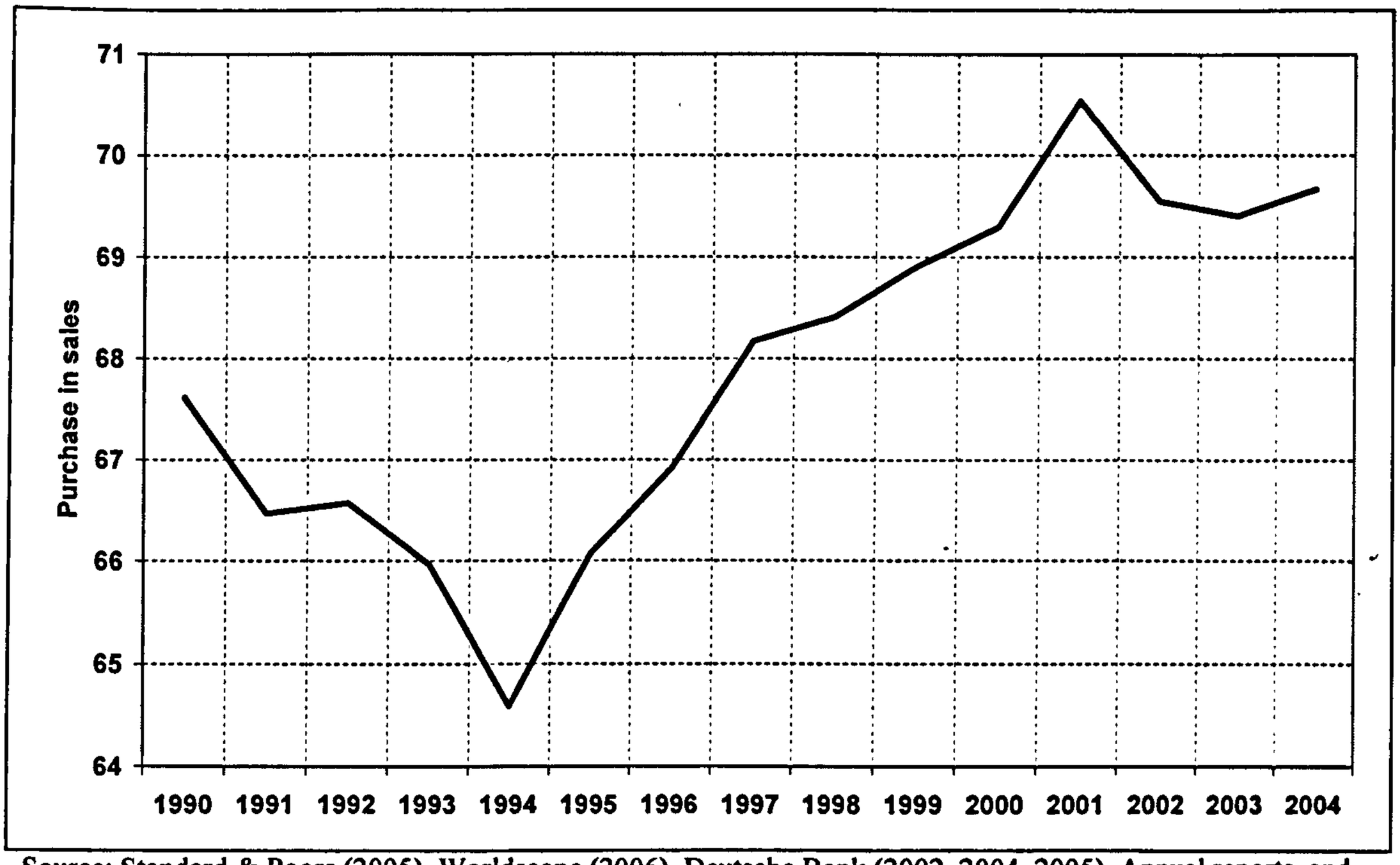
All firms	1990	1995	2000	2004	Period
DAX 30	64.4	61.6	67.0	66.9	66.0
CAC 40	68.9	66.6	69.5	69.1	68.3
FTSE100	68.8	68.7	70.9	71.8	70.4

Yardstick	1990	1995	2000	2004	Period
DAX 30	64.4	65.2	67.6	67.9	67.6
CAC 40	68.3	66.6	69.9	70.1	68.7
FTSE 100	68.8	68.9	70.0	70.9	69.0

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Purchase in sales is defined as Sales minus value added as a per cent of total sales. For company data used in calculations see appendix 3.

Table 5.2 reveals the average purchases as a per cent of total sales for firms listed within the three major European indexes compared to the yardstick group of firms. The financial analysis reveals that over fifteen years for both yardstick and all firms the average share of purchase costs in total revenue remains quite stable (see figure 5.5). Although the 1990s was a period during which firms were advised to outsource and focus on their core competences this is to some extent revealed in aggregate trends although it is possible that cost savings from outsourcing may also have been passed on to consumers as lower prices in competitive markets. There are some signs that the share of purchase costs in total income increase across the group of European 170 firms from 1994 to 2001 but this trend is reversed thereafter and are back to levels seen in 1990 by 2004. It should also be noted that one only observes a +/-3 per cent movement overall for the whole period. It would seem that it is structurally difficult for firms to generate adjustments in this particular financial ratio and as the researcher will now go on to argue this limits the extent to which firms can increase their share of the financial value chain. It is also observed how product market conditions (sales and purchase) affect the purchase in sales through the business cycle (see figure 5.5), with a bottom in 1994 and a peak in 2001.

Figure 5.5, Europe 170 firms: Purchase costs as per cent of total income



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Purchase in sales is defined as purchases in relation to sales. For company data used in calculations see appendix 3.

Value retention rate

After deducting all external costs it is possible to establish the proportion of total revenue that major European companies retain as value added to be distributed to cover all internal expenses. The value retention rate in income is a calculation which mirrors the purchase in sales ratio as value retention rate is 100 – purchases in sales ratio. For the major European stock market indices this aggregated values for all firms' averages at 34 per cent for DAX30 and 32 per cent for CAC40 and 30 per cent for FTSE100. That is, out of every unit of revenue 34 per cent, 32 per cent or 30 per cent of total income, on average, is retained for use within companies to cover internal factor costs and return on capital employed.

Table 5.3, Value retained out of sales for the main country index's, aggregated values for certain years and period average

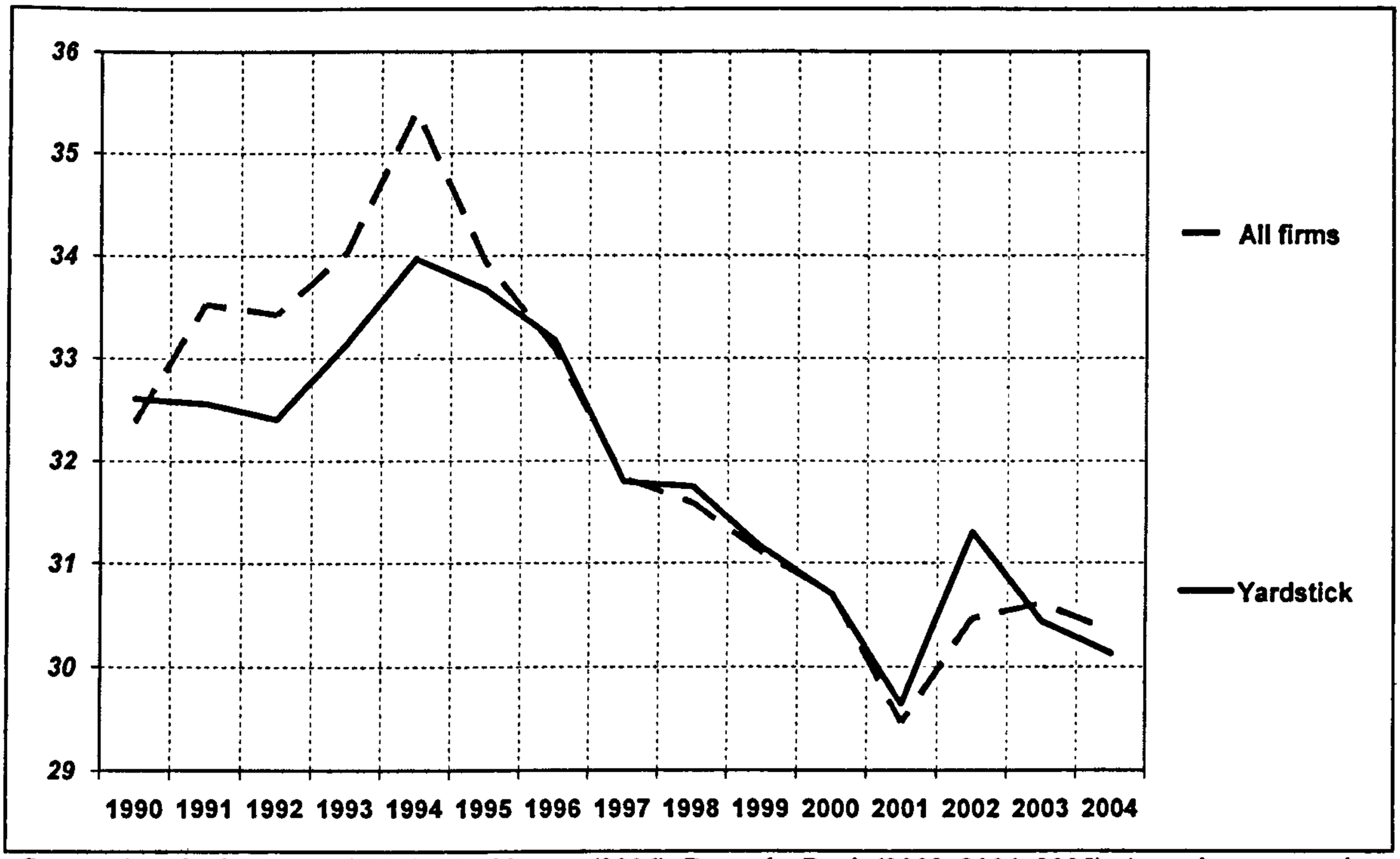
All firms	1990	1995	2000	2004	Period
DAX 30	35.6	38.4	33.0	33.1	34.0
CAC 40	31.1	33.4	30.5	30.9	31.7
FTSE100	31.2	31.3	29.1	28.1	29.6

Yardstick	1990	1995	2000	2004	Period
DAX 30	35.6	34.8	32.4	32.1	32.4
CAC 40	31.7	33.4	30.1	29.9	31.3
FTSE 100	31.2	33.1	29.9	29.1	31.0

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value retained defined as value added as a per cent of total sales. For company data used in calculations see appendix 3.

As the share of purchase costs in income start to increase this reduces the share of total income that is retained within the European 170 group of firms. For the Europe 170 value retention drops from 32-33 per cent of income in 1990 down to 30 per cent of income in 2004, which is a ten per cent drop in the retention rate (see figure below). During the period it is observed that the value retention rate improves after 1992 and again after 2001, as the share of purchase cost in income starts to fall off. However, during the 1990s the increase in external costs in income during the period 1995-2001 does have the effect of reducing the share of the financial value chain accounted for by the European 170 group of firm's because financially they are becoming financially less vertically integrated.

Figure 5.6, Value retained out of income (%)



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value retained defined as value added as a per cent of total sales. For company data used in calculations see appendix 3.

Where firms are able to consistently reduce the share of total external costs in income these firms will retain more of the financial value chain for their own purposes. In general the last decade is one where purchase costs slightly increased their share of total income so reducing the value retained of income.

The researcher now turn to consider how the value retained by firms, in each of our country indices, is distributed to labour (as salaries, wages and social costs) and what proportion of value retained is available as cash from operations. The researcher starts by describing the similarities and differences in labour's share of value retained

The labours share

Whereas there are more similarities than differences in the purchase cost share in income and value retention rates this is not the case when one considers the share of value retained which is then distributed to cover total employee compensation.

Table 5.4, Labour cost share of value retained for the main country index's for certain years and period average

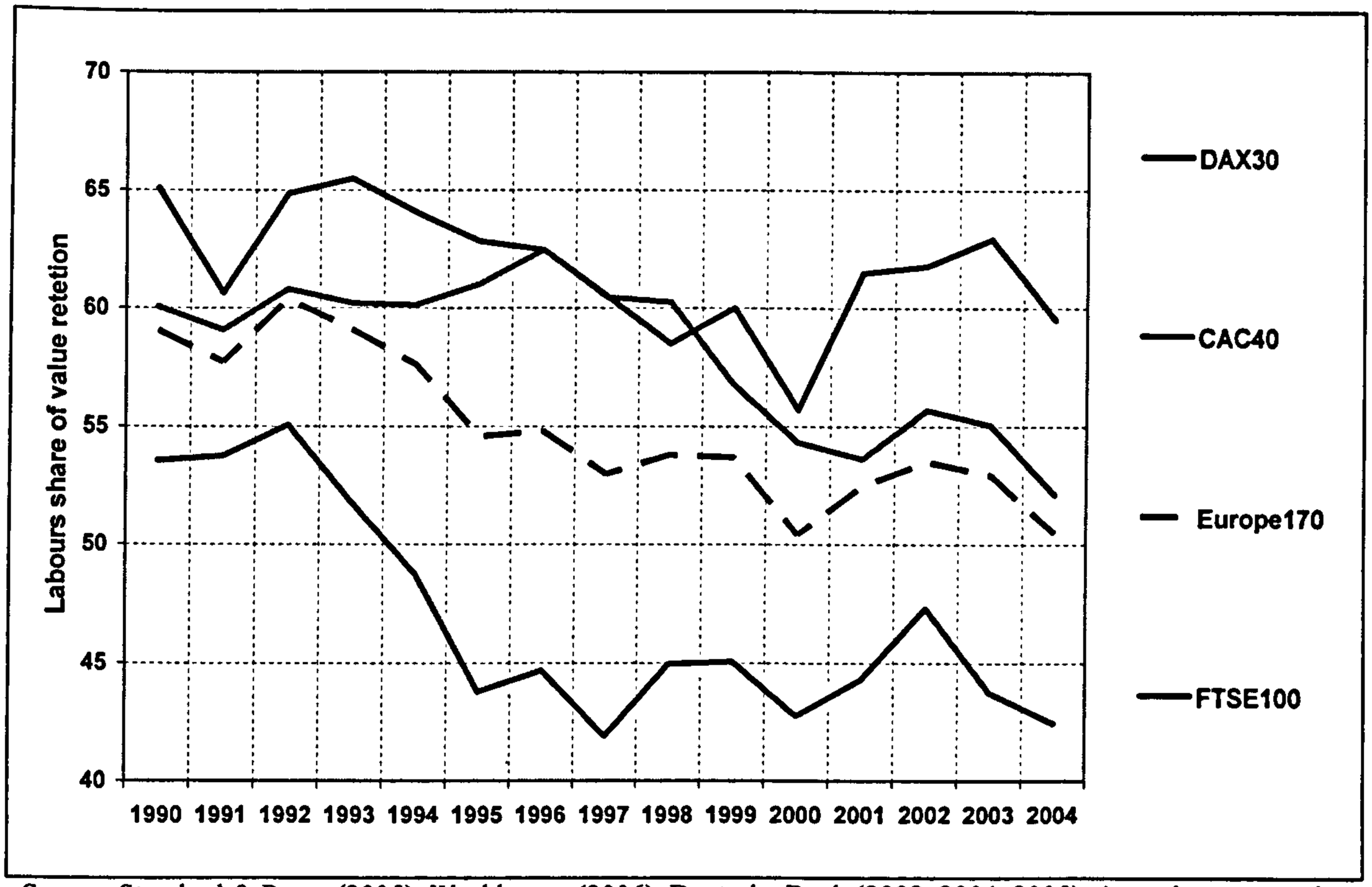
All firms	1990	1995	2000	2004	Period
DAX 30	65.1	62.8	55.7	59.5	61.2
CAC 40	60.1	61.0	54.3	52.1	57.0
FTSE100	53.6	43.8	42.8	42.5	45.6

Yardstick	1990	1995	2000	2004	Period
DAX 30	65.1	61.8	55.4	59.2	61.4
CAC 40	60.1	62.2	53.5	50.8	56.8
FTSE 100	53.6	47.1	46.6	44.1	47.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Labour's share of value retained is calculated as labour costs divided into value retained and expressed as a per cent. For data used in calculations see appendix 3.

In table 5.4 the researcher calculates the share of value retained which is used to cover the cost of employment. In 1990 the average DAX 30 firm or yardstick firm would distribute two-thirds of value retained to cover total employment costs compared to a 54 per cent share of value retained in FTSE 100 firms. Although there is a relatively large gap between the various indices these tend to narrow over the period covered. DAX 30 yardstick companies reduce the share of labour costs out of value retained from 65 to 59 per cent, CAC 40 firms from 60 to 51 per cent and FTSE 100 firms from 54 to 44 per cent.

Figure 5.7, Labours share of value retained by yardstick firms per country



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Labours share of value retention is defined as labour costs in relation to value retained. For company data used in calculations see appendix 3.

From 1991 onwards and until the end of the decade labour's share of value retained is reducing across all of the firms in the yardstick group of the Europe 170 set of firms. Even the FTSE 100 group of yardstick firms is reducing the share of labour costs in value retained form 54 per cent down to 44. The late 1990's recession halts this trend but after 2002 the CAC 40 and DAX 30 group of yardstick firms again reduce labour costs share out of value retained.

During the 1990s DAX 30 and CAC 40 yardstick firms are also reducing labours share of value retained by roughly one half of one per cent age point each year. Explaining this phenomenon is more problematic and not the subject of this thesis but it could be accounted for by globalisation and labour cost arbitrage between high and low wage economies. This is later exemplified by the Ericsson case as a possible explanation, as outsourcing was part of the management strategy in the later part of the 1990's.

In the year 2004 relatively large differences in value distributed to cover labour costs remained with FTSE100 firms distributing 44 per cent of their value retained to labour compared to 59 per cent for German DAX30 and 51 per cent for French CAC40 companies. The researcher has previously argued (see Andersson et al 2006) that S&P 500 firms have managed to increase the share of cash generated out of income. In the European 170 group of all firms and also the yardstick group labour's share of value retained have been reduced and this has had a favourable impact on cash retained out of income. As such this may well be an explanation also for the S&P 500 study, but this is outside the scope of this thesis.

Corporate cash generated out of income in the European 170 group of firm's

In table 5.5 (below) the researcher calculates the cash return on sales (Cash ROS) which is computed as operating profit before depreciation and amortisation divided by sales. This table reveals a gradient of difference between the German DAX30 and FTSE100 in terms of how much cash is generated out of sales revenue by firms within these stock market indices. German firms tend to be rather less cash generative than French and English firms, reflecting a generally higher share of labour costs out of value retained and sales revenue limiting free cash. On average yardstick firms in the FTSE100 are one-third more cash generative than their German DAX30 counterparts and one-fifth higher than the CAC40. However, over the whole period this gap has narrowed from a position in 1990 when FTSE100 firms were two-thirds more cash generative than the DAX30 average. Compared to US firms (see Andersson et al 2006) European firms are slightly less successful in reducing costs and as such their cash ROS is also generally lower than the US.

Table 5.5, Cash share of sales revenue for the main country index's for certain years and period average

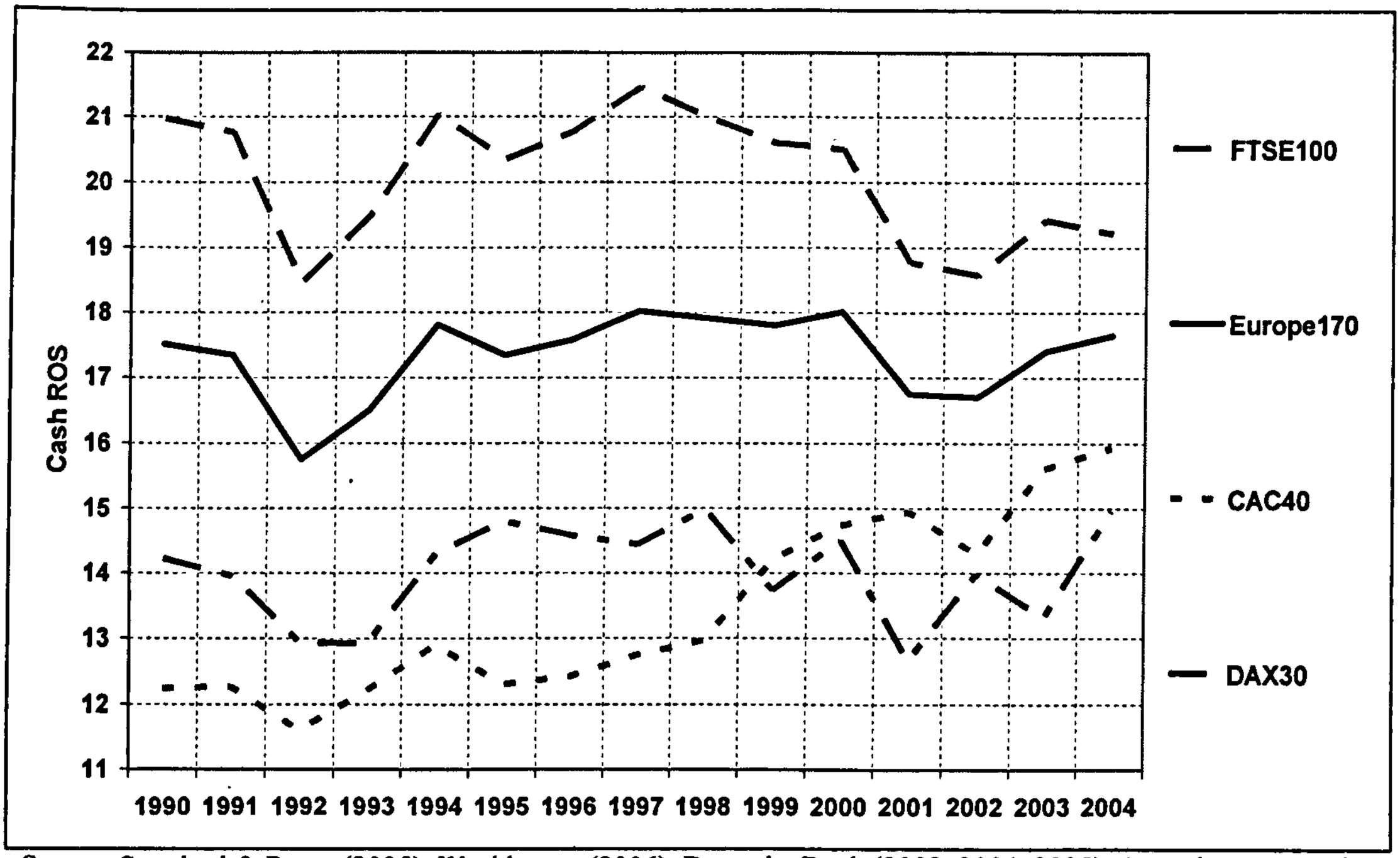
All firms	1990	1995	2000	2004	Period
DAX 30	12.4	14.3	14.6	13.4	13.2
CAC 40	12.4	13.0	13.9	14.8	13.6
FTSE100	14.5	17.6	16.7	16.2	16.1

Yardstick	1990	1995	2000	2004	Period
DAX 30	12.4	13.3	14.4	13.1	12.5
CAC 40	12.7	12.6	14.0	14.7	13.5
FTSE 100	14.5	17.5	16.0	16.2	16.2

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash share of total income calculated as operating earnings before depreciation and amortisation (i.e. EBITDA) divided into sales revenue and expressed as a per cent. For company data used in calculations see appendix 3.

Figure 5.8 below reveals the trends over time showing that whilst the FTSE 100 group of yardstick firms are generating more cash out of income throughout the period this gap is narrowing from 6-8 per cent age points to 3-4 by the end of the period as DAX and CAC yardstick firms extract more cash from their income.

Figure 5.8, Main county index's: Cash as a per cent of total income (Cash ROS)



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash Return on income (cash ROS) is calculated by dividing operating earnings before depreciation and amortisation (i.e. EBITDA) into sales and expressed as a per cent. For company data used in calculations see appendix 3.

Cash share in value retention

After deducting all labour costs from value retained it is possible to establish the proportion of total revenue that major European companies retain as cash to be distributed to cover investments, corporate taxes and investor claims. However, the cash share of sales (table 5.5 above) does not take into account the level of financial degree of vertical integration and as such one need to study the cash share of value added. The cash share of value added is a calculation which mirrors the labour's share of value retained as cash is 100 minus labour's share in value retention.

Table 5.6, Cash share in value retention for certain years and period average

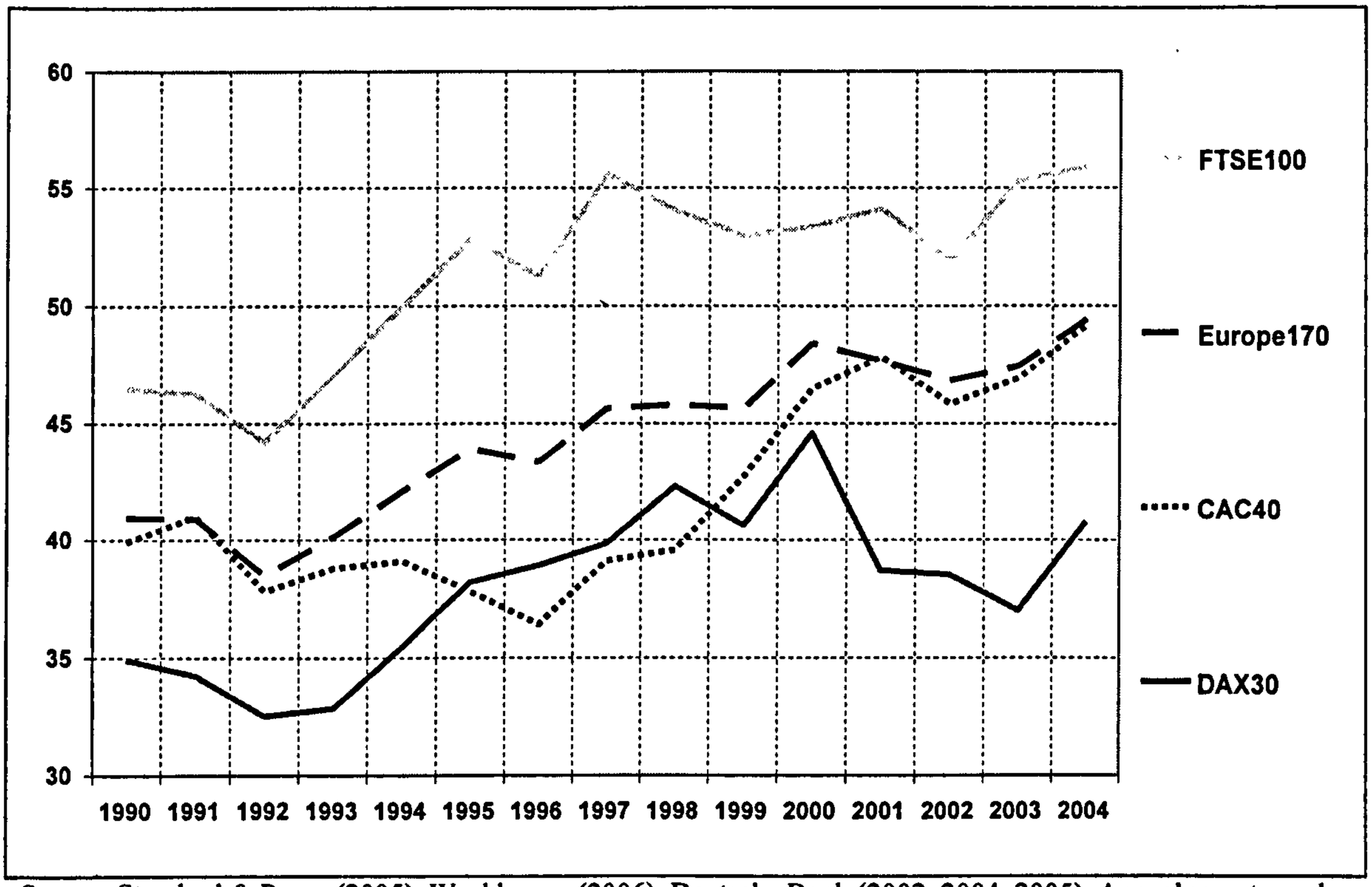
All firms	1990	1995	2000	2004	Period
DAX 30	34,9	37,2	44,3	40,5	38,8
CAC 40	39,9	39,0	45,7	47,9	43,0
FTSE100	46,4	56,2	57,2	57,5	54,4

Yardstick	1990	1995	2000	2004	Period
DAX 30	34,9	38,2	44,6	40,8	38,6
CAC 40	39,9	37,8	46,5	49,2	43,2
FTSE 100	46,4	52,9	53,4	55,9	52,2

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash share of value retention is calculated as operating profit before depreciation and amortisation (i.e. EBITDA) divided into value retained and expressed as a per cent. For data used in calculations see appendix 3.

In table 5.6 the researcher calculates the cash share of value retained which is cash left after the labour cost has been paid out of value retained. In 1990 the average DAX 30 firm or yardstick firm generated one-third of value retained as cash compared to a 46 per cent cash share of value retained in FTSE 100 firms. Although there is a relatively large gap between the various indices these tend to narrow over the period covered. DAX 30 yardstick companies increase their cash share of value retained from 35 to 41 per cent, CAC 40 firms from 50 to 49 per cent and FTSE 100 firms from 46 to 54 per cent.

Figure 5.9, Cash share of value retained by yardstick firms per country



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash share of value retention is calculated as operating profit before depreciation and amortisation (i.e. EBITDA) divided into value retained and expressed as a per cent. For data used in calculations see appendix 3.

From 1992 onwards and until the end of the decade the cash share of value retained is increasing across all of the firms in the yardstick group of the Europe 170 firms. Even the FTSE 100 group of yardstick firms is increasing their already relatively high cash share of value retained form 46 per cent down to 54. The late 1990's recession halts this trend but after 2002 the CAC 40 and DAX 30 group of yardstick firms again increase their cash share out of value retained.

During the 1990s DAX and CAC yardstick firms are increasing their cash share of value retained by roughly one half of one per cent age point each year and this mirror the reduced labour share as noted earlier. Even though CAC40 and DAX30 firms are increasing their cash retention rate out of value retained there are still relatively large differences between this group of 70 firms and the FTSE 100.

Profit (ROS) in the Europe 170 group of firms

The next financial calculation computes profit before taxes as a per cent of sales revenue for the main European indexes (see table below).

Table 5.7, Profit in sales revenue (Profit ROS) for the main country index's for certain years and period average

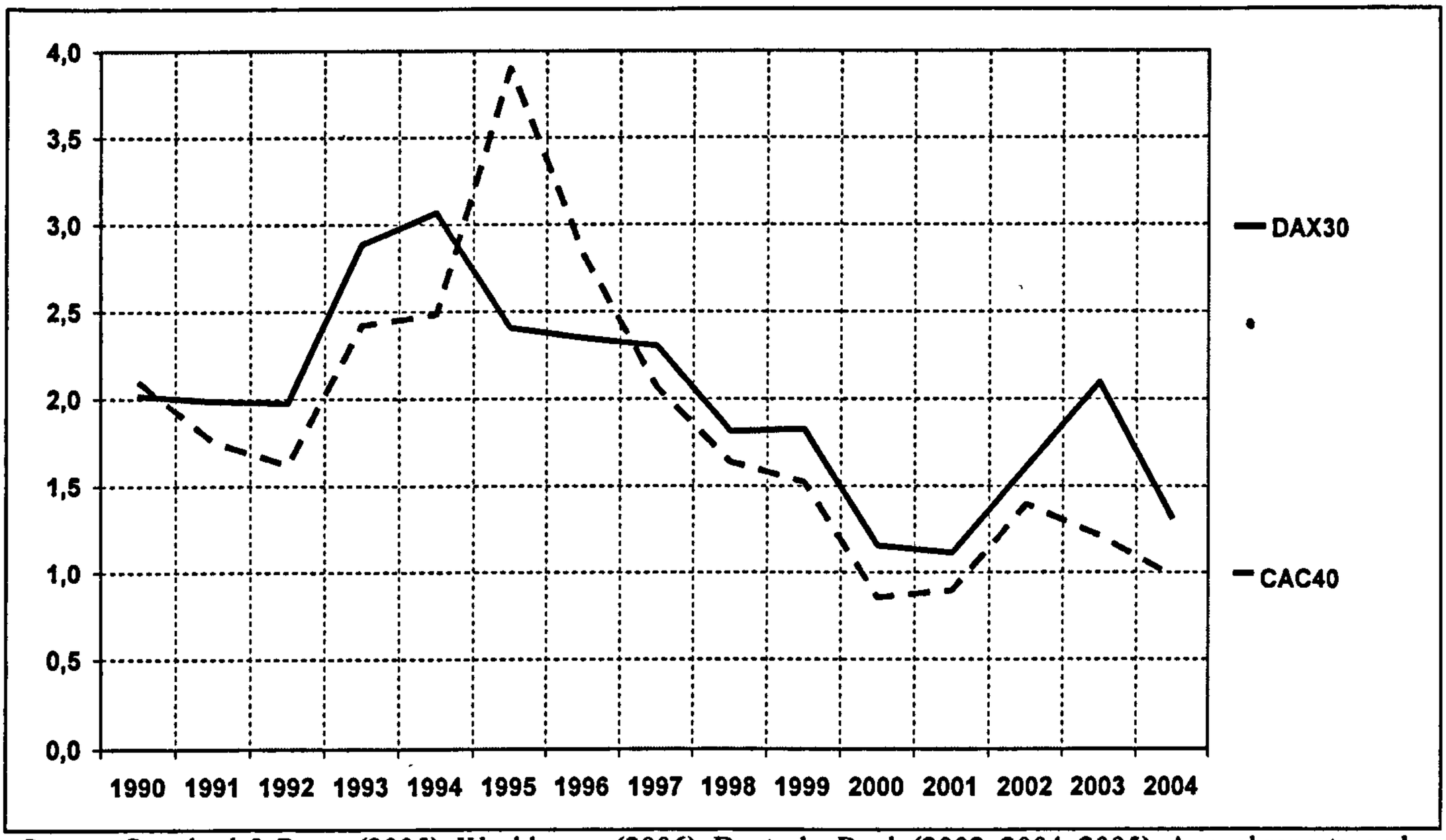
All firms	1990	1995	2000	2004	Period
DAX 30	4.7	3.8	6.3	6.2	4.2
CAC 40	4.6	2.9	8.6	8.3	5.7
FTSE100	9.5	11.9	10.1	10.9	9.9

Yardstick	1990	1995	2000	2004	Period
DAX 30	4.7	4.6	6.8	6.9	5.0
CAC 40	4.5	2.9	9.2	9.3	6.1
FTSE 100	9.5	11.1	7.9	9.1	8.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Profit share of total income calculated as pre-tax profit divided into sales revenue and expressed as a per cent. For company data used in calculations see appendix 3.

In terms of profit performance a similar pattern also emerges as for cash ROS with firms on average and across the major indices of the CAC, DAX and FTSE improving profit rates before the setbacks of recent recession and then subsequent recovery. However, there are still large differences in the profit extracted out of income across the three main country indexes. Although the difference between the FTSE 100 and the CAC 40 and the DAX 30 have narrowed over the period concerned it is still the case that for all firms the FTSE 100 group of firms are roughly twice as profitable as their main European counterparts. A similar picture emerges if one also employs the yardstick group rather than all firms there is still a significant difference in profit extracted out of income for the FTSE 100 firms compared to the CAC 40 and DAX 30 firms.

Figure 5.10, FTSE100 profit ROS expressed as a ratio of DAX30 and CAC40 ROS

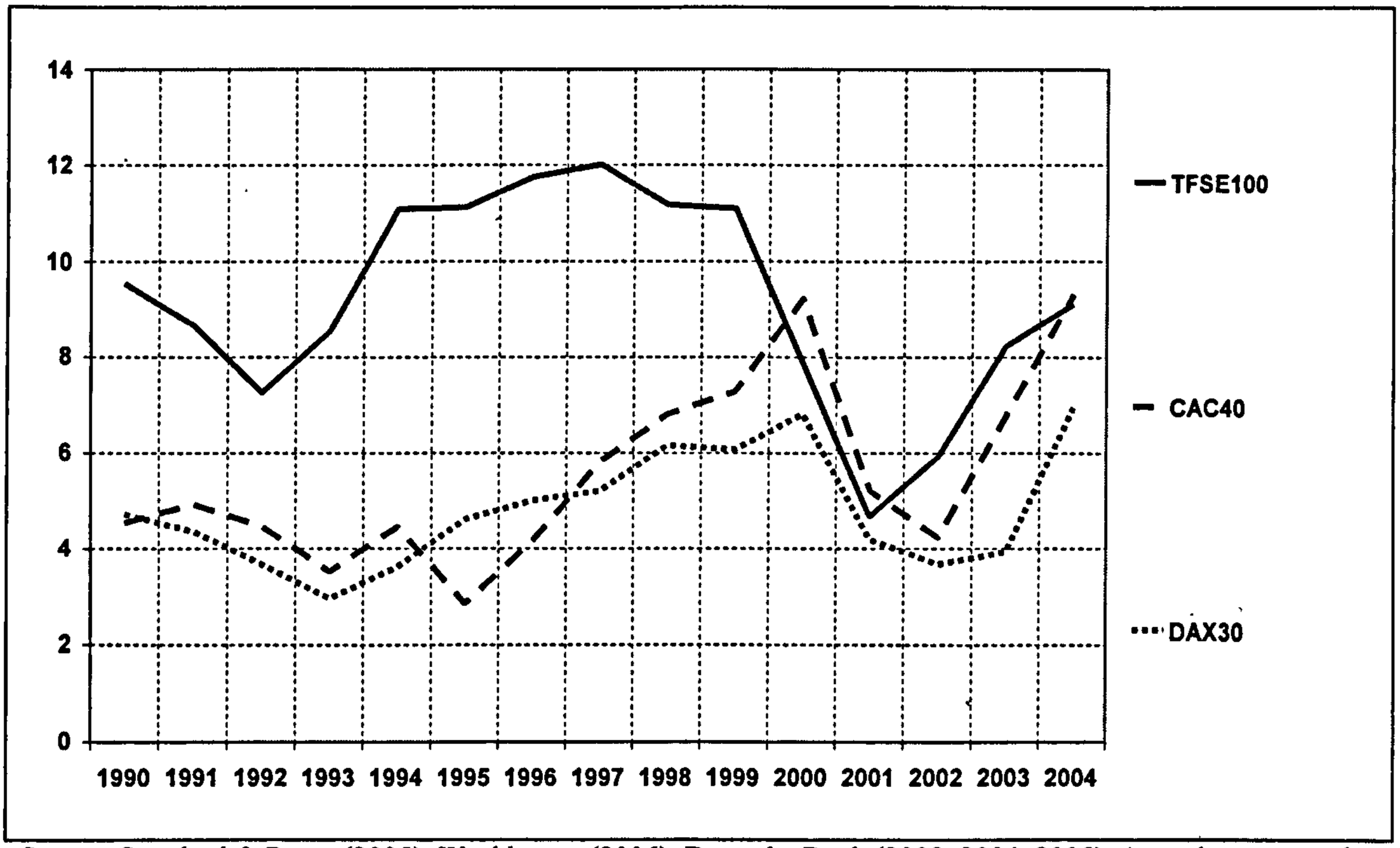


Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Profit share of total income is calculated as pre-tax profit divided into sales revenue and expressed as a per centage for the yardstick group of firm in each country index. For company data used in calculations see appendix 3.

Figure 5.10 reveals the difference in profit generated out of sales revenue for CAC 40 and DAX 30 yardstick group of firms relative to the FTSE 100 yardstick. This shows that the profit rate in sales in FTSE 100 yardstick was 2 times greater than the CAC 30 and DAX 40 average in 1990. This difference had narrowed significantly and steadily such that the relative rates of profit extracted out of total income had become more or less equivalent by 2004.

For the purpose of comparison, Andersson et al (2006) showed that the profit ROS for US firms averaged of 8 to 9 per cent over a 25 year period 1980 to 2004, which is in line with what is found for FTSE100 firms. However, both DAX30 and CAC40 firm aggregates are below both US and UK levels in a 5 to 6 per cent range during most of the period.

Figure 5.11, Profit ROS by country, yardstick



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Profit ROS or profit share of total income is calculated as pre-tax profit divided into sales revenue and expressed as a per cent age. For company data used in calculations see appendix 3.

The analysis of Europe 170 countries reveals similarities and differences in trajectory and cash and profit generation out of income. However, the researcher has argued that firms have been under pressure to deliver shareholder value during the last decade and the analysis now connects income and cash generation to the balance sheet and capital employed and the researcher start by reviewing the capital intensity index. This is a measure of how much capital is employed in the balance sheet to generate a unit of income, cash and profit.

Capital intensity

Sales capital intensity

The researcher has argued in the methodology chapter that it is important to incorporate a capital side into the analysis of the value added statement that is to relate cash and profit

generated to the value of capital employed in the balance sheet especially long term debt and equity. In table 5.8 the capital intensity index has been computed for all companies and their respective stock market indices. This reveals that for the Europe 170 the value of capital employed to generate a unit of sales revenue has increased from 0.6 to 0.9 or a 50 per cent higher than it was in 1990. The general trend is one in which European large firms are using more capital to generate profit and sales and a similar pattern is found for S&P500 firms in US (see Andersson et al 2006), where capital intensity over the period 1996-2003 increased from 0.70 to over 1.0.

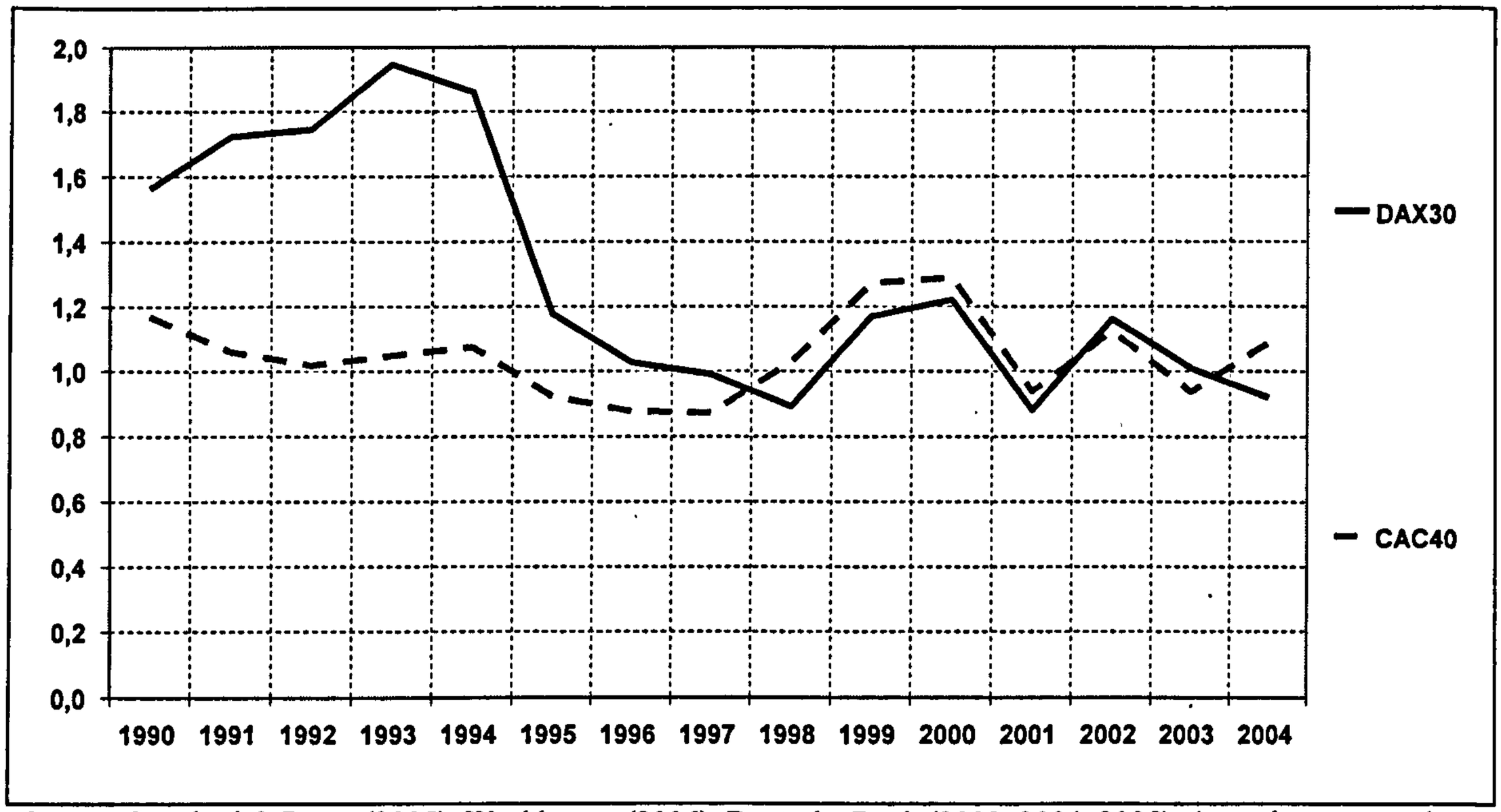
Table 5.8, Capital employed in sales for the main country index's for certain years and period average

All firms	1990	1995	2000	2004	Period
DAX 30	0.44	0.61	0.79	0.89	0.75
CAC 40	0.58	0.74	0.82	0.78	0.81
FTSE100	0.70	0.71	0.99	0.91	0.86

Yardstick	1990	1995	2000	2004	Period
DAX 30	0.44	0.60	0.89	0.92	0.77
CAC 40	0.59	0.77	0.84	0.77	0.83
FTSE 100	0.69	0.71	1.08	0.84	0.87

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Capital intensity index is defined as capital employed divided by sales, where capital employed is defined as total long-term debt plus shareholder funds. For company data used in calculations see appendix 3.

Figure 5.12, DAX and CAC capital intensity relative to FTSE 100 capital intensity



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Capital employed is defined as total long-term debt plus shareholder funds. Total sales revenue is divided into capital employed to compute a capital intensity index which for the CAC and DAX are then divided into the capital intensity index for FTSE 100 firms. For company data used in calculations see appendix 3.

Figure 5.12 reveals that FTSE 100 firms are generally more capital intensive than their counterparts CAC 40 and DAX 30 index companies. However, over the period 1990 to 2004 DAX 30 and CAC 40 companies increased their capital intensity closing the gap on the FTSE 100. Whereas capital employed to generate a unit of income has remained relatively stable in the FTSE group of firms the DAX 30 group of firms increased their capital intensity with more than 50% and CAC 40 firms increased capital intensity by 20 per cent. This closing of the gap between FTSE 100 firms and CAC 40 and DAX 30 firm's capital intensity is revealed in figure 5.12. In an earlier period FTSE 100 firms generally employed 20 to 60 per cent extra finance capital to generate a unit of sales revenue compared to the DAX 30 and CAC 40 yardstick firms. By the year 2004 this gap had closed such that FTSE yardstick firms employed roughly the same capital per unit of income as DAX 30 and CAC 40 firms.

Value added capital intensity

The capital intensity index above is based on sales and it also does not take into account the degree of financial integration but this can be accommodated for if one employs value retained instead of sales and thus compute a value added capital intensity index.

In table 5.9 the researcher has computed a value added capital intensity index for all companies and their respective stock market indices by dividing capital employed into value retained. This reveals that for the Europe 170 the value of capital employed to generate a unit of value added has increased significantly over the period across all three countries. Whereas capital employed to generate a unit of value added has remained relatively stable in the FTSE 100 group of firms the DAX 30 group of firms increased their capital intensity around 100% and CAC 40 firms increased capital intensity by 40 per cent.

Table 5.9, Capital employed in value added for the main country indexes for certain years and period average

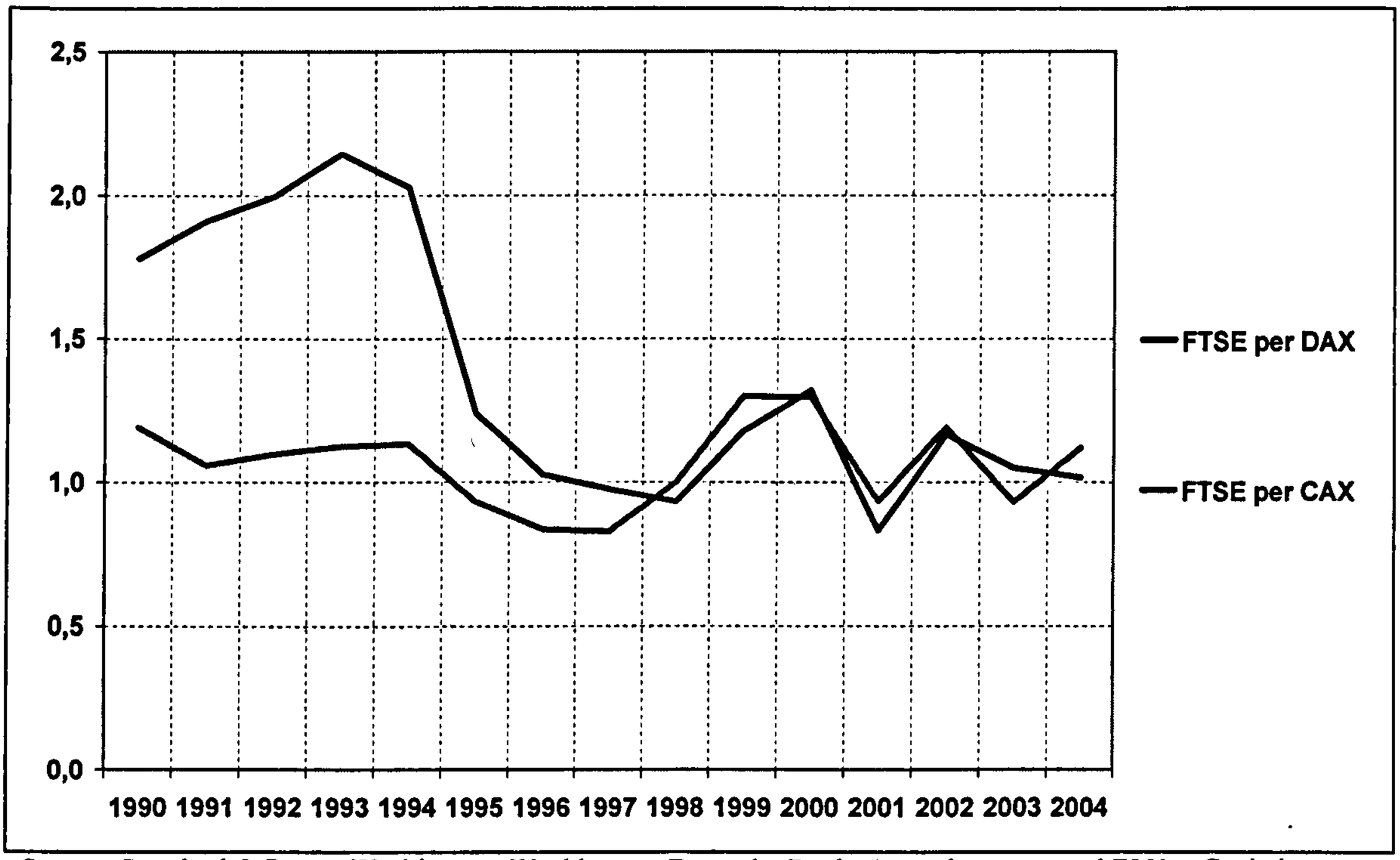
All firms	1990	1995	2000	2004	Period
DAX 30	1.23	1.60	2.40	2.68	2.22
CAC 40	1.86	2.22	2.70	2.53	2.56
FTSE100	2.23	2.26	3.39	3.25	2.91

Yardstick	1990	1995	2000	2004	Period
DAX 30	1.23	1.74	2.74	2.85	2.38
CAC 40	1.84	2.31	2.79	2.59	2.65
FTSE 100	2.19	2.15	3.63	2.90	2.81

Source: Standard & Poors, Washington, Worldscope, Deutsche Bank, Annual reports, and F20's. Capital intensity of value added is defined as capital employed divided by value retained, where capital employed is defined as total long-term debt plus shareholder funds. For company data used in calculations see appendix 3.

Moreover as the researcher show in Figure 5.13 below the spread between the FTSE 100 and CAC 40 and DAX 30 have also narrowed from a position where capitalisation rates are 20 per cent to 1 times greater in the FTSE to a situation where FTSE capitalisation rates are roughly in line with CAX40 and DAX30.

Figure 5.13, DAX and CAC capital intensity of value retained relative to FTSE 100 capital intensity of value retained



Source: Standard & Poors, Washington, Worldscope, Deutsche Bank, Annual reports, and F20's. Capital employed is defined as total long-term debt plus shareholder funds. Total value retained is divided into capital employed to compute a capital intensity index which for the CAC and DAX are then divided into the capital intensity index for FTSE 100 firms. For company data used in calculations see appendix 3.

The researcher now turn to consider how the combinations of cash and profit generated out of income combine with capital intensity to deliver the bottom line cash and profit return on capital employed.

Return on capital employed

The calculation of cash generated per unit of capital employed is an important corporate finance metric because the numerator and denominator figure in the computation of shareholder value. For example, EVA is computed as a cost of capital deducted from corporate profit and cash, in addition to profit return on capital employed, is also an important shareholder value metric in its own right.

Table 5.10, Cash return on capital employed for the main country indexes for certain years and period average

All firms	1990	1995	2000	2004	Period
DAX 30	28.4	23.3	18.4	15.1	17.5
CAC 40	21.5	17.6	16.9	18.9	16.8
FTSE100	20.8	24.9	16.9	17.7	18.6

Yardstick	1990	1995	2000	2004	Period
DAX 30	28.4	22.0	16.3	14.3	16.3
CAC 40	21.6	16.3	16.7	19.0	16.3
FTSE 100	21.2	24.6	14.8	19.3	18.6

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash ROCE is defined as EBITDA in relation to the sum of shareholders equity and long term debt. For company data used in calculations see appendix 3.

The analysis finds that in an earlier period, 1990-1995, all DAX 30 firms were generally able to deliver high cash return on capital employed because they were also running with the lowest capital intensity. However, as one progress through the period 1990 to 2004 these differences narrow and the three country index are running with roughly the same cash return on capital employed. A similar pattern is observable with the DAX 30 and CAC 40 yardstick firms which start off with lower levels of capital intensity which help to flatter reported cash ROCE but at the end of the period adding capital brings these companies more or less into line with the FTSE 100 group of yardstick firms.

The analysis reveals the trade off between capital intensity and margin, which is reasonable given the shift in production factors (i.e. increased usage of capital). What is interesting is that the margin of improvement has been predominantly delivered through reduction of labour's share of value retained offsetting the general reduction in the value retention rate.

The final computation is the profit return on capital employed which is one of the bottom line ratio in the return on capital employed (ROCE) pyramid structure of ratios. The researcher has computed the profit pre tax return on capital employed in table 5.11.

Table 5.11, Profit return on capital employed for the main country index's for certain years and period average

All firms	1990	1995	2000	2004	Period
DAX 30	10.8	6.2	7.9	7	5.6
CAC 40	7.9	3.9	10.5	10.6	7.1
FTSE100	13.7	16.9	10.2	11.9	11.4

Yardstick	1990	1995	2000	2004	Period
DAX 30	10.8	7.6	7.7	7.6	6.4
CAC 40	7.8	3.7	11.0	12.0	7.3
FTSE 100	13.9	15.6	7.3	10.8	10.1

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Profit ROCE is defined as pre tax profit in relation to the sum of shareholders equity and long term debt. For company data used in calculations see appendix 3.

This table reveals that the pre tax profit generated per unit of capital employed is consistently higher in the FTSE 100 group of all and yardstick firms than that generated by CAC 40 and DAX 30 all and yardstick firms in these indexes. It is also surprising that after a period during which there has been increased pressure to deliver shareholder value French and German corporations have consistently delivered a profit return on capital employed which is well below an average of 10 per cent throughout the 1990s.

Summary discussion and getting to the bottom line of ROCE

In this chapter the researcher has deconstructed the financial performance of the firms that make up the corporate sector of Europe 170 firms in the FTSE 100, CAC 40 and DAX 30, both all firms in the index and the yardstick group of firms, throughout the period 1990 to 2004. In this final section the researcher summarise the similarities and differences in corporate performance and operating cost structures to reveal similarities and differences of the corporate sectors in these countries.

All countries within the Europe 170 index experienced similar growth rates with CAGR's ranging between 7.8 and 9.4 per cent this similarity is also echoed in terms of the share of

external purchase costs in income. The FTSE 100 group of firms has the higher purchase cost in income and the DAX 30 the lower share of purchase cost in income. German firms in the DAX 30 generally retain a higher share of total income as a result but distribute a much larger share of this retained value to employees as total compensation in comparison to CAC 40 and FTSE 100 firms. After income has covered external costs and internal labour costs FTSE 100 firms have, on average, more cash as a residual out of income compared to DAX 30 and CAC 40 firms which have, on average, similar cash retention rates. When one move from cash to pre tax profits one finds that FTSE 100 firms retain a higher proportion of total income as profit pre tax.

Table 5.12, Rating performance revealed for the Europe 170 firms (average for the period 1990-2005)

	DAX 30	CAC 40	FTSE 100
Value added compound growth rate	**8.6**	**7.8**	**9.4**
Yardstick	**5.6**	**6.9**	**6.9**
Purchase cost in sales % All	**66.0**	**68.3**	**70.5**
Yardstick	**67.6**	**68.7**	**69.0**
Value retained out of sales %	**34.0**	**31.7**	**29.6**
Yardstick	**32.4**	**31.3**	**31.0**
Of which Distributed to Labour costs %	**61.2**	**57.0**	**45.6**
Yardstick	**61.4**	**56.8**	**47.8**
Cash return in sales %	**13.2**	**13.6**	**16.1**
Yardstick	**12.5**	**13.5**	**16.2**
Cash share in value retention	**38.8**	**43.0**	**54.4**
Yardstick	**38.6**	**43.2**	**52.2**
Profit return in sales %	**4.2**	**5.7**	**9.9**
Yardstick	**5.0**	**6.1**	**8.8**
Sales capital Intensity index	**0.75**	**0.81**	**0.86**
Yardstick	**0.77**	**0.83**	**0.87**
Value added capital Intensity index	**2,22**	**2,56**	**2,91**
Yardstick	**2,38**	**2,65**	**2,81**
Cash return on capital employed	**17.5**	**16.8**	**18.6**
Yardstick	**16.3**	**16.3**	**18.6**
Profit return on capital employed	**5.6**	**7.1**	**11.4**
Yardstick	**6.4**	**7.3**	**10.1**

Notes: Yardstick firms include firms that we have obtained complete firm years for all years during the period 1990-2004 and all firms included the 170 firms covered by the DAX30, CAC40 and FTSE100.
Value added compound growth is defined as value added geometric annual growth rate for the period. Purchase cost in sales is defined as sales minus value added as a per cent of total sales. Value retained out of sales is defined as value added as a per cent of total sales. Labour's cost of value retained is calculated as labour costs divided into value retained and expressed as a per cent. Cash share in sales is calculated as operating profit before depreciation and amortisation (i.e. EBITDA) divided into sales revenue and expressed as a per cent. Cash share in value retention is defined as operating profit before depreciation and amortisation (i.e. EBITDA) divided by value retention. Profit return in sales is calculated as pre-tax profit divided into sales revenue and expressed as a per cent. Sales capital intensity index is defined as capital employed divided by sales, where capital employed is defined as total long-term debt plus shareholder funds. Value retention capital intensity is defined as capital employed divided by value retention. Cash return on capital employed is defined as operating profit before depreciation and amortisation (i.e. EBITDA) in relation to the sum of shareholders equity and long term debt. Profit return on capital employed is defined as pre tax income divided by capital employed.

For shareholder value metrics one need to combine cash and profit with capital employed to establish the cash and profit return on capital. The higher level of cash and profit generated out of income in FTSE 100 firms also translates into higher returns on capital because the capital intensity of FTSE 100 firms is similar to that of its CAC 40 and DAX 30 counterparts. What is rather surprising is that French and German large quoted firms are able to sustain lower levels of profit per unit of capital employed although it is the case that the main index's firms do generate similar cash returns on capital employed.

In this chapter the researcher has employed the financial framework and corporate financial database to make visible the financial operating characteristics of those firms that make up the main corporate country indexes in Europe. Although there are similarities in terms of average growth trajectory, the researcher finds a number of differences in the patterns between: external purchase costs in income, the distribution of retained income to employees and levels of cash and profit retained out of income. Although average levels of balance sheet capitalisation are similar across the main indexes.

This analysis reveals that there are tradeoffs. For example in the case of German firms in the DAX 30 a higher level of value retention because purchase costs take a generally lower share of total income helps to offset a higher distribution of expenses to employees. As one progress through the operating ratios it is possible to reveal how these tradeoffs operate as one move to a bottom line of return on capital employed. Although this analysis tells the researcher how variable: income growth, value retention, cash and profit rates combine to deliver variable profit and cash return on capital, it is also important to be able to differentiate between "strong" and "weak" financial performance.

It is also possible to rank the performance of companies in the Europe 170 index and to put each firm into a quintile group which splits the sample of firms into five equal groups. For example with the compound annual growth rate (CAGR) one find that the lowest overall growth rate for a firm over the period 1990 to 2004 was -11.7 per cent and the highest CAGR 34.6. The researcher can now combine this quintile breakdown of corporate performance in the Europe 170 with the financial framework above to reveal how growth combines with favourable operating ratios to generate high returns on capital employed and position a country index of firms, industry sector and individual firms.

The researcher know from the analysis in table 5.13 that just twenty per cent of firms in the Europe 170 generate a cash return on capital employed which is above 30 per cent. In order to get to this position this group of firm's must be operating with favourable growth trajectories and also operating ratios. As such one can employ the quintile distribution of corporate financial performance in the Europe 170 to help position high versus low corporate performance. The financial analysis can now put numbers on this, that is, a top quintile firm will have: a compound annual growth rate (CAGR) of more than 13 per cent per annum, a purchase cost in sales of less than 50 per cent and a labour share of value retained which is less that 40 per cent. Cash retention in income will be more than 25 per cent and this must combine with a capital intensity ratio which is less than forty per cent (capital employed as a per cent of total income).

Table 5.13, Quintile distribution of the Europe 170 firm key ratios

	1 (bottom)	2	3	4	5 (top)
Sales Growth Compound Rate	<3.3	3.3-6.4	6.4-9.0	9.0-12.9	>12.9
Value Added (Euros)	<2.8	2.8-5.8	5.8-9.5	9.5-13.3	>13.3
Purchases in Sales Rate %	>75.0	66.5-75.0	58.4-66.5	49.3-58.4	<49.3
Value Retention Rate %	<25.0	25.0-33.5	33.5-41.6	41.6-50.7	>50.7
Labour's Share of Value Retained	>67.2	61.2-67.2	53.4-61.2	39.9-53.4	<39.9
Cash ROS Rate %	<8.9	8.9-13.6	13.6-17.3	17.2-25.4	>25.4
Cash share in value retention	<32.8	32.8-38.8	38.8-46.6	46.6-60.1	>60.1
Profit ROS Rate %	<3.4	3.4-6.3	6.3-10.2	10.2-14.6	>14.6
Sales capital Intensity Rate %	>1.3	0.7-1.3	0.5-0.7	0.4-0.5	<0.4
Value retention capital intensity index %	>3.40	2.16-3.40	1.68-2.16	1.10-1.68	<1.10
Cash ROCE Rate %	<15.7	15.7-20.8	20.8-24.3	24.3-30.8	>30.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For company data used in calculations see appendix 3.

The researcher know from the country analysis that the average FTSE 100, CAC 40 and DAX 30 firms are located somewhere in quintile 3, but within the overall set of firm's corporate performance is distributed as between weak and strong industry sectors and individual firms. In the chapter that follows the researcher break down the Europe 170 into broad industry sectors using the industry sector definitions employed by Standard and Poors. The objective is to change the perspective from overall country corporate indices into industry sectors so as to differentiate the financial operating characteristics of these sectors.

Chapter 6 : The Europe 170 corporate financial performance by sector

In this chapter the researcher will conduct an analysis of industry sectors using the same financial data set as used for the major country indexes and discussed in the previous chapter. However, rather than analyse corporate performance by country the researcher will now consider industry variations in corporate performance. The analysis in this chapter will focuses on eight industry sectors which are based on Standard and Poor's industry classification to disaggregate their overall Europe 170 into its industry sector constituents. The chapter is structured into four sections as with the pervious chapter, namely growth trajectory, financial operating ratios, capital intensity index and return on capital.

Chapter 5 reviewed the similarities and differences as between the companies that make up the three main European country indexes but this chapter reviews the similarities and differences as between industry sectors. The chapter starts by reviewing the growth trajectories of the industry sectors that make up the Europe 170 index. The analysis that follows splits the sample of firm in the Europe 170 into two groups of analysis, namely "all firms" and "yardstick" group. The category "all firms" includes all the firms and their accounting years in the Europe 170 index for which complete firm years have been obtained over the period 1990 to 2004. Whereas the "yardstick" group includes firms where a full set of financial data, in terms of firm years has been obtained for the period (i.e. 1990-2004), was obtained regardless if they stayed in the index or entered the index.

The Standard and Poor's breakdown of industry sectors has been chosen in order to provide a broad description of industry sectors rather than alternative definitions which would provide finer sector detail but would include fewer firms in each industry. The S&P breaks down its European 350 and S&P 500 composite indexes into the following industry sectors: Consumer discretionary, Consumer staples, Energy, Utilities, Financials, Healthcare, Industrials, Information Technology (IT), Telecommunications and finally Materials. As the number of firms in Europe 170 for Energy, Utility, IT and Telecommunications industry sectors was limited these sectors have been grouped into the following two new sectors: Energy & utility as well as IT & Telecommunication. The complete financial information for these sectors and

for the European 170 (FTSE 100, CAC 40 and DAX 30) accounting data per firm are in included in appendix 1 (table 1.1, Classification of firms) and appendix 3.

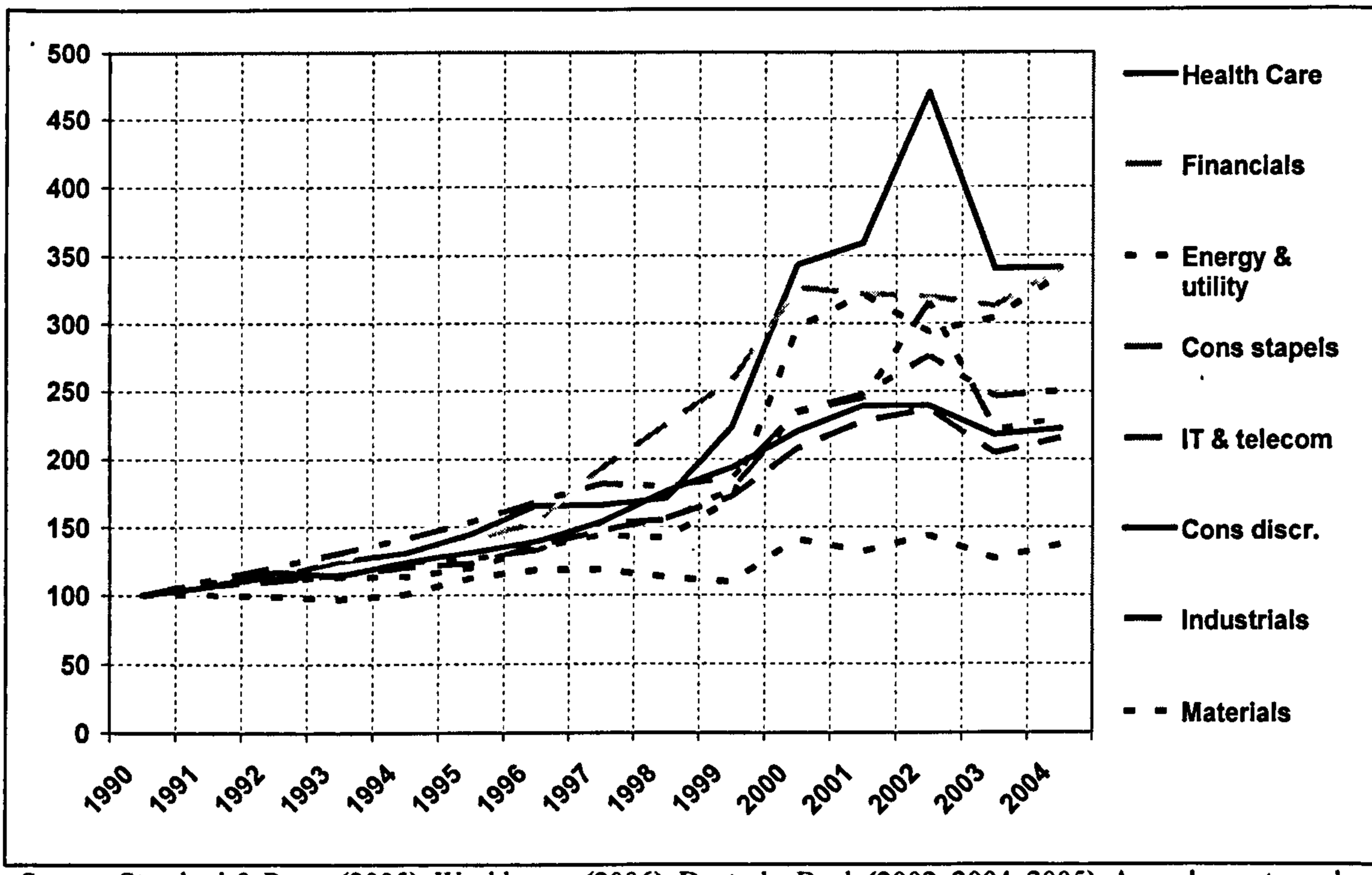
Growth trajectory by industry sector

This first section of the chapter reviews the differences in growth rates as between industry sectors using the S&P definition of sectors described above.

Sales growth by industry sector

The researcher starts by observing in figure 6.1 the variations in sector growth, from a high average compound average growth rate (CAGR) of 9 per cent for Healthcare, Financials and Energy & Utilities to the low 2 per cent for Materials over this period. The figure below reveals that the materials industry group has the lowest CAGR of 2.3 per cent for the period. This compares with over nine per cent growth rates for the industry sectors: Energy & utilities, Financial services and Healthcare with Information Technology & Telecommunications coming in the middle of this range at 6 per cent per annum CAGR.

Figure 6.1, Compound sales growth of yardstick firms



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Compound sales growth is defined as sales actual year in relation to reference year 1990 and then multiplied by 100. The value weighted indexes is based on accounting values. For accounting data used in calculations see appendix 3.

The researcher has provided two types of analysis in table 6.1, the first of which includes all firms in the Europe 170 group of firms for the period and secondly the researcher present the yardstick group, which includes firms that reported a full set of financial information throughout the period.

Table 6.1, Sales growth, aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	9.0	5.9
Consumer staples	8.7	6.8
Energy & utility	12.9	9.0
Financials	11.2	9.1
Healthcare	11.6	9.2
Industrials	7.6	5.6
IT & Telecom	9.2	6.1
Materials	6.6	2.3
All sectors	9.9	7.0

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Sales growth is defined as the geometrics average for the period. For accounting data used in calculations see appendix 3.

The average sales growth for all firms varies significantly between the sectors during the period, from approximately a 7 per cent average sales growth over the period to approximately 13 per cent. Where industry sectors experience variable growth trajectories it is assumed that it will generally be easier for strong growth firm's to manage increases in revenue ahead of expenses or obtain productivity gains which improves unit costs and cash and profit margins.

It is also observed (see table 6.2) that the average firm (equal weighted average) has slightly higher sales growth than the aggregated corporate accounts per sector in table 6.1. This suggests that large firms grows slightly less than the average firm in the sample and is more noticeable in IT & Telecom, where firms like Vodafone (34% average sales growth) and SAP (27%) affect the average significantly as they have grown from small or medium sized firms to large firms during the period.

Table 6.2, Sales growth (%), equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	9.4	6.7
Consumer staples	8.0	7.2
Energy & utility	9.1	8.0
Financials	9.6	9.2
Healthcare	13.5	7.5
Industrials	7.7	8.6
IT & Telecom	13.5	12.8
Materials	12.9	5.1
All sectors	9.9	7.9

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Sales growth is defined as the geometrics average for the period. For accounting data used in calculations see appendix 3.

One can also locate corporate performance into quintile bandings thereby separating high, average and low financial performance. For example, on average, the yardstick industry sector Consumer discretionary is located in quintile band 3 with a score of 3.3 whereas the average Healthcare firm would be located at the top end of quintile band 3.

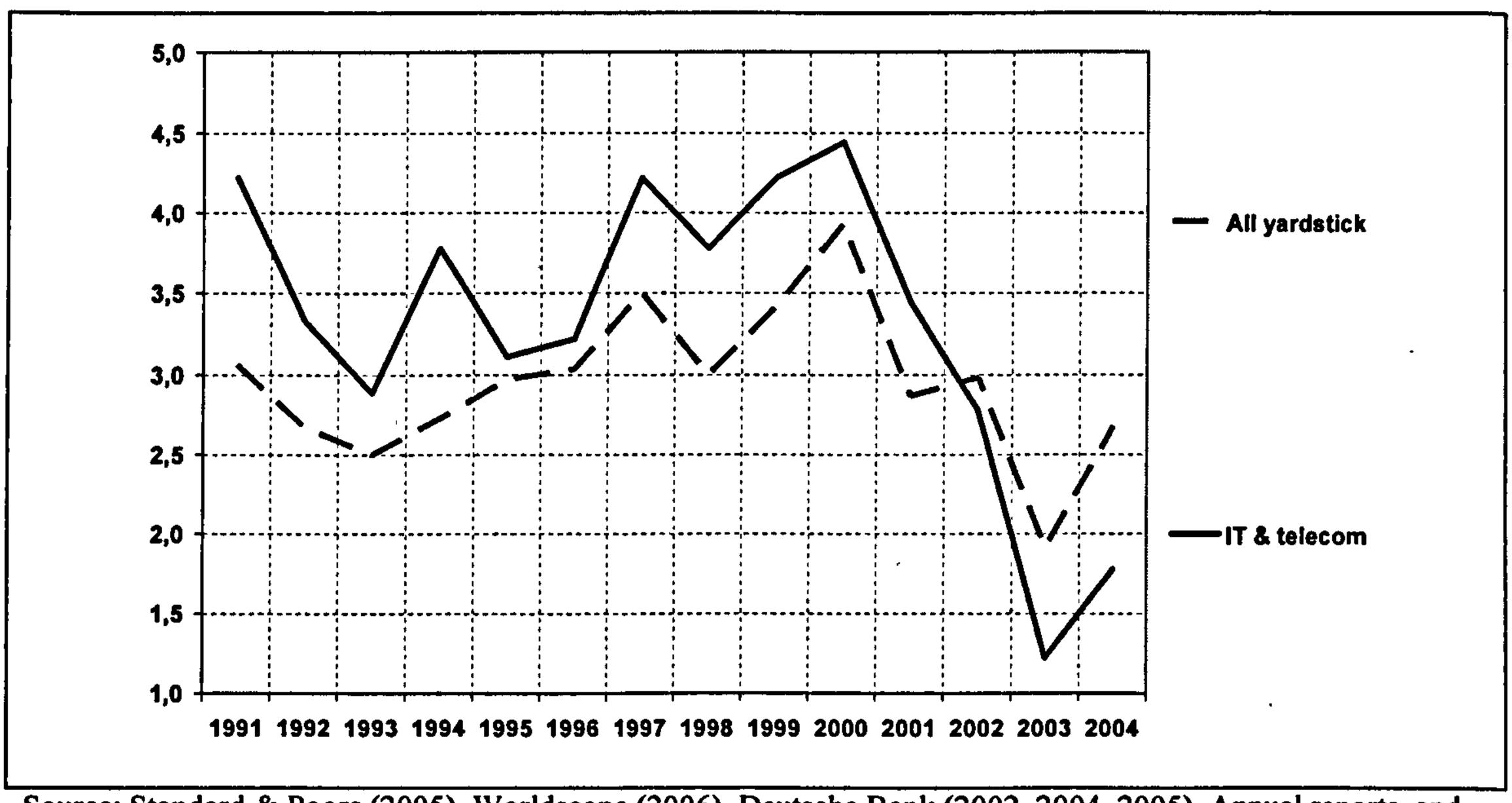
Table 6.3, Sales growth (%) by quintiles

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	3.3	3.0
Consumer staples	2.8	2.6
Energy & utility	3.5	3.6
Financials	3.3	3.3
Healthcare	3.6	3.2
Industrials	3.1	3.1
IT & Telecom	3.4	3.1
Materials	2.8	2.2
All sectors	3.2	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

Throughout the 1990s there is some indication that within each industry group the average firm is positioned higher up in the quintile bandings but that after the recent recession in Europe these gains have been lost as financial performance deteriorates over the business cycle. For example, it is observed how IT & telecommunications slip from a quintile 3 to 4 firm average during the 1990's and to a quintile one to two in the years 2003-2004.

Figure 6.2, Quintile sales growth variation over time



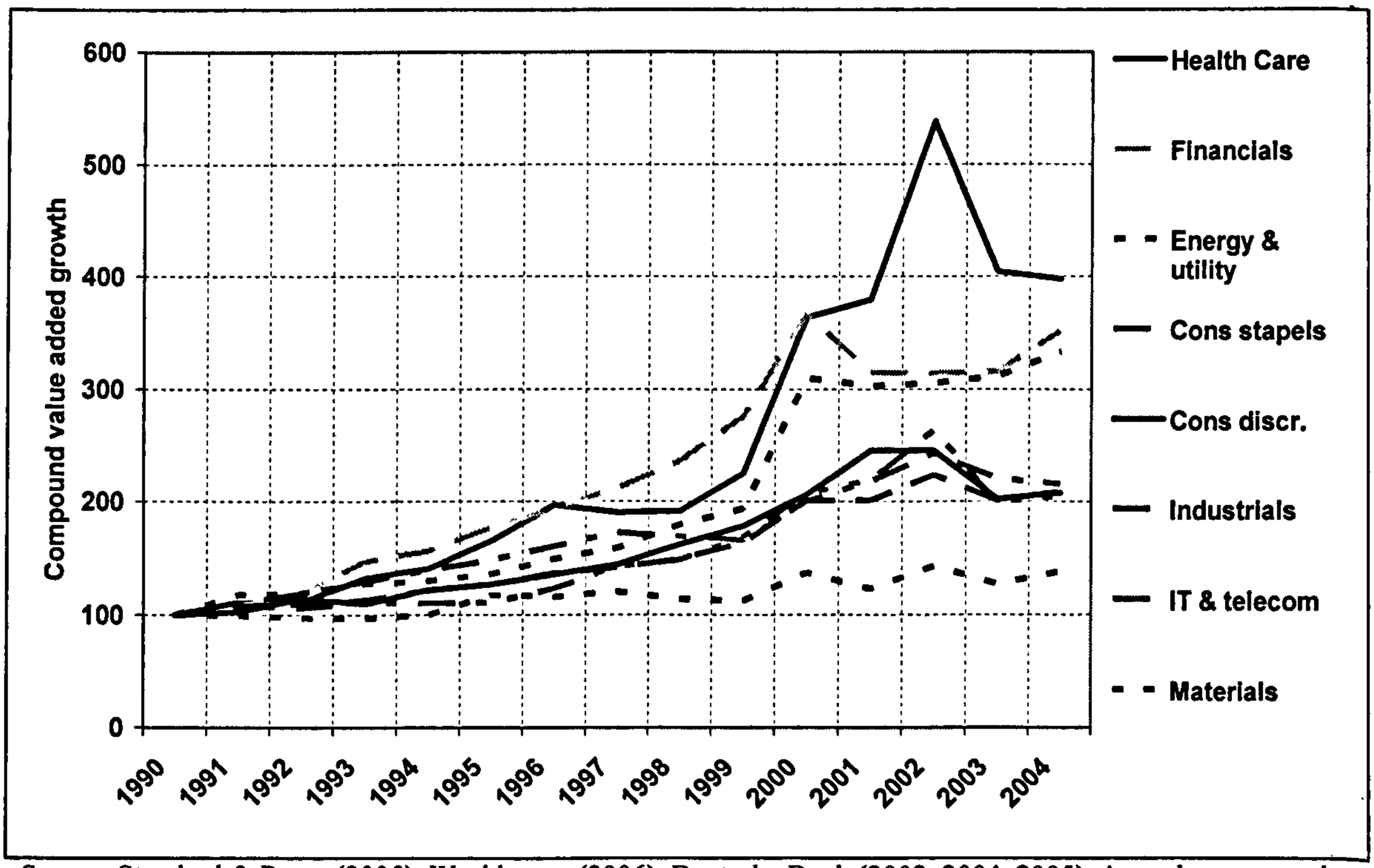
Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

The researcher now turn to consider the growth of value added by industry sector noting that value added is the share of gross revenue that is retained by a group of firm's that are located within a particular industry. This measure of output therefore excludes the cost of purchased inputs that are outside of a particular industry and so one avoids the effect of double-counting.

Value added growth by industry sector

Valued added is found after subtracting the cost of purchased inputs from the total sales revenue or gross output of a group of firms that make up the industry. The researcher find strong similarities for value added growth with the patterns revealed form using total sales revenue or gross output (see figure 6.3 and table 6.4), suggesting also that the value retained in sales may also be relatively stable over time.

Figure 6.3, Compound value added growth (aggregated yardstick)



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Compound value added growth is defined as value retained actual year in relation to reference year 1990 and then multiplied by 100. For accounting data used in calculations see appendix 3.

Table 6.4, Average value added growth, aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	8.5	5.4
Consumer staples	7.8	5.6
Energy & utility	12.7	9.0
Financials	11.8	9.4
Healthcare	12.9	10.4
Industrials	7.5	5.4
IT & Telecom	8.3	5.2
Materials	6.5	2.3
All sectors	9.4	6.5

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Average value added growth is defined as the geometric aggregated value added growth for the sector companies during the period and then multiplied by 100. For data used in the calculation, see appendix 3.

This is not to say that the value added growth trajectories vary significantly between the various industry sectors, the Materials industry group have a CAGR growth rate which is nearly five times less than Healthcare and four times less than that for Energy & Utilities and Financial Services. It is also observed in table 6.5 the same pattern as for sales growth, that the average firm has higher value added growth than the aggregated accounts for the sectors. The exceptions are Healthcare and Financials which have lower sales growth. This implies that these two sectors have increased their value retention rate during the period, Healthcare more so than Financials.

Table 6.5, Average value added growth, equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	9.4	6.5
Consumer staples	7.4	6.9
Energy & utility	9.7	8.7
Financials	11.5	9.2
Healthcare	14.9	8.5
Industrials	7.5	8.7
IT & Telecom	13.3	13.5
Materials	14.7	4.9
All sectors	10.5	8.0

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Average value added growth is defined as the average geometric value added growth during the period and then multiplied by 100. The equal weighted index is based on equal weight per firm in the indexes. For data used in the calculation, see appendix 3.

On average a yardstick company is located in quintile band three but the average Materials industry firm is located towards the bottom of quintile band 2 and the average Energy & utility company in the Europe 170 near the top end of quintile group 3 (see table 6.6 below).

Table 6.6, Average CAGR value added growth by quintiles

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	3.1	2.7
Consumer staples	2.8	2.6
Energy & utility	3.6	3.7
Financials	3.4	3.3
Healthcare	3.8	3.3
Industrials	3.1	3.1
IT & Telecom	3.4	3.1
Materials	2.9	2.3
All sectors	3.2	3.0

Source: Author's calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

In the following section the researcher now turns to consider the degree to which the industry sectors in the Europe 170 group of firms exhibit variations in terms of their operating ratios and ability to generate profit and cash out of income and do these patterns align with the understanding of trajectory and its variability within the all firms and yardstick groups within the Europe 170.

Financial operating ratios

Purchase costs charged against total revenue by industry sector

The first calculation is the cost of purchases or external costs share of total income which is calculated by deducting value retained for all firms within an industry sector from total revenue of all firms within an industry sector. In general purchase costs are a large deduction against total income accounting for roughly two-thirds of total income received.

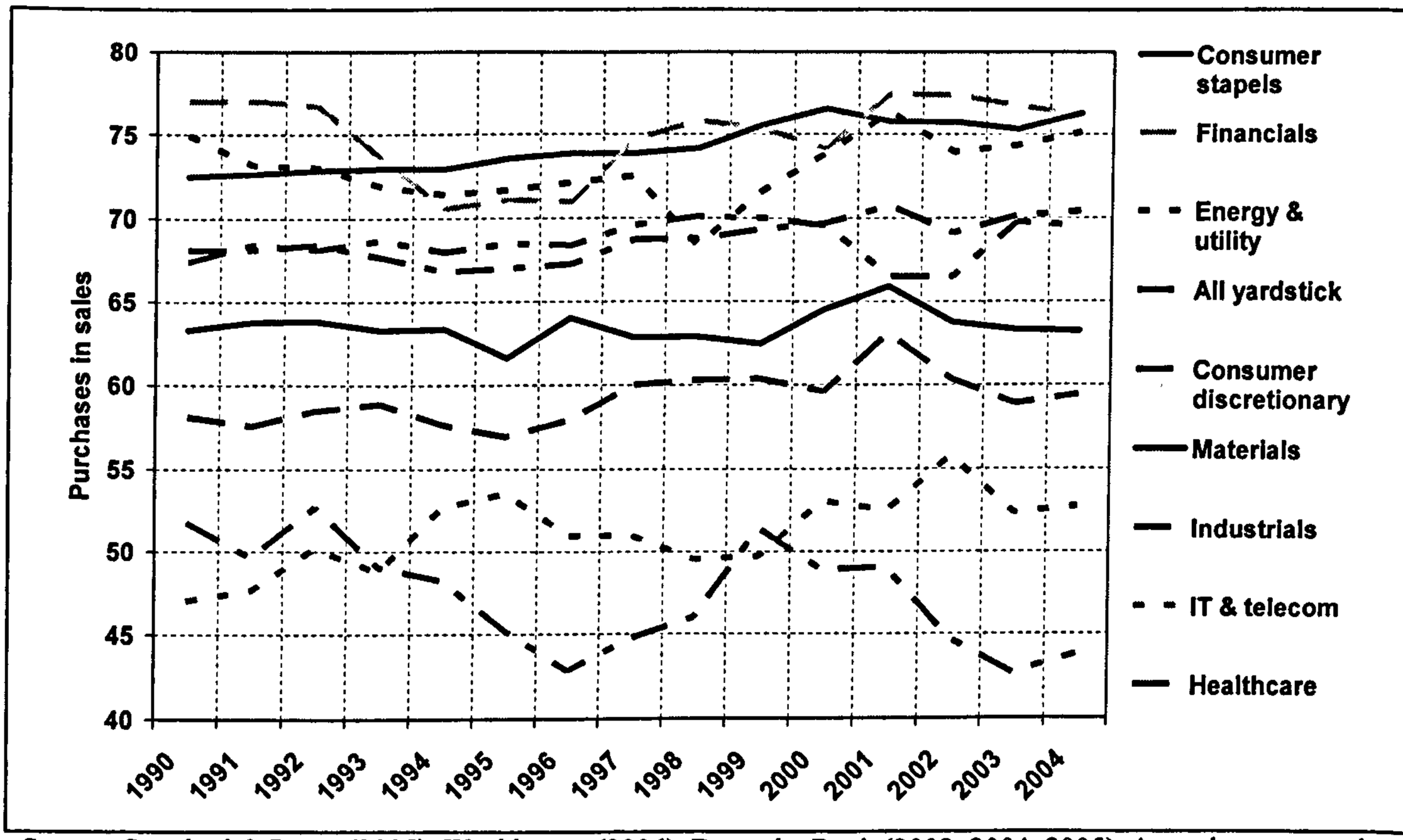
Table 6.7, Purchase in sales, aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	68.4	68.4
Consumer staples	74.4	74.7
Energy & utility	73.5	73.5
Financials	75.8	75.4
Healthcare	47.1	46.7
Industrials	58.4	59.5
IT & Telecom	44.9	51.8
Materials	64.0	63.5
All sectors	68.5	69.0

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Purchase in sales is defined as purchases in relation to sales. See also appendix 1 for data on firms included in the sector indexes and appendix 3 for company data.
Comment: In the case of Financials it should be observed that the sales definition use gross revenue and not net revenue (see chapter 4). As such the purchase share in sales becomes higher than normally expected, but aligns better to the transactions made than a net revenue approach.

Starting with the sample of all firms in the Europe 170 index the researcher compute an average purchase cost in sales at 68 per cent compared to 69 per cent for the yardstick companies. The researcher also observes that the ratio varies significantly between the sectors, for all firms from 45 per cent for IT & Telecom to 74 per cent for Consumer staples. It is also observed that the ratio for most of the sectors is stable for the two sample groups, with the exception of IT & Telecom where individual firm data significantly impacts upon the ratio due to limited number of firms in the sample. However, regardless of the calculations employed to compute industry sector purchase costs in total income, it is clear that this ratio stays relatively constant over a period of time although the Healthcare sector is an exception. Over time the purchase in share ratio is fairly stable, but less so compared to the country indexes (see previous chapter) as some sectors are quite volatile (e.g. Healthcare). In some sectors a possible trend is also observed for example with the purchase in sales for Healthcare falling and an increasing share of purchases in sales for IT & Telecom (see figure 6.4). For some sectors the balance between what is out-sourced and carries out within the sector does change over time but the general pattern is one of stability in the ratio.

Figure 6.4, Purchase in sales, aggregated values



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Purchase in sales is defined as purchases in relation to sales. See appendix 3 for data on firms included in the sector indexes.

Comment: In the case of Financials it should be observed that the sales definition use gross revenue and not net revenue (see chapter 4). As such the purchase share in sales becomes higher than normally expected, but aligns better to the transactions made than a net revenue approach.

In figure 6.4, it is also clear that both Healthcare and IT & Telecom have lower purchases in sales compared to other sectors and these were regarded as growth sectors during the time period investigated. Firms or industries that operate with a low share of purchase costs in income retain a higher proportion of total income for internal expenses, cash and profit. Both Healthcare and IT & Telecom are located at the more favourable end of the spectra with Consumer staples and Energy & utilities at the other end of the range with a low share of value retained out of every unit of income.

Table 6.8, Purchase in sales, equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	62.5	62.5
Consumer staples	69.5	72.2
Energy & utility	65.9	63.1
Financials	67.1	64.6
Healthcare	53.8	49.2
Industrials	56.3	56.6
IT & Telecom	46.0	44.8
Materials	65.4	65.1
All sectors	62.6	61.7

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Purchase in sales is defined as purchases in relation to sales. See also appendix 1 for data on firms included in the sector indexes and appendix 3 for company data.
Comment: In the case of Financials it should be observed that the sales definition use gross revenue and not net revenue (see chapter 4). As such the purchase share in sales becomes higher than normally expected, but aligns better to the transactions made than a net revenue approach.

This picture is reproduced when one segregate firms into quintile bands and situate in this range firms from various industry sectors. At the bottom end of the quintile range with quintile scores below 2 Consumer discretionary and Consumer staples is found which operate with a generally high purchase cost in income and at the top end of the range one have Healthcare and IT & Telecommunications which have a low purchase costs in income and consequently a higher level of value retained out of income (see table 6.9 below).

Table 6.9, Purchases in sales (%) by quintiles

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	2.9	2.8
Consumer staples	2.3	1.9
Energy & utility	2.7	2.9
Financials	2.7	2.8
Healthcare	4.2	4.7
Industrials	3.5	3.4
IT & Telecom	4.2	4.3
Materials	2.7	2.8
All sectors	3.0	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.
Comment: In the case of Financials it should be observed that the sales definition is based on gross revenue and not net revenue (see chapter 4).

Once purchases are deducted from total income what is left is the value retained by firms in each industry sector.

Value retention out of total income by industry sector

Value retention out of total income is the inverse of the purchase in sales ratio as value retention rate is 100 minus the purchases in sales ratio. In the analysis shown below the value retention rate for all sectors are between 25 and 55 per cent for both all firms and the yardstick group.

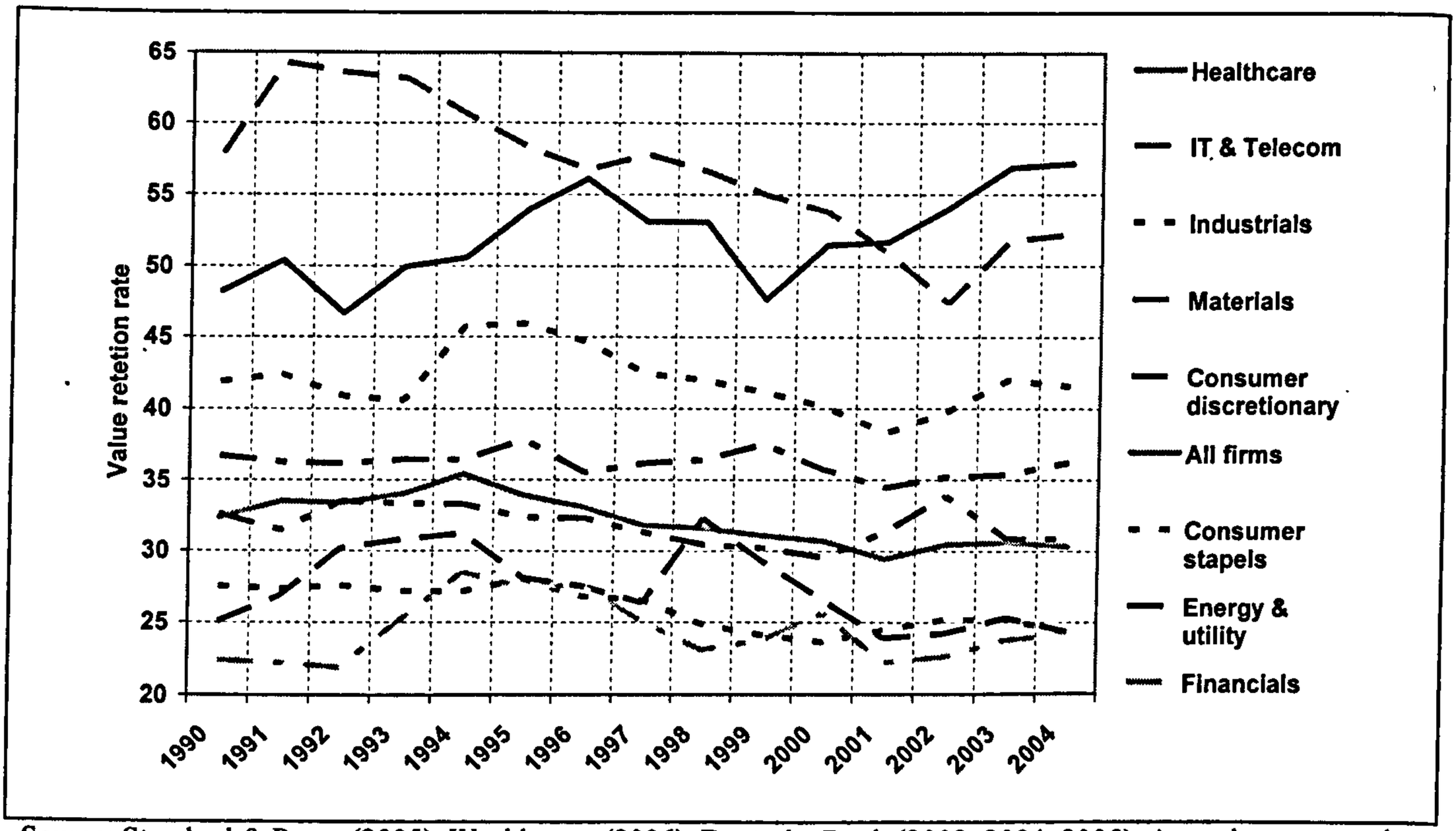
Table 6.10, Value retention rate (%), aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	31.6	31.6
Consumer staples	25.6	25.3
Energy & utility	26.5	26.5
Financials	24.2	24.6
Healthcare	52.9	53.3
Industrials	41.6	40.5
IT & Telecom	55.1	48.2
Materials	36.0	36.5
All sectors	31.5	31.0

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value retention rate is defined as value retained in relation to sales multiplied by 100. For accounting data used in calculations see appendix 3.
Comment: In the case of Financials it should be observed that the sales definition use gross revenue and not net revenue (see chapter 4). As such the value retention rate becomes lower than normally expected, but aligns better to the transactions made than a net revenue approach.

At the top end of one have IT & Telecommunication services which retain around 55 per cent of their gross income for their internal purposes compared to Consumer staples and Financials (see comment in table) that retain around 25 per cent of their gross income to cover their own internal expenses. This figure not only reveals the structural differences in the operating rations between sectors but also the relatively stable nature of these ratios across most sectors over a longer period of time, see figure 6.5 below. However, there are sectors that deviate from this assumption such as IT & Telecom, with a declining value retention rate, and Healthcare with an increasing value retention rate.

Figure 6.5, Value retention rate, aggregated values



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value retention rate is defined as value retained in relation to sales. See appendix 3 for data on firms included in the sector indexes.
Comment: In the case of Financials it should be observed that the sales definition use gross revenue and not net revenue (see chapter 4). As such the value retention rate becomes lower than normally expected, but aligns better to the transactions made than a net revenue approach.

Table 6.11, Value retention rate (%), equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	37.5	37.5
Consumer staples	30.5	27.8
Energy & utility	34.1	36.9
Financials	32.9	35.4
Healthcare	46.9	50.8
Industrials	43.7	43.4
IT & Telecom	54.0	55.2
Materials	34.6	34.9
All sectors	37.4	38.3

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value retention rate is defined as value retained in relation to sales multiplied by 100.For accounting data used in calculations see appendix 3.
Comment: In the case of Financials it should be observed that the sales definition use gross revenue and not net revenue (see chapter 4). As such the value retention rate becomes lower than normally expected, but aligns better to the transactions made than a net revenue approach.

For comparison table 6.11 shows the ratio for each industry sector if one equally weight the sample of firms rather than aggregate their values and calculate the index. This shifts the ratios somewhat towards a more favourable average retention rate suggesting that large firms by value are generally retaining less of their total income in the sample of firms in the index.

The researcher now classify companies into their quintile banding and this reveals a similar pattern of ratio stability by industry sector but variability in industry positioning in terms of how much income is retained by the various industry sectors. As such one find that Consumer staples firms on average is a quintile two firm, where as IT & Telecom is on average a quintile four firm and Healthcare is on average nearly a quintile five firm where a high quintile score represents a higher level of value retained out of total income. It is also observed that most other sector firms are on average quintile 3 firms.

Table 6.12, Value retention rate by quintiles

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	2.9	2.8
Consumer staples	2.3	1.9
Energy & utility	2.7	2.9
Financials	2.7	2.8
Healthcare	4.2	4.7
Industrials	3.5	3.4
IT & Telecom	4.2	4.3
Materials	2.7	2.8
All sectors	3.0	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.
Comment: In the case of Financials it should be observed that the sales definition is based on gross revenue and not net revenue (see chapter 4).

Labour's share of value retained by industry sector

The researcher now deduct from the value retained the total expense of labour costs which includes social charges to cover pensions and other social benefits. The researcher find that regardless of whether one uses the all firms or the yardstick group one finds that labour's share of value retained is roughly 40-75 per cent. However, there are difference between sectors and these are significant for example at the low end of the range one have the Energy & utility industry which operates with a labour's share of internal costs of 40 per cent whilst Industrials operate with a 75 per cent share of labour costs in value retained.

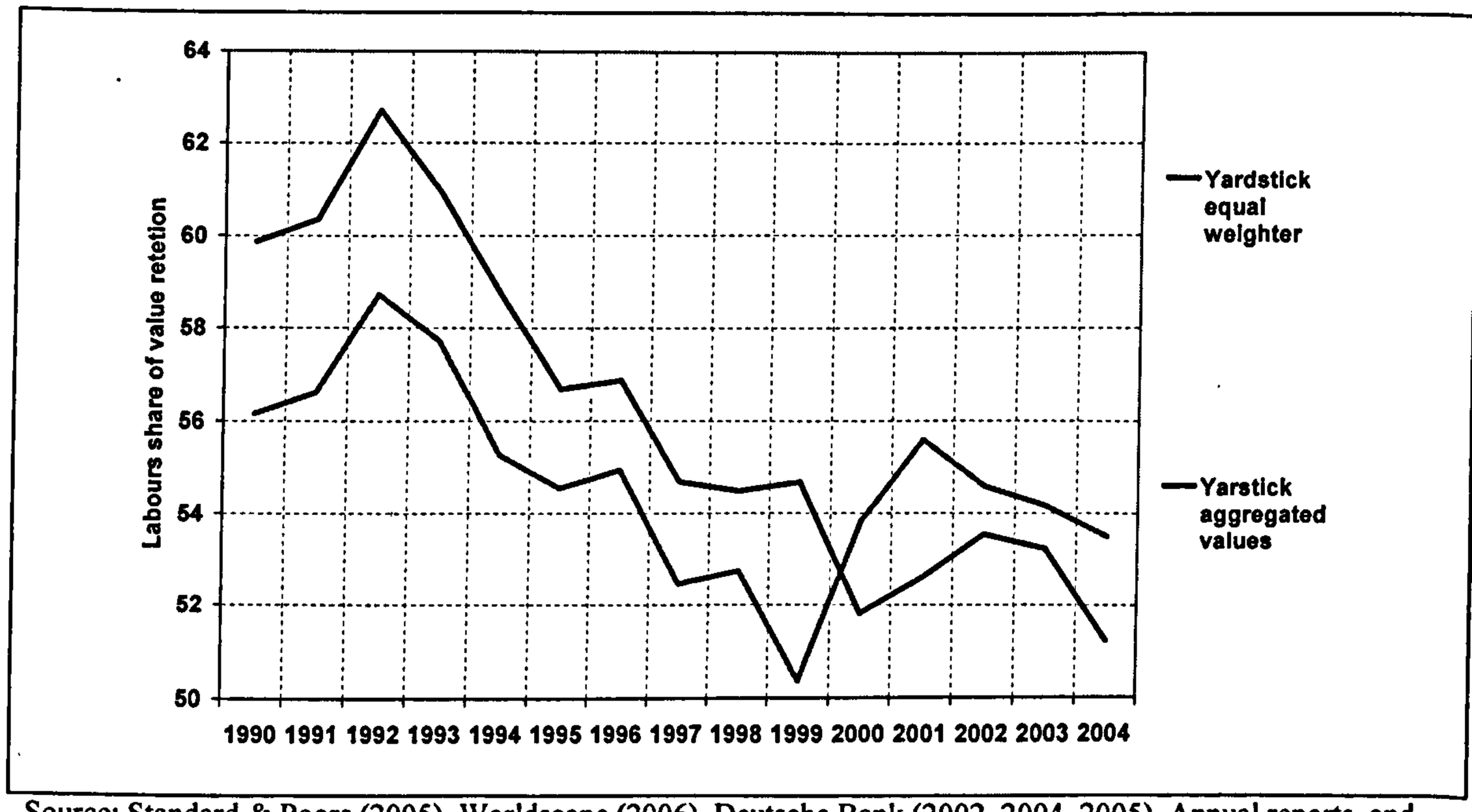
Table 6.13, Labour share of value retention, aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	64.0	65.6
Consumer staples	54.0	54.8
Energy & utility	40.0	42.1
Financials	44.8	44.9
Healthcare	48.6	47.9
Industrials	74.9	74.1
IT & Telecom	46.4	52.2
Materials	59.8	59.2
All sectors	53.9	55.2

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Labours share is defined as labour costs in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

However, over time one also find that labour's share of value retained has been generally reduced across all industry sectors and depending on the calculation employed there is a 4-5 percentage point reduction in an equally weighted computation and a 10 percentage point reduction in the aggregated calculation of labour's share of value retained, see figure 6.6 below.

Figure 6.6, Labours share of value retention (%), all sectors (yardstick)



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Labours share is defined as labour costs in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

The average firm (equally weighted) has a labour share that tracks below that for the aggregated ratio when computed using the value weighting and this difference is more pronounced for the Healthcare and IT & Telecom sectors, than the others.

Table 6.14, Labour share of value retention, equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	61.9	63.4
Consumer staples	51.7	54.4
Energy & utility	42.8	37.1
Financials	42.2	39.3
Healthcare	67.8	55.4
Industrials	69.3	69.4
IT & telecom	58.6	56.7
Materials	54.8	55.0
All sectors	54.8	54.3

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Labours share is defined as labour costs in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

This variation in labours share of value retention is also noticeable when one classifies the average of labour's share of value retained by quintile. For example Energy & utility as well as Financials are located in quintile 4 (that is firms with low labour costs in relation to value retained), whereas the average firm for Consumer discretionary and Industrials are located in quintile 2.

Table 6.15, Labours share of value retention by quintiles

Industry sector	1990-2004 all firms, equal weighted	1990-2004 yardstick, equal weighted
Consumer discretionary	2.2	2.1
Consumer staples	3.4	3.4
Energy & utility	4.0	4.4
Financials	3.9	4.1
Healthcare	2.8	3.0
Industrials	1.7	1.7
IT & Telecom	2.9	2.8
Materials	3.0	3.1
All sectors	3.0	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

This variation in the distribution of value retained to cover labour costs was less noticeable at a country level because sector differences are evened out when most industry sectors are represented in all three country indexes. As one move from presenting the financial analysis at a country level to industry sectors new patterns are visible which were previously invisible when a country level analysis was employed.

Once labour costs have been charged against the value retained in each industry sector what is left is a residual, which is the cash from operations or operating profit before depreciation and amortisation (c.f. EBITDA). In the next section the researcher consider the extent to which sectors retain more or less cash out of total income. Cash is an important residual because it

is employed to cover the cost of capital (interest charges and dividends), tax and what is retained as free cash supports the maintenance of product renewal and capital expenditure.

Cash return in sales

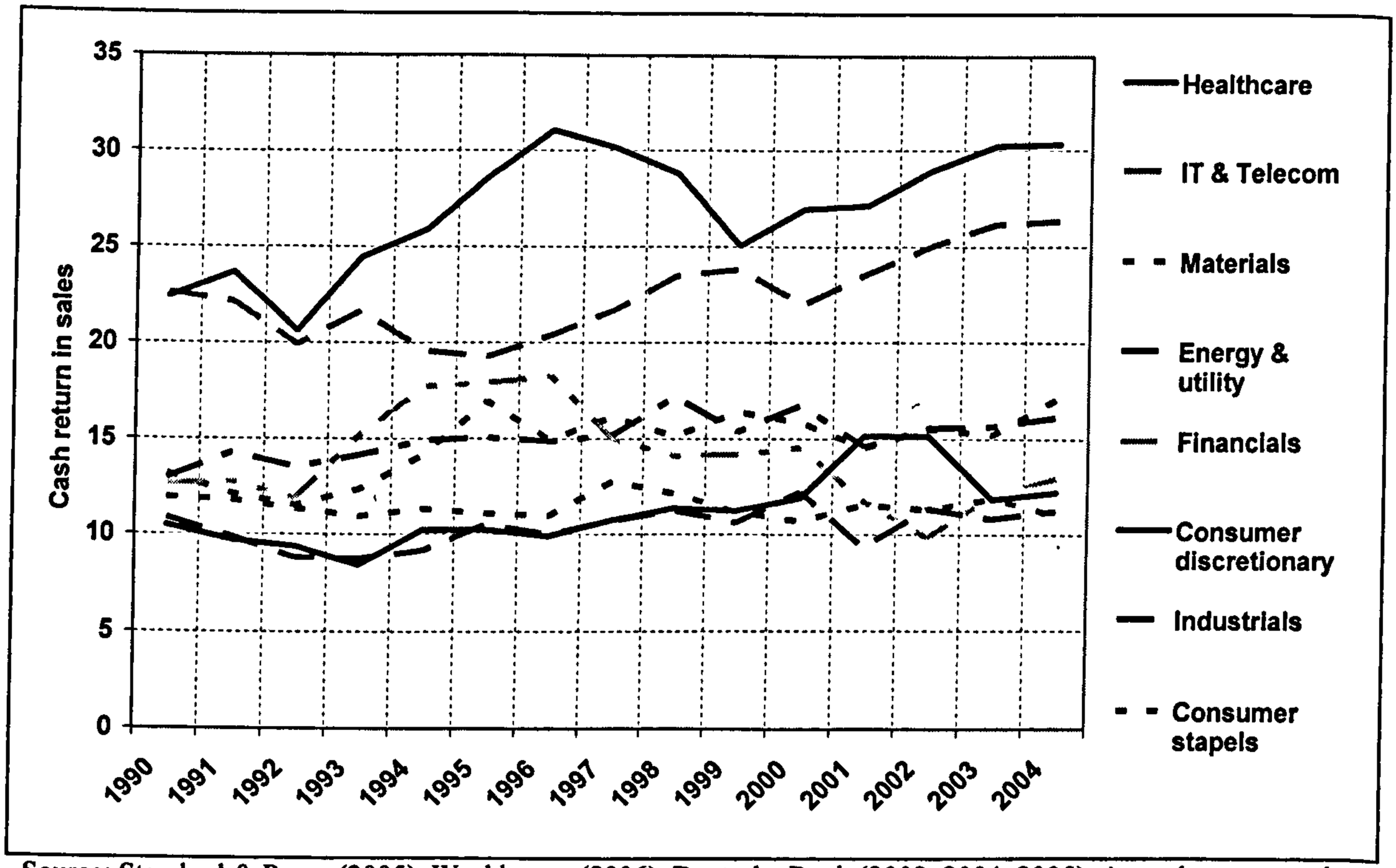
Table 6.16, Cash return in sales (%), aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	11.4	10.9
Consumer staples	11.8	11.4
Energy & utility	15.9	15.3
Financials	13.3	13.6
Healthcare	27.2	27.7
Industrials	10.4	10.5
IT & Telecom	29.5	23.0
Materials	14.5	14.9
All sectors	14.5	13.9

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash return in sales is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to sales. See appendix 3 for data on firms included in the sector indexes.

Once labour costs are deducted from retained income for each sector one can observe that there are large sector differences in cash generated out of total income. At the top end IT & telecommunications and Healthcare services are generating an increasing share of cash out of income rising from 22 to 26 to 30 per cent respectively. All the other sectors are clustered in the range 10-15 per cent cash generated out of total income (see figure 6.7 below), with little obvious signs that this group are able to increase cash share in income.

Figure 6.7, Cash return in sales (%)



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash return in sales is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to sales. See also appendix 3 for accounting data on firms included in the sector indexes.

In the table below one observe the average firm in a given sector (employing an equal weighting) has a higher cash return on sales compared to the aggregated sector values.

Table 6.17, Cash return in sales (%), equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	14.3	13.4
Consumer staples	15.7	12.9
Energy & utility	20.2	23.5
Financials	20.3	23.1
Healthcare	26.4	32.6
Industrials	15.3	15.6
IT & Telecom	23.9	24.0
Materials	15.9	15.7
All sectors	18.0	18.4

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash return in sales is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to sales. See appendix 3 for data on firms included in the sector indexes.

In terms of quintile distribution one observe high cash return in sales for the average Healthcare firm because they are located in quintile four and by way of contrast Consumer discretionary, Consumer staples and Industrials sectors, have below average firm performance that puts them into quintile 2 firm (see table 6.18 below).

Table 6.18, Cash return in sales (%) by quintiles

Industry sector	1990-2004 all firms, equal weighted	1990-2004 yardstick, equal weighted
Consumer discretionary	2.5	2.4
Consumer staples	2.6	2.3
Energy & utility	3.3	3.8
Financials	3.3	3.5
Healthcare	3.9	4.3
Industrials	2.5	2.5
IT & Telecom	3.7	3.7
Materials	3.1	3.1
All sectors	3.0	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

Cash share of value retained by industry sector

After deducting all labour costs from value retained one are able to establish the proportion of total revenue that major European companies retain as cash to be distributed to cover investments, corporate taxes and investor claims. However, the cash return in sales (table 6.16) does not take into account the level of financial integration and to correct for this the researcher employs the computation of share of value added. The cash share of value added is a calculation which mirrors the labours share of value retained as cash is 100 minus labours share in value retention.

The researcher finds that regardless of whether one uses the all firms or the yardstick group for all sectors one find that cash share of value retained is roughly 45-46 per cent on average over the whole period. However, it is observed that differences between sectors are significant, for example, at the high end of the range the Energy & utility industry sectors operates with a cash share value retained of 60 per cent and Industrials operate with a 25 per cent share of cash share of value retained.

Table 6.19, Cash share of value retention, aggregated values

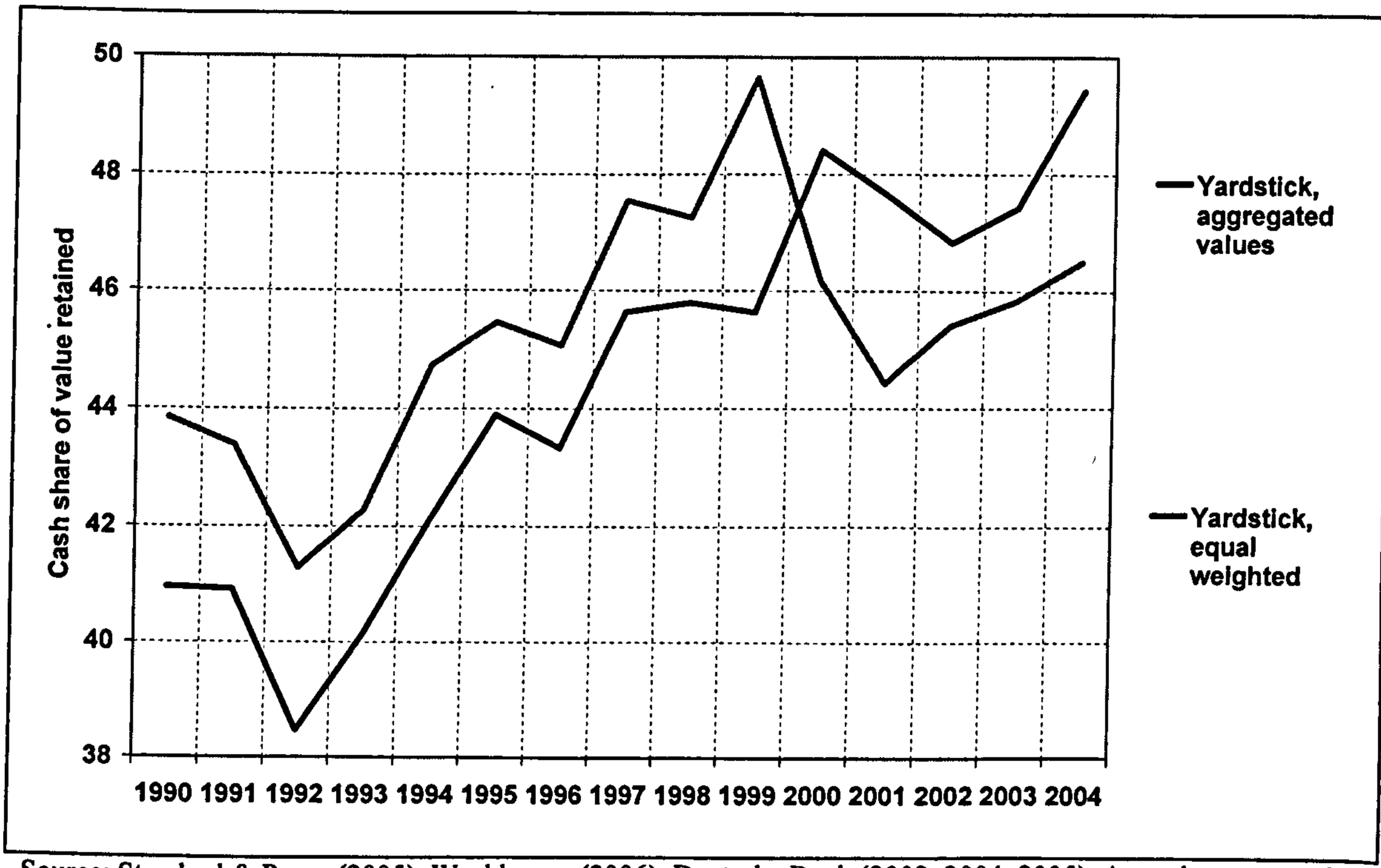
Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	36.0	34.4
Consumer staples	46.0	45.2
Energy & utility	60.0	57.9
Financials	56.2	55.1
Healthcare	51.4	52.1
Industrials	25.1	25.9
IT & Telecom	53.6	47.8
Materials	40.2	40.8
All sectors	46.1	44.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash share of value retained is defined as earnings before interest, taxes, depreciation and amortisation in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

Over time one find that the cash share of value retained has generally increased across all industry sectors, as labour' share of value retained by these industry sectors have been

reduced. Depending on the calculation one employ there is a 4-5 percentage point increase in the equally weighted analysis and a 10 per cent age point reduction in the aggregated calculation of cash share of value retained, see figure 6.8 below.

Figure 6.8, Cash share of value retention, all sectors (yardstick)



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash share of value retention is defined as earnings before interest, taxes, depreciation and amortisation in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

The average firm (equal weighted) has a cash share that is different from the aggregates sector values. This is more pronounced for Healthcare and IT & Telecom, than other sectors.

Table 6.20, Cash share of value retention, equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	38.1	36.6
Consumer staples	48.3	45.6
Energy & utility	57.2	62.9
Financials	57.8	60.7
Healthcare	32.2	44.6
Industrials	30.7	40.6
IT & Telecom	41.4	55.3
Materials	45.2	45.0
All sectors	45.2	45.7

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash share of value retained is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

The variation in cash share of value retention is also noticeable in terms of quintiles, where Energy & utility as well as Financials are in average quintile 4 firms (with higher cash share in relation to value retained), whereas Consumer discretionary and Industrials are average quintile 2 firms. The researcher also observe that the ranking of sectors is different than for cash share of sales (see table 6.18), where Healthcare is now a 3.0 sector compared to 4.3 for cash share in sales. This is also noticeable for IT & Telecom, which had a high value retention rate, as they are now a 2.8 quintile sector compared to 3.7 for cash share in sales.

Table 6.21, Cash share of value retention by quintiles

Industry sector	1990-2004 all firms, equal weighted	1990-2004 yardstick, equal weighted
Consumer discretionary	2.2	2.1
Consumer staples	3.5	3.4
Energy & utility	4.0	4.4
Financials	3.9	4.1
Healthcare	2.8	3.0
Industrials	1.7	1.7
IT & Telecom	2.9	2.8
Materials	3.0	3.1
All sectors	3.0	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

This variation in the distribution of cash share of value retained was less noticeable at a country level because sector differences are evened out when most industry sectors are represented in all three country indexes. As one move from presenting the financial analysis at a country to industry sector issues are visible which were previously invisible when a country level analysis was employed.

The researcher now turn to consider the profit residuals remaining out of sales after all expenses (by nature) have been deducted from total income.

Profit return in sales

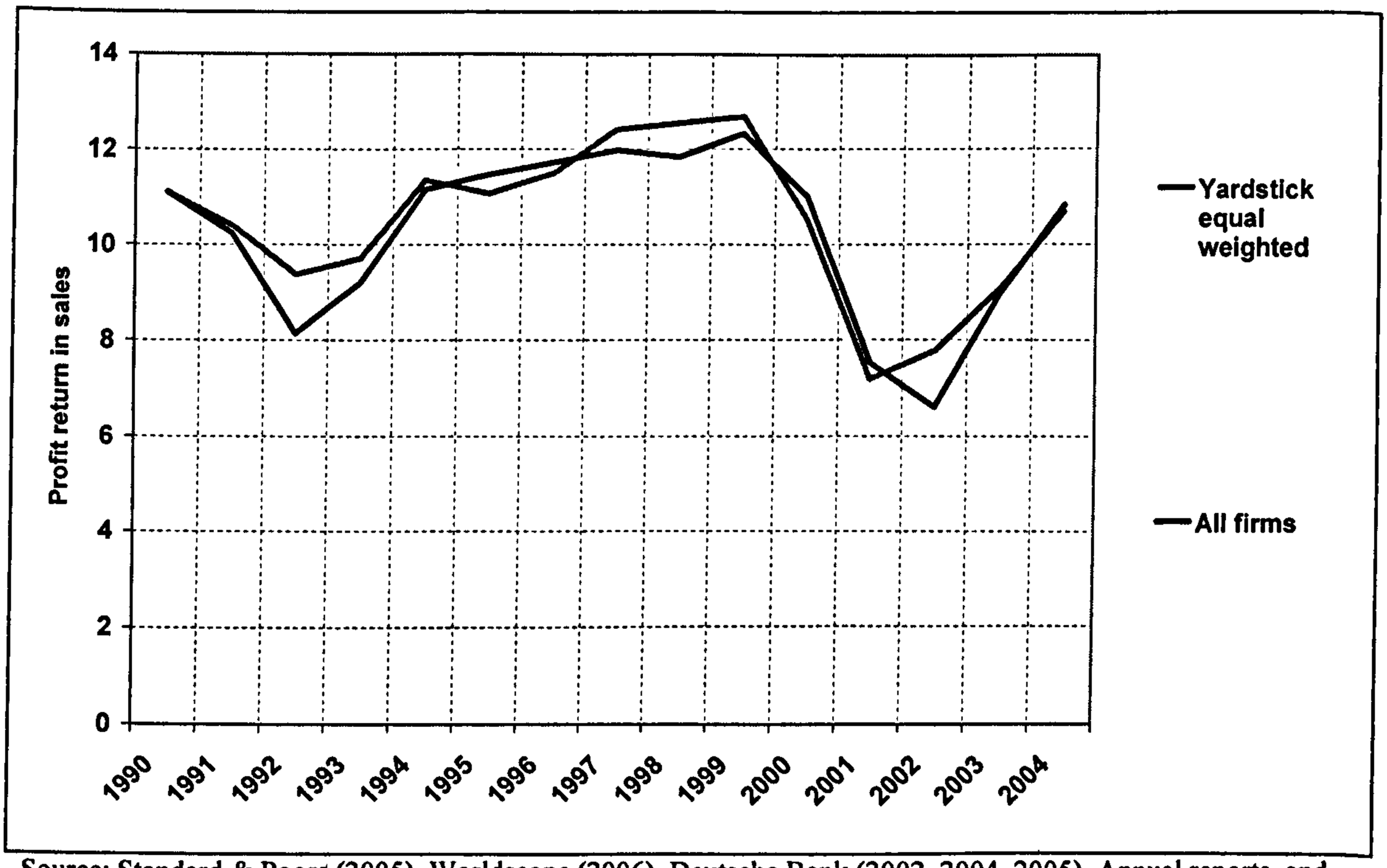
Table 6.22, Profit return in sales, aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	4.5	4.3
Consumer staples	8.0	7.8
Energy & utility	8.5	8.3
Financials	8.0	6.6
Healthcare	20.5	22.5
Industrials	4.4	4.6
IT & Telecom	3.4	2.5
Materials	8.1	8.1
All sectors	8.6	8.3

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. The profit return in sales is defined as pre tax profit in relation to sales. See also appendix 3 for accounting data on firms included in the sector indexes.

The profit return in sales varies between sectors from a low of three per cent for IT & Telecom and Industrials to above 20 per cent for Healthcare. One observe a stable profit return in sales for both all firms as well as the yardstick group over time, excluding the years 2001-02/03, where the recession impacts negatively on several sectors, such as IT & Telecom. This stability is more pronounced for Consumer staples and Industrials than other sectors such as IT & Telecom where the volatility in profit return in sales is more pronounced.

Figure 6.9, Profit return in sales, all sectors



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. The profit return in sales is defined as pre tax profit in relation to sales. See also appendix 3 for accounting data on firms included in the sector indexes.

One also observe the high level of profit return in sales for Healthcare, which is well above any other sector a pattern which is more pronounced at the end of the period. Also IT & Telecom have an above average sector profit return in sales for most years, although the average is below for the period.

Table 6.23, Profit return in sales (%), equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	6.9	7.2
Consumer staples	10.6	8.8
Energy & utility	10.1	12.5
Financials	13.5	13.8
Healthcare	11.2	17.1
Industrials	6.4	6.9
IT & Telecom	5.8	6.7
Materials	9.9	9.4
All sectors	9.5	9.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. The profit return in sales is defined as pre tax profit in relation to sales. See also appendix 3 for accounting data on firms included in the sector indexes.

When the researcher again turn to locate particular industry sectors into a quintile distribution one note that Consumer discretionary firms are generally located in quintile 2 (with relatively low profit out of income) and Healthcare with the higher average profit out of total income being located in quintile 3-4.

Table 6.24, Profit return in sales (%) by quintiles

Industry sector	1990-2004 all firms	19990-2004 yardstick
Consumer discretionary	2.4	2.5
Consumer staples	3.3	3.1
Energy & utility	3.2	3.8
Financials	3.4	3.3
Healthcare	3.9	4.7
Industrials	2.1	2.1
IT & Telecom	2.5	2.7
Materials	3.2	3.2
All sectors	2.9	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

In this next section the researcher introduce the capital market dimension and the profit and cash return on capital employed and how variable capital intensities improve of restrict the cash and profit return on capital employed (ROCE)

Capital intensity

Sales capital intensity

The average capital intensity for all industry sectors in the Europe 170 is around 0.8, (that is 80 Euros of capital employed for every 100 Euros of income) with a significant spread between sectors from 0.4 for Consumer staples to 1.6 for IT & Telecom. The researcher also observes that most sectors have capital intensity in the range 0.4 to 0.7 with the exception of Financials and IT & Telecom which have capital intensity above 1.3.

Table 6.25, Capital intensity, aggregated values

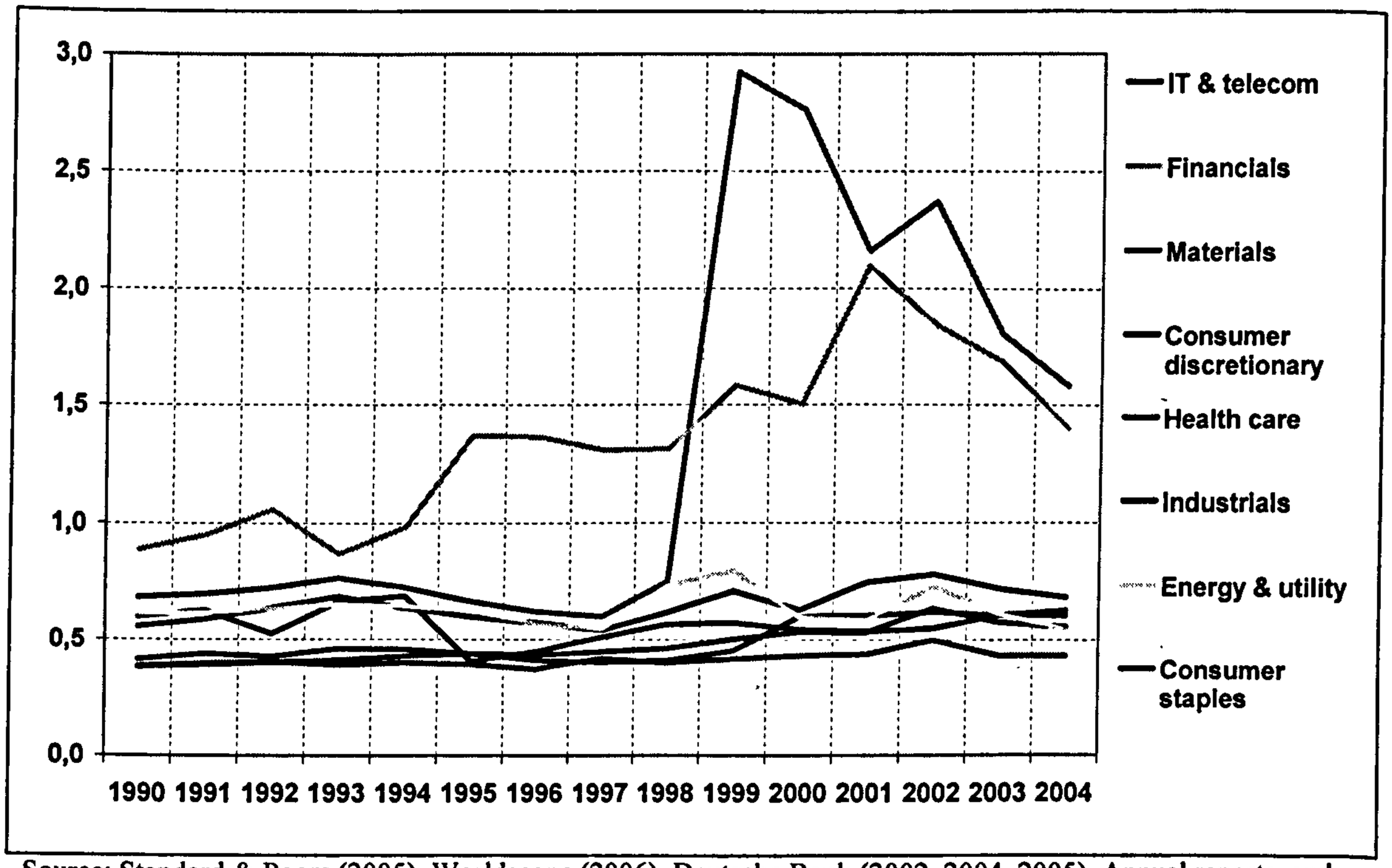
Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	0.51	0.50
Consumer staples	0.42	0.42
Energy & utility	0.60	0.63
Financials	1.40	1.47
Healthcare	0.69	0.56
Industrials	0.47	0.50
IT & Telecom	1.57	1.56
Materials	0.65	0.65
All sectors	0.81	0.82

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Capital intensity is computed by dividing capital employed (long-term debt plus equity) into total income. See appendix 3 for accounting data used in calculations.

In aggregate for all sectors the researcher observe a general increasing trend in capital intensity over time as done for the country analysis, but this is more pronounced for sectors like Financials and IT & Telecom than for other sectors. Most sectors do run with a relatively stable capital intensity index that is total capital employed to generate a unit of revenue and

much of the growth in capital intensity is explained in the Financials and IT & Telecoms sectors.

Figure 6.10, Capital Intensity Index



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Capital intensity is computed by dividing capital employed (long-term debt plus equity) into total income. See also appendix 3 for accounting data on firms included in the sector indexes.

The researcher also observes that the pattern of increased capital intensity is more pronounced in the latter part of the 1990's, a pattern one recognise from the country analysis. This increasing capital intensity will impact negatively on the cash ROCE. When one compares aggregated values with equal weighted computations one observes that large firms relative to the average are less capital intensive.

Table 6.26, Capital intensity, value weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	0.81	0.60
Consumer staples	0.57	0.54
Energy & utility	1.03	1.23
Financials	3.24	3.97
Healthcare	1.08	0.58
Industrials	0.62	0.66
IT & Telecom	1.34	1.33
Materials	0.78	0.72
All sectors	1.30	1.30

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Capital intensity is computed by dividing capital employed (long-term debt plus equity) into total income. See appendix 3 for accounting data used in calculations.

It is again interesting to note that if one locate the average firm capital intensity into a quintile distribution one finds that Financial services firms are located in quintile 2 with relatively high average capital intensity. At the other end of the spectra one find Industrials and Consumer discretionary firms with an average capital intensity which locates these firms in quintile 4.

Table 6.27, Capital intensity by quintiles

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	2.3	3.5
Consumer staples	3.5	3.6
Energy & utility	2.7	2.4
Financials	1.9	1.8
Healthcare	2.6	3.2
Industrials	3.8	3.7
IT & Telecom	2.3	2.6
Materials	2.9	2.8
All sectors	2.9	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

Value added capital intensity

The capital intensity index is based on sales and does not take into account the degree of financial integration and this adjustment is made again by using value add instead of sales to compute a value added capital intensity index.

Table 6.28, Value added capital intensity, aggregated values

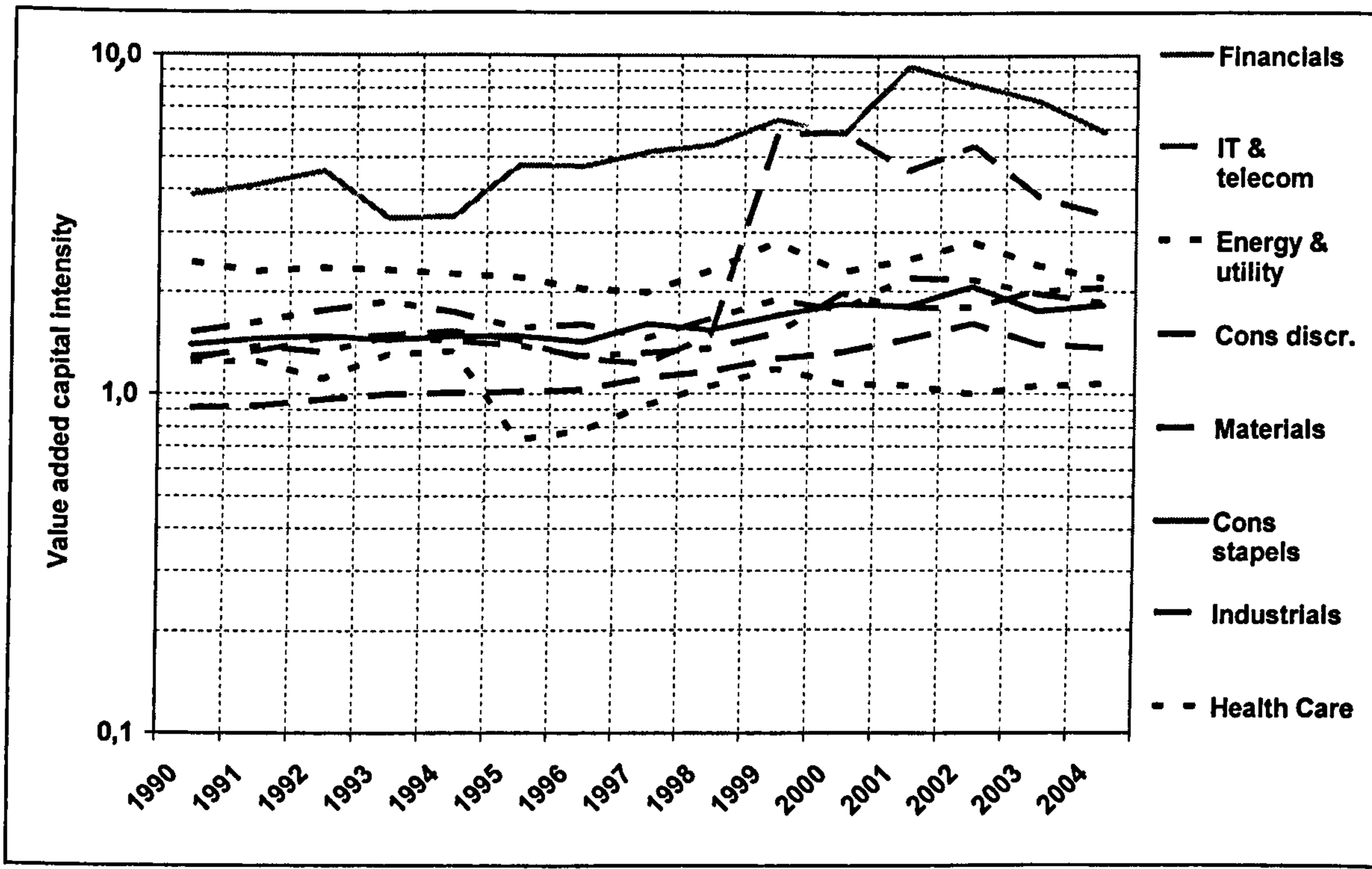
Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	1.62	1.58
Consumer staples	1.65	1.66
Energy & utility	2.27	2.37
Financials	5.77	5.98
Healthcare	1.30	1.05
Industrials	1.14	1.22
IT & Telecom	2.86	3.24
Materials	1.80	1.79
All sectors	2.59	2.65

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value added capital intensity is defined as the sum of shareholders equity and long term debt (capital employed) divided in to value retained. See appendix 3 for accounting data used in calculations.

The average value added capital intensity for sectors is around 2.6, with significant spread between sectors from 1.3 for Healthcare to 6.0 for Financials. The researcher also observe that most sectors have a capital intensity of 1.1 to 1.8, with the exception of Financials, Energy & utility and IT & Telecom which has capital intensity above 2.0 independent of sample.

For sectors one observe the same pattern of increasing capital intensity over time as for countries, with an increase of nearly 50% from 1990 to 2004 and this is more pronounced for sectors like Financials and IT & Telecom than for other sectors. There are also some sectors which exhibit a stable ratio over time such as Industrials and Energy & utilities.

Figure 6.11, Value added capital intensity, aggregated value



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value added capital intensity is defined as the sum of shareholders equity and long term debt in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

The researcher observe that the pattern of increased capital intensity is also more pronounced towards the latter part of the 1990's, a pattern also revealed form the country level analysis in the previous chapter. As the capital intensity of both country and industry sectors has increased this has impacted negatively on the cash ROCE where one observe a general reduction in cash generated per financial unit of capital employed or the cash ROCE.

In the last section the researcher combine the financial operating ratios with the capital intensity ratios to derive the profit and cash ROCE's for the range of industry sectors.

Return on capital

Cash ROCE

As the researcher now move towards completing the bottom line ratio one observe how profit generated out of income (ROS) and capital intensity interact to deliver the bottom line ROCE. It's possible that a firm with a low ROS can increase its overall ROCE because capital intensity is low.

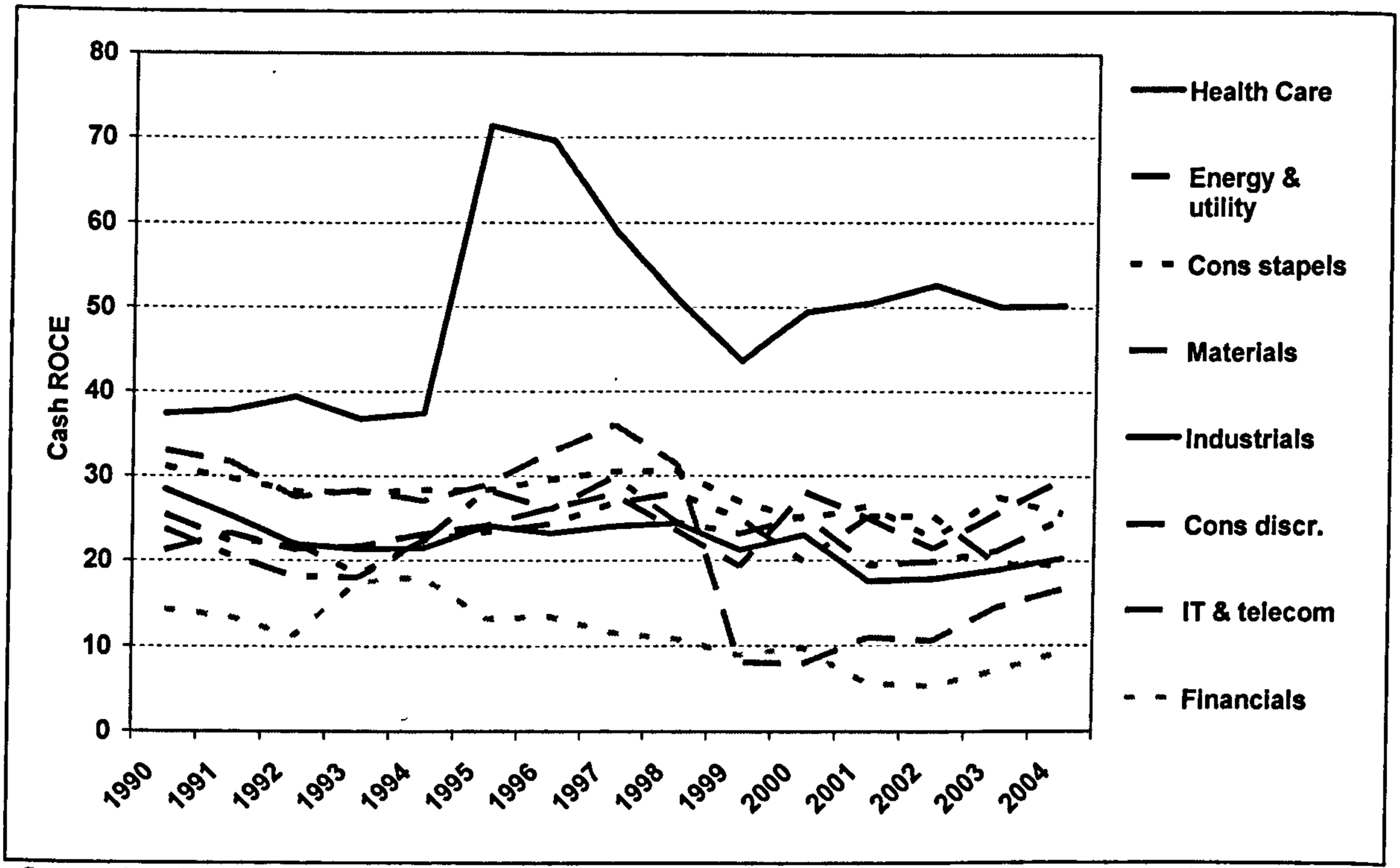
Table 6.29, Cash ROCE, aggregated values

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	22.2	21.8
Consumer staples	27.8	27.2
Energy & utility	26.5	24.4
Financials	9.6	9.2
Healthcare	39.4	49.5
Industrials	22.0	21.2
IT & Telecom	18.8	14.8
Materials	22.3	22.8
All sectors	17.8	16.9

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash ROCE is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to the sum of shareholders equity and long term debt. See also appendix 3 for data on firms included in the country indexes.

In general terms one do observe that in aggregate there is a lower ROCE towards the end of the period covered (1990-2004) than at the start and this is due in part to a business cycle and also that capital intensity tend to increase towards the end of this period. This is a surprising result when, as the researcher has argued in the literature review, this has been a period when firms have been under pressure to deliver increasing returns on capital for shareholders.

Figure 6.12, Cash ROCE, aggregated values yardstick



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash ROCE is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to the sum of shareholders equity and long term debt. See also appendix 3 for accounting data on firms included in the sector indexes.

The average pattern is roughly the same for all the industries within the Europe 170. The researcher note that the volatility in Healthcare in the mid 1980s is caused by the GlaxoWelcome data as this company increased its share of the sector at this time and results were impacted by the merger with Welcome.

One also observes that the differences between sectors are generally ironed out as one move towards the bottom line ROCE. Although Healthcare operate with a high ROCE relative to all sectors Industrials also pull back a relatively low profit and cash in income ratio with a generally low capital intensity index to deliver a strong cash ROCE. Financials have poor performance because relatively high profit and cash returns are offset by the need for this industry to have large amounts of capital employed in their balance sheets relative to cash and profit (see table 6.30).

Table 6.30, Cash ROCE, equal weighted

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	23.2	25.6
Consumer staples	28.3	25.9
Energy & utility	23.8	23.0
Financials	14.5	15.2
Healthcare	31.3	40.5
Industrials	30.0	28.8
IT & Telecom	22.4	24.6
Materials	22.1	22.3
All sectors	23.3	24.4

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Cash ROCE is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to the sum of shareholders equity and long term debt. See also appendix 3 for data on firms included in the country indexes.

The result is that the financial sector is positioned in the lowest quintile group (1) and at the top end of the spectra one has Healthcare firms including pharmaceuticals with the highest average position in the quintile distribution but the majority of sectors come out with average quintile 3 performance.

Table 6.31, Cash ROCE by quintiles

Industry sector	1990-2004 all firms	1990-2004 yardstick
Consumer discretionary	2.8	3.0
Consumer staples	3.6	3.4
Energy & utility	3.0	2.8
Financials	1.8	1.8
Healthcare	3.9	4.8
Industrials	3.3	3.2
IT & Telecom	3.0	3.1
Materials	3.1	3.2
All sectors	2.9	3.0

Source: Authors calculation based on accounting data retrieved from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For accounting data retrieved per company see appendix 3 as well as chapter 4 for definition of quintile distribution.

Summary discussion and getting to the bottom line

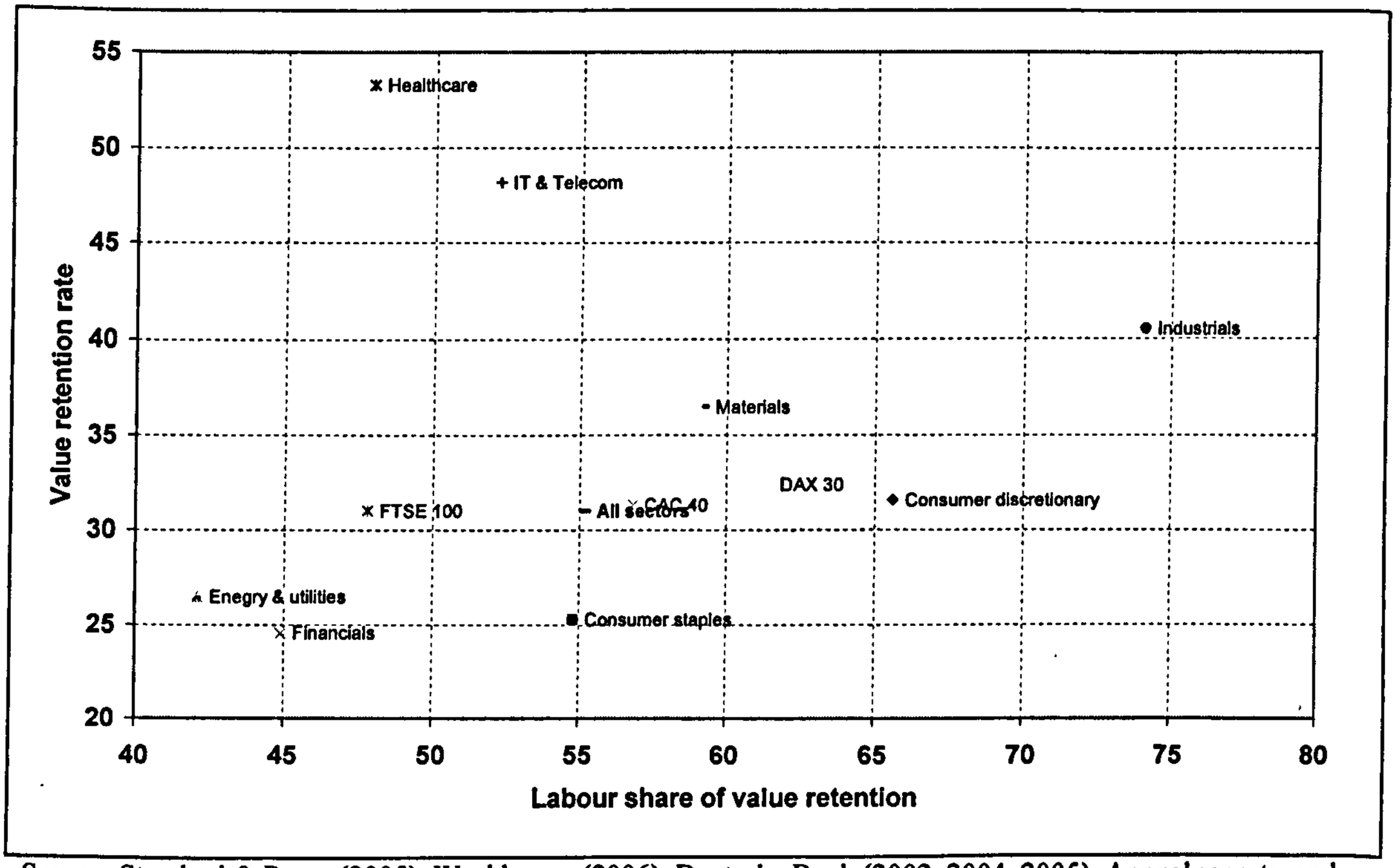
In this chapter the researcher has deconstructed the financial performance of the firms that make up the Europe 170 firms by major industry sector both all firms in the index where one have complete firm years and also those that the researcher has obtained complete firm year financial data for all years throughout the period 1990 to 2004 (i.e. the yardstick group). In this final section the researcher summarise the corporate financial performance and operating cost structures to reveal similarities and differences.

The researcher summarise by comparing all firms in the Europe 170 and summarise how one get to the bottom line return of capital employed in the same way as in the previous chapter for the country level analysis. However, table 6.32 also includes the same financial information for yardstick firms in italics below each line in the table. All firms in the Europe 170 index experienced different growth rates with CAGR's ranging between 7 and 13 per cent. As such the sales and value added growth condition vary significantly between sectors and this contrasts with the stability found at a country level. In terms of interpreting this financial information the researcher has also found that the aggregated average growth rates were lower than when equally weighted averages were used and this suggests that large firms may have difficulty in finding sustained growth opportunities.

The researcher also find that there are significant differences in operating costs structure for example the Consumer staples sector have the higher purchase cost (74 per cent) in income and the IT & Telecom the lower share of purchase cost in income (45 per cent). In terms of purchases as a share of sales, as well as value retention rate, Healthcare and IT & Telecom stands out with a higher degree of financial integration than the average sector and these sectors have historically been considered as growth sectors due to introduction of new technologies. The researcher findings might suggest that growth companies generally retain more sales revenue as value retained but that large firms are generally less financially integrated. In contrast to the country analysis one also find that there are sectors which distribute a large fraction of their retained income to employees, for example, Industrials and those sectors which generally distribute a much smaller fraction of their retained income to cover salaries, for example, Energy & utilities and Financials.

This pattern can be illustrated in the following figure, where the sector diversity in terms of value retention rate and labour share of value retained is show as well as the values of the three countries.

Figure 6.13, Value retention rate and labour share of value retention for sectors and countries



Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. Value retention rate is defined as value added in relation to sales. Labours share is defined as labour costs in relation to value retained. See also appendix 3 for accounting data on firms included in the sector indexes.

The country level analysis in chapter five did not reveal these differences because sector differences are averaged out, however, when the overall country data is split into industry sectors one then reveal similarities and differences at the sector level which are not visible at the country level.

The average cash return in sales is fairly stable over time, but at a sector level there are again winners as well as losers. The researcher observes that Consumer discretionary, Consumer staples and Materials have improved their position in the equal weighted sample, whereas Financials and IT & Telecom have lost ground. These movements in sectors ability to reward capital are important as they inform managers as well as investors about future prospects. For

sectors one observes the same pattern of increasing capital intensity over time as with the country analysis, with an increase of nearly 50 per cent from 1990 to 2004 but this is more pronounced for sectors like Financials and IT & Telecom than for other sectors. The researcher also observes that the pattern of increased capital intensity is more pronounced in the latter part of the 1990's, a pattern one also find in the country analysis.

After income has percolated to cover external costs and internal labour costs Healthcare firms have, on average, more cash as a residual out of income compared to other sectors. When one move from cash to pre tax profits the researcher finds that Financials deliver on average a higher return, and the advantage of the Healthcare sector has become less pronounced. At each stage as the researcher moves down through the ratios to get to the bottom line of profit and cash ROCE similarities and differences between industry sectors are revealed. Moreover some sectors may operate with a high share of internal labour cost limiting profit but pull things back because they operate with lower capital intensity. To summarise these tradeoffs and patterns the researcher now construct a summary table for all industry sectors (see table 6.32). For Consumer staples the researcher reveals that this sector operates with a high purchase cost in income and also that a larger proportion of value retained goes to pay employees. As such relative low capital intensity compensates for a poor profit and cash generated out of income.

Table 6.32, Deconstructed operating performance for the Europe 170 firms (average for the period 1990-2004)

Aggregated values	Cons. discr.	Cons. staples	Energy & util.	Financials	Health-care	Ind.	IT & Telecom	Materials
Compound value added growth rate (CAGR) All	8.5	7.8	12.7	11.8	12.9	7.5	8.3	6.5
Yardstick	5.4	5.6	9.0	9.4	10.4	5.4	5.2	2.3
Purchase cost in sales % All	68.4	74.4	73.5	75.8	47.1	58.4	44.9	64.0
Yardstick	68.4	74.7	73.5	75.4	46.7	59.5	51.8	63.5
Value retained out of sales %	31.6	25.6	26.5	24.2	52.9	41.6	55.1	36.0
Yardstick	31.6	25.3	26.5	24.6	53.3	40.5	48.2	36.5
Of which Distributed to Labour costs % All	64.0	54.0	40.0	44.8	48.6	74.9	46.4	59.8
Yardstick	65.6	54.8	42.1	44.9	47.9	74.1	52.2	59.2
Cash share in value retention	36.0	46-0	60.0	56.2	51.4	25.1	53.6	40.2
Yardstick	34.4	45.2	57.9	55.1	52.1	25.9	47.8	40.8
Cash return in sales % All	11.4	11.8	15.9	13.3	27.2	10.4	29.5	14.5
Yardstick	10.9	11.4	15.3	13.6	27.7	10.5	23.0	14.9
Profit return in sales % All	4.5	8.0	8.5	8.0	20.5	4.4	3.4	8.1
Yardstick	4.3	7.8	8.3	6.6	22.5	4.6	2.5	8.1
Sales capital intensity index All	0.51	0.42	0.60	1.40	0.69	0.47	1.57	0.65
Yardstick	0.50	0.42	0.63	1.47	0.56	0.50	1.56	0.65
Value added capital intensity index All	1.62	1.65	2.27	5.77	1.30	1.14	2.86	1.80
Yardstick	1.58	1.66	2.37	5.98	1.05	1.22	3.24	1.79

Cash return on capital employed All	**22.2**	**27.8**	**26.5**	**9.6**	**39.4**	**22.0**	**18.8**	**22.3**
Yardstick	**21.8**	**27.2**	**24.4**	**9.2**	**49.5**	**21.2**	**14.8**	**22.8**

Notes: Yardstick firms include firms that we have obtained complete firm years for all years during the period 1990-2004 and all firms included the 170 firms covered by the DAX30, CAC40 and FTSE100. Value added compound growth is defined as value added geometric annual growth rate for the period. Purchase cost in sales is defined as sales minus value added as a per cent of total sales. Value retained out of sales is defined as value added as a per cent of total sales. Distributed to labour costs or labour's costs of value retained is calculated as labour costs divided into value retained and expressed as a per cent. Cash share in sales is calculated as operating result before depreciation and amortisation (i.e. EBITDA) divided into sales revenue and expressed as a per cent. Cash share in value retention is defined as operating result before depreciation and amortisation (i.e. EBITDA) divided by value retention. Profit return in sales is calculated as pre-tax profit divided into sales revenue and expressed as a per cent. Sales capital intensity index is defined as capital employed divided by sales, where capital employed is defined as total long-term debt plus shareholder funds. Value retention capital intensity is defined as capital employed divided by value retention. Cash return on capital employed is defined as operating result before depreciation and amortisation (i.e. EBITDA) in relation to the sum of shareholders equity and long term debt. Profit return on capital employed is defined as pre tax income divided by capital employed.

In this chapter the researcher has employed the financial framework and corporate financial database to make visible the financial operating characteristics of those firms that make up the main corporate sector indices in Europe. In contrast to the previous chapter one observe variation in growth rates for the sectors and one also reveal a number of differences in the patterns between: external purchase costs in income, the distribution of retained income to employees, levels of cash retained out of income and capital intensity.

In getting to the bottom line of ROCE the researcher is also able to differentiate strong and weak corporate financial performance in the Europe 170 group. It is possible to rank the performance of companies in the Europe 170 index and to put each firm into a quintile group which splits the sample of firms into five equal groups. For example with the compound annual growth rate (CAGR) one find that the lowest overall growth rate for a firm over the period 1990 to 2004 was -11.7 per cent and the highest CAGR 34.6. One can combine this quintile breakdown of corporate performance in the Europe 170 with the financial framework to reveals how growth, combines with favourable operating ratios to generate high returns on capital employed and position a country index of firms, industry sector and individual firms.

Table 6.33, Quintile distribution of the Europe 170 firm key ratios

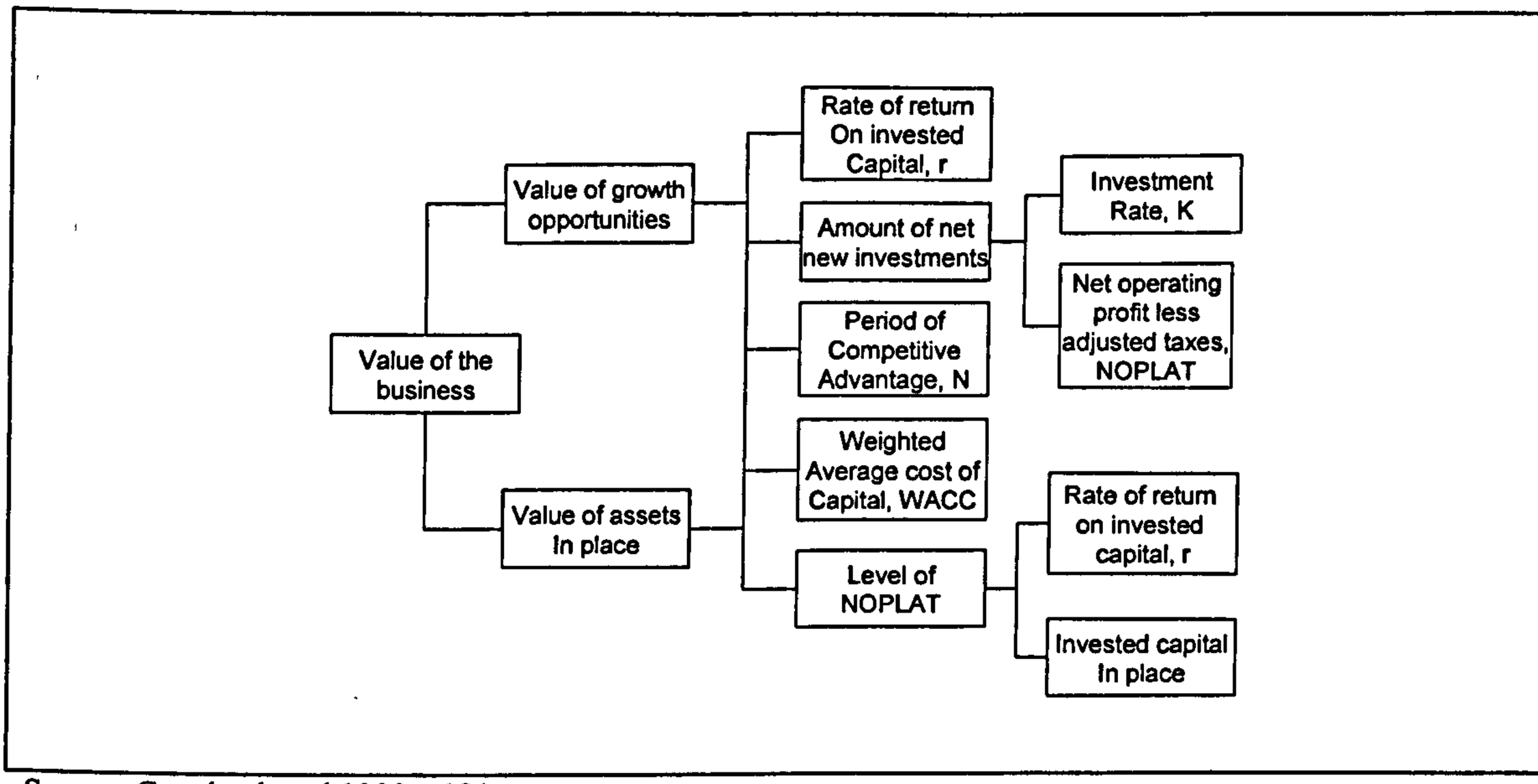
	Quintile 1 (bottom)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (top)
Sales Growth Compound Rate	<3.3	3.3-6.4	6.4-9.0	9.0-12.9	>12.9
Value Added (Euros)	<2.8	2.8-5.8	5.8-9.5	9.5-13.3	>13.3
Purchases in Sales Rate %	>75.0	66.5-75.0	58.4-66.5	49.3-58.4	<49.3
Value Retention Rate %	<25.0	25.0-33.5	33.5-41.6	41.6-50.7	>50.7
Labour's Share of Value Retained	>67.2	61.2-67.2	53.4-61.2	39.9-53.4	<39.9
Cash ROS Rate %	<8.9	8.9-13.6	13.6-17.3	17.2-25.4	>25.4
Cash share in value retention	<32.8	32.8-38.8	38.8-46.6	46.6-60.1	>60.1
Profit ROS Rate %	<3.4	3.4-6.3	6.3-10.2	10.2-14.6	>14.6
Sales capital Intensity Rate %	>1.3	0.7-1.3	0.5-0.7	0.4-0.5	<0.4
Value retention capital intensity index %	>3.40	2.16-3.40	1.68-2.16	1.10-1.68	<1.10
Cash ROCE Rate %	<15.7	15.7-20.8	20.8-24.3	24.3-30.8	>30.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For company data used in calculations see appendix 3.

The researcher know from the analysis in table 6.33 that just twenty per cent of firms in the Europe 170 generate a cash return on capital employed which is above 30 per cent. In order to obtain this position this group of firm's must be operating with favourable trajectories and operating ratios. The researcher can employ the quintile distribution of corporate financial performance in the Europe 170 to position high versus low corporate financial performance. The financial analysis can now put numbers on this, that is, a top quintile firm will have: a CAGR of more than 13 per cent per annum a purchase cost in sales of less that 50 per cent and a labour share of value retained which is less that 40 per cent. Cash retention in income will be more than 25 per cent and this must combine with a capital intensity ratio which is less than forty per cent (capital employed as a per cent of total income).

The researcher knows from the sector analysis in this chapter that although average company in the Europe 170 sample is located in quintile 3, which was also the case in the country analysis, this has not been the case for the sectors. Here one observes differences in terms of growth trajectories, financial operating ratios and capital related ratios. These observations are important as these key ratios form a complementary set of value drivers when compared to the traditional accounting format. As such the value added DuPont tree structure of key ratios can be aligned to the shareholder value metrics as suggested by Copeland et al (1990), by substitution the traditional breakdown of the return on capital employed (see figure 1.1) with a value added ROIC-tree as suggested by the researcher. This provides a complementary set of value drivers (in terms of return on capital) that can aligned to shareholder valuation metrics.

Figure 6.14, The key value drivers



Source: Copeland et al 1990 p 121.

What the researcher has observed in both the country and sector chapter of Europe 170 is that cash generated by firms, i.e. EBITDA, is a function of both the value retention rate (i.e. degree of vertical integration) and the cash share of value added. As such what happens between income and factor costs (here procurement and labour costs) can mathematically be described as follows:

EBITDA = Sales * value retention rate * cash share of value added

Or

EBITDA = Value retention * cash share of value retention

This implies that firms compete for value retention along their value chain to capture cash as the residual after procurement and labour costs has been deducted. Compared to the function of expense format the nature of expense format is additive and the analytical qualities of the above EBITDA-formula is not lost because it can be aggregated at a meso and macro level. The nature of expense format does not contain arbitrary judgements about where to allocate expenses improving the analytical qualities of this particular approach are stronger as a result.

The importance of the above EBITDA-formula is that cash is determined by the firms strategic and tactical market interventions in product markets (sales and procurement) and labour market (labour costs) and as such strategy can be seen as arbitrage. However, the value added in sales format employed in the Europe 170 analysis for this chapter cannot fully describe the financial ratios at a firm level because firms also have financial assets. The case study chapters which follow allow the researchers to decompose the capital employed into financial assets and production capital employed thereby allowing the researcher to capture intervention in financial markets by the firm. These interventions are important as the value added statement on sales reveals a cash flow format that is related to the firm's primary stakeholders as:

EBITDA (investors & government) = Sales (customers) – procurement (suppliers) – labour costs (employees)

As one cannot locate firm strategy at the corporate sector level, the researcher turns to the case study chapters to locate strategy at the firm level as value drivers are an important characteristic in shareholder value metrics. The key value drivers in the "rate of return on invested capital" can be analysed using either the function of expense format or the nature of expense format. As such the value added structure of the nature of expense format provide complementary and important financial insights of similarities and differences between firms, sectors and countries.

For analysts and shareholders what matters is how firm strategy translates into strong financial performance. Strategy is by its nature located within firms and directed by senior executives in the interests of competitive advantage and shareholder value. The analysis now moves on to consider strategy and how the account for corporate performance needs to combine strategic narratives and financial numbers.

Chapter 7 . Nokia and Ericsson: Accounting for strategic narratives

In this chapter the researcher turns to review the strategic narratives employed by Nokia and Ericsson to justify corporate moves in a competitive market. The objective of this chapter is to establish the degree to which it is possible to identify unique characteristics about the narratives used by the two companies. To what extent is it possible to rely on corporate narratives to help us judge performance?

The chapter is split into four section and start off with an introduction to the case study, it then review the narratives each company has used to identify its strategic priorities in the next two sections and end the chapter with a discussion on similarities and differences.

Introduction to the case study

Strategy and finance

In the corporate strategy literature Porter (1980, 1985) argues that firms obtain competitive advantage from their position in an industry relative to competitors and this position can be a low cost or differentiation. The competitive advantage combined with the scope of activity provides firms with three generic strategies; low cost leader, differentiator or focus on a market niche. Firms that successfully install these generic strategies into their respective value chains can sustain competitive advantage in terms of higher return on capital that competitors. For Prahalad et al (1990) the attention is with how organisations set up structures that allow them to focus on their core competences and thereby extract competitive advantage from their resources (c.f. scarcity rent). More recently the strategic management accounting and corporate finance literature has stressed the importance of combining financial and physical numbers to help formulate business strategy for example with the so-called balanced scorecard (Kaplan, 1992, 1993, 1996). This has been further refined with the stress now on the need to generate shareholder value which places rather more emphasis on how organisations need to restructure to improve shareholder value (Rappaport 1998). The

increased focus on shareholder value in managerial accounting is also a consequence of blending two kinds of thinking namely corporate finance and corporate strategy (Copeland et al 2000). No longer is finance only reserved for CFO's as strategy is no longer reserved to CEO's. This new reality presents executive managers with a need to manage value and to focus on value creating strategies. In this quest for value executive managers align corporate strategy with the wealth creation of shareholders. The increased focus on shareholder value creation from managers as well as investors has led to the development of several shareholder value metrics over the past decades as reviewed by Ameel et al (2002).

The researcher start by introducing the case firms before turning to review the narratives each company has used to identify its strategic priorities.

Company introduction

Ericsson and Nokia are two Nordic companies that are regarded as the two leading companies in the mobile communication industry, Ericsson in Mobile systems and Nokia in Mobile phones. Together these two companies account for around 40 per cent of the global mobile phone market (see appendix 5, table A5.6) for Nokia Mobile Phones and Sony Ericsson Mobile JV and around 45 per cent of the global mobile systems market (see appendix 5, table A5.7) for Nokia Networks and Ericsson Systems.

It was not obvious in the early days of the mobile communication industry that the two companies would later become the leaders in this emerging industry. In the early 1980's Ericsson was a leader in Public Telecommunication and at that time mobile communication was viewed as a small niche within the telecommunications industry. At the same time Nokia was a Finish industrial conglomerate operating a diverse business portfolio of which telecommunications was a small part of its business. Despite management disputes as whether mobile communication was an area for the future or not, customer demands and foresight made the difference as both companies chose to develop products for the NMT450 standard in the Nordic region, which provided the technological expertise and market experience that proved valuable later. Besides the Nordic presence, regulatory and technological reforms played a role in underwriting the success of the Nordic players, where deregulation of the telecommunications industries in both US and Europe during the mid

1980s and thereafter played a significant role because it opened up new geographic markets. The technological breakthrough of GSM was also important as it became the digital standard adopted in Europe in the early 1990´s and later in several other countries outside Europe as mobile communication was introduced in these countries. A more extensive description of the two firms and their product market conditions can be found in appendix 5.

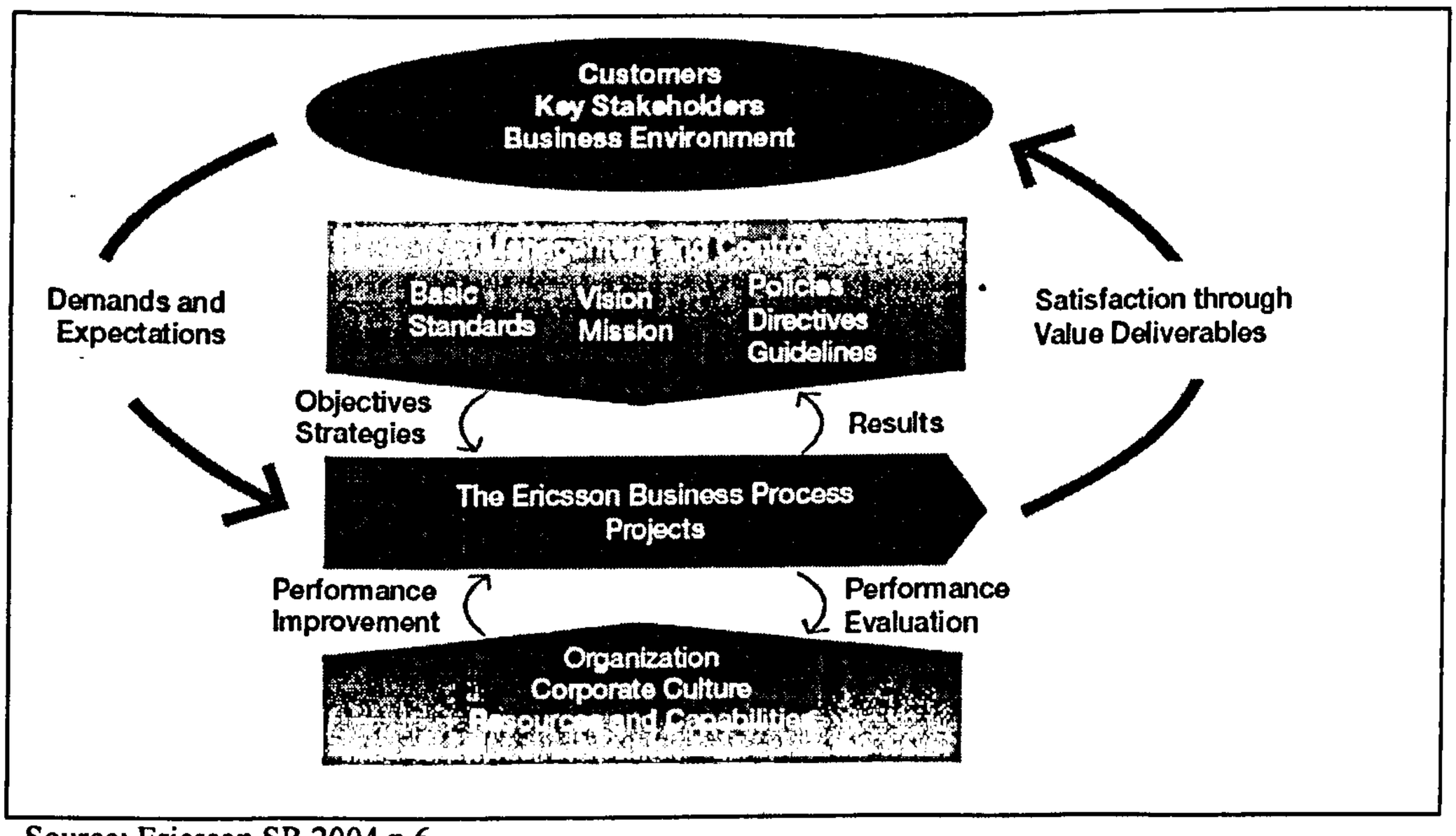
The researcher will start by reviewing the strategic priorities of Ericsson before turning to review the strategic priorities of its competitor Nokia.

Ericsson

Ericsson: Strategy and management moves

The Ericsson management system focuses on the 'value flow' of their operations, i.e. how product market changes and customer needs are converted into business fulfilment by defining a common set of elements for visualising and managing activities (Ericsson SR 2004). The Ericsson management system is valid for all operations and serves as a prerequisite for operational excellence.

Figure 7.1, The Ericsson Group Management System.



Source: Ericsson SR 2004 p 6.

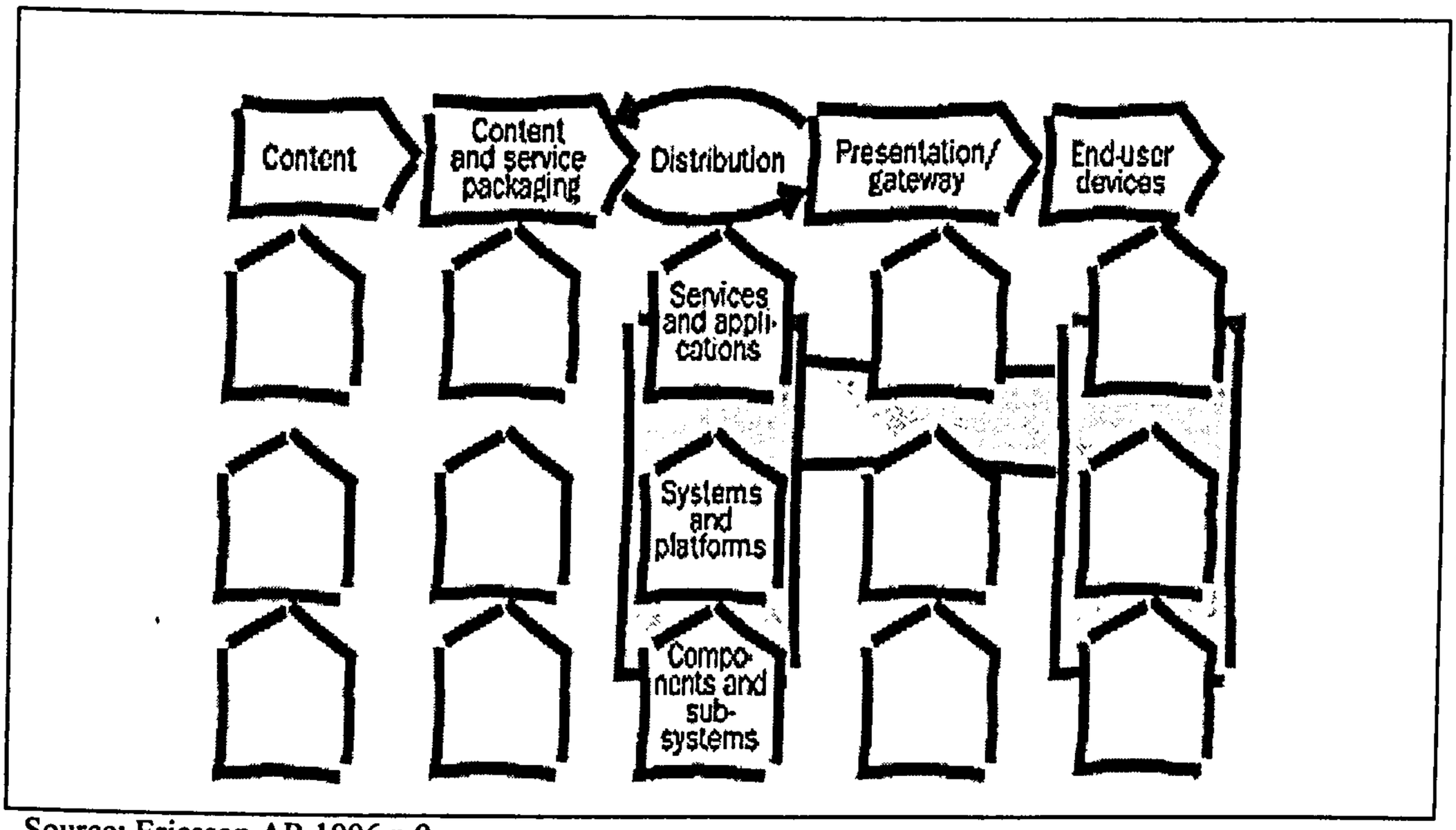
This particular model describes how strategy is formulated and the feedback loops from the product market operate to shape strategy and it is a model that draws elements from Porter (1980, 1985) and Prahalad et al (1990). Porter emphasises that firms pay attention to their industry and competitive environment and use this information to inform strategy. Attention to organisation culture and especially capabilities and resources is a key facet of the resource based theory (see Amit et al 1993, Prahalad et al 1990). Employing both physical and financial information to drive performance is also a key element of the balanced scorecard and strategic management accounting which emphasises the use of customer satisfaction to inform strategy.

Ericsson: Managing the value chain

In the 1991 annual report Ericsson was concerned to ensure that market intelligence was employed to help shape future business strategy (Ericsson AR 1991) hoping to create a picture of telecommunication demands employing the evolution of existing product market trends and competitors reactions.

The Internet and the World Wide Web are first mentioned in the 1995 annual report (Ericsson 1995 AR) the year Netscape made its Initial Public Offering (IPO). Before that a strategy of pure telecommunication technology was embraced for the development of data communication, as ISDN and ATM, and as such Ericsson was focusing on its own value chain rather than adjunct value chains.

Figure 7.2, The value chain of content and services



Source: Ericsson AR 1996 p 9

The "2005 study" conducted by Ericsson in 1996 (AR 1996) provides the researcher with insight into how the strategy process is conducted at Ericsson. This review of the telecommunication industry and its business environment was concerned with identifying dominant market trends. These included the observation of convergence in telecommunication, data and media industries. In addition Ericsson's strategic review of this time reviewed the industry structure in terms of value chains, both the traditional value chain of telecommunication and the value chain of content and services (see figure 7.2). In 1996 Ericsson was also concerned with the transfer of activities from operators to suppliers (in sourcing) and from suppliers to component suppliers (outsourcing). The next step was an analysis of the value chains of content and services and identifying critical issues for the future including: end user needs, customer-driven solutions, joint business development with partners, regional diversity, mass market logistics, the data paradigm, low-cost operation, open systems and software culture, microelectronics, as well as organisational development and corporate culture.

The central feature of this framework of analysis for formulating strategy is that it is geared around the development of new products and services within an industry-value chain and how resources could be articulated to provide new products and services into the future based on market trends.

In 1998 Ericsson (AR 1998) introduced its new strategy "New Telecom World", which described the convergence of data and telecommunication, where wireless communication was expected to be a central development. Ericsson had ambitions to be in a strong market position (no 1 or 2) in wireless (Network operators and service products, consumer products and enterprise solutions) and a less strong position in wire-line (top 3, niche top 3 or top 5).

In the year 2002 new strategic initiatives emerged so as to handle the new telecoms market in the new millennium. According to the CEO (Ericsson AR 2004 p 3) the challenge for Ericsson is "to secure an enduring competitive advantage in a profoundly changed market" as the market has shifted from being technology driven to consumer driven. As far as the company is concerned, a strategy for success depends on five crucial elements (Ericsson 2004 p 3): "Refining our long-term vision, reinforcing the importance of meeting customer's needs, improving our way of working, focusing on consumer-driven technology leadership, launching new products and services for operators".

Strategy at Ericsson calls for: market leadership and global reach from innovation and technological leadership, cost leverage from economies of scale and to deliver sustainable best in class operating margins (Ericsson F20 2004). In the choice of operational excellence and innovation the direction, according to the CEO, is clear (Ericsson AR 2004 p 3): "Technology remains important, but success is achieved by meeting consumer's needs, not by developing technologies in search of a market". Throughout the period 1991 to 2004 Ericsson is concerned to understand the nature of its changing market place and adjust the configuration of its value chain accordingly. This is also a period where firms are made aware of the importance of intangible assets and the knowledge and capabilities of employees.

Ericsson: Managing core competences

The researcher often finds the word "intangibles" being used in connection with statements about employees (Ericsson AR 1991, AR 1995, AR 1997, AR 1998, BR 1999, BR 2000, AR 2005). In the case of Ericsson (AR 1991 p 12-13) one also finds that "high quality as one of the primary competitive weapons of the future" and separate sections on this issue are observed in some years (Ericsson AR 1991, AR 1995). Ericsson (SR 2004 p 24) "has been

using employee's surveys as means to measure employee empowerment and the human capital index for many years".

During the 1990s Ericsson made several major organisational changes, where "the common denominator has been an increasingly stronger focus on core business and a more distinct market orientation" (Ericsson AR 1995 p 14). Companies or operations that have fallen outside the definition of core operation have been sold or liquidated. By 1995 Ericsson (AR 1995) areas of competence shifted in the annual report as radio communication became the largest business area and was now for the first time described before the business area public telecommunication in the annual report.

Competitive market pressures forced Ericsson (AR 1996), by mid 1990´s, to concentrate on its core operations and thus assign much of their primary production to outside companies. Part of this development was driven by the impact of new technology where new products are requiring less complicated construction and thus less production hours (Ericsson AR 1997).

According to Berggren et al (2004 p 221) "Ericsson has been at the forefront of outsourcing in the telecom sector" and from the "mid 1990´s started a process of aggressive outsourcing of its fixed networks business" (ibid p 214). By year 2000, Ericsson had also divested its mobile phone division by creating a Joint Venture with Sony after having first outsourced the manufacturing of phones to Flextronics.

Throughout the period 1990 to 2004 Ericsson selectively discloses in its annual report how strategy is being formulated and adjusted around the needs of the product market and industry dynamics and at the same time reflecting on how intangible assets and firm resources need to be mobilised to achieve these objectives. Performance, is not just financial, but also judged on the basis of using physical as well as financial measures in line with strategic management accounting and balanced scorecard approach. Ericsson employs a "balance scorecard as a framework for translating strategic objective into a set of performance indicators" (SR 2004 p 6). The scorecard is divided into five perspectives: finance, customer, competition, internal efficiency and employees. The scorecard is also used as a management tool to: enhance progress, align department and personal objectives to company goals and connect strategic objectives to long-term targets.

Ericsson: managing for shareholder value

In recent years the strategic priorities of the company have changed and now increasingly incorporate the language of shareholder value. In the case of Ericsson, the CEO states that their "basic objective is, with a good level of profitability, to be able to be the leading international supplier of advanced telecommunication systems" (Ericsson AR 1995 p 5). In connection with the strategic review in 1996 Ericsson (AR 1996 p 5) state they "will give our shareholders a 'competitive' dividend on money invested" moreover that "an overall objective for Ericsson is to create competitive value growth for its shareholders" (Ericsson AR 1998 p 12). This is defined as the development of the Ericsson share price and dividends i.e. total shareholder returns.

Strategy, at Ericsson, has become increasingly "financialized" where senior management remuneration packages are now geared towards generating shareholder value. In 1997 Ericsson (AR 1997) introduced a more directed share option program for 500 key persons as a salary bonus. Ericsson states, in connection with their stock purchase program, it "enhances shareholder value, minimizes share value dilution and helps us to attract and retain talented and committed people" (2000 BR p 45). This is also reinforced in the sustainability report (Ericsson SR 2004 p 1) by the CEO as "an essential factor in Ericsson success is the attraction, retention and engagement of all our employees".

Ericsson operates two significant global remuneration programs (Ericsson SR 2001, 2004): a short term incentive plan for all managers world-wide, which rewards achievements of specific targets set at business and team level. Ericsson's short-term cash incentive plan is based on specific business targets derived from the annual business plan (Ericsson AR 2005). The exact nature of the targets depends on the level of executive position and may include financial targets, operational targets, employee motivation targets and customer satisfaction targets (c.f. earlier scorecard perspectives). Ericsson's share-based long-term incentive plans are submitted each year for approval by the shareholders at the Annual General Meeting (Ericsson AR 2005). The exact value for the receivers is determined by three specific variables, the individuals' own investment in shares, a long-term financial target at corporate level, and the share price development (AR, 2005).

Nokia

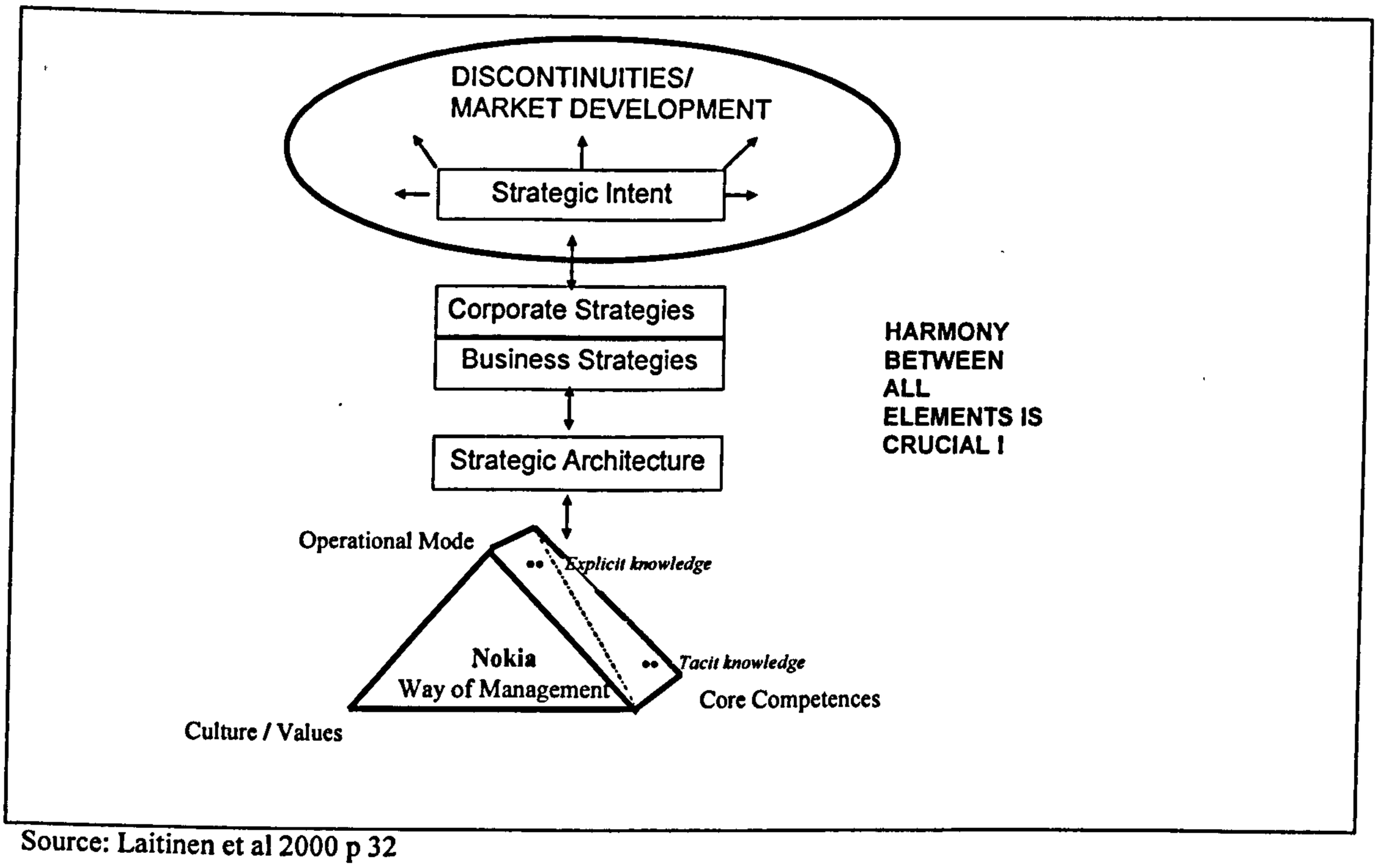
Nokia: Strategy and management moves

Strategic intent is an important concept for Nokia (AR 1998) and is related to their perception of the world. Their strategic intent is described in the annual reports as the "strive for leadership in the most attractive global communication segment through speed in anticipation and fulfilling evolving customer need, quality in products and processes, as well as openness with people and to new ideas and solutions" (Nokia AR 1998 p 2). It is also described as to "take a leading, brand-recognized role in creating the Mobile Information Society by: combining mobility and the Internet, stimulating the creation of new services" (Nokia BR 1999 p 4, BR 2000 p 3).

Nokia: Strategic intent and managing core business competences

In contrast to Ericsson, Nokia is a firm which has been strategically focussed on product market discontinuities and has been concerned to mobilise firm resources to sustain competitive advantage. Hamel et al (1994 p 158) states that "a firm's strategic intent should represent an ambition that stretches far beyond the current resources and capacities of the firm". As such "a firm's strategic architecture and its overall strategic intent must be grounded in a deep understanding of potential discontinuities" (ibid). The Nokia model of strategic intent context is illustrated by Laitinen et al (2000), see figure below.

Figure 7.3, Nokia´s framework for strategy development



Source: Laitinen et al 2000 p 32

Strategic intent is more about how it is possible to create the future rather than only adapt to the industry environment. Hamel et al (1994 p 160) observe that "we need a view of strategy as stretch as well as fit" and as such "one must find a way to close the gap between resources and aspirations that the strategic intent opens up" (ibid p 161).

However, Silberman (1999) argues that the success of Nokia is also a story of product market conditions, as the digital telecom standard GSM helped to create a unified mobile phone market in Europe during the 1990´s. GSM, or second generation mobile technologies, provided a technological discontinuity, as different set of competencies were required (mainly in R&D and manufacturing) due to the introduction of digital radio technology (Sandowski et al 2003). Krogh et al (2000) argue that the mobile phone industry went through a turning point in 1998, triggered by the formation of new consumer preferences, such as low price phones and pre-paid subscriptions, enabling young people to become mobile subscribers. This turning point also marks the shift from an engineering era to a marketing era. During this shift, von Krogh et al (2000) argues that Nokia was sensitive to changing consumer demand and un-served customer segments and Ericsson, by way of contrast, focussed much more on technology-related issues

In the early 1990s, Nokia made the strategic decision to make telecommunications their core business, with the goal of establishing market leadership in every major global market. This is a position that they now have in Mobile Phones and Mobile Systems. Nokia's current stated business strategy is to continue to be a market and customer driven product company and to capitalize on market leadership in mobile devices and infrastructure. Nokia's ambition is to lead the development and commercialization of high capacity networks as demand for mobile services increases. Traditionally anticipating and expanding into new business segments during their initial development stage helped Nokia to become a leading player in the global mobile communications market. (Nokia 20F 2005).

Nokia's current business policy with regards to mobile devices can be broken down into three main strategic moves (Nokia 20F 2005): first, continue to *expand mobile voice telephony* because growth opportunities still exist in the mobile voice market, such as markets with low mobile penetration and increased functionality in higher penetration markets. Second, *develop consumer mobile multimedia* employing connected mobile multimedia devices, applications and solutions together with customers and other key industry collaborators to offer compelling multimedia experiences to end consumers. Thirdly, bring *extended mobility to enterprises* offering products and services designed to benefit companies and individual business people.

Nokia believes that this combination of strategic moves in mobile communications devices will position the business favourably, when different digital technologies and industry standards converge. Nokia also aims to drive the standards surrounding the interoperability of mobile communications technology and thus capture the growth of mobile services worldwide. The development of relevant software by independent producers will, it is argued, provide consumers with a wide and varied selection of competitive, yet interoperable products and services (Nokia F20 2005).

The dominant strategic language employed in Nokia has traditionally been that of production as a core competence for example, "We consider our mobile phone manufacturing as a core competency and competitive advantage" (Nokia F20 2002 p 33). However, despite this, Nokia had outsourced 26 per cent of their mobile phone production in 2005 (F20 2005) and more than 50 per cent of networks production (Nokia CR 2005). These different outsourcing

strategies are described as a "horizontal outsourcing model" for Nokia (Berggren et al 2004). Nokia reorganised its "core" business in January 1998 into three business groups: Telecommunication (later renamed Networks), Mobile Phones and Communication products and the venture organisation and research centre (Nokia FS 1998). In January 2004 the organisation was split into four business groups: Mobile Phones, Multimedia, Enterprise Solutions and Networks. The new structure also included two horizontal groups, namely Customers and market operations as well as Technology platforms (Nokia AA 2004).

According to Laitinen et al (2000) management at Nokia aims to combine and balance winning foresight and excellence in the execution of strategy by "reading the market through wide and open market interfaces, being able to translate intuitive foresight into right actions at the right time and being able to execute a global strategy fast" (Ibid p 15). This is also stated by the CEO as "in this changing environment our goal is to establish a balance between foresight and excellence in execution, and then to maintain it" (Nokia BR 1998 p 7).

Nokia: Strategy for shareholder value

Although the language of strategy at Nokia is very much centred on managing core business operations and competences the researcher observe, more recently, a shift in emphasis towards a more shareholder value driven approach to managing and directing corporate strategy. In a similar vein to Ericsson, Nokia (F20 2005 p 90) states that they operate in an "extremely competitive, complex and rapidly evolving high technology industry". Being a leading company in the industry with a global business the key objectives of their executive compensation programs are to "attract, retain, and motivate talented executive officers that drive Nokia's success and industry leadership" (ibid).

In Nokia there is a strong focus on creating shareholder value (Nokia AA 2001, AA 2002, AA 2003, AA 2004, AA 2005, F20 2001, F20 2002, F20 2003, F20 2004, F20 2005), but what this implies is more difficult to find out in the financial documents. However, one does find some insight into what this means as:

- "The key financial targets for Nokia are growth, profitability, operational efficiency and a strong balance sheet" (Nokia F20 2005 p 124 and F-59).

- "The Nokia brand has become one of the most valuable in the world and is one of the company's key assets in securing long-term shareholder value" (Nokia BR 1999 p 9).
- "Shareholder value is maintained and increased by foresight, combined with excellence in execution. We have a lot of expertise, an energetic global organization and many interesting opportunities ahead. We aim high and our objective is strong growth and good profitability leading to increased shareholder value". (Nokia BR 1998 p 7)

The Nokia CEO states that the ultimate goal for a corporation is to generate value for shareholders (Nokia AR 1997). This is done through care of customers, engaged employees and a strong corporate culture, which is a prerequisite for an efficient company and thus high sustainable return for shareholders. Although there is a strong commitment to shareholder value as a strategic objective one do not find a consistent and clear set of shareholder value metrics reported in the annual report.

However, Nokia's managers do comment on specific key ratios as: net-debt to equity ratio, R&D to sales, investments to sales and operating margin (Nokia AR 1991, AR 1993, AR 1994, AR 1995, AR 1996, AR 1997, FS 1998, FS 1999, FS 2000, AA 2001, AA 2002, AA 2003, AA 2004, AA 2005). Some key ratios are commented upon every year for example: the net debt to equity ratio, which can be understood from a historical perspective when Nokia had during the 1980s a high net gearing, much higher than Ericsson which was the outcome of a series of acquisitions.

Nokia's conversion to shareholder value can been seen much more clearly in the remuneration report which outlines the mechanics of senior executive pay. Nokia compare compensation practices against other relevant companies, which include "both high technology and telecommunications firms that are headquartered in Europe and the United States" (Nokia F20 2005 p 90). They have also access to, and uses outside independent consultants for remuneration comparison. The executive compensation programs at Nokia are designed to (ibid): provide a total compensation package that is competitive with the relevant market, competitive base pay rates and variable cash compensation for the achievement of stretch goals. These arrangements serve to align the financial interests of the executives with those of the shareholders through long-term incentives in the form of equity-based awards.

The components of the executive compensation program at Nokia include (Nokia F20 2005): annual cash compensation, base salaries targeted at globally competitive market levels, short-term cash incentives tied directly to performance and representing a significant portion of executive officers' total annual cash compensation and long-term equity-based incentives. The remuneration package for senior executives is revealed in figure 7.4. This reveals two significant components determining the overall financial packages for senior executives in Nokia. The first component relates pay for performance in traditional operating profits and net assets growth. However, the second component of executive compensation promotes the delivery of Total Shareholder Returns (TSR), which is dividend and market value gains one year to the next. If executives achieve maximum performance on TSR they can boost their compensation by more than one-third.

Figure 7.4, Nokia's managerial incentive scheme

Position	Incentive as a % of Annual Base Salary: Minimum Performance	Target Performance	Maximum Performance	Measurement criteria
Chairman and CEO	0	100%	225%	*Financial Objectives* (Includes targets for net sales, operating profit and net working capital measures)
	0	25%	37.50%	*Total Shareholder Return* (comparison made with key comparators in the high technology and telecommunications industries over a one, three and five year period)
	0	25%	37.50%	*Strategic Objectives*
Total	**0**	**150%**	**300%**	
President and COO	0	100%	225%	Financial & Strategic Objectives
	0	25%	37.50%	Total Shareholder Return
Total	**0**	**125%**	**262.5%**	
Group Executive Board	0	75%	168.75%	Financial & Strategic Objectives
	0	25%	37.50%	Total Shareholder Return[1]
Total	**0**	**100%**	**206.25%**	

[1] Only some of the Group Executive Board Members are eligible for the additional 25% total Shareholder Return element.

Source: Nokia F20 2005 p 91.

These incentive payments are determined based on the company's actual performance to pre-established targets for net sales, operating profit and net working capital measures. Certain

executives may also have objectives related to market share, quality, technology innovation, new product revenue, or other objectives of key strategic importance. (Nokia F20 2005)

Nokia's long-term equity-based incentive awards in the form of stock options, performance shares and restricted shares are used to align the executives' interests with shareholders' interests, reward performance, and encourage retention. These awards are determined on the basis of several factors, including a comparison of that executive's overall compensation with the relevant market. (Nokia F20 2005)

One of the goals of Nokia's long-term equity-based incentive program is to focus executives on building value for shareholders. In addition to granting executives stock options, performance shares and restricted shares, Nokia also encourage stock ownership by their top executives. In January 2001, Nokia introduced a stock ownership commitment guidelines with minimum recommendations tied to annual base salaries (Nokia F20 2005). Strategy at Nokia has become increasingly financialized because the company is employing significant sums of cash to buy-back shares which has a positive impact on earnings per share (EPS) and therefore share prices and total shareholder returns in addition to the fact the remitting cash back to shareholders to buy-backs shares also increases shareholder returns. In this way the financial interests of managers and investors are increasingly aligned (see Andersson et al, 2007).

Nokia (F20 2005) distributes retained earnings either in the form of cash dividends, share buy-backs, or a combination of these. There is no specific method governing the way in which amounts distributed are determined, although some limits are set by law. Nokia has over the past few years been authorized to repurchase own shares: 225 million shares in 2001, 220 million shares in 2002, 225 million shares in 2003, 230 million shares in 2004 and 443 million shares in 2005. The amount authorized each year has been at or slightly under the maximum limit provided by the Finnish Companies Act. The table below sets forth actual share buy-backs in volume and value by the Group in respect of each fiscal year indicated.

Figure 7.5, Nokia share buy backs 2001-05

	Number of shares	EUR millions (in total)
2001	995 000	21
2002	900 000	17
2003	95 338 500	1 363
2004	214 119 700	2 661
2005	315 010 000	4 265

Source: Nokia F20 2005 p 10

Share buy-backs have become an increasingly significant use of cash resources by Nokia and are being employed to finance an investor – management financial circuit. Treasury shares are also being acquired by the Group to meet its obligations under employee stock compensation plans in the US and Canada. When treasury shares are issued on exercise of stock options any gain or loss is recognized in share issue premium. (Nokia F20 2005)

After using broad-based employee stock option plans since 1997, Nokia introduced in 2004 performance shares as the main element to their broad-based equity compensation program, to further emphasize the performance element in employees' long-term incentives. As part of this change, the number of stock options granted has been significantly reduced since then. Since 2003 Nokia have granted restricted shares to recruit, retain, reward and motivate selected high potential employees, who are critical to the future success of Nokia (Nokia, F20 2005).

Nokia and Ericsson: Similarities and differences

The analysis that have been undertaken using the narratives employed by senior executives in the annual reports of both companies suggest some differences in the degree of emphasis with regards to strategic priorities. On the one hand, one find that Ericsson's senior managers are focussed on managing the value chain and how this can be recalibrated to sustain competitive advantage. However, this is not to say that Ericsson's senior managers do not stress the importance of managing resources and utilising the intangible capabilities of the organisation. On the other hand, senior managers in Nokia tend to emphasise the management of resources relative to industry and product market positioning but here too managers do not ignore the need to pay attention to industry conditions and customer demands.

What one find when reviewing the strategic narratives employed by both companies is a slight difference in emphasis but that both firms claim they pay attention to the needs of the product market and how they adjust their core competences and capabilities to the needs to the customer. For example, both firms have out-sourced production on the basis that this allows them to concentrate on their core business activity. This said one also notes that in recent years the language of managing strategy for shareholder value has become an increasingly significant and important strategic objective. Senior manager's remuneration now incorporates the metrics of shareholder value and links managerial financial reward to shareholder value. Both Nokia and Ericsson stress the importance of strategy delivering shareholder value.

Using the strategic narratives taken from the annual report and accounts and other corporate documentation it is not possible to construct an assessment as to whether one company's strategic moves are superior to another. This is because elements of the common narratives associated with the discourse of management strategy are present albeit with slightly different emphasis. The researcher is given hints from a secondary literature commenting on the two companies that Ericsson failed to manage its outsourcing strategies successfully and that this led to loss of market momentum as product launches were delayed or cancelled (see Gustavsson et al 2003, Berggren et al 2004). These delays have been credited with establishing a divergence in the trajectories of both companies with Nokia exploiting a more favourable relationship with its supply chain. Even so the extent to which these vents tie in with a divergence of strategic trajectory is also difficult to establish because one need to complement the narrative with financial numbers to be able to judge strategic success or failure.

Adding financial number to strategic narratives

When one turns to the financial accounts for both companies and consider the extent to which financial numbers are employed to support strategic initiatives and reveal performance the researcher find that the financial number presented are not consistent over time and are fragmented and partial in nature.

In the Ericsson annual reports there is limited description as to what constitutes a key set of corporate financial metrics but one do find, for example, that capital turnover as a key ratio. Capital turnover is annually reviewed in the "board of director's report" together with accounts receivable to sales and inventory to sales on the asset side. Ericsson may well be focussed on managing its working capital and on the equity and liability side only the equity ratio (equity plus minority in relation to asset) as this is commented on annually. The exception is the annual report of 1998 (p 12-13), where financial objectives are stated clearly as "growth of at least 20 per cent with a positive cash flow requires a yield on capital employed of 20 to 25 per cent for Ericsson as a whole. Consequently, there is a need for average operating margins of 10 per cent or more and an average capital turnover of two or more". These financial objectives are then sustained in this format for some years (AR 1999, FS 2000, FS 2001). However, these financial objectives become less pronounced in connection with the financial crisis after the millennium shift and have thereafter not been disclosed in this strict structure or treated with equivalent importance.

Outside the board's review, ratios such as net sales to order booking, income before taxes, adjusted income per share after actual taxes, return on equity, return on capital employed cash flow before financing activities, equity ratio are highlighted in figures in the annual report. However, in terms of textual comments only that pertaining to R&D is well reviewed both in terms of size, key ratios and direction of investments a similar pattern is also seen with Nokia.

Nokia also reveal few insights into the financial key metrics they employ. Senior executive do place emphasis on a number of key financial ratios which are not emphasised by Ericsson. Nokia's managers comment on: net-debt to equity ratio, R&D to sales, investments to sales and operating margin (Nokia AR 1991, AR 1993, AR 1994, AR 1995, AR 1996, AR 1997, FS 1998, FS 1999, FS 2000, AA 2001, AA 2002, AA 2003, AA 2004, AA 2005). However, the only key ratios that are commented upon every year are the net debt to equity ratio, which can be understood from a historical perspective when Nokia had during the 1980s a high net gearing, much higher than Ericsson due to its acquisition strategy. Despite strong improvement in the financial position during the 1990's Nokia continued to report on this ratio.

Ericsson do not drawn our attention to the return on capital employed (ROCE) although some components of ROCE are measured by the company (see appendix 4.2 fifth page) and the

company gives us a glimpse of the calculation of Economic Value Added (EVA) but only uses the WACC calculation for internal awareness of the cost of capital (see appendix 4.2 fifth page).

In general both companies operate with a set of traditional financial metrics based on traditional accounting ratios which over time are supplemented with ad hoc ratios, like the value added index for Nokia and the Ericsson "value-flow statement". However, these formats are either not disclosed, as in the case of Nokia where one only have indirect knowledge that some sort of value added accounting format is employed to evaluate performance (see Häikiö 2002). Or in the case of Ericsson there is a glimpse that the value added format, outlined in this thesis, is employed to assess corporate performance in relation to its stakeholder groups in the so-called value-flow statement (see figure 7.6) where:

> "the wealth created by our activities is the amount of value added to the cost of raw material, components and ready-made products and services that we purchase". Ericsson (SR 2004 p 10)

Figure 7.6, Ericsson value-flow statement.

VALUE FLOW STATEMENT (SEK million)

	2005	2004
Net Sales	151,821	131,972
Share in earnings of joint ventures and associated companies	2,395	2,323
Other operating income	2,491	2,617
Financial income	2,653	3,541
Total reported revenues	159,360	140,453
Procurements and other operational expenses	-83,363	-70,846
Amortization and depreciation	-5,802	-7,004
Value added	70,195	62,603
Of which allocated to:		
- Employees	34,458	32,358
- Government (taxes)	8,875	8,330
- Bondholders and other lenders	2,402	4,081
- Shareholders	24,460	17,838
of which paid out as cash dividend	7,260	4,033
Increase in value add	12%	

Source: Ericsson SR 2005 p 8.

However, this financial analysis is not consistently reviewed in key financial reports year on year but rather shown once in their sustainability report (SR 2004, SR 2005).

Summary

After reviewing the annual reports and key corporate documents it is not possible to easily distinguish separate and distinctive strategic narratives used by these two companies. What one find is a rather fragmented narrative for both companies which changes over time to reflect current thinking and new business models. Moreover as between the two case study firms whilst it is possible to suggest that there is a difference in emphasis as between Nokia and Ericsson on resource based rather than industry structure approaches one cannot use these narratives to make a clear distinction.

One can say that both firms are increasingly driven towards organising strategy around increasing shareholder value (SV), but the financial metrics that one commonly associate with SV are not consistently present in the corporate reports of both firms. In a similar fashion, the strategic narratives and the numbers employed are used in a fragmentary way where a consistent approach one year to the next is absent. Using the annual reports and other corporate documentation to help the researcher to judge how strategy is formulated and performance outcomes judged has proved problematic. The narratives about strategy and strategic priorities alone cannot help the researcher to judge performance and the fragmentary use of numbers are also unhelpful.

In the following chapter the researcher therefore employ the financial framework developed in this thesis for the country and industry analysis and reproduce this for both Nokia and Ericsson. Because the researcher are concentrating on just two firms, it is also possible to add additional financial detail and test the extent to which adding detail to the analysis also adds value to the financial framework developed for this thesis. Moreover using a consistent framework of analysis it will be possible to compare individual firm performance with the overall Europe 170 benchmark. In this way the researcher are able to position firms relative to a global benchmark which represents the distribution of financial performance across the Europe 170. Adding numbers to the strategic narratives will enable the researcher to judge the extent to which strategy at Nokia and Ericsson has translated into superior performance and value.

Chapter 8 : Nokia and Ericsson adding the financial numbers

The objective of this chapter is to complement the strategic narratives of the earlier chapter with an analysis of corporate financial performance for the two firms, as the success of strategy cannot be evaluated on narratives alone. In terms of the objective of the thesis this chapter adds measurement and evaluation metrics at the firm level and positions Nokia and Ericsson within the corporate sector (in this case the Europe 170). The researcher will use the quintile distribution as a positioning devise for the value added key ratios for Ericsson and Nokia relative to the Europe 170. In addition one will be able to add more detail to the financial analysis reflecting that fact that the return on capital employed is the outcome of a blended mix of assets and contractual stakeholder relations under control of the firm. In this way the researcher are able to utilise the case studies to show how one might position firms against the benchmark of Europe 170 and also test the extent to which the macro dataset captures enough financial information to make sensible observations.

The chapter is split into five sections. The first starts with a review of growth trajectories before the researcher turn to consider financial operating ratios and return on capital in similar fashion to the analysis carried out for the Europe 170 country and sector analysis. Because the researcher are also considering firm level data, it is possible to review financial performance in more detail before turning to consider the extent to which Nokia and Ericsson demonstrate variable financial performance and market value.

In this chapter the researcher will again utilise the accounting framework outlined in chapter 3 to evaluate the financial performance for Ericsson and Nokia and specifically deconstruct each company's financial performance in terms of return on capital employed (ROCE) again employing expenses classified by their nature and not function. The objective of this chapter is to reveal similarities and differences in performance and the variability of stakeholder claims against value added. In each case the researcher is concerned too understand how product market conditions combine with factor cost shares to maintain a strong return on capital employed for those providing financial resources. Thereby also deconstructing and revealing the process by which each company extracts value and return on capital from their respective financial value chains. The researcher also locate each individual firm' operating

performance within the Europe 170 so as to judge case study firms financial performance relative to the Europe 170.

Growth trajectories

A tale of two companies and two trajectories

The market and revenue growth patterns for Nokia and Ericsson will, in this section, be employed to reveal two companies on different trajectories by end of the 1990's. Nokia sales revenue growth was 417 per cent in the years 1996 to 2004 but in contrast Ericsson's sales growth was just 22 per cent during the same time period (see appendix 5, table A5.1 and A5.2). One explanation for the loss of sales for Ericsson is the deconsolidation of the mobile phone business into the joint venture with Sony after 2001, which had annual sales of around 37 billion SEK. However, even if one takes this into account half of the sales of the joint venture after 2001, growth can be estimated at just 49 per cent for the period.

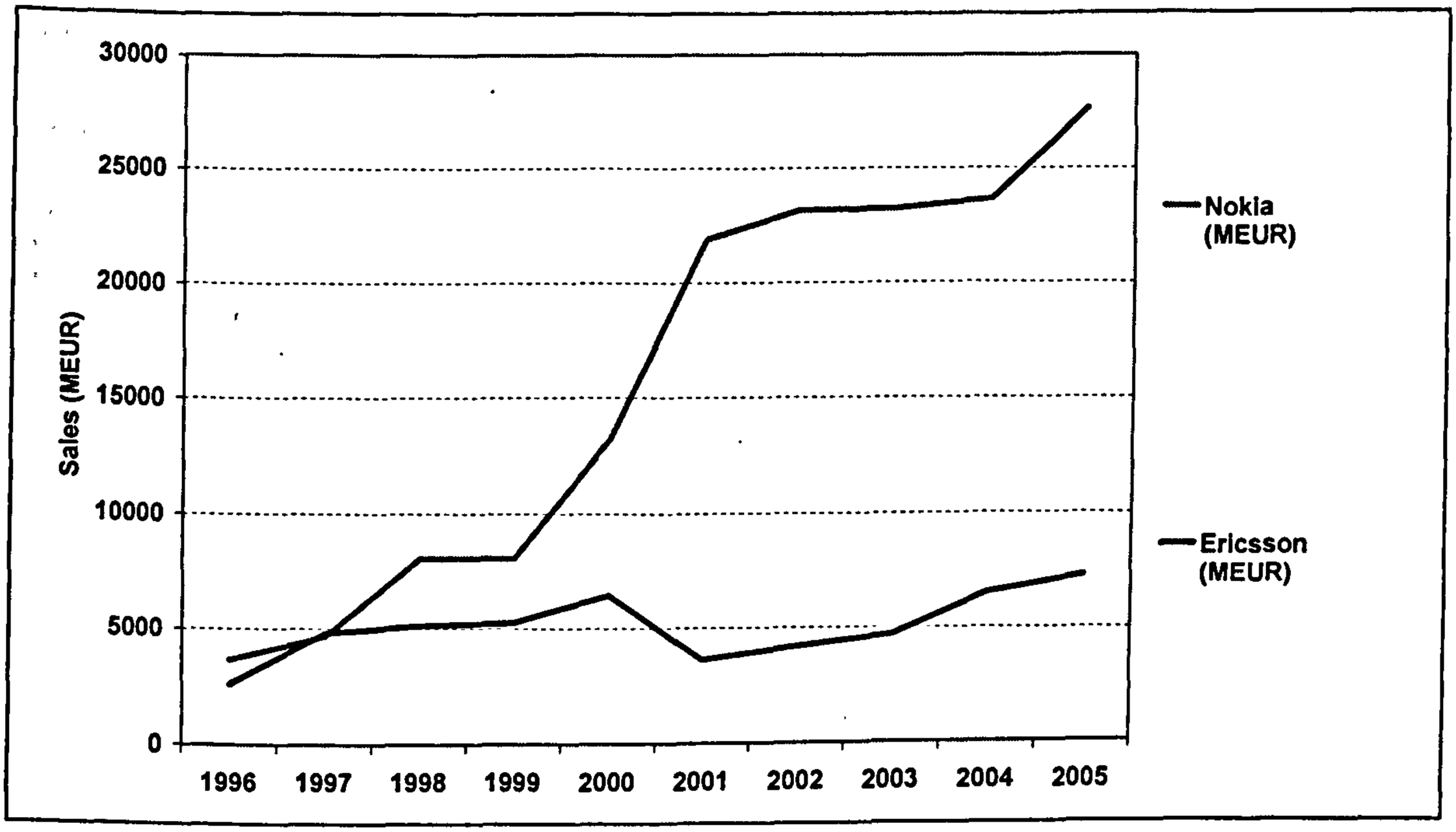
Nokia is now a market leader in mobile phones, with a market share of 33% in year 2005, whereas the Sony Ericsson joint venture accounts for just 6% of the overall market in the same year. In table 8.1 the researcher shows that both companies mobile phone business start off with roughly the same value of sales (in million Euro) but 1998 marks a break with this pattern and in the year 2000 Nokia's sales revenue is twice that of Ericsson.

Table 8.1, Mobile phone sales, Ericsson and Nokia

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson (MSEK)	22658	42300	45237	46444	56937	33267				
Exchange rate (SEK/EUR)	8,84	8,84	8,84	8,84	8,84	9,25				
Ericsson (MEUR)	2563	4785	5117	5254	6441	3596	4176	4673	6525	7268
Nokia (MEUR)	3629	4649	8070	8070	13182	21887	23158	23211	23618	27653

Notes: The Nokia figure for 2005 also include the business units Mobile Internet Communication and Nokia One. From Q4 2001 the Ericsson figure is based on the JV with Sony.
Source: Ericsson and Nokia annual and quarterly reports.

Figure 8.1, Nokia and Ericsson Mobile phones revenue



Source: Ericsson and Nokia annual reports.

The explanations surrounding Ericsson reversal of fortune are complex but among the main reasons are the problems associated with product transition in handsets starting in 1998 (see chapter 7 earlier). This was a crucial disjuncture because Nokia could thrive on GSM growth whilst Ericsson could not take advantage of the strong market growth for GSM in Europe and thereby handed over the market opportunity to Nokia. The transition to digital standards, mainly GSM, also meant that there was a shift in global market leadership from Motorola to Nokia, as digital standards were adopted on a country basis at different points of time and Europe took a lead.

In volume, rather than value, the differences are stark. By the year 2000 Nokia's volumes of handsets had increased six fold from 1997 and Ericsson's volume had just doubled and from 2000 to 2005 Nokia's volumes increased again by a factor of roughly two whilst total volumes in the joint venture with Sony were just 20 per cent up on Ericsson's year 2000 volumes.

Table 8.2, Growth of mobile devices, Ericsson, Nokia and the market.

Volumes (million units)	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	22,9	24	31	43,3	27,9	22,9	27,2	42,3	51,2
Nokia	21,3	40,8	78,5	128	140	152,1	179,3	207,7	265
Market	105	168	275	410	380	405	490	643	795

Volume growth		1998	1999	2000	2001	2002	2003	2004	2005
Ericsson		5%	29%	40%	-36%	-18%	19%	56%	21%
Nokia		92%	92%	83%	9%	9%	18%	16%	28%
Market		60%	64%	49%	-7%	7%	21%	31%	24%

Source: Ericsson and Nokia annual and quarterly reports.

The growth in mobile system sales increased at an annual average rate of 20 per cent until year 2001, when it declined significantly with dramatic effects for the industry. Specifically this downturn impacted negatively on cash flow and for some suppliers (including Ericsson) this led to significant down grades of credit rating to junk bond status.

Table 8.3, Mobile system market

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bill US $	12,4	17,1	25,6	30,4	35,7	42,9	53.0	52,7	43,7	43,6	54,3	59,7
Growth		38%	49%	19%	17%	20%	23%	-1%	-17%	0%	25%	10%

Source: Brâtenius (2006).

Maturity of the mobile communication industry after year 2000 was inevitable as the market penetration had reached 11% of the global population after a period where there had been a ten –fold increase every 5 year from the early 1980's. For Williams et al (1994b) market maturity is reached when one reaches market saturation and where competition erodes price structures. A more extensive description of the two firms and their product market conditions can be found in appendix 5.

The researcher now turn to evaluate corporate financial performance, which are now deconstruct in finer detail than in chapter 5 and 6, where the data was collected for 170 firms (see chapter 4). However, the researcher will follow the same structure of analysis as outlined in the country and sector chapters and firstly review growth trajectories and then turn to corporate financial operating and capital intensity ratios before considering return on capital employed. At each stage in the analysis the researcher is also going to position Ericsson and Nokia in their respective quintile bandings relative to the Europe 170. So, for example, if Nokia is located in quintile 5 this puts Nokia in the top twenty per cent of firms in

the Europe 170 and conversely if Ericsson is located in quintile band 1 this corresponds to the bottom twenty per cent of performance in the Europe 170.

The researcher now turns to the growth trajectory locating Ericsson and Nokia into the quintile bands obtained form the Europe 170 database.

Growth trajectory

In terms of sales growth one observe that over the period 1990-2004 Nokia had a compound average growth rate (CAGR) which was twice that of Ericsson. Adjusting the Ericsson figure for the joint venture with Sony still results in a lower growth rate than Nokia.

Table 8.4, Sales growth and quintile distribution

Sales growth	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson		0	3	34	31	20	26	35	10	17	27	-15	-37	-19	12	7,9
Nokia		-30	18	30	27	22	7	34	51	48	54	3	-4	-2	-1	15,9

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson		1	1	5	5	5	5	5	4	5	5	1	1	1	4	3
Nokia		1	5	5	5	5	3	5	5	5	5	1	1	1	1	5

Source: Ericsson and Nokia annual reports.

In terms of quintile position for a majority of years up until the year 2000 both firms were located in quintile 5 which is to be expected when both firms benefiting from a high growth market for mobile telecommunications (see also appendix 5 on market growth). After the year 2000 both companies suffer from the severe down-turn in the market and are for some years located in quintile 1 which is the lowest growth quintile for the Europe 170. The pattern for value added growth (which is sales revenue minus purchase) is much the same as that for sales and again both firms follows a similar pattern in that they are generally located in the top quintile group until year 2000 and thereafter slip into quintile 1.

Table 8.5, Value added (VA) growth and quintile distribution

VA growth	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson		-4	6	21	23	18	20	33	10	7	31	-59	-6	-4	61	7,0
Nokia		-25	11	0	59	1	8	59	48	40	38	-18	16	1	-5	13,6

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson		1	3	5	5	5	5	5	4	3	5	1	1	1	5	3
Nokia		1	4	1	5	1	3	5	5	5	5	1	5	1	1	5

Source: Ericsson and Nokia annual reports.

In the following sections the researcher turns to review how market conditions and variable cost recover conditions impact on the internal operating financials of both Nokia and Ericsson, Here the researcher again employs the financial research method outlined in chapter 3 (see accounting framework) which is grounded in accounting and employs the value added financial statement supplemented with balance sheet information on capital employed to reveal the return on capital employed which is a key shareholder value metric.

Financial operating ratios

Purchase costs in sales

When a company makes sales in a product market it receives income (in the form of sales revenue) but this is not value retained by an organisation and the wealth created by the firm. In order to establish how much of every Swedish krona (SEK) or Euro (EUR) of sales revenue is value retained by an organisation one have to deduct all external costs.

The researcher has computed external costs as a share of total income for both Nokia and Ericsson in table 8.6, based on the nature of expense format (see appendix 6).

Table 8.6 Nokia and Ericsson external cost share in sales and output

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
External cost in sales, Ericsson	54%	57%	57%	63%	62%	64%	64%	66%	65%	66%	79%	79%	67%	61%	61%	62%
External costs in sales, Nokia	62%	64%	66%	70%	69%	73%	68%	68%	65%	68%	72%	71%	69%	70%	72%	75%
External costs in output, Ericsson	54%	57%	56%	60%	62%	63%	64%	64%	64%	67%	77%	81%	68%	62%	60%	60%
External costs in output, Nokia	63%	65%	66%	68%	67%	68%	70%	65%	64%	67%	70%	70%	68%	69%	71%	74%

Note. External costs is defined as raw material and consumable used and output is defined as sales plus change in inventories of finished goods and work in progress and work performed by the enterprise and capitalised. For data used in the calculation see appendix 6, the nature for expense format for Ericsson and Nokia.
Source: Ericsson and Nokia annual reports.

In table 8.6 external costs in income are used as a financial proxy of the degree of vertical integration of a business (see Haslam et al 2000). Starting with Ericsson one observes that there are two distinct periods 1990 to 2001 and 2002 to 2005 with the first period showing an increase in external costs in income and thereafter a reduction in external costs in income. After a period of vertical disintegration Ericsson now operates with a reduced share of external costs in income and output. As such Ericsson is now back on the level of financial integration it once had in the mid 1990's. By way of contrast Nokia's external costs in income have been gently increasing and suggesting the company is now less vertically integrated than in was ten years ago.

Table 8.7 Nokia and Ericsson external cost share in sales and quintile distribution

Purchases in sales	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	50	52	51	56	59	59	61	62	62	65	64	82	74	69	55	64,4
Nokia	59	56	59	68	61	67	67	61	62	64	67	74	69	68	69	67,3

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	5	4	5	4	4	3	3	3	3	3	3	1	2	2	4	3
Nokia	3	4	4	2	3	2	2	3	3	3	2	2	2	2	2	2

Source: Ericsson and Nokia annual reports.

Value retention rate

In table 8.8 the researcher compute the value retention rate, which is how much sales revenue is retained after deducting the cost of external supplies and services. In the case of Nokia one can see that they retain an average around 31 per cent of sales and 32 per cent of output within a range of +/- five to six per cent age points in terms of sales and output. The average for

Ericsson is higher with 36 per cent or sales and 36 per cent of output, but much more volatile with a low of 21 per cent in the year 2000-2001 and a high of 46 per cent in year 1990

Table 8.8, Nokia and Ericsson: degree of financial vertical integration

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson, by sales	46%	43%	43%	37%	38%	36%	36%	34%	35%	34%	21%	21%	33%	39%	39%	38%
Ericsson, by output	46%	43%	44%	40%	38%	37%	36%	36%	36%	33%	23%	19%	32%	38%	40%	40%
Nokia, by sales	38%	36%	34%	30%	31%	27%	32%	32%	35%	32%	28%	29%	31%	30%	28%	25%
Nokia, by output	37%	35%	34%	32%	33%	32%	30%	35%	36%	33%	30%	30%	32%	31%	29%	26%

Note. The vertical degree of integration by sales is defined value added divided by sales and value added divided by output. Value added is defined as operating result before depreciation and amortisation (i.e. EBITDA) plus staff costs and output is defined as sales plus change in inventories of finished goods and work in progress and work performed by the enterprise and capitalised. For data used in the calculation see appendix 6, i.e. the nature for expense format for Ericsson and Nokia.
Source: Ericsson and Nokia annual reports.

Of the value retained by an organisation after charging external costs the next major expense is that relating to labour costs which the researcher noted in the literature review can account for up to 70 per cent of the value retained (Cox 1979). In terms of quintiles the researcher observes that Ericsson is on average a quintile three firm compared to Nokia which is on average a quintile two firm. Whereas Nokia shows a stable pattern of quintile belonging, the volatility of quintiles for Ericsson for the years 1999 to 2003 is in stark contrast. For both companies one also observes a decline of one quintile from 1990 to year 2005, possibly due to changes in business mix and outsourcing.

As one move from income minus external purchases to obtain the value retained as a per cent of sales for both firms it is possible to locate their performance relative to the Europe 170 quintile distribution. This is completed in table 8.9 and shows that there is a general trend towards lower value retention out of income relative to the top quintile group of firms in the Europe 170. In recent years Nokia and Ericsson are located in quintile group 2/3 which is average or slightly above average performance relative to the Europe 170.

Table 8.9, Nokia and Ericsson value retention rate relative to Europe 170 quintile distribution

Value retetion rate	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	50	48	49	44	41	41	39	38	38	35	36	18	26	31	45	35,6
Nokia	41	44	41	32	39	33	33	39	38	36	33	26	31	32	31	32,7

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	5	4	5	4	4	3	3	3	3	3	3	1	2	2	4	3
Nokia	3	4	4	2	3	2	2	3	3	3	2	2	2	2	2	2

Source: Ericsson and Nokia annual reports.

Labour share of value retained

In the previous chapter the researcher observed that one of the key financial ratios employed by Nokia and helping to support strategy formulation is value added divided by labour costs or conversely labour costs share of value retained. Nokia's share of labour costs in value retained are held relatively stable at 40 per cent from the mid of the 1990's (see table 8.10) and touch a low of 30 per cent in the year 2000 and are still in 32-42 per cent range in the last five years.

Table 8.10, Nokia and Ericsson: Labour's share of value retained

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	68%	81%	82%	76%	73%	70%	69%	62%	64%	68%	79%	128%	105%	81%	62%	55%
Nokia	73%	84%	80%	69%	54%	52%	46%	41%	40%	35%	30%	32%	33%	34%	41%	42%

Note. The labour share of vale retained is defined as staff costs divided by value added, where value added is defined as operating result before depreciation and amortisation (i.e. EBITDA) plus staff costs. For data used in the calculation see appendix 6, i.e. the nature for expense format for Ericsson and Nokia.
Source: Ericsson and Nokia annual reports.

Ericsson's labour cost share of value retained is in direct contrast to Nokia, rising to 128 per cent in year 2000 from a low of 62 per cent in 1997 a level which was already well above that for Nokia in 1997. When labour costs exceed value retained there is, in effect no internal surplus cash from operations or residual profit available to the business to satisfy the financial demands of other stakeholders including the shareholders. Ericsson has since brought down its internal labour costs distributed out of value retained to 55 per cent in 2005, but the fact remains that Ericsson's corporate performance has been unstable.

If the researcher again locates this performance into the Europe 170 quintile distribution one find that Nokia is positioned consistently in quintile 5 a top performing firm after a period in the early to mid 1990s when it was in the bottom quintile group. Ericsson, by way of contrast, has not managed to escape its position as a quintile 1 firm in the 1990s apart from specific years when market conditions were very favourable.

Table 8.11, Nokia and Ericsson labour cost share of value retained relative to Europe 170 quintile distribution.

Labours share	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	63	75	76	73	69	67	65	58	61	64	55	137	123	102	41	70,8
Nokia	67	67	65	73	47	55	42	39	38	33	29	38	33	32	38	38,0

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	2	1	1	1	1	1	2	3	3	2	3	1	1	1	4	1
Nokia	1	1	2	1	4	3	4	5	5	5	5	5	5	5	5	5

Source: Ericsson and Nokia annual reports.

Over time the researcher observes that Ericsson is a quintile one firm with a relative high labour share of value retained, but when market conditions are favourable labour share is reduced and the firm moves towards quintile 3. This contrast Nokia's movements of continued decline of quintiles to a quintile five firm, partly explained by divestures in the mid 1990's. In general Ericsson's labour cost share in total income is consistently double that of Nokia and that this combined with the weakness in sales growth had a damaging effect on the cash from operations (i.e. EBITDA) that Ericsson was able to extract out of total income.

Cash share of value retained

The researcher also knows that the cash share of value retention mirrors labours share of value retention as it is 100 less labour share of value retention in table 8.11 above. From this the researcher can draw the conclusion that Nokia is on average a quintile five firm compared to Ericsson as a quintile 1 firm (see also table below). As such one observe that Nokia generate twice as much cash out of value retained as Ericsson, this the researcher argue is a significant difference as firms compete for value added along there value added chain.

Table 8.12, Nokia and Ericsson cash share of value retained relative to Europe 170 quintile distribution.

Cash in VA	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	36,6	25,0	23,6	27,3	31,1	33,3	35,0	41,7	39,0	36,0	45,2	-36,5	-22,7	-1,8	59,4	29,2
Nokia	33,5	33,0	35,3	26,6	52,8	45,0	58,0	61,4	61,8	66,7	70,8	61,6	66,6	68,3	62,0	62,0

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	2	1	1	1	1	2	2	3	3	2	3	1	1	1	4	1
Nokia	2	2	2	1	4	3	4	5	5	5	5	5	5	5	5	5

Source: Ericsson and Nokia annual reports.

Cash share of income

The next financial calculation which deconstructs both companies financial performance is the operating result before depreciation and amortisation (i.e. EBITDA) as share of income. This is a critical financial calculation because cash flow from operations is a key metric governing corporate financial health. It is out of cash that various other appropriations need to be made for example: net interest charges on debt financing, dividends, tax and re-investment for capital expenditure or financing share buy-backs. In addition cash flow from operations is central in computing a firm's share price and hence impute market value (MV) which in finance theory represents the discounted value of future estimated cash flows. Moreover cash flow from operations is an index of corporate liquidity and again important in the evaluation of credit ratings and thereby impacting on risk assessment and the cost of capital.

Table 8.13, Nokia and Ericsson: Cash as a share of income

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	15%	8%	8%	10%	11%	12%	12%	14%	13%	10%	5%	-5%	-1%	7%	15%	19%
Nokia	10%	5%	7%	10%	15%	17%	16%	21%	22%	22%	22%	21%	21%	21%	17%	15%

Note. The cash as share of income is defined as operating result before depreciation and amortisation (i.e. EBITDA) divided by sales. For data used in the calculation see appendix 6, table A1a and A1b, i.e. the nature for expense format for Ericsson and Nokia.
Source: Ericsson and Nokia annual reports.

Cash as share of sales has increased for Nokia during the early 1990's and been fairly stable for Nokia around 21-22% after 1997, apart from the year 2004-05 when it dropped into the range 15 to 17%, mainly due to deterioration in market conditions. In the case of Ericsson one see a more volatile pattern that starts with a relatively healthy10-14 per cent EBITDA-

margin, which then deteriorates to become a negative 5 per cent of total income before again climbing back to a positive 19 per cent by 2005. For Ericsson the drop in EBITDA-margin from 1998 to 2001 is connected with the increased share of external cost in income and 1%-point increase in labour cost share of income. Although the external cost in income improved in 2002 most of the beneficial impact of this is then lost to an increased share of labour cost in income. Here one observe that the lower sales growth than anticipated causes significant capacity problems with reduced value retention rate and increased labours share of income. For example infrastructure sales were negatively impacted by diversion of operator's cash retention into auctions for 3G licenses in Europe during year 2000.

In terms of cash return on sales (Cash ROS) the researcher observe that Nokia is a quintile 4 firm and its position is stable with some migration between quintile 3 to 4 firm apart from the early 1990's, whereas Ericsson has, by way of contrast, been stable as a quintile 1-2 firm, except for the year 1990 and its improved movement to quintile 5 in 2004.

Table 8.14, Nokia and Ericsson Cash ROS relative to Europe 170 quintile distribution.

Cash ROS	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	18,3	11,9	11,6	12,1	12,9	13,7	13,6	16,1	15,0	12,6	16,4	-6,4	-6,0	-0,6	26,4	10,4
Nokia	13,6	14,4	14,5	8,4	20,7	14,6	19,1	24,0	23,7	24,1	23,0	16,0	20,9	22,1	19,1	20,3

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	4	2	2	2	2	2	2	3	3	2	3	1	1	1	5	2
Nokia	2	3	3	1	4	3	4	4	4	4	4	3	4	4	4	4

Source: Ericsson and Nokia annual reports.

Capital intensity

The researcher now turns to consider capital intensity which is calculated in two ways first: capital employed as a per cent of total income or sales and then capital employed as a per cent of value added or retained income. When one move from the ratio of capital employed to generate a unit of sales revenue to value retained one are correcting for differences in financial integration and this shows that Nokia tends to be less capital intensive per unit of value added than Ericsson. However, from the late 1990s Ericsson's deteriorating performance is also reflected in a higher capital intensity ratio.

Table 8.15, Nokia and Ericsson capital employed (CE) per unit of sales and value added (VA)

CE per sales	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	45%	50%	56%	49%	42%	40%	40%	37%	42%	45%	42%	61%	95%	97%	76%	75%
Nokia	77%	106%	87%	60%	53%	50%	56%	44%	39%	37%	33%	41%	47%	52%	51%	39%

CE per VA	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	97%	114%	126%	121%	109%	105%	109%	105%	117%	136%	180%	318%	302%	253%	191%	188%
Nokia	207%	301%	258%	187%	162%	158%	184%	128%	107%	109%	109%	134%	149%	169%	179%	149%

Note. Capital employed (CE) per sales is defined as the sum of shareholders equity, minority shareholder interest, short-term borrowings, current portion of long term debt and long term interest bearing liabilities in relation to sales. Capital employed (CE) per value added (VA) is defined as the sum of shareholders equity, minority shareholder interest, short-term borrowings, current portion of long term debt and long term interest bearing liabilities in relation to value added. For data used in the calculation see appendix 6, the nature for expense format as well as balance sheet.
Source: Ericsson and Nokia annual reports.

For Nokia and Ericsson the researcher notices similar sales capital intensity for most of the period. However, after the write issue in 2002 one observes increased sales capital intensity for Ericssson. Over time both companies are in average a quintile 4 company compared to Europe 170, although Ericsson now has become a quintile 3 company after the write issue.

Table 8.16, Nokia and Ericsson sales capital intensity relative to Europe 170 quintile distribution.

Sales CI	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	0,43	0,47	0,50	0,46	0,38	0,40	0,36	0,38	0,41	0,43	0,41	0,52	0,75	0,74	0,75	0,49
Nokia	0,41	0,53	0,45	0,40	0,48	0,40	0,43	0,42	0,40	0,39	0,36	0,40	0,48	0,51	0,49	0,44

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	4	4	4	4	4	4	5	4	4	4	4	4	2	2	2	4
Nokia	4	3	4	4	4	4	4	4	4	4	5	4	4	4	4	4

Source: Ericsson and Nokia annual reports.

In terms of value retention capital intensity the pattern is similar to the sales capital intensity, although Nokia use less capital per value added. In terms of Europe 170 quintiles, both companies are stable over time as quintile 4 firms.

Table 8.17, Nokia and Ericsson value added capital intensity relative to Europe 170 quintile distribution.

VA CI	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	0,86	0,99	1,01	1,03	0,91	0,98	0,93	0,98	1,07	1,24	1,14	2,95	2,87	2,39	1,69	1,38
Nokia	1,02	1,22	1,10	1,26	1,22	1,22	1,30	1,06	1,05	1,07	1,11	1,53	1,54	1,59	1,58	1,34

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	5	5	5	5	5	5	5	5	5	4	4	2	2	2	3	4
Nokia	5	4	5	4	4	4	4	5	5	5	4	4	4	4	4	4

Source: Ericsson and Nokia annual reports.

In terms of capital intensity both firms belong to the same quintile, which contrast the growth trajectory ratios as well as the financial operational ratios. In particular one notice that Nokia was a quintile 5 firm regarding cash share of value retention compared to a quintile 1 firm for Ericsson.

Return on capital employed

The intention is also to deconstruct the ROCE as outlined in the methodology chapter, but as both companies have significant cash positions and thus substantial financial income the ROCE-decomposition needs to be made for both financial assets and production capital employed. Production capital employed is defined as the capital employed less financial assets, where financial assets are defined as the cash and cash equivalents plus investments in associates and JV. As a result the return on production capital employed has come close to the concept of invested capital used in capital markets for discounted cash flow valuation (see for example Copeland et al 2000), where financial assets are valued separately from the invested capital, i.e. here the production capital employed used in relation to product market intervention and creation of value added.

In the following sub-section the researcher describes how the return on capital employed generated by managers is the product of employing both financial assets and production capital employed. Decomposing the ROCE in this way will thus fine tune the analysis using production capital employed for value added activities in product markets. This contrasts the managerial usage of financial assets, which are increasingly used for intervention in capital markets such as share buy backs (see Andersson et al 2007). Such a split of capital employed

gets us closer to the value added concept employed in the Corporate Report and its relation to primary stakeholders (see Donaldson et al 1995).

Overall ROCE in Nokia and Ericsson

At the start of the period the overall ROCE for Ericsson is well above that for Nokia at 33% although throughout the early 1990s it is averaging roughly 15-16% and for a short while well above Nokia's performance. However, in the mid 1990s Nokia moves ahead of Ericsson to generate consistently higher cash return on capital employed and to levels twice that of its competitors and at times above 50 per cent.

Table 8.18 Nokia and Ericsson Return on Capital Employed

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	33%	16%	12%	15%	21%	24%	25%	33%	27%	21%	28%	-16%	-13%	-6%	30%	30%
Nokia	10%	4%	6%	15%	28%	29%	23%	39%	50%	56%	58%	28%	35%	35%	32%	37%

Note. Return on capital employed is defined as operating result plus income from associates and financial income in relation to the sum of shareholders equity, minority shareholder interest, short-term borrowings, current portion of long term debt and long term interest bearing liabilities. For data used in the calculation see appendix 6, the nature for expense format as well as balance sheet.
Source: Ericsson and Nokia annual reports.

In terms of cash ROCE quintiles relative to the Europe 170 Ericsson maintains a 4-5 position throughout the 1990s but after the downturn in the year 2000 its performance slips to the bottom quintile. In contrast Nokia's performance is consistently a top quintile performance relative to the Europe 170 after the early 1990's.

Table 8.19, Ericsson and Nokia Cash ROCE relative to Europe 170 quintile distribution.

Cash ROCE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	42	25	23	26	34	34	38	43	36	29	40	-12	-8	-1	35	21,1
Nokia	33	27	32	21	43	37	45	58	59	62	64	40	43	43	39	46,4

Quintiles	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Period
Ericsson	5	4	3	4	5	5	5	5	5	4	5	1	1	1	5	3
Nokia	5	4	5	2	5	5	5	5	5	5	5	5	5	5	5	5

Source: Ericsson and Nokia annual reports.

The researcher now turn to consider how the return on capital employed is the product of both the return on financial assets and also assets used to serve product markets (i.e. what the researcher term production capital employed).

Return on financial assets

The return on financial assets is the interest income from cash and dividends or share of results that the firm receives from investments in financial assets such as bond and shares, where shares can be both public equity and private equity. The analysis here includes two such assets, namely cash and cash equivalents and investments in associates and joint ventures. Both of these assets yield income in terms of financial income (interest payment) and income from associates (pre tax income or dividend payments). This implies that one can reveal the return from these assets relative to other assets/ capital employed. If one start with the return on financial assets and consider table 8.20 this reveals that both firms were generating a strong return on financial assets in the early to mid 1990s but that these returns progressively deteriorate and reach a low during the period 200-2004 as interest rates and returns from the stock market are depressed. In general both firms are generating roughly the same return from financial assets during this period.

Table 8.20, Nokia and Ericsson return on cash and cash equivalents.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	20,2%	17,8%	17,4%	15,4%	8,8%	11,0%	11,1%	10,0%	9,4%	9,6%	9,1%	9,2%	6,3%	5,7%	4,7%	3,4%
Nokia	18,9%	19,8%	19,0%	22,4%	23,8%	14,0%	10,1%	9,1%	6,9%	5,9%	7,2%	5,2%	3,6%	3,9%	4,2%	3,4%

Note. Return on cash and cash equivalents are defined as financial income divided by bank and cash plus available for sale investments. For data used in the calculation of each year average see appendix 6, nature of expense format as well as balance sheet.
Source: Ericsson and Nokia annual reports.

The return on non-cash assets has been significantly higher for Nokia throughout the period, apart from the early years when Ericsson was ahead. Return on non-cash assets has been stronger for Nokia than Ericsson which was not able to match Nokia's exceptional performance over the period 1999 to 2004. Nokia's return on non-cash assets was over 100 per cent in most years over the period 1999 to 2004 suggesting that, on average Nokia was recovering the investment in productive assets in just one year whilst Ericsson was taking 4-5 years to do the same.

Table 8.21, Nokia and Ericsson return on non-cash assets

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	41%	15%	10%	15%	26%	30%	33%	47%	35%	24%	36%	-32%	-32%	-26%	98%	85%
Nokia	8%	-1%	2%	13%	30%	34%	26%	60%	88%	101%	92%	43%	73%	108%	132%	164%

Note. Return on non-cash assets is defined as operating income plus income from associate divided by capital employed less cash and cash equivalents. For data used in the calculation see appendix 6, nature of expense format as well as balance sheet.
Source: Ericsson and Nokia annual reports.

Return on production capital employed

Production capital employed is the remaining part of the capital employed, i.e. the capital employed less the financial assets of cash and cash equivalents as well as investments in associates and joint ventures. The return on production capital employed are significant for both companies but more so for Nokia than Ericsson during the period. Both companies have more than doubled the return on production capital employed during the period to a level well above 100% but Ericsson's performance is much more erratic than Nokia
The return on production capital employed for both companies are affected by non-recurring items, such as restructuring charges and capital gains. However, even after adjusting for these items one reveal the underlining corporate performance and how Nokia moves ahead of Ericsson after 1997 and sustains this productive advantage thereafter.

Table 8.22, Nokia and Ericsson underlying return on production capital employed

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	41%	13%	9%	17%	25%	33%	34%	51%	37%	23%	7%	-23%	-12%	14%	104%	94%
Nokia	9%	-1%	3%	15%	35%	35%	29%	61%	89%	102%	92%	65%	80%	108%	133%	172%

Note. Return on production capital employed is defined as operating income less non-recurring items divided by the capital employed less the sum of cash and cash equivalents and investments in associates & JV. Capital employed is defined as shareholders equity, minority, long term debt and short term debt. For data used in the calculation see appendix 6, nature of expense format as well as balance sheet.
Source: Ericsson and Nokia annual reports.

The researcher have now revealed how the overall bottom line ROCE is the blended mix of both the return on financial assets (both cash and investments in equity holdings) and return on production capital employed, where the return on production capital employed for a particular year may be affected by non-recurring items. These non-recurring items are often

the result of renegotiation of stakeholder claims in resource markets, such as labour contracts and divesture of equity holdings. As such the expense of non-recurring items can distort financial performance measures related to the management of production capital employed. However, by deconstructing the return on production capital employed into the return on sales and capital turnover one is able to understand where the increased return on production capital employed has come from.

The return on sales as well as return on output has been stable for Nokia as the researcher noted earlier but more volatile for Ericsson. The return on value added has been on a high and steady level for Nokia, while Ericsson has had significant changes in its financial fortune as revealed in by the earlier value added structure. This is evidenced in table 8.23 which reveals just how volatile the financial performance of Ericsson has been and its relative underperformance when compared to Nokia.

Table 8.23, Nokia and Ericsson cash return on sales, output and value added.

Return on sales	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	15%	8%	8%	10%	11%	12%	12%	14%	13%	10%	5%	-5%	-1%	7%	15%	19%
Nokia	10%	5%	7%	10%	15%	17%	16%	21%	22%	22%	22%	21%	21%	21%	17%	15%

Return on output	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	15%	8%	8%	10%	10%	11%	12%	14%	13%	11%	5%	-5%	-1%	7%	15%	18%
Nokia	10%	5%	7%	10%	15%	15%	17%	20%	22%	22%	21%	20%	21%	20%	17%	15%

Return on value	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	32%	19%	18%	24%	27%	30%	31%	38%	36%	32%	21%	-28%	-5%	19%	38%	45%
Nokia	27%	16%	20%	31%	46%	48%	54%	59%	60%	65%	70%	68%	67%	66%	59%	58%

Note. Return on sales is defined as operating result before depreciation and amortisation (i.e. EBIDTA) divided by sales. Return on output is defined as operating result before depreciation and amortisation (i.e. EBITDA) divided by the sum of sales, change in inventory of finished goods and work in progress and work performed by the enterprise and capitalised. Return on value added is defined as operating result before depreciation and amortisation (i.e. EBITDA) divided by value added. For data used in the calculation see appendix 6, nature of expense format.
Source: Ericsson and Nokia annual reports.

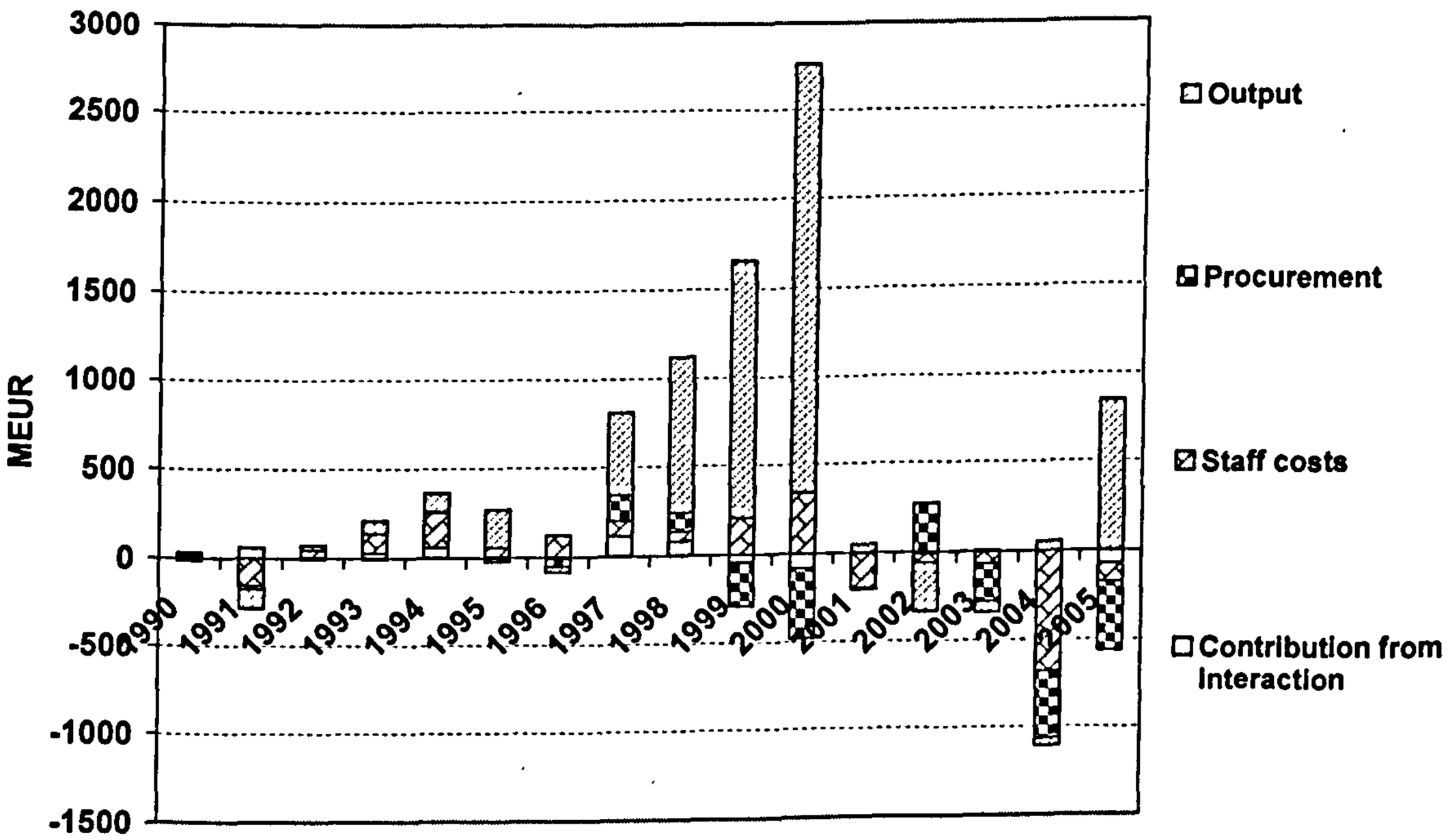
The main problem for Ericsson is that the contribution to cash from operations from output growth has been a problem which limits overall financial performance.

Nokia and Ericsson: Stakeholder contribution to cash from operations (EBITDA)

The change in operating result before depreciation and amortisation (i.e. EBITDA) between the years can be examined by looking on the contribution from each primary stakeholder, for example, how sales, procurement as well as labour costs have changed to support or not increased cash generated from operations.

For Nokia the strong growth in sales dominates the contribution to EBITDA in the years 1997 to 2000, although there is an increasing pressure from suppliers which to some extent offsets the positive contribution to EBITDA from output but this negative impact is rather limited overall. However, as the business cycle reversed post 2000 suppliers increased their claims against Nokia's cash resource. In 2003 as the business cycle picks up the pressure from suppliers and internal labour costs increase to pressure against the cash generated from operations.

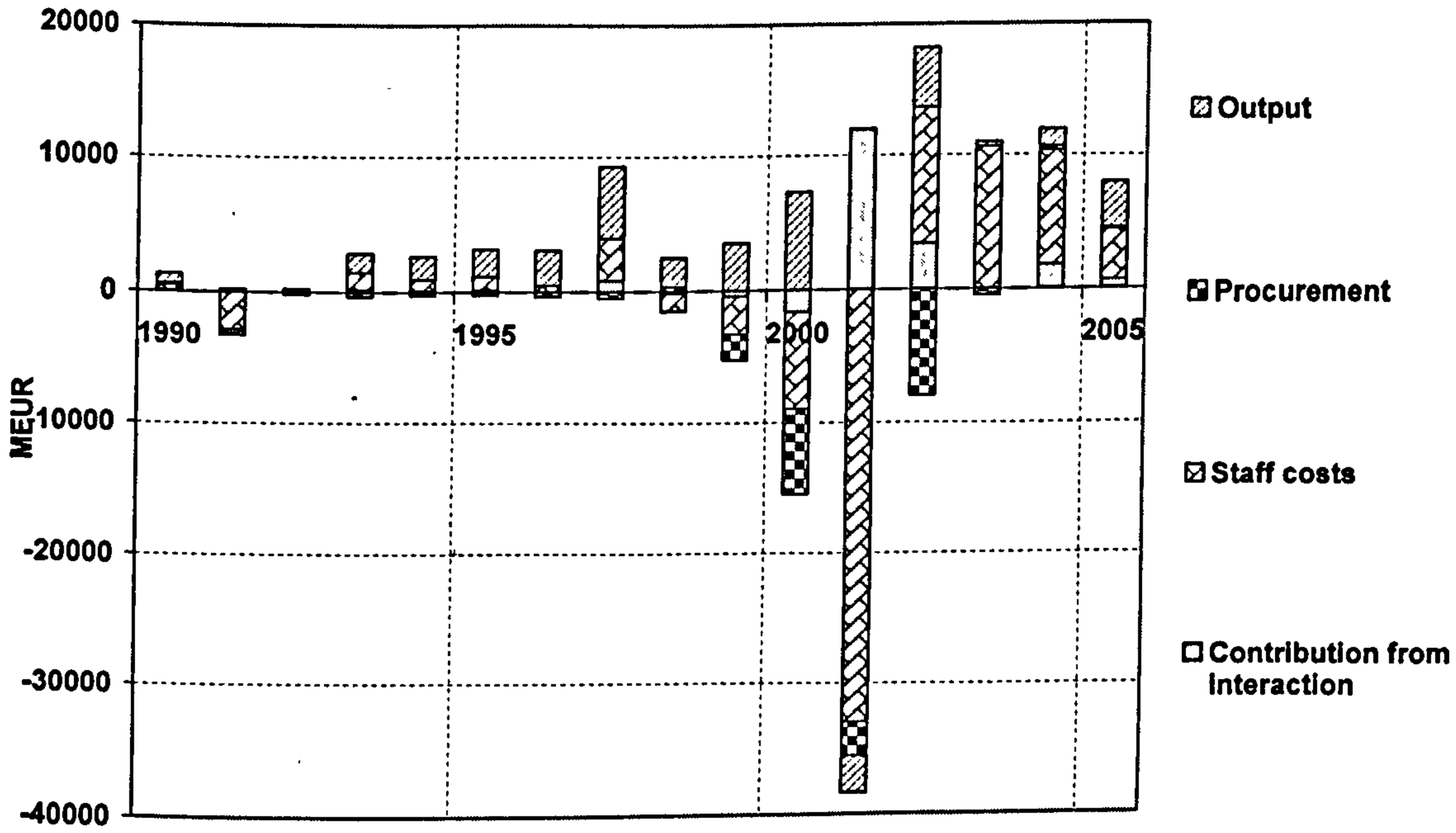
Figure 8.2, Nokia Change in stakeholder contribution to EBITDA



Note. For data used in the figure see appendix 6, Nokia EBITDA-contribution decomposition.
Source: Ericsson and Nokia annual reports.

For Ericsson overall growth in output contributes far less to EBITDA in the years 1995 to 2000 relative to Nokia and there is also increasing pressure from suppliers and employees suggesting product market conditions are not robust enough to support these expenses and maintain healthy cash residuals. After 2000 corporate restructuring and downsizing reduces labour costs reversing the contribution that labour makes towards improving residual cash from operations.

Figure 8.3, Ericsson Change in stakeholder contribution to EBITDA



Note. For data used in the figure see appendix 6, Ericsson EBITDA-contribution decomposition.
Source: Ericsson and Nokia annual reports.

The analysis of the change in stakeholder contribution to EBITDA reveals how management intervention in contractual markets changes the financial outcome. Although the researcher cannot investigate this on a contractual level one can clearly see that the aggregated outcome of management actions makes a difference in terms of cash generation.

Understanding the value added structure

A high value added margin and low labour share of income are important elements in understanding the evolution of the EBITDA-margin as illustrated by the Ericsson and Nokia case discussed above. This is also an observation the researcher made in connection with the key rations in chapter 6 and the complementary value drivers based on the nature of expense. The reason for this is that the EBITDA margin is the product of contractual relations in the product market for sales and procurement as well as the labour market, which can be expressed as:

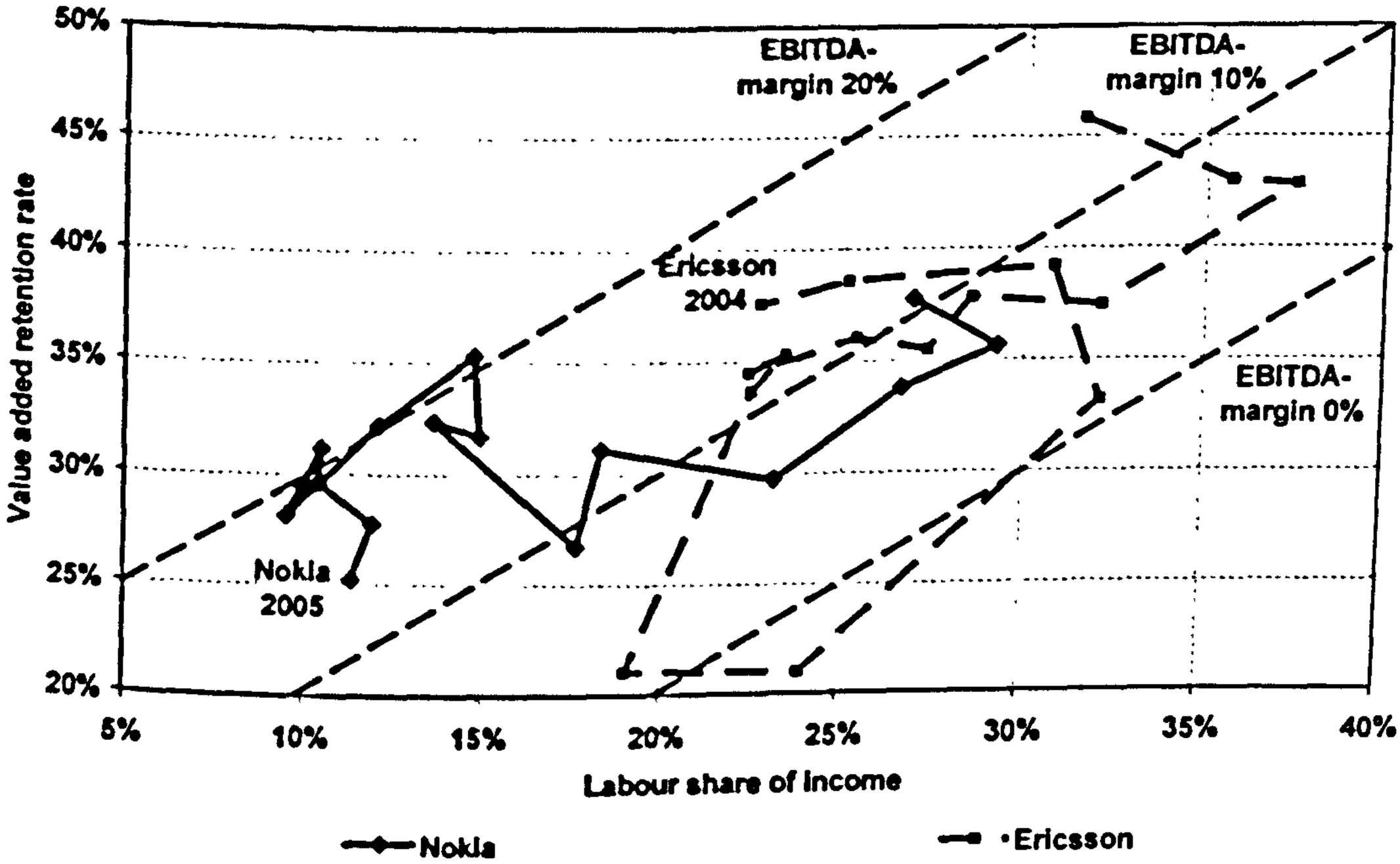
EBITDA-margin = 1 – External costs in income – labour share in income

Or

EBITDA-margin = Value retention rate – labour share of income

As such it is possible to follow the development of Ericsson and Nokia in two dimensions over time, see figure below where one also include the EBITDA-margin lines for zero per cent, 10 per cent and 20 per cent have been included in the figure.

Figure 8.4, Nokia and Ericsson: Value added structure



Note. The value added retention rate is defined as value added divided by sales and the labour share of income is defined as staff costs divided by sales. For data used in the calculation see appendix 6, i.e. the nature for expense format for Ericsson and Nokia.
Source: Layout author and data from annual reports.

Nokia's EBITDA-margin has improved during the early 1990's and then been fairly stable as a reduced value added retention rate was more than compensated for by a reduction of the labour's share in income. However, the pattern for Ericsson is more dramatic and volatile because the value added retention rate drops 25%-points from 1990 to year 2000 and then improves by more than 20%-points during the period 2002 to 2004. At the same time the labour share of income in sales first improves to 19% in year 2000 and then erodes to 32% by 2002 and then once again starts to improve.

A similar analysis in terms of gross margin and expenses as per cent of income could also be presented employing the function of expense format. However, this format does not have the additive characteristics that value added has in terms of its aggregation into the corporate sector, because any attempt to summate cost of goods sold may also include parts of the financial value chain that do belong to that particular company. As such value added generates analytical qualities, which the researcher examine in the next step in the analysis in terms of value added distribution.

Why cash matters

The researcher introduces this section in particular because cash is important to maintain the health of key financial operating ratios; as cash is used for growing and funding the firm in terms of capital expenditure, dividends and share buy backs as well as also for maintaining a strong credit rating.

In the productionist models of business strategy a key indicator of corporate health is the ability of a business to maintain the level of tangible asset replacement rates or capital expenditure out of cash generated from operations.

Capital expenditure

Table 8.24, Nokia and Ericsson Capital expenditure as share of cash from operation

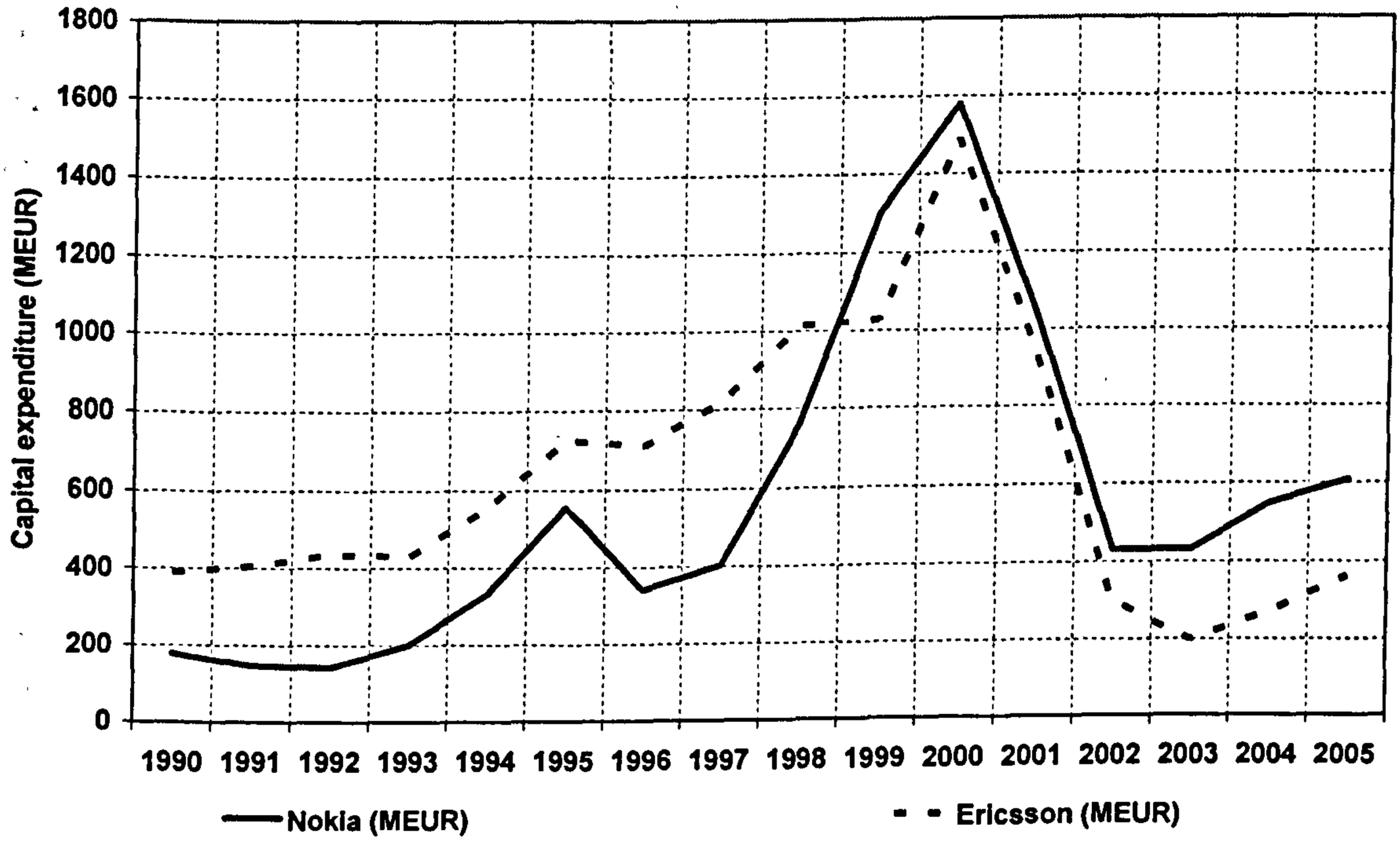
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	51%	95%	101%	60%	56%	55%	44%	31%	37%	40%	89%	-71%	-132%	21%	12%	12%
Nokia	48%	103%	68%	49%	43%	54%	32%	22%	25%	30%	24%	16%	7%	7%	11%	11%

Note. The capital expenditure as share of cash from income is defined as capital expenditure divided by operating result before depreciation and amortisation (i.e. EBITDA). For data used in the calculation see appendix 6, the nature for expense format for EBITDA and cash flow statement for capital expenditure. Due to losses on the EBITDA level the capital expenditure as share of cash from income is not meaningful for Ericsson in 2001 and 2002.
Source: Ericsson and Nokia annual reports.

The capital expenditure as share of cash from operations (i.e. capital expenditure divided by EBITDA) is similar in year 2004 and 2005 for the two companies. Nokia has, for example, reduced its share of capital expenditure out of cash from operations but this should be set in a context where the growth in its cash base has been very strong. On the other hand, Ericsson's share of cash devoted to capital expenditure (part from the years when cash is negative) is generally higher than that of Nokia but this may also reflect the fact that Ericsson's growth in cash resources has been weaker than Nokia and so capital expenditure soaks up rather more of the cash from operations.

It is interesting to notice that the size of the capital expenditure and the patterns of capital expenditure are similar as between the two firms with both executing substantial cutbacks after year 2000 (see figure 8.5 below).

Figure 8.5, Capital expenditure by value



Source: Ericsson and Nokia annual reports.

Dividends and share buy backs

Table 8.25, Nokia and Ericsson Dividends and share buy backs as share of cash from operations

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Dividends, Ericsson	10%	20%	22%	15%	14%	13%	13%	12%	16%	18%	29%	-35%	-31%	2%	1%	15%
Dividends, Nokia	9%	25%	13%	7%	5%	13%	14%	10%	13%	14%	15%	22%	21%	23%	28%	29%
Buybacks, Ericsson	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	-1%	0%	2%	0%	0%
Buybacks, Nokia	0%	0%	28%	0%	2%	0%	3%	0%	0%	0%	2%	0%	0%	22%	53%	81%

Note. The dividend as share of cash from operation is defined as dividends paid divided by operating result before depreciation and amortisation (i.e. EBITDA) and the share buy backs is defined as purchase of treasury shares. For data used in the calculation see appendix 6, the nature for expense format for EBITDA and cash flow statement for dividends paid and purchase of treasure shares. For the years 2001-02 the ratio is not meaningful for Ericsson due to significant losses.
Source: Ericsson and Nokia annual reports.

Again one sees a similar pattern of cash distributed to cover dividends during most of the 1990's. In the case of Ericsson a larger proportion of cash from operations is distributed to cover dividends reaching 29 per cent of cash in the year 2000 and thereafter dividends are postponed in 2003 as the firm moves into losses. However, the table below indicates the growth in the value of dividends paid by the two companies' reveals that Nokia distributed in aggregate much higher dividends to investors than Ericsson. Nokia was so cash rich in 2003 to 2005 it was also buying back shares from the capital market at market value (in total 8261 million Euro). To put this into perspective the total value of these share buy-backs by Nokia was twice that of the total of all Ericsson's dividends paid over the period 1990 to 2004 (in total 3620 million Euro).

Table 8.26, Dividends paid in Nokia and Ericsson in million Euros

Dividends	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	673	753	834	940	1188	1510	1917	2805	3800	4010	4179	4295	645	206	292	4133
Exchange rate	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,49	9,25	9,15	9,13	9,12	9,28
Ericsson	76	85	94	106	134	171	217	317	430	454	492	464	70	23	32	445
Nokia	34	36	27	29	35	133	152	178	374	597	1004	1396	1348	1378	1413	1531

Source: Ericsson and Nokia annual reports.

The reduced dividends payment to shareholders by Ericsson in 2002 to 2004 is a result of the significant weakness of cash from operations.

This weakness in cash from operation for Ericsson was also reflected in the credit rating, which was downgraded in 2001 and 2002 to below investment grade. In contrast a cash rich Nokia was able to sustain A rated credit ratings with the two main rating agencies Moody's and Standard and Poors.

Table 8.27, Credit ratings 1997-2005

			1997	1998	1999	2000	2001	2002	2003	2004	2005
Nokia	Short-term	Standard & Poor´s	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1	A-1
		Moody´s	P-1	P-1	P-1	P-1	P-1	P-1	P-1	P-1	P-1
	Long-term	Standard & Poor´s	A	A	A	A	A	A	A	A	A
		Moody´s	n.a.	n.a.	n.a.	A1	A1	A1	A1	A1	A1
Ericsson	Short-term	Standard & Poor´s	A-1	A-1	A-1	A-1	A-2	n.a.	n.a.	n.a.	n.a.
		Moody´s	P-1	P-1	P-1	P-1	P-2	n.a.	n.a.	na.a	na.a
	Long-term	Standard & Poor´s	A+	A+	A+	A+	BBB+	BB+	BB	BB	BBB-
		Moody´s	A1	A1	A1	A1	Baa1	Ba2	B1	Ba2	Baa3

Source: Ericsson and Nokia annual reports.

Nokia and Ericsson: Delivering shareholder value

Total shares outstanding have increased significantly for Ericsson compared to Nokia after split adjustments, mainly due to their write issue in 2002. Whilst Nokia has been content to maintain the volume of its outstanding share capital at roughly 4 billion shares Ericsson has increased the volume of its share capital to 16 billion after adjusting for share splits.

Table 8.28, Nokia and Ericsson outstanding shares (millions) (split adjusted)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	6583	6592	6598	6949	6951	7661	7689	7796	7805	7829	7910	8067	15975	16132	16132	16132
Nokia	4025	4025	4025	4409	4793	4793	4798	4845	4654	4654	4693	4737	4788	4701	4488	4173

Note. Outstanding shares have been split adjusted. For Ericsson, split 4:1 in year 2000 and bonus issue 1:1 in 1998. For Nokia, split 4:1 in year 2000, 2:1 in 1999 and 2:1 in 1998.
Source: Ericsson and Nokia annual reports.

The cash flow per share after investing activities has been stronger for Nokia when one compares this performance to Ericsson which has consistently lagged behind that for Nokia throughout the mid 1990s and the first four years of the new millennium.

Table 8.29, Cash flow per share after investment activities

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson (SEK)	0,26	-0,19	-0,26	0,01	0,77	-0,33	0,53	0,99	-1,26	-0,31	0,04	0,83	-0,44	1,21	-0,52	1,10
Exchange rate	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,49	9,25	9,15	9,13	9,12	9,28
Ericsson (EUR)	0,03	-0,02	-0,03	0,00	0,09	-0,04	0,06	0,11	-0,14	-0,04	0,01	0,09	-0,05	0,13	-0,06	0,12
Nokia (EUR)	0,01	0,03	-0,01	0,01	0,03	-0,06	0,19	0,25	0,21	0,39	0,21	0,82	1,03	0,43	0,89	1,43

Note. Cash flow per share after investment activities has been defined as cash flow after investing activities divided by outstanding shares. For cash flow data see appendix 6, cash flow statement.
Source: Ericsson and Nokia annual reports.

Likewise dividends per share in Euro were roughly similar in 1997 for Ericsson and Nokia but since that point in time Nokia has increased dividends per share roughly eight times, whereas Ericsson has only increased their dividend from 3 Euro cents to 5 Euro cents in 2001 and then they cancelled their dividends because of corporate restructuring. In relation to estimating share value one would expect Nokia to be operating with a higher share price than Ericsson because cash earnings per share are a good proxy for market value. Up until 1999 and roughly in line with cash earnings per share the two companies share prices track each other. They start to diverge after 1998 when it becomes clear that Nokia is generating superior cash returns on share capital.

Table 8.30, Nokia and Ericsson: Share price, year end

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson (SEK)	5,8	3,4	5,8	10,7	12,8	16,3	26,5	37,3	48,3	137,0	108,0	57,5	6,1	12,9	21,2	27,3
Exchange rate, SEK/EUR	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,49	9,25	9,15	9,13	9,12	9,28
Ericsson (EUR)	0,65	0,38	0,65	1,21	1,45	1,84	3,00	4,22	5,46	15,50	12,72	6,22	0,67	1,41	2,32	2,94
Nokia (EUR)	0,14	0,15	0,22	0,72	1,74	1,71	2,65	3,82	12,85	44,99	47,49	28,95	15,15	13,99	11,62	15,45

Source: Ericsson and Nokia annual reports.

In the years 1999 and 2000 the share price of Nokia in Euro stood at roughly 50 Euro compared to Ericsson's price per share of 12-15 Euro four, times below that of Nokia. At the end of a period when Ericsson's performance has been poor the share price of Nokia was 5-6 times greater than Ericsson. From this it would seem that the market is picking up on the performance signals and valuing Ericsson well below Nokia. However, share prices are not overall market value (MV) which is found by multiplying share price by the number of shares

outstanding, as difference in financial gearing and financial assets also affect the entity value of production capital employed.

Table 8.31, Nokia and Ericsson: total market value of equity

Ericsson	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Number of shares (million)	6583	6592	6598	6949	6951	7661	7689	7796	7805	7829	7910	8057	15975	16132	16132	16132
Share price	5,75	3,38	5,78	10,66	12,81	16,25	26,50	37,31	48,25	137,00	108,00	57,50	6,10	12,90	21,20	27,30
Market value	38	22	38	74	89	124	204	291	377	1073	854	464	97	208	342	440
Exchange rate	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,49	9,25	9,15	9,13	9,12	9,28
Market value (BEUR)	4,3	2,5	4,3	8,4	10,1	14,1	23,1	32,9	42,6	121,3	100,6	50,1	10,7	22,8	37,5	47,5

Nokia	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Number of shares (million)	4025	4025	4025	4409	4793	4793	4798	4845	4654	4654	4693	4737	4788	4701	4488	4173
Share price	0,14	0,15	0,22	0,72	1,74	1,71	2,65	3,82	12,85	44,99	47,49	28,95	15,15	13,99	11,62	15,45
Market value (BEUR)	0,6	0,6	0,9	3,2	8,4	8,2	12,7	18,5	59,8	209,4	222,9	137,2	72,5	65,8	52,1	64,5

Note. Outstanding shares have been split adjusted. For Ericsson, split 4:1 in year 2000 and bonus issue 1:1 in 1998. For Nokia, split 4:1 in year 2000, 2:1 in 199 and 2:1 in 1998.
Source: Ericsson and Nokia annual reports.

In 2005 the MV of Nokia stood at 64.5 billion Euro and Ericsson's MV 47.5 billion Euro a difference of just 35 percent although it needs to be noted that in a good years Nokia's MV was twice that of Ericsson. During the period 1990 to 2005 Nokia distributed seven times as much cash to dividends per share than Ericsson and in recent years a level of 3 times.

Table 8.32, Nokia and Ericsson: Total dividends

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson (MSEK)	574	720	721	722	977	1195	1676	2404	3411	3905	3919	3954	0	0	0	3959
Exchange rate	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,49	9,25	9,15	9,13	9,12	9,28
Ericsson (MEUR)	65	81	82	82	111	135	190	272	386	442	462	428	0	0	0	427
Nokia (MEUR)	0	0	0	21	32	126	151	176	378	586	931	1314	1279	1340	1398	1463

Source: Ericsson and Nokia annual reports.

Moreover Nokia has started to buy back its shares capital starting in the year 2000 and accelerating this is recent years with a total of 4.2 billion Euros repurchased since the year 2000. This buy-back programme is equivalent to 50 percent of dividends paid by Nokia over the period 1990 to 2005.

Table 8.33 Nokia and Ericsson share buy backs

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson (MSEK)	0	0	0	0	0	0	0	0	0	0	386	156	0	158	0	0
Exchange rate	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,84	8,49	9,25	9,15	9,13	9,12	9,28
Ericsson (MEUR)	0	0	0	0	0	0	0	0	0	0	45	17	0	17	0	0
Nokia (MEUR)	0	0	0	1	15	6	31	0	0	24	160	21	17	1363	2661	4268

Source: Ericsson and Nokia annual reports.

Nokia has consistently outperformed Ericsson in terms of growth and its operating ratios which have delivered consistently strong cash and profit out of income relative to Ericsson. In turn this has also helped generate strong dividends and earnings per share including funding substantial share buy-backs. All of this should add up to a substantial differential in MV generated by these two companies and yet the bottom line difference in MV in 2005 was just 35 percent as the capital market expectations are that the future may be different from the history revealed in this analysis.

Summary

The cases study on Nokia and Ericsson in chapter 7 observed the ambiguity in revealing performance simply from reading the narratives relating to the strategic initiatives of each firm. The researcher argued that the narratives alone do not help in gauge performance. In this chapter the researcher add the numbers to reveal financial performance relative to the narratives of strategy. The analysis indicates that Nokia is a strong performing company relative to its competitor Ericsson and also in comparison to the Europe 170. Specifically one find that Nokia is positioned in quintile 4-5 which places it in a strong position in the Europe 170 i.e. generally in the top 30-40 per cent of firms. By way of contrast Ericsson is generally positioned in the bottom 10-30 per cent of firms in the Europe 170.

It is also observed that the main deviations in relation to cash ROCE between the firms can be related to the value added key ratios: growth rates (sales & value added), value retention rate and the cash share of value retention. The exclusion of purchase in sales and labours share in value retention by the researcher is related to that these are mirrored in the value retention rate and the cash share of value retention.

Table 8.34 Nokia and Ericsson key ratios and quintiles

	Ericsson Key ratio	Quintile	Nokia Key ratio	Quintile
Sales growth	**7,9**	**3**	**15,9**	**5**
Value added growth	**7,0**	**3**	**13,6**	**5**
Purchase in sales	64,4	3	67,3	2
Value retention rate	**35,6**	**3**	**32,7**	**2**
Labours share of value retained	70,8	1	38,0	5
Cash in value retention	**29,2**	**1**	**62,0**	**5**
Cash return in sales	10,4	2	20,3	4
Profit return in sales	4,4	2	15,4	5
Sales capital intensity	0,49	4	0,44	4
Value retention capital intensity	1,38	4	1,34	4
Cash ROCE	21,1	3	46,4	5

Source: Author.

The researcher has employed the case study to explore the extent to which it is possible to further deconstruct corporate return on capital employed and one find that firms like Nokia are increasing the sum of financial capital as opposed to productive capital. However, the aggregate ratios employed in the Europe 170 provide a very useful benchmark by which one can start to locate performance and track changes in performance. The analysis suggests that Nokia has been a consistently strong performer and it is puzzling that at the end of the period 1990 to 2005 Nokia has only managed to stretch its MV to a level just 35% above than of its competitor Ericsson when it is also twice the size of Ericsson.

Chapter 9 , Conclusions

The objective of this chapter is to summarise the thesis. This concluding chapter contains eight sections and starts off with addressing the research effort undertaken, which is followed by a section that review the gap in the literature and what the researchers observes to be the absence of a coherent financial framework for evaluating corporate performance. The next section covers the dataset and the accounting framework, before summarising the findings from Europe 170 and the case study as well as adding value to theory. The last two sections outline the contribution to knowledge that this thesis makes whilst also providing some reflections for further study because the dataset developed in this thesis could provide the basis for future studies.

The research effort undertaken

Aim of the thesis

The aim of the thesis has been to show the usefulness of the value added format in a capital market context to judge corporate performance and strategy, and thus market values. This, since the value added accounting format has been used to manage the economy, but neither in managing firms nor market values.

Arriving to a bottom line of ROCE for the Europe 170 study and the case study showed that tradeoffs are made between value retention rates, labour shares as well as capital intensity indexes. Here, the nature of expense format in terms of value added calculations reveals the trade offs made to reward the firm's primary stakeholders. In particular, the nature of expense format introduced in Europe provide a standardised accounting format, to the same level as the function of expense format, This implies that observations relevant for the function of expense format in academic research should also be valid for the nature of expense format, besides the duality of cost structures (see the literature review) which has been the focus of this thesis.

It was thus possible, based on the nature of expense format, to identify a complementary subset of value drivers (see chapter 6), that can be used for entity valuation. The value added format and its connection to primary stakeholders provide a possibility to integrating the industry and the resource based view of strategy with shareholder value metrics and thus suggest an accounting theory of the firm, which allows the researcher to integrate accounting numbers with strategic narratives. This also enables feedback loops for reformulation of strategy (see later in this chapter) as the nature of expense format aligns product, labour and capital markets to an accounting format that reveals stakeholder claims.

The research question

The literature review is used to construct and inform the problem definition, which is revealed as an absence of a value added accounting format, at the micro and meso- corporate sector level, as a method of accounting for corporate performance, even though the literature review reveals the usefulness of the value added accounting format for performance measurement at the macro and industry level in national accounts. A rather disconnected agenda is observed between national accounts and business accounts in terms of performance measurement for wealth and value creation. It is also an agenda where accounting numbers provide useful inputs to other research areas and which helped underwrite significant shifts in research focus in accounting and finance over the past century.

The research question was formulated as: "How can the value added statement be useful for evaluation of performance and thus strategy in a capital market context?". As such the usefulness of the value added format is about:

- "how accounting numbers can be employed at various levels of the economy to inform us about corporate performance"
- and "support strategic decision making by managers and investors in their quest for value at the firm level".

The critical issue for this thesis was to construct a research method that can account for corporate performance which is the outcome of corporate strategy. By adding a capital dimension to the value added format it was possible to review similarities and differences in terms of financial performance for both the Europe170 and the case study of Ericsson and

Nokia. This format also adjusts for the financial degree of vertical integration, which is important in judging corporate performance in terms of factor resource utilisation and productivity.

The Europe170 revealed that there are tradeoffs between various key ratios as well as that the invisible at one level may become visible at a lower level of financial aggregation. These tradeoffs in terms of value added key ratios provide a complementary set of value drivers, which can be utilised for financial as well as strategic analysis.

The case study revealed that it is difficult to evaluate strategic priorities on narratives alone. What is required is to add accounting numbers to narratives to evaluate and thus reformulate strategy. As such adding a capital dimension to the value added format opens up new research areas (see end of this chapter) that can be explored through the dataset developed for this thesis as well as the dataset used for the S&P500 in US (see Andersson et al 2006, 2007).

The literature review

In the literature review the researcher has argued that there is a general absence of a strategic accounting framework that can reconciled the macro and meso economic national level accounting with sector and firm level accounts. More significantly the researcher has found that there is an absence of a national accounting framework which consolidates the corporate sector into its constituent industry sector and individual firm elements. The researcher believes this is a significant omission when the large-firm corporate sector is the subject of a great deal of attention in the strategy literature. In addition the corporate sector accounts for a significant proportion of market value (MV) upon which the social welfare settlements of many employees both within and outside of the corporate sector are dependent on, for example, pensions.

This thesis therefore sets out to construct a rich financial dataset using large European companies listed by market value and used by Standard & Poors to construct their European market index. The object was to make visible the financial characteristics of the European corporate sector and use this rich dataset so support the research method chosen in this thesis. In the research method chapter it was decided to employ a partial grounded theory approach

and construct a rich financial dataset for the Europe 170 companies. In addition rather than employ a positivist or purely narrative and descriptive approach the object has been to combined numbers and narratives to describe corporate performance.

In constructing the dataset for this purpose there have been a number of practical difficulties relating the collection of financial information and coverage in terms of the time period. It was not possible, for example, to include all of the European 350 firms from the Standard & Poors constituent list because complete financial data for this list of companies for the period 1990 to 2004 was not easily available. Rather the researcher chose instead to focus on the main European country indexes for the purpose of constructing the corporate finance dataset. This required collecting a range of financial variables for 170 firms listed in the FTSE 100, the DAX 30 and CAC 40. The researcher has also constructed what is termed a "yardstick" group for which he has a complete set of financial data for all firm years during the period and is the base for the quintile distribution. Using this rich financial dataset it has been possible to reveal corporate performance for a period covering 1990 to 2004 and from this information describe country and sector similarities and differences in corporate performance. Moreover in the chapters on Ericsson and Nokia the researcher has employed firm financials relative to benchmarks for the industry and at an aggregate level to help triangulate the narratives employed by managers to describe their strategic priorities. Specifically the researcher are able to position individual firms relative to the Europe 170 group of firms in the corporate sector to make judgements about the relative success of corporate strategies pursued. The corporate financial dataset provides an "anchorage" against which one is able to make comparisons and check outcomes against managerial claims.

It has not been possible to use this dataset for a complete range of research objectives and later in this conclusion the researcher discuss a range of projects that could employ this dataset for further research which for practical reasons of time and resources available could not be completed in this thesis. In the next section of this conclusion the researcher review the way in which the dataset was constructed.

The dataset and the accounting framework

Constructing the dataset

In chapter 3 and the appendix 1-3 the researcher has provided details on how the dataset has been constructed outlining the assumptions made and the obstacles needed to be overcome to complete this dataset as far as was practically possible. At an early stage in the research process it was necessary to decide upon the general accounting framework to be employed to construct the dataset. This would, for practical purposes, require making trade offs between excessive detail and too little financial information on each company. It was decided that the time period to be covered would be 1990 to 2004 which include two general recessions / business cycles. However, this too involved making a trade off because the further back the dataset had to go historically the less comprehensive was the financial coverage achievable from all available information sources.

The framework of analysis for the construction of the corporate financial dataset was grounded in the literature review on national accounting and specifically the struggle to design an accounting format that would not double-count and could be used to describe firm, sector and aggregate financials. The advantage of the national accounting system is that it employs a value added accounting format which avoids double counting. However, the literature review had revealed the absence of formats that accounted for the corporate sector and more significantly the national accounting project did not extended downward to the level of the firm. Rather, the way in which individual firms report their financials very much depends on the way in which annual reporting formats have developed at a national level. The agendas driving the way in which firms report their financials has not generally been that which was required to fit in with a national accounting project, but to meet the needs of various stakeholders and their interests, often after financial crises in stock markets for example the aftermath of the 1929 stock market crash. Therefore, in order to reconstruct the financial data reported by companies into a format that has the advantages of a national accounting format, it was decided to employ a framework which is grounded in the concept of value added. However, this format on its own was not sufficient for the purposes of this research project when the corporate sector is under pressure to deliver shareholder value from corporate strategy. The financial framework described again briefly below was the outcome

of a series of adjustments to the national accounting model to thereby create a hybrid accounting format.

The financial framework underpinning the dataset

The extensive use of the functional accounting format, mainly in Anglo-American countries, has led researchers in finance and strategy away from the utilisation of the value added format and it may also be the case that value added accounting is not been deemed relevant for corporate business, despite the fact that it has been successfully used in national accounting and economics for managing the economy. The main points against value added format have been the inconsistencies in its calculation and the fact that disclosure has generally been voluntary (Renshall et al 1979, van Staden 2000). The unregulated nature of the value added statement has also allowed for inconsistencies in the disclosure. Renshall et al (1979) suggests that these inconsistencies may be related to the strong impact of the Corporate Report had at the time, as "the only guide to the presentation of the value added statement is an illustrative example in the Corporate Report" (ibid p 89).

The literature review revealed that the value added format has indirectly been standardised in the form of the "nature of expense format" by IASB (2003) in their standard IAS1, which is now introduced in Europe. The nature of expense format is an extended "value added on production" format compared to the "value added on sales" format used in the Corporate Report (c.f. Renshall et al 1979, Gray et al 1980).

Employing the value added format and combining this with expenses disclosed by their nature is an important step forward because one can construct financial formats for firms, sectors and the overall corporate sector without double counting. Moreover the use of the value added format avoided the arbitrary assumptions employed to allocate expenses into functional categories such as: market and distribution, research and development. Rather the value added accounting format avoids arbitrary allocations and also double counting.

Table 9.1, The value added on sales format

	£
Sales revenue	1000
External purchases	-600
Value added/retained	400
Labour costs	-280
Depreciation	-60
Operating profit	60

By collecting the above items from a set of company reports and accounts it was possible to undertake a significant degree of analysis and for the purposes of this financial model of analysis the disclosure of labour costs is of great importance. When one add labour costs to depreciation and operating profit it is possible to compute value retained from an "additive" perspective. Deducting the value retained from total income reveals the proportion of the firm's total revenues that are distributed to suppliers of materials and services. Apart from providing a series of technical financial computations this format reveals the financial interest of different stakeholder groups. For example, the purchase or external costs as a proportion of total income reveals the financial interest of external suppliers, labour costs the employee stakeholders and dividends, net interest, tax and reinvestment out of value added the various other external stakeholder claims

Technically this accounting format is relatively simple to put together so long as labour costs are available. In the case of European as opposed to US firms (see Andersson et al 2006) this is a much easier task because European firms have generally reported, as a note to their accounts, total employee compensation. From 2005 public firms in Europe are also required to report their group accounts according to IFRS/IAS standards, which require disclosure of labour costs and depreciation & amortisation if the function of expense format is chosen instead of the nature of expense format. This enables a full reconstruction of the nature of expense format, since with labour costs, depreciation & amortisation and operating profit it is then possible to compute the value added and subtracting this from total income reveals external purchases and supplies. The proportion of external costs in income between firms, sectors and country indices and labour's share of value retained are variable. What is left

after labour costs are paid is cash from operations and deducting depreciation leaves operating profit.

The value added format takes the researcher only so far and in order to bring this into line with the literature review, which revealed the increasing pressure for shareholder value from the corporate sector, it was necessary to add a capital market dimension to the framework of analysis. This particular aspect of the framework of analysis borrows heavily from the Return on capital employed (ROCE) pyramid structure of ratios which includes a capital dimension in the form of capital employed. The combination of the value added format including a capital market dimension represented by capital employed results in a format for analytical purposes has an economy of presentation without losing the rich nature of corporate performance from a stakeholder perspective. The researcher are able from this dataset to: construct an evaluation of corporate trajectory (product market growth), reveal how income is decanted off to cover external suppliers in the value chain, cover employee costs to leave a residual of cash and profit from operations and finally how much profit or cash is generated per financial unit of capital employed.

Table 9.2 The value added format: by nature of expenses and return on capital employed

	£	
Sales revenue	1000	Growth trajectory
External purchases	600	External costs in income %
Value added/retained	400	Value retained in income %
Labour costs	280	Labour costs share of value added %
Depreciation	60	
Operating profit	60	Return on Sales (ROS)
Long-term debt	3000	
Shareholder Funds	3000	
Capital employed	6000	Profit and Cash return on Capital Employed

Using this hybrid model it is now possible to deconstruct the bottom line return on capital employed ratio into its constituent elements and thereby reveal how one get to the bottom line. In this thesis the researcher has employed this financial model of analysis to make

visible; the financial performance of the corporate sector in Europe so that one are able to understand the differences by country, sector and how the researcher can compare firms with their sector or the overall corporate sector benchmarks.

Utilising the dataset for further research

The dataset developed provide new insights into accounting, finance and strategy issues based on a socially constructed world where primary stakeholder claims matters. As such the database is expected to provide a potential value for future research, both in its present shape as well as adding new data items.

As the Europe 170 dataset use the same data structure as the S&P 500 data utilised by Andersson et al (2006, 2007) adding labour costs to US data will enable comparisons between US and Europe. Also extending the data items with cash flow and more balance sheet items would provide more detailed analysis of Europe 170 data as done in the case study and may provide a stakeholder account of cash distribution.

In the following section the researcher again briefly summarise the key findings from the analysis sections in this thesis starting with the country level analysis, then sector and company cases.

The Europe 170

Country analysis: FTSE 100, DAX30 and CAC40

The central findings from chapter 5 are constructed out of what was termed the "yardstick" group of firms. These are firms that the researcher was able to obtain complete and consecutive firm years for the period 1990-2004 and are also used for constructing the quintile distribution. This group of firms is also compared with all firms in the Europe 170 which includes firms for whom the researcher did not have a complete set of financial data in terms of firm years.

Table 9.3, The European 170 (all firms and yardstick group) deconstructed corporate sector performance by country. Average 1990-2004

	DAX 30	CAC 40	FTSE 100
Compound growth rate (CAGR) All	8.6	7.8	9.4
Yardstick	5.6	6.9	6.9
Purchase cost in sales % All	66.0	68.3	70.5
Yardstick	67.6	68.7	69.0
Value retained out of sales %	34.0	31.7	29.6
Yardstick	32.4	31.3	31.0
Of which Distributed to Labour costs %	61.2	57.0	45.6
Yardstick	61.4	56.8	47.8
Cash return in sales %	13.2	13.6	16.1
Yardstick	12.5	13.5	16.2
Cash share in value retention	38.8	43.0	54.4
Yardstick	38.6	43.2	52.2
Profit return in sales %	4.2	5.7	9,9
Yardstick	5.0	6.1	8.8
Sales capital Intensity index	0.75	0.81	0.86
Yardstick	0.77	0.83	0.87
Value added capital Intensity index	2,22	2,56	2,91
Yardstick	2,38	2,65	2,81
Cash return on capital employed	17,5	16,8	18,6
Yardstick	16.3	16.3	18.6
Profit return on capital employed	5.6	7.1	11.4
Yardstick	6.4	7.3	10.1

Notes: Yardstick firms include firms that we have obtained complete firm years for all years during the period 1990-2004 and all firms included the 170 firms covered by the DAX30, CAC40 and FTSE100. Value added compound growth is defined as value added geometric annual growth rate for the period. Purchase cost in sales is defined as sales minus value added as a per cent of total sales. Value retained out of sales is defined as value added as a per cent of total sales. Distributed to labour costs or labour's costs of value retained is calculated as labour costs divided into value retained and expressed as a per cent. Cash share in sales is calculated as operating result before depreciation and amortisation (i.e. EBITDA) divided into sales revenue and expressed as a per cent. Cash share in value retention is defined as operating result before depreciation and amortisation (i.e. EBITDA) divided by value retention. Profit return in sales is calculated as pre-tax profit divided into sales revenue and expressed as a per cent. Sales capital intensity index is defined as capital employed divided by sales, where capital employed is defined as total long-term debt plus shareholder funds. Value retention capital intensity is defined as capital employed divided by value retention. Cash return on capital employed is defined as EBITDA in relation to the sum of shareholders equity and long term debt. Profit return on capital employed is defined as pre tax income divided by capital employed.

In table 9.3 the researcher makes visible the financial operating characteristics of the European group of firms by deconstructing the return on capital employed revealing also how one arrive to the bottom line and how income has been distributed amongst the various stakeholders. In general, the researcher finds that the main countries in Europe have roughly the same growth trajectories at between 8-9 compound annual growth rates (CAGR) per annum. It would seem that European firms are all competing in similar markets and their spread between domestic and European growth rates are equally diversified.

When the researcher turns to the proportion of total income paid out to external suppliers of materials and services one also finds quite strong similarities between the three nations corporate sectors. At one end the DAX 30 group of firms generally pay out less of their total income to suppliers, that is, they are financially more integrated relative to FTSE 100 and CAC 40 firms which pay out 3-4 per cent more of sales income to suppliers. This means that the German corporate sector manage to retain a slightly higher (but a relatively significant) share of the financial value chain for internal factor costs. Chapter 5 also revealed that over a period of time these ratios tend to remain quite steady suggesting that whilst firms may have out-sourced more from their own business to external suppliers this has not significantly altered their financial operating ratios.

Significant differences start to emerge when one consider how the value retained by the various corporate sectors is distributed to cover the costs of labour. At the top end German firms distribute 62 per cent of their value retained to cover the cost of employees compared to large corporate FTSE 100 firms which distributed, on average, just 46 per cent of value retained to employees. The net effect of this is that there are large significant differences in the percentage of cash and profits retained out of total income by country corporate sector. Although these differences have narrowed over a period of time there is still a relatively large and persistent difference in cash and profit extracted out of total income.

Turning to the cash and profit return on capital employed (ROCE) these differences persist because the average level of capital intensity, that is capital employed to generate a unit of income, are roughly similar across the three countries. In Germany, France, and the UK large corporate players employ between 75 to 85 euros of capital employed per 100 Euro of sales revenue. This analysis suggests that there are still large differences in cash and profit return on capital employed by country. During a period of intense pressure on the corporate sector

to deliver improvements in profit generated out of capital employed German and French firms have, it would seem, resisted this pressure in the last decade or so.

Using the financial framework developed in the research methods chapter and employing this to construct a large corporate sector financial dataset the researcher are able to reveal and make visible differences in corporate financial performance by country. The researcher can from this framework also reveal similarities and differences to help inform further research, for example, on national differences and responses to the pressure for shareholder value.

The researcher now turns to briefly summarise the results obtained form the company sector analysis undertaken on the financial dataset.

Sector analysis

To break down the corporate dataset into industry sectors the researcher employed the Standard and Poor's definitions for industry sectors which give eight broad sectors in table 9.4. Immediately this table throws out larger differences between industry sectors with Healthcare, IT & Telecom and Materials showing strongest growth with IT & Telecom and Healthcare also operating with the lower share of external costs in income. A lower share of external costs in income gives Industrials, IT & Telecom and Healthcare a higher retention of income out of sales.

Table 9.4, European 170 financial analysis by sector

Aggregated values	Cons. Discr.	Cons. staples	Energy & util.	Financials	Health-care	Ind.	IT & Telecom	Mater-ials
Compound value added growth rate (CAGR) All	8.5	7.8	12.7	11.8	12.9	7.5	8.3	6.5
Yardstick	5.4	5.6	9.0	9.4	10.4	5.4	5.2	2.3
Purchase cost in sales % All	68.4	74.4	73.5	75.8	47.1	58.4	44.9	64.0
Yardstick	68.4	74.7	73.5	75.4	46.7	59.5	51.8	63.5
Value retained out of sales %	31.6	25.6	26.5	24.2	52.9	41.6	55.1	36.0
Yardstick	31.6	25.3	26.5	24.6	53.3	40.5	48.2	36.5
Of which Distributed to Labour costs % All	64.0	54.0	40.0	44.8	48.6	74.9	46.4	59.8
Yardstick	65.6	54.8	42.1	44.9	47.9	74.1	52.2	59.2
Cash share in value retention	36.0	46-0	60.0	56.2	51.4	25.1	53.6	40.2
Yardstick	34.4	45.2	57.9	55.1	52.1	25.9	47.8	40.8
Cash return in sales % All	11.4	11.8	15.9	13.3	27.2	10.4	29.5	14.5
Yardstick	10.9	11.4	15.3	13.6	27.7	10.5	23.0	14.9
Profit return in sales % All	4.5	8.0	8.5	8.0	20.5	4.4	3.4	8.1
Yardstick	4.3	7.8	8.3	6.6	22.5	4.6	2.5	8.1
Sales capital intensity index All	0.51	0.42	0.60	1.40	0.69	0.47	1.57	0.65
Yardstick	0.50	0.42	0.63	1.47	0.56	0.50	1.56	0.65
Value added capital intensity index All	1.62	1.65	2.27	5.77	1.30	1.14	2.86	1.80
Yardstick	1.58	1.66	2.37	5.98	1.05	1.22	3.24	1.79

Aggregated values	Cons. Discr.	Cons. staples	Energy & util.	Financials	Health-care	Ind.	IT & Telecom	Mater-ials
Cash return on capital employed All	**22.2**	**27.8**	**26.5**	**9.6**	**39.4**	**22.0**	**18.8**	**22.3**
Yardstick	**21.8**	**27.2**	**24.4**	**9.2**	**49.5**	**21.2**	**14.8**	**22.8**

Notes: Yardstick firms include firms that we have obtained complete firm years for all years during the period 1990-2004 and all firms included the 170 firms covered by the DAX30, CAC40 and FTSE100. Value added compound growth is defined as value added geometric annual growth rate for the period. Purchase cost in sales is defined as sales minus value added as a per cent of total sales. Value retained out of sales is defined as value added as a per cent of total sales. Distributed to labour costs or labour's costs of value retained is calculated as labour costs divided into value retained and expressed as a per cent. Cash share in sales is calculated as operating result before depreciation and amortisation (i.e. EBITDA) divided into sales revenue and expressed as a per cent. Cash share in value retention is defined as operating result before depreciation and amortisation (i.e. EBITDA) divided by value retention. Profit return in sales is calculated as pre-tax profit divided into sales revenue and expressed as a per cent. Sales capital intensity index is defined as capital employed divided by sales, where capital employed is defined as total long-term debt plus shareholder funds. Value retention capital intensity is defined as capital employed divided by value retention. Cash return on capital employed is defined as EBITDA in relation to the sum of shareholders equity and long term debt. Profit return on capital employed is defined as pre tax income divided by capital employed.
In the case of Financials it should be observed that the sales definition use gross revenue and not net revenue (see chapter 4). As such the value retention rate becomes lower than normally expected, but aligns better to the transactions made than a net revenue approach.

However, IT & Telecom and Industrials have the highest propensity to distribute retained income to employee compensation which softens the amount of cash retained as a per cent of total income. Although Consumer Staples operate with a relatively low growth trajectory and high purchase cost in income this is then offset as one move down through the ratios by a low distribution to labour costs and a relatively low capital intensity index. Whilst Healthcare, as a sector, operates with favourable growth and operating ratios including relatively low requirements for capital.

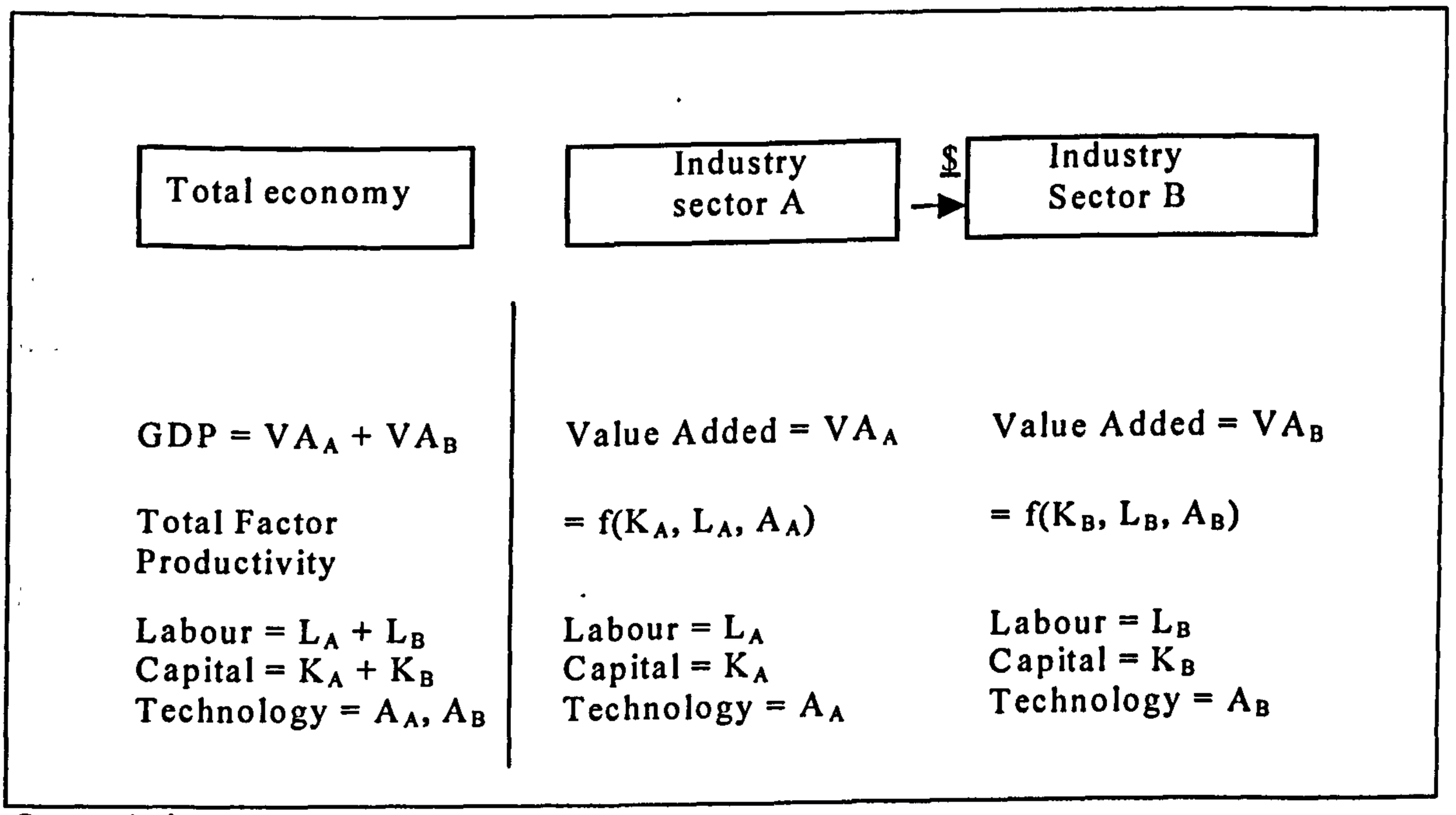
When one maps out the financial analysis using the sector matrix in table 9.4 the researcher reveal the variations in operating characteristics across the sectors where, for example, Financials are operating with very high levels of capitalisation because they are investment banks but their return on capital is not strong because cash and profit return out of income is also below average. Moreover when one considers the sector analysis over time the researcher are made aware of how sectors within the overall corporate index change over time as some sectors advance and others decline. To illustrate this process of value added mobility the researcher has developed a two sector model that illustrates the redistribution of value added across sectors.

Value added mobility

To illustrate the benefits of value added cash flow chain for sector analysis the researcher introduce an example of a single economy with two industry sectors (i.e. sector A and sector B) and one sector of final demand (e.g. Households). The researcher also defines the resources used for each industry sector, i.e. Labour (L), Capital (K) and Technology (A), in line with the ideas for Total Factor Productivity (Hall et al 1997). Using value added in this context is not so different from the original argument that wealth is created by three main factors of production (land, labour and capital) as "things that are required for making a commodity" (Marshall 1961 p 25).

From the value added concept one knows that the total GDP for the economy is the sum of the value added in the two sequential industry sectors, i.e. GDP = $VA_A + VA_B$. One also know that value added can be measured from the income side as the sum factor costs, i.e. sum of profits, depreciation, interest, payroll costs, dividends and taxation (see chapter 3). In terms of terminology this translates to labour costs (including social benefits) and earnings before depreciation and amortisation (EBITDA), i.e. Labour costs + EBITDA=value added.

Figure 9.1, The two sector model of value added cash flow.



Source: Author.

One can now describe the value added as a value added statement as done in the Europe 170 study by using value added accounting as (see table 9.5):

Table 9.5, The Value Added Cash Flow Statement of the two sector model

	Industry A	Industry B	The economy
+ Sales	GDP	VA_B	
- Procurement	$- VA_B$	-0	
= Value added	VA_A	VA_B	GDP
- Labour costs	$- L_A$	$- L_B$	$- L_A - L_B$
= EBITDA	$EBITDA_A$	$EBITDA_B$	$EBITDA_A + EBITDA_B$

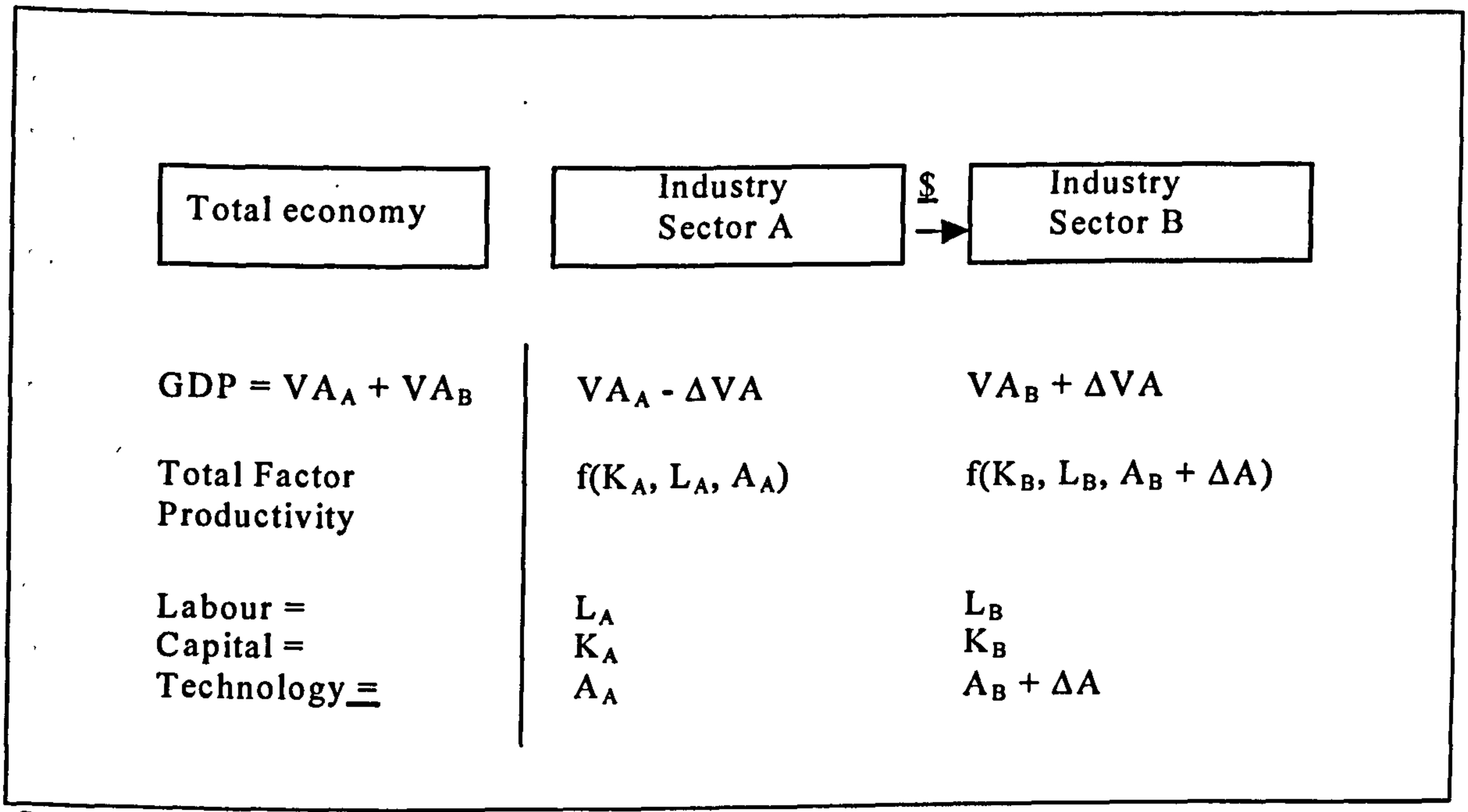
Here one also observes how the procurement of one sector is the sales of another, an important observation used for construction of input/output tables in the national accounts (see chapter 2).

Note that in this model the researcher has made some simplifications, as everything produced is also sold (i.e. no inventory exists), no work is capitalised by the firm and that depreciation is equal to fixed capital consumption. It is also assumed, although not shown, that the firm is only financed with equity and that there are no capital gains from sale of assets, no taxes on production and import, no subsides and no business current transfer payment.

An important point in using value added format is that it becomes obvious that the resource allocation by the firm (i.e. L, K, A) is towards generating the value added rather than sales which includes the procurement of value added from suppliers. The framework also suggests *that firms compete for value added and the resource allocation against the value added determines the cash available for investors! This competitive awareness through value added is important for managers and investors in understanding corporate performance and its changes in relation to strategy.*

If one now introduce a change in technology (ΔA) into the economy, to the advantage of industry sector B and disadvantage of sector A all other things being equal, i.e. stable GDP as well as stable L and stable K in each industry, then the change in technology will lead to a change in value added, i.e. ΔVA, between the industries.

Figure 9.2, The two sector model with creative destruction.



Source: Author

The change in technology can be seen as a structural shift of value added (c.f. creative destruction), as the economy as such is untransformed. The result of this change in technology (ΔA), i.e. change of value added (ΔVA), can now be described in value added accounting terms as:

Table 9.6, Change in our value added cash flow statement due to ΔVA.

	Industry A	Industry B	Economy
+ Sales	GDP	$VA_B + \Delta VA$	
- Procurement	$- VA_B - \Delta VA$	- 0	
= Value added	$VA_A - \Delta VA$	$VA_B + \Delta VA$	GDP
- Labour costs	$- L_A$	$- L_B$	$- L_A - L_B$
= EBITDA	$EBITDA_A - \Delta VA$	$EBITDA_B + \Delta VA$	$EBITDA_A + EBITDA_B$

Source: Author

The effect of the value added mobility due to the change in technology (i.e. ΔVA) can also be described in terms of key ratios changes as:

- Labour share of value retention = Labour (L) divided by value added.
- Capital efficiency = EBITDA divided by capital (K).

As can be seen from the above example the labour costs in value retention will go up for industry sector A and fall in industry sector B. Whereas the capital efficiency will decrease for industry sector A (i.e. lower profitability) and increase for industry sector B (i.e. higher profitability). This type of pattern, that is changes in key ratios, was observed both in the Europe 170 study as well as in the case study, that is the fortune of one firm or a sector is the loss of value added capacity for another.

In the example, a change of technology that results in a redistribution of value added, which provides industry sector B with a competitive advantage that translates to increased cash flow (i.e. EBITDA) and thus higher entity value (provided that the technology change was not expected by the market). More generally this type of model may also make it easier to understand concepts like disruptive technologies (Christiansen 1999) and how the threats from potential entrants and substitutes to the existing value added cash flow chain. It also allows comparing financial flows with physical flows, an important characteristic to evaluate strategy.

The researcher now turns to discuss the conclusions reached form the company case study on Nokia and Ericsson.

The case study

Accounting for strategy and corporate performance

The text books on corporate strategy are dominated by three themes which the researcher has identified as: market positioning (see Porter, 1980, 1985), resource efficiency and core competences (Prahalad et al 1990) and more recently financialised strategies for shareholder value (Copeland 1990, Rappaport, 1998). In this thesis the researcher has sought to develop a financial framework of analysis that is complementary to these positions on strategy that include financial dimensions reflecting: market trajectory as the outcome of favourable industry and market position, resource efficiency as reductions in external an internal costs and shareholder value from higher cash and profit per financial unit of capital employed.

The two company cases on Nokia and Ericsson were chosen because they are firms competing in the same industry sectors and share common underlying technology and markets. These are also companies that, from an investor point of view, are regarded as close substitutes when constructing investment portfolios. The review of the strategic narratives employed by these two companies found that market positioning, resource efficiency and statements about shareholder value were generally present in all the corporate material and interviews carried out with managers. Using the narratives alone to judge outcomes was not an easy task because all elements were present in the literature on Ericsson's and Nokia's corporate strategies. One do observe that the nature of "what is" strategy?" in the two companies does change so that Nokia will now repurchase share capital in line with a financialisation of its strategy. However, the language and narratives about strategy employed by each company are generally similar and therefore it is not possible using the narrative accounts alone to make judgements about performance and market value.

The second half of the case studies employs the financial framework to make visible the financial performance of Nokia and Ericsson to revealing similarities and differences.
In terms of value added growth (see table 9.7) Nokia grows twice as fast as the average firm, whereas Ericsson shows a growth slightly ahead of the average firm. In terms of value retention rate Nokia is an average firm, whereas Ericsson retains more than the average firm. However, in relation to the IT & Telecom sector both firms retains less than the average firm.

Table 9.7, Nokia and Ericsson: Comparative financial performance

	Ericsson	Nokia	Europe 170, Yardstick	IT & Telecom, yardstick
Compound value added growth rate (CAGR)	**7.0**	**13.6**	**6.5**	**5.2**
Purchase cost in sales %	**64.4**	**67.3**	**69.0**	**44.8**
Value retained out of sales %	**35.6**	**32.7**	**31.0**	**55.2**
Of which Distributed to Labour costs %	**70.8**	**38.0**	**54.3**	**56.7**
Cash share in value retention	**29.2**	**72.0**	**45.7**	**43.3**
Cash return in sales %	**10.3**	**20.3**	**18.4**	**24.0**
Profit return in sales %	**4.4**	**15.4**	**9.8**	**6.7**
Sales Capital Intensity index	**0.49**	**0.44**	**1.33**	**1.30**
Value retention Capital Intensity index	**1.38**	**1.34**	**2.63**	**2.86**
Cash return on capital employed	**21.1**	**46.4**	**24.4**	**24.6**

Notes: Yardstick firms include firms that we have obtained complete firm years for all years during the period 1990-2004 included the 170 firms covered by the DAX30, CAC40 and FTSE100. Value added growth is defined as value added geometric annual growth rate for the period. Purchase in sales is defined as Sales minus value added as a per cent of total sales. Value retained out of sales is defined as value added as a per cent of total sales. Labour's are of value retained calculated as labour costs divided into value retained and expressed as a per cent. Cash share in value retention is defined as operating result before depreciation and amortisation (i.e. EBITDA) divided by value retention. Cash share of total income calculated as operating result before depreciation and amortisation (i.e. EBITDA) divided into sales revenue and expressed as a per cent. Profit share of total income calculated as pre-tax profit divided into sales revenue and expressed as a per cent. Sales Capital intensity index is defined as capital employed divided by sales, where capital employed is defined as total long-term debt plus shareholder funds. Value retention Capital intensity index is defined as capital employed divided by value retention. Cash ROCE is defined as EBITDA in relation to the sum of shareholders equity and long term debt.

When it comes to distribution of value retained to labour, Ericsson distributes more than the average firm, whereas Nokia distribute less than the average firm. This is also reflected in the cash return in sales relations, where Nokia can be regarded as an average firm, whereas Ericsson is below average. In terms of profit return in sales Nokia is way above the average, whereas Ericsson is below whilst both firms have about the same capital intensity index, which is well below the average. In terms of cash return on capital employed Ericsson is an average firm, whereas Nokia's performance translates into well above the average.

The financial analysis tells a story of two different companies both in terms of growth trajectory and also operating ratios. In addition the researcher introduced the idea of industry and market positioning using the quintile bands that divide the distribution of performance into five equal groups so as to rank Nokia and Ericsson. A quintile distribution breaks up the same firms in the industry sector or for the corporate sector as a whole into five groups of firms ranked by their financial performance. It is not only important to carry out a financial analysis for both Nokia and Ericsson but to also be able to situate or position both companies relative to their industry peers or the corporate sector as a whole. Porter was concerned with market position and so ranking firms relative to their industry sector peers is a useful method which complements Porter's work on market position. In ranking a firm relative to others in the industry one is also able to make visible the impact that resource efficiency (Prahalad et al 1990) and specificity has had on operating financials. Where one ranks the firm relative to all other firms in the corporate sector one are able to discern which are generating more or less shareholder value.

Table 9.8 Nokia and Ericsson key ratios and quintiles

	Ericsson		Nokia	
	Key ratio	Quintile	Key ratio	Quintile
Sales growth	**7,9**	**3**	**15,9**	**5**
Value added growth	**7,0**	**3**	**13,6**	**5**
Purchase in sales	64,4	3	67,3	2
Value retention rate	**35,6**	**3**	**32,7**	**2**
Labours share of value retained	70,8	1	38,0	5
Cash in value retention	**29,2**	**1**	**62,0**	**5**
Cash return in sales	10,4	2	20,3	4
Profit return in sales	4,4	2	15,4	5
Sales capital intensity	0,49	4	0,44	4
Value retention capital intensity	1,38	4	1,34	4
Cash ROCE	21,1	3	46,4	5

Source: Author.

Not only does the financial framework of analysis reveal corporate performance it also complements the narrative accounts provided by managers which reflect their ambitions in terms of: market position, resource efficiency and shareholder value. Not only is one relying on management narratives the researcher is also triangulating these narratives with a deconstructed view of corporate performance. Because the researcher are also taking a long-run view one are able to discern the extent to which new strategic narratives establish a break with the past, deliver more of the same or lead to a deterioration in performance.

The financial framework of analysis employed therefore deconstructs the bottom line revealing how one arrive to a bottom line return on capital employed whilst the use of a quintile distribution helps the researcher locate corporate financial performance relative to all other firms. In deconstructing the bottom line ratio one is also revealing the importance of different drivers of corporate financial performance.

Adding value to theory

The drivers of value

In summarising chapter 6 the researcher observed that the nature of expense format provide a complementary set of value drivers to existing shareholder value metrics as it describes what happens between the purchase of factor costs and sales, an area largely ignored according to Coase (1992). Compared to the traditional set of value drivers one avoid the arbitrariness of the function of expense format as well as one avoid double counting. As such it is possible to extend the value driver analysis also to sectors and countries as done for Europe 170.

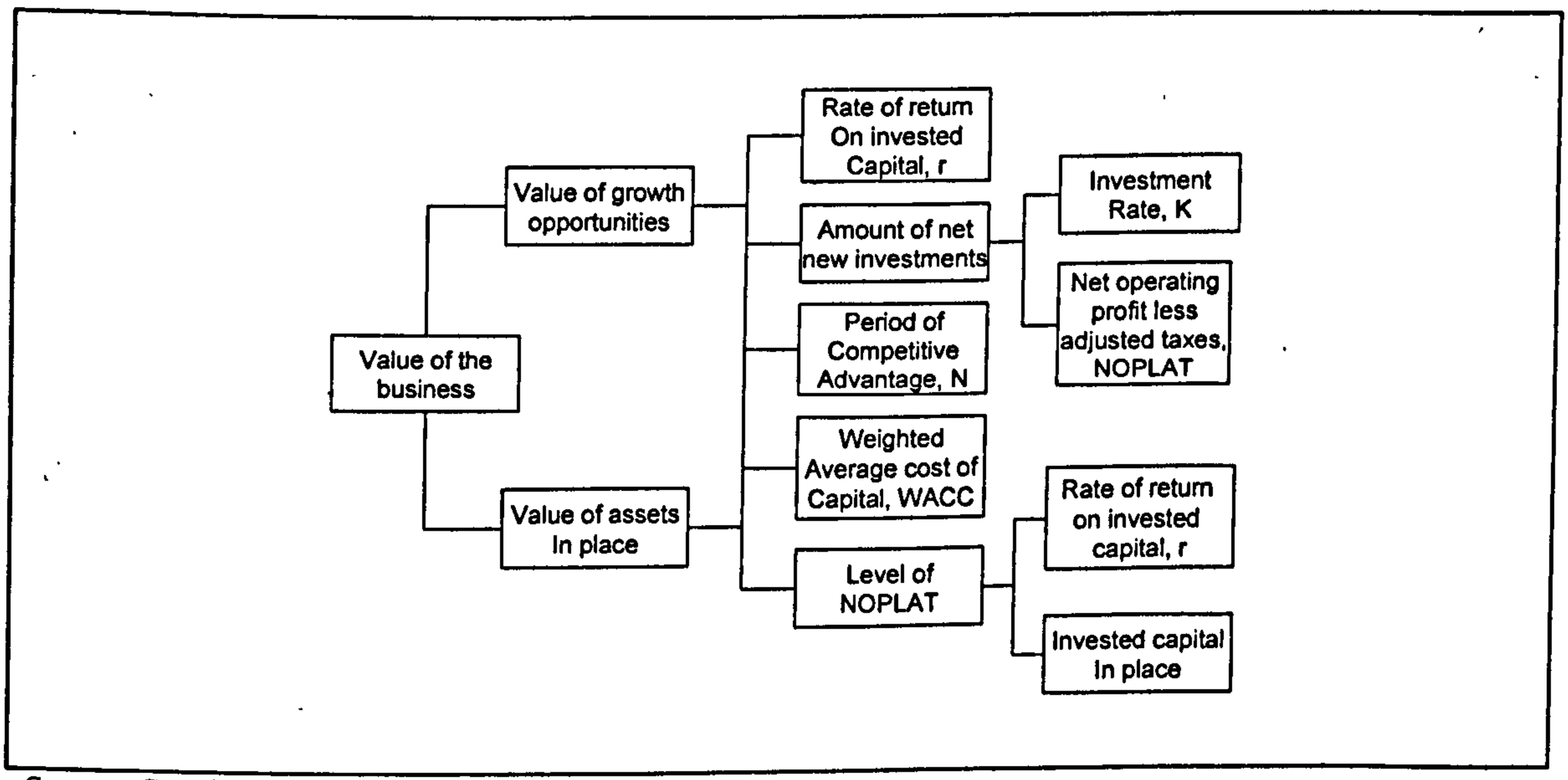
Compared to the existing set of value drivers one can also align stakeholder interest and claims to the firm. But before the researcher turn to that, he recaptures some of the key characteristics of traditional value drivers and in relation what has been done in this thesis.

It was previously observed that Copeland et al (2000 p 97) defines a value driver as "a performance variable that has impact on the result of a business, such as production effectiveness or customer satisfaction" and are based on three principles (ibid 97-99):

- "Value drivers should be directly linked to shareholder value creation and cascade down throughout the organisation".
- "Value drivers should be targeted and measured by both financial and operational KPI's". This Key Performance Indicators (KPI) is used for both target setting and performance measurement and 5-10 KPI's is sufficient to get an overview of the business.
- "Value drivers should cover long-term as well as operating performance"

The key drivers of value are according to Copeland et al (1990 p 121) "the return on invested capital relative to the weighted average cost of capital and the amount the company invests in new capital at the this rate to generate growth". Copeland is concerned with establishing a connection between value drivers, free cash flow and market valuation.

Figure 9.3, The key value drivers



Source: Copeland et al 1990 p 121.

Black et al (1998), building on the work of Rappaport, identifies: sales or turnover growth, cash profit margin (i.e. EBITDA), cash tax rate, working capital to grow the business, capital expenditure or fixed capital, WACC and competitive advantage period (CAP) as key metrics driving value. The framework constructed in this thesis is complementary to those employed in finance theory to estimate corporate market value (MV) because they share common financial metrics. However, the purpose of the research undertaken in this thesis is not to

identify the link between market value and corporate financial performance. Rather the object has been to reveal corporate performance.

Table 9.9 summarises what the researcher are trying to do. That is to both deconstruct the bottom line corporate financial performance namely the return on capital employed into its constituent elements. From this it is then possible to rank firm performance for each of these elements and group firms into quintile bands so as to be able to position individual firms or a group of firms relative to an industry sector or the corporate sector as a whole. From the analysis one find that corporate financial performance is distributed between strong and weak performance and that not all firms can be winners.

Table 9.9, Quintile distribution of the Europe 170 firm key ratios

	Quintile 1 (bottom)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (top)
Sales Growth Compound Rate	<3.3	3.3-6.4	6.4-9.0	9.0-12.9	>12.9
Value Added (Euros)	<2.8	2.8-5.8	5.8-9.5	9.5-13.3	>13.3
Purchases in Sales Rate %	>75.0	66.5-75.0	58.4-66.5	49.3-58.4	<49.3
Value Retention Rate %	<25.0	25.0-33.5	33.5-41.6	41.6-50.7	>50.7
Labour's Share of Value Retained	>67.2	61.2-67.2	53.4-61.2	39.9-53.4	<39.9
Cash ROS Rate %	<8.9	8.9-13.6	13.6-17.3	17.2-25.4	>25.4
Cash share in value retention	<32.8	32.8-38.8	38.8-46.6	46.6-60.1	>60.1
Profit ROS Rate %	<3.4	3.4-6.3	6.3-10.2	10.2-14.6	>14.6
Sales capital Intensity Rate %	>1.3	0.7-1.3	0.5-0.7	0.4-0.5	<0.4
Value retention capital intensity index %	>3.40	2.16-3.40	1.68-2.16	1.10-1.68	<1.10
Cash ROCE Rate %	<15.7	15.7-20.8	20.8-24.3	24.3-30.8	>30.8

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's. For company data used in calculations see appendix 3.

In table 9.9 the researcher summarise the corporate financial performance of all firms in the Europe 170 (FTSE 100, CAC 40 and DAX 30) and rank firms to obtain the quintile bandings. This analysis reveals what it takes to be in the top twenty per cent of firms in the Europe 170. This group of firms have compound annual growth rates (CAGR's) of more that 13 per cent (both in sales and value added) which is roughly twice the annual growth rates of an average firm. Moreover a top twenty per cent company has a low share of external costs in income below fifty per cent which means that value retained is fifty per cent of total income or more. These firms also have a low labour's share of value added at below forty per cent which leaving a cash residual out of total income of 25 per cent or more. When this also combined with a low index of capital employed per financial unit of sales a top performing firm will generate a cash return on capital employed of more than 30 per cent.

Not all firms have growth rates, revenue percolation ratios and capitalisation rates which can deliver top twenty per cent performance because just like the horse race not all firms jump all the fences to win the race. They can fall at the start or at the end but either way this will damage bottom line outcomes. It is possible that weak performance is offset elsewhere, for example a high labour cost share in value retained is offset by a low capitalisation index. In these circumstances one can reveal how strategy is the outcome of a series of trade off's to get the firm to the bottom line. As one track individual firms over a period of time it is also possible to reveal performance and value at risk

Performance and value at risk

The financial markets literature emphasises the importance of value at risk which is an attempt to assess how the market value of a firm may be compromised as a result of strategic decisions, adjustments to regulatory requirements and general economic conditions. In terms of performance at risk the researcher has observed that over a period of time the conditions that locate a firm in, say, the top quintile band of firms can deteriorate. It may not be possible to sustain growth rates at or above 10 per cent per annum and that when the trajectory slows internal labour costs rise to reduce cash residuals. In these circumstances one can reveal risk not just as earnings volatility relative to the stock market index as a composite beta (β) which is presumed to embody systematic risk. Rather this framework contributes to the understanding of corporate financial risk because it is deconstructed financially into: product market, financial supply-chain, factor cost, capitalisation rates relative to cash and profit extracted out of income. Management strategy can also be judged in relation to how these risk components vary over time as with our consideration of Nokia and Ericsson which revealed points in time where there are turning points where corporate financial risk is made worse or the improved by events. This implies that strategy and corporate performance is the outcome of product and factor market arbitrage.

This thesis has therefore been concerned with how to make visible corporate financial performance and this required the researcher to construct a rich financial dataset for the Europe 170. In itself this was a major task because the format employed for this presentation of financial data had not been previously constructed and appropriate historical financial data

was difficult to trace. The object of this thesis has been to expand our understanding of competitive awareness through value added and how accounting numbers can help increase the field of the visible. Specifically how one can employ this financial dataset to review corporate performance by: country, sector and at the level of the firm in Europe. Moreover the researcher has been concerned to be able to position firms within a matrix of firms that constitute national corporate sectors using quintile bandings to visually help to position a firms performance an also increasing our awareness of what constitutes strong or week corporate financial performance.

Towards an accounting theory of the firm and feedback loops

In the literature review the researcher revealed how the main theories of strategy situate the firm within an industry, resource base and shareholder value context but that all these dimensions are treated as separate domains. Often research is carried out within one of these frameworks, for example, considering the impact of intangible assets (resource based approach) on strategy formulation and competitive advantage or how shareholder value metrics may help transform performance and help formulate strategy. The literature review provided in this thesis revealed a rather fragmented approach combining industry structure, resource based theory and share holder value approaches. The struggle is, as Rumfelt (1984) observed one of developing a "strategic theory of the firm". After this original article researchers have suggested several theories of the firm, but economists have been very critical of these approaches (Phelan et al 2000). Of importance of this thesis is that "a theory of the firm must ultimately blend strategic and economic considerations" (Phelan et al 2000 p 306). The researcher has already observed that the strategy literature and models developed to help managers formulate strategy tend not to be located in accounting but grounded in the economic theory of the firm. So the researcher finds that accounting concepts such as value added have not been employed in the strategy literature and, at times eschewed by academics (see Porter 1985, Shank 1989). However, the problem is not just with the strategy literature but also within accounting. Here too there has been a long-standing debate on how to construct a theoretical framework in accounting (see Yu 1966, Bromwhich 1986), where there is dissatisfaction with conventional accounting data for managerial, investment and analytical purposes. There has also been criticism of trying to employ accounting numbers to construct a

general theory of capitalist enterprise calculation (see Cutler et al 1977) especially when the accounting numbers are malleable.

This is not to say that there have been efforts to try and integrate existing strategic theories into one "unified" strategic theory of the firm. Amit et al (1993) have proposed a theoretical approach that would integrate the competitive forces at the industry level and the resource based paradigm of competitive advantage at the firm level (see also Barney 1986). However, these strategic models are grounded in economics and tend also to be rather descriptive and so when it comes to judging outcomes and performance one have to rely on "narratives" about the nature of strategic initiatives rather than financial numbers. However, as soon as one start to introduce financial numbers one enter the realm of accounting which is concerned with reporting systems that have incrementally developed to meet the challenges and demands of various stakeholders and adjust to changes economic and political circumstances.

In this thesis it is important to add numbers to support strategic narratives so that one can make judgements about performance and outcomes and use the financial numbers to also inform a feedback look to adjust strategic priorities. To construct this financial description of corporate financial activity the researcher has drawn together the value added format employed by accountants to construct national accounts and supplemented this with a capital dimension which includes balance sheet capitalisation. Using this hybrid financial model the researcher are able to preserve the so-called pyramid structure of ratios which allows him to deconstruct the bottom line cash return on capital employed (Cash ROCE) into elements which describe product market conditions / trajectory, resource costs structure and shareholder value in terms of return on capital. The researcher has also tried to avoid the criticism that the accounting numbers one employ are subject to arbitrary allocations and so the researcher has used the nature of expenses to structure the analysis rather than function of expenses. However, it is still not possible to avoid the interference of accounting practices and systems and the social construction of the numbers.

This financial approach does present an opportunity to move towards an integrated accounting theory of the firm which connects with the notion that the firm combines resources to meet competitive product market demand and extract a surplus for investors as shareholder value. Using this financial framework the researcher is able to describe the development of product markets and how the combination of external resources (purchase costs) and internal costs

(labour) act to promote, sustain, or frustrate the return on capital for investor. This financial framework complements existing strategic theories of the firm which are so far lacking an integrative device. This thesis makes a contribution to knowledge in this area because the hybrid financial framework could provide just such an integrative device where connections and tensions between product, resources and capital market demands are revealed.

A strategic model for value added chain analysis

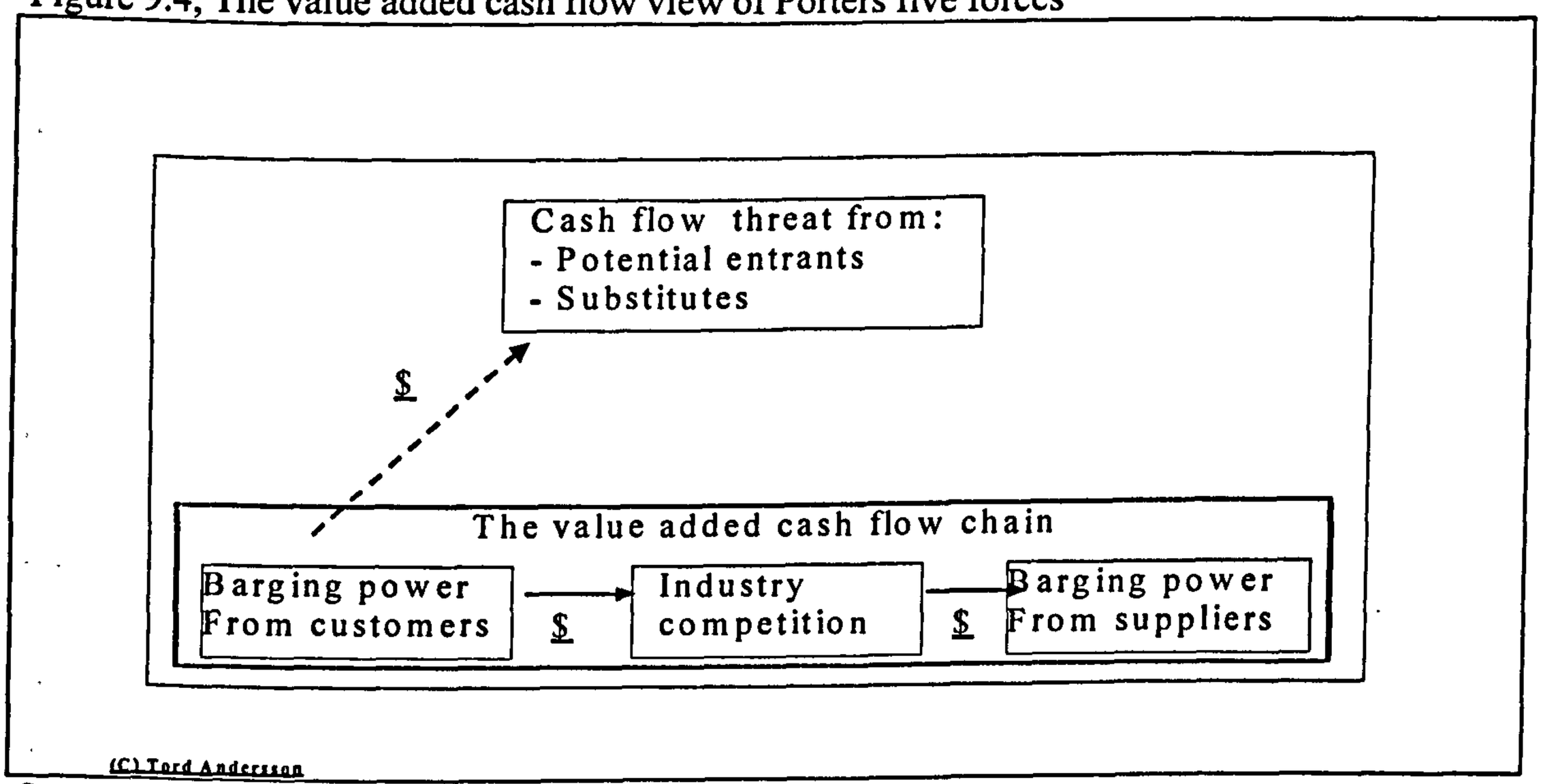
In the literature review the researcher made the argument that the value added concept can be used to describe value added chains, a position which contradicts that put forward by Porter (1985). The financial analysis using value added makes visible the extent to which firms are financially integrated, for example, the Europe 170 study has revealed similarities and differences at both the country level and the sector level in terms of value retention of out sales revenue. But more importantly it allows the researcher to view product markets as a value added process where each firm adds value along the value added chain between raw materials and consumer demands because value added avoids double counting.

Financially revealing the interests of the primary stakeholders, in terms of customer and suppliers, allows the researcher to connect the product market of sales and the product markets of procurement through the value added concept, as value added is defined as sales less procurement. These insights suggest that firms and industry structures can be analysed through a value added perspective and to illustrate this the researcher use the well know five-force model of competition from Porter (1980), which is also used to illustrate strategic industry forces by Amit el al (1993).

The researcher start with the notion that firms competes for is the value added in their industry rather than sales. This does not mean that sales revenue is not important, but firms only allocate resources and capabilities in terms of employees and capital to their own part of the value added chain. Sales are in such a perspective important as it describes the down stream factor costs added by firms in the value added chain to satisfy consumer demands, which at the macro level of the economy translates to expenditure in terms of consumers spending, government spending, investment, export and import.

Thereby three of the five forces suggests by Porter (1980) can be included in the value added chain analysis of industries (buyers, industry competition and suppliers). The remaining two forces, i.e. substitute and potential entrants, can be introduced as competing for customer sales and thus the industries value added cash flow chain. As such it better illustrates the choices available to customers than the original Porter model.

Figure 9.4, The value added cash flow view of Porters five forces



Source: Author.

The value added chain model of Porters five forces model do not change the forces as suggested by Porter (1980), rather it intellectually makes it easier to understand what firms compete for in a socially constructed world based on narratives and numbers when conducting the industry analysis.

This also implies that the resource based view of the firm, at least if one follow Amit et al (1993), must be related to the additive characteristics of the value added perspective, since the subtractive characteristics is related to product market conditions. As such the value added describes the financial characteristics of the resources and capabilities that the firm controls in terms of strategic assets. Such a view makes sense as one is able to assign value to each of the assets controlled by the firm based on cash flow expectations through the use of shareholder value metrics.

This complementary set of value drivers together with the accounting theory of the firm allows the researcher to integrate strategy and finance theory, through the value added concept, and thus provide a framework which allows one to integrate strategic narratives with accounting numbers for wealth creation at the firm level. It also allows the researcher to construct feedback mechanisms for the reformulation of strategy. Because the financial framework provides the basis for both formulating and feeding back information about product, factor and capital markets it is possible to recalibrate strategic initiatives.

The researcher now ends this chapter with by stating the contribution to knowledge and a section on further research.

Contribution to knowledge

By constructing a large data set based on the value added concept it was possible to reveal differences and similarities at various levels of the economy (macro, meso and micro). As such, it is argued that the value added format make visible how income percolates down to the bottom line and how income is distributed amongst primary stakeholders of the firm. This financial framework of analysis technically reveals similarities and differences in business conditions in product, labour and capital markets through value added key ratio analysis. It is also argued that this financial format can add value to existing strategic business models and also finance theory.

The construction of the dataset on its own can be seen as a contribution to knowledge, as data for construction of the database was not available from one single source. By revealing similarities and differences it is possible to judge performance and tradeoffs made by firm managers as well as position firms into a quintile distribution (cf rating system).

The contribution to knowledge is also related to the usefulness of the value added accounting format in relation to capital markets by:

- Revealing a complementary set of value drivers to that existing in finance theory by using a nature of expense format. This set of value drivers differs from those revealed

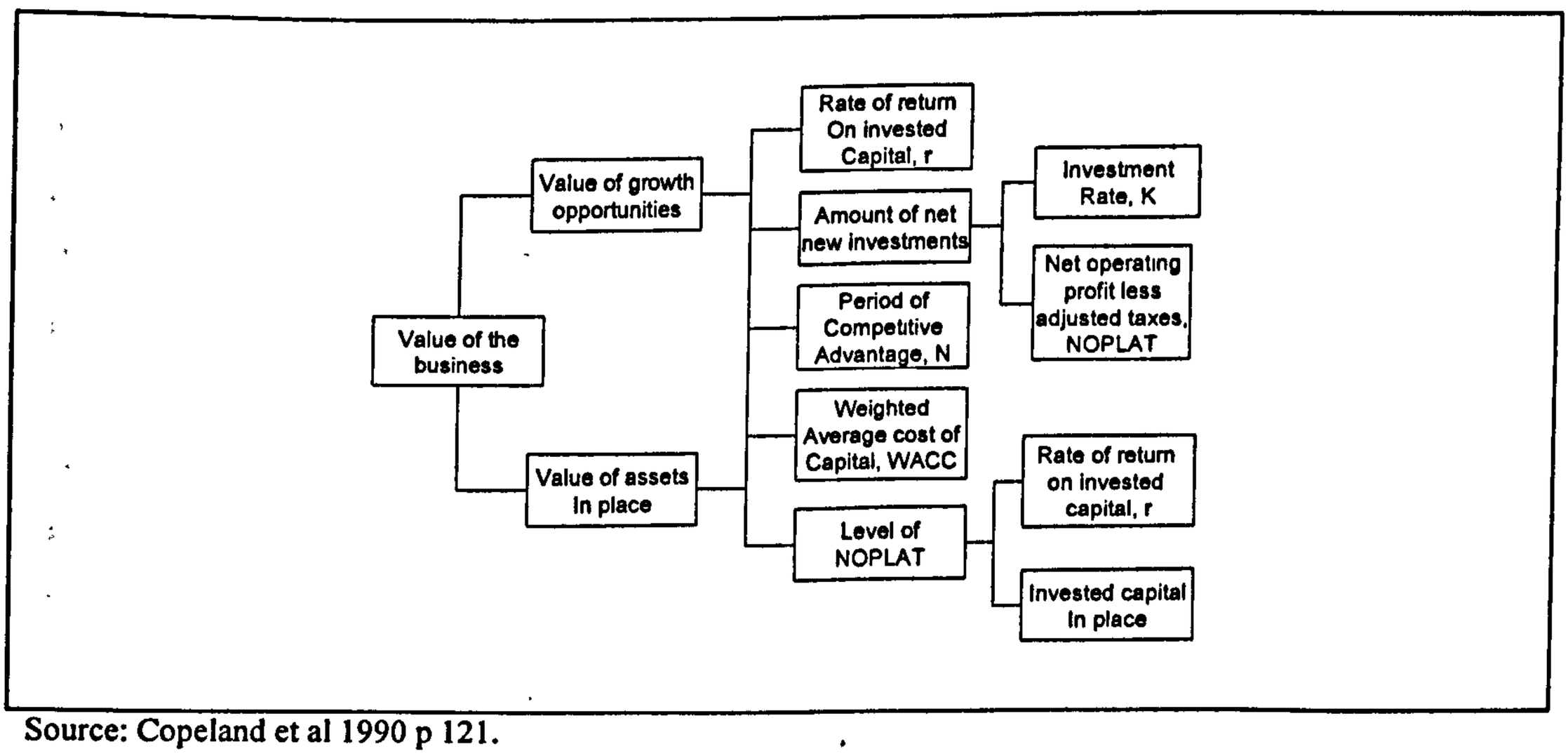
by the function of expense format thereby providing a new complementary perspective of the firm in relation to its primary stakeholder, their markets and the circulär flow of income.

- Integrating the industry and the resource based view of strategy with shareholder value metrics through the value added concept it is possible to describe an "accounting theory of the firm" with allows an integration of accounting numbers with strategic narratives within a socially constructed universe of primary stakeholders.
- The integration of accounting numbers and strategic narratives enables feedback mechanisms for the reformulation of strategy. Because the financial framework provides the basis for both formulating and feeding back information about product, factor and capital markets it is possible to recalibrate strategic initiatives.

Complementary set of value drivers

The complementary set of value drivers comes out of observations from the Europe 170 dataset and the accounting framework that employs the value added concept combined with the DuPont pyramid of financial ratios. Combining a value added format and the pyramid of ratios suggested by DuPont provides and framework that also integrates shareholder value metrics into the analysis as suggested for value drivers by Copeland et al (1990), see figure 9.5 below.

Figure 9.5, The key value drivers



Source: Copeland et al 1990 p 121.

International Accounting Standard (IAS1) will now demand that European firms report both their expenses by "function" and by "nature" and so this will allows researchers and analysts to provide two complementary sets of value drivers.

Towards an accounting theory of the firm

The financial framework developed in this thesis can also help contribute towards the development of an integrated strategic accounting model which has so far been a rather fragmented programme of research. This would also help us move "Towards a strategic theory of the firm" (Rumfelt 1984). In contrast to Porter (1989) the researcher argue that firms compete with their resources and capabilities for value added in terms of sales less procurement expense along a value added chain. Thereby three of the five forces in Porters (1980) model of industry competition are included in the value added chain analysis of industries (buyers, industry competition and suppliers). The remaining two forces, i.e. substitutes and potential entrants, can be introduced as competition for customers and thus the industry value added and cash flow. This also implies that the resource based view of the firm, at least if one follow Amit et al (1993), will be the additive characteristics of value added because value added describes the financial characteristics of the resources and capabilities that the firm controls in terms of strategic assets.

Strategy formulation and the feedback loop

This financial framework reveals that strategy formulation must balance a competing set of product, factor and capital market demands and that by being able to reveal: revenue, procurement costs, internal operating costs and return on capital one can also use these metrics to inform how one recalibrate strategy in a feedback loop.

Because the researcher was time restricted it was not possible to undertake further research into issues arising. There are a number of projects that the researchers would wish to draw attention to that might be consolidated out of this work and to take arguments and debate forward.

Taking the debate forward

A stakeholder model of business strategy

The corporate strategy literature has in recent years, building on Freeman (1984), sought to construct a stakeholder model of corporate business where management has a responsibility to satisfy the demands of a wide range of stakeholder groups. The financial format developed in this thesis allows one to consider the competing demands of primary stakeholders: consumers (product markets), suppliers (external purchases), employees (employment costs), government (tax), shareholders (dividends and share buy-backs) and providers of debt finance (interest charges). Whilst this is not a comprehensive list of stakeholders one would be able to establish the way in which firms are able or not, as the case may be, to satisfy all stakeholder interests.

Research in the area of Corporate Social Responsibility (CSR) may be supported with a financial framework which reveals corporate financial performance over a period of time and the extent to which top performing firms are able to sustain a higher level of commitment to CSR relative to firms which are financially stressed. In this a new era of CSR are firms increasingly focussed on financializing strategy around the financial interests of managers and investors?

The connection between performance and shareholder value

A great deal of positivist research in the area of financial markets has been devoted to establishing a connection between corporate performance and market value. Often the measures of corporate performance employed, earnings and dividends and earnings volatility against stock market indices have been employed to establish correlations between corporate financial performance and market value (MV). It would be of interest to the researcher if the structuring of corporate performance as employed in this thesis is connected to a higher aggregation of MV in top performing firms in the corporate sector.

In chapter 5 the country analysis revealed significant differences in profit extracted out of income across the three nations with the French and German corporate sector delivering

persistently lower profit rates than the FTSE100 corporate sector. What factors, for example, have led to this outcome after a period of pressure on companies to deliver improved returns for shareholder value?

Strategy as resolving product market, labour market and capital market demands.

This thesis has developed a framework of analysis that integrates product market, labour market and capital market dimensions to reveal strategy as a balancing act where trade offs need to be made and where not all can be winners. Future research needs to extend the case study work using the model to reveal how managers struggle to improve corporate performance and how the various trade off's between product, labour and capital market are accommodated. This would involve capturing the narratives employed by managers to describe their strategies and how their priorities have changed over time relative to financial outcomes. To what extent does belonging to particular industry sectors structurally limit what is achievable? How have firms managed to loosen constraints on performance?

Summary

This thesis is about making the usefulness of the value added statement in capital markets visible. Research so far has regarded the value added format as a social disclosure, mainly aimed to employees with socially related arguments. However, the researcher's view is that the research conducted has neglected the capital dimension of the format and thus its relation to corporate performance, strategy and market values. The capital market dimension is important for business managers, which create value through strategic arbitrage in product, labour and capital markets.

Employing the value added format and combining this with expenses disclosed by their nature enabled the researcher to construct financial formats for firms, sectors and the overall corporate sector without double counting. Using the financial framework developed in the research methods and employing this to construct a large corporate sector financial dataset it is possible to reveal and make visible differences and similarities in corporate performance by both country and sectors. As such the financial framework deconstructs how return on capital

employed whilst the use of a quintile distribution helps locate corporate financial performance relative to all other firms.

The framework constructed in this thesis is complementary to those employed in finance theory to estimate corporate market value (MV) because they share common financial metrics. However, the purpose of the research undertaken in this thesis is not to identify the link between market value and corporate financial performance. Rather the object has been to reveal corporate performance and thus the usefulness of the value added format in a capital markets for evaluation of performance and strategy.

The value added format makes visible how income percolates down to the bottom line and along the way is distributed to primary stakeholders of the firm and at various levels of the economy. This analysis has revealed similarities and differences in business conditions in product, labour and capital markets through value added key ratio analysis. The researcher also argues that this format can help inform existing finance and strategy models providing new insights into existing theory and alternative interpretations of finance and strategy model. As such the contribution to knowledge of this thesis has been, besides the dataset itself, to show how the value added accounting format can be useful in capital markets as it:

- Reveals a complementary set of value drivers based on the nature of expense format which can be used to inform finance theory because it provides a complementary but alternative perspective of the firm in relation to its primary stakeholders and the circular flow of income.

- Integrates the industry and the resource based view of strategy with shareholder value through the value added concept and thus describes an accounting theory of the firm which allows one to integrate accounting numbers with strategic narratives.

- Consolidates accounting numbers with strategic narratives to enable feedback to recalibrate strategy revealing also the possibilities and limitations of management action.

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Appendixes

Appendix 1 The data sample

Table A 1.1, Classification of firms

S&P classification	Survivors: DAX30	CAC40	FTSE100	Entrants DAX30	CAC40	FTSE100	Deutsche Bank classification
Industrials		Thales	BAE Systems Rolls-Royce Smiths Group		EADS		Aerospace & defence
			Capita Group Rentokil Initial Rexam	Deutsche Post		Brambles	Business Services (1)
	MAN Siemens	Schneider Electric					Capital goods
	Lufthansa		British Airways **BAA**				Transport
		Saint Gobain Vinci	Wolseley				Building & constr (1)
Materials		Lafarge	Hanson **Persimmon**				Building & constr (2)
	Bayer BASF Linde	Air Liquide	BOC Group ICI Johnson Matthey				Chemicals
			Rio Tinto			Anglo American BHP Billiton **Antofagasta** **Kazakhyms** Xstrata	Metals & minning
	Thyssen Krupp		Corus		Arcelor		Steel
Energy		Total	BG Group BP Royal Dutch Shell			**CAIRN Energy**	Oil & gas
Utilities	E ON RWE	Suez	Kelda Scottish & Southern Scottish Power Severn Trent United Utilities		**EDF** **Gaz De France** Veolia Environ.	**British Energy** Centrica International Power National Grid	Utilities
Consumer Discretionary	BMW Continental Volkswagen	Michelin Peugeot		Daimler-Chrysler	Renault		Autos
					Thomson		Technology (1)
						Compass Group	Business services (2)
		LVMH Pinault Printemps		Adidas Salomon			Consumer & luxuary goods (1)
	TUI	Accor	Carnival Intercontinental Hotels **Ladbrokes**			Enterprise Inns **PartyGaming**	Leisure & hotel
		Lagardere Publicis Vivendi Universal	Daily Mail & General Trust Pearson Reed Elsver Reuters WPP			B sky B ITV Yell	Media
			GUS Kingfisher Marks & Spencers Next				Retail (1)

Cont. table A 1.1, Classification of firms (2/2)

Consumer staples		Carrefour	Boots Group Morrisson Supermarkets Sainsbury Tesco	Metro			Retail (2)
		Danone Pernod-Ricard	A B Foods Cadbury Schweppes Diageo Dixons Reckitt Benckiser SAB Miller Scottish & Newcastle Tate & Lyle Unilever			Gallaher Imperial Tobaco BAT	Food bev. & tobaco
	Henkel	L'Oreal					Consumer & luxuary goods (2)
HealthCare		Essilor Intl.					Consumer & luxuary goods (3)
	Schering Altana	Sanofi-Aventis	Astrazeneca GlaxoSmith-Kline			Shire	Pharmaceutical
			Smith & Nephew	Fresenius Medical			Healthcare & Medical devices
Information technology	SAP	Alcatel CAP Gemini	SAGE	Infineon	STMicor-electronics		Technology (2)
Telecom services		Bouygues	BT Group Cable & Wireless Vodafone	DeutscheTelecom	France Telecom		Telecom
Financials	Commerzbank Deutsche Bank	BNP Paribas Societe Generale Dexia	Barclays HSBC Royal Bank of Scotland Lloyds Prudential Standard Chartered			Norther Rock Alliance & Leicester	Banks
				Deutsche Borse			Diversified financials
	Allianz MUENCH. RUECK	AGF AXA Credit Agricole	Amvescap Aviva Legal & General Royal Sun Alliance Schroders			3i Group Friends Provident HBOS Liberty Int MAN Group Old Mutal	Other financials
			British Land Liberty International Hammerson Land Securities	Hypo Real Estate			Real Estate

Source: Standard & Poors (2005), Deutsche Bank (2002, 2004, 2005).

Table A 1.2, Firms with fiscal year different from calendar year

	Fiscal year ending: First quarter		Second quarter		Third quarter			Fourth quarter
	End of January or end of February*	03-31 or end of March*	End of april	06-30	07-31	Mid of September or end of September*	09-30	11-30 or end of December
Germany							Infinieon Siemens Thyssen Krupp	
France								
United Kingdom	Kingfisher	3I Group	DSG Int.	BHP Billiton	Smiths	Ass. British Foods	BOC Group	Carnival
	NEXT PLC	BAA		Brambles Ind.	Wolseley	Daily Mail & General Trust*	COMPASS	Cadbury Schweppes*
	Morrison Supermarkets	BOOTS Group		B Sky B		Imperial Tobaco*	Enterprise Inns	CORUS*
	KESA*	British Airways		DIAGEO				
	Tesco*	British Land						
		BT Group						
		Cable & Wireless						
		GUS						
		JOHNSON MATTHEY						
		Land Seurities						
		MAN GROUP						
		National Grid						
		SABMiller						
		Scottish & Sothern Energy						
		Scottish Power						
		Severn Trent						
		Tate & Lyle						
		United Untilites						
		Vodafone						
		Yell						
		Marks & Spencer*						
		Sainsbury*						

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 1.3, Missing data points

		DAX30	CAX40	FTSE100	Comments
Consumer Disctretionary	ADIDAS SALOMON	All data 1990			IPO 1995
	BAY MOT WERKE				
	CONTINENTAL AG				
	DAIMLERCHRYSLER	All data 1990-94			Merger Daimler-Benz & Chrysler in 1998
	TUI N				
	VOLKSWAGEN AG				
	Accor				
	Lagardere		Sales 1990-91, labour 1990-91, EDBITDA 1990-91, pretax 1990-91, taxes 1990-91, net income 1990-91, LT debt 1990-91, dividend 1990-95		
	LVMH				
	Michelin				
	Peugeot				
	Pinault Printemps				
	Publicis Groupe Sa				
	Renault				
	Thomson		All data 1990-95		IPO in 1999
	Vivendi Universal				
	B SKY B GROUP		All data 1990-91		IPO in 1994
	CARNIVAL			All data 1990-98	Merger Carnival & PO Princess in 2003
	COMPASS GROUP			All data 1990-95	Relisted in 2001 after demerger.
	DLY MAIL&GEN TST A			Labour 1991-92	
	ENTERPRISE INNS			All data for 1990-94	IPO in 1995
	GUS			Labour 1990, EBITDA 1990-91	
	INTERCONT HOTELS			Labour all years, EBITDA 1990-91	
	ITV			All data for 1990-91	Merger Granada and Carlton in 2004. Demerger Compass and Granada in 2001.
	Kesa (KAZAKHMYS)			All data for 1990-2001	Kesa demerged from Kingfisher in 2003
	KINGFISHER				
	LADBROKES			Labour 1990-91, EBITDA 1990-91	
	MARKS & SPENCER			Dividends 1990-91	
	PARTYGAMING			Labour 1990-91, dividend 1990-91	
	NEXT			Pretax 1990-91, net income 1990-91, dividend 1990-91	
	PEARSON				
	REED ELSEVIER			All data 1990-91 plus depr 1993-94	
	REUTERS GROUP			Dividends 1990-91	
	WPP GRP				
	YELL GROUP			All data 1990-2001	IPO in 2003

Cont. table A 1.3, Missing data points (2/7)

Consumer Stapels	HENKEL KGAA VZ				
	METRO AG	All data 1990-94, dividend 1995			IPO in 1996.
	CARREFOUR				
	Groupe Danone				
	L'Oreal				
	Pernod-Ricard		Labour 1990-91, EBITDA 1990-91, pretax 1990-91, net income 1990-91		
	ASSOCIAT BRIT FOODS			Labour 1990, EBITDA 1990, net profit 1990, dividend 1990-91	
	BOOTS GROUP				
	BRIT AMER TOBACCO			All data 1990-94	
	CADBURY SCHWEPPES			Dividends 1990-91	
	DIAGEO			Labour 1990-91, dividend 1990-91	
	DSG INTERNATIONAL			Dividends 1990-91	
	GALLAHER GRP			All data for 1990-95 plus dividend for 1996	Demerger from American Barnds in 1997
	IMPERIAL TOBACCO			All data for 1990-94	Demerger from Hanson in 1996
	MORRISON SUPERMKTS				
	RECKITT BENCKISER				
	SABMILLER			All data 1990-91	
	SAINSBURY				
	SCOTT & NEWCASTLE			Labour 1990-91	
	TATE & LYLE			Labour 1990, equity 1990-91, dividend 1990 91	
	Tesco			Labour 1990-91, dividend 1990-91	
	UNILEVER				

Cont. table A 1.3, Missing data points (3/7)

Energy & utilities	E.ON AG				Merger VIAG & VEBA in 2000
	RWE ST A				
	EDF		Labour 1990-91, EBITDA 1990-94, depr 1990-94, equity 1990-94, LT debt 1990-94, dividends all years		IPO in 2005.
	Gaz De France		All data all years		IPO in 2005
	Suez				
	Total				
	Veolia Environ.		All data 1990-97		IPO in 2002
	BG GROUP			Labour 1990-91	Demerger BG & Centrica in 1997. Demerger BG & Nationalgrid in 2000.
	BP			Labour 1990-91, EBITDA 1990-91, Depr 1990-91, Pretax 1990-91, Taxes 1990-91, dividend 1990-91	
	BRITISH ENERGY				
	CAIRN ENERGY			Tax 1990-2004, net profit 1990-95 & 2002-04	
	CENTRICA			All data 1990-92, pretax 1993-96, equity 1993-96, debt 1993-96	Demerger in 1997 from Brittish Gas.
	INTERNATIONAL POWER			Labour 1990, EBITDA 1990, depr 1990, pretax 1990, tax 1990, net profit 1990, equity 1990, LT debt 19990, dividend 1990	Demerger of UK business and national power
	Kelda				
	NATIONAL GRID			Dividend 1990-91, debt 1990-91	IPO in 1995
	ROYAL DUTCH SHELL-A			All data 1990-94	
	SCOT & STHN ENERGY			Labour 1990-91, dividend 1990-91	
	SCOTTISH POWER				
	SEVERN TRENT			Dividends 1990-91	
	UNITED UTILITIES				

Cont. table A 1.3, Missing data points (4/7)

Financials	ALLIANZ AG	EBITDA 1990-94, depr 1990-94			
	COMMERZBANK AG	EBITDA 1990-96, Depr 1990-94			
	DEUTSCHE BANK N	EBITDA 1990-95, depr 1990-94 & depr 2001-02			
	DT BOERSE N	All data 1990-96			IPO in 2001.
	HYPO REAL ESTATE	All data for 1990-2002			IPO in 2003
	MUENCH. RUECK N	Labour 1990, EBITDA 1990-98, depr all years			
	AGF		Labour 1990-94, EBITDA all years, depr all years		
	AXA		Labour 1990, EBITDA all years, depr all years		
	BNP PARIBAS		Depr 1990-91		
	CREDIT AGRICOLE		Depr 1990-91, dividend 1990-2000		
	Dexia		All data 1990-91, dividend 1990-2000		
	Societe Generale A		Depr 1990-91, EBIDTA 1998-2004		
	3I GROUP			Sales 1990-92, Labour 1990-92, debt 1990-91	IPO in 1994
	ALL & LEICS			EBITDA 1990-91, depr 1990-91, dividend 1990-91	IPO in 1997
	AMVESCAP			Labour 1990-91	
	AVIVA			Labur 1990-91, EBITDA 1990-91, depr 1990-91, pretax 1990-91, dividend 1990-91, equity 1990-91	
	BARCLAYS			Depr 1990-91, dividend 1990-91, LT debt 1990-91	
	BRITISH LAND CO				
	FRIENDS PROVIDENT			All data for 1990-2000	FTSE100 listing in 2001
	HAMMERSON			EBITDA all years, dividends 1990-91	
	HBOS			All data 1990-91	Merger Halifax and Bank of Scotland in 2001
	HSBC HLDG			All data 1990-91	
	LAND SECURITIES			EBITDA all years	
	LEGAL & GENERAL			Labour 1990-94, EBITDA 1990-2004, depr 1990-91 & 2002-04	
	Liberty International				
	LLOYDS TSB			All data for 1990-91, Labour 1992-93	
	MAN GROUP			All data 1990-93	IPO in 1994
	NORTHERN ROCK			All data 1990-95	IPO in 1997

Cont. table A 1.3, Missing data points (5/7)

cont. Financials	OLD MUTUAL			All data 1990-98	IPO in 1999
	PRUDENTIAL			Sales 1990-91, labour 1990-94, EBITDA 1990-2004, depr 1990-91, pretax 1990-91, taxes 1990-91	
	ROYAL BK SCOTL GR			Depr 1990-91	
	ROYAL SUN ALLIANCE			Sales 1990-91, labour 1990-91, EBITDA, 1990-91 depr 1990-91, pretax 1990-91, taxes 1990-91, dividend 1990-91	
	SCHRODERS			Sales 1990-91, labour 1990-94, EBITDA 1990-2004, depr 1990-91, pretax 1990-91, taxes 1990-91	
	STANDARD CHARTERED			Depr 1990-91, dividend 1990-91	
Health care	ALTANA				
	FRESENIUS MEDI	All data for 1990-96, dividends 1997-2004			Merger Fresenius and National Medical Care in 1996. Listing of Fresnius Medical in 1996.
	SCHERING AG				
	Essilor Intl				
	Sanofi-Aventis		All data 1990-91, dividends 1996-98 & 2000-04		
	Alliance Unichem				
	ASTRAZENECA			Labour 1990-91	Meger Astra & Zeneca in 1999
	GLAXOSMITHKLINE			Dividends 1990-91, LT debt 1990-91	
	SHIRE			All data for 1990-95	IPO in 1996
	SMITH & NEPHEW				

Cont. table A 1.3, Missing data points (6/7)

Industrials	DEUTSCHE POST NA	All data for 1990-93, EBITDA 1994-95, depr 1994-95, pretax 1994-95, taxes 1994-95, dividend 1994-97			IPO in 2000.
	DT LUFTHANSA AG				
	MAN AG I				
	SIEMENS N				
	EADS		All data for 1990-91, dividend 1992-98		IPO in year 2000
	Saint Gobain				
	Vinci				
	Schneider Electric		Labour 1990-91		
	Thales				
	BAE SYSTEMS				
	BRAMBLES INDUSTRIES			All data 1990-2001	Demerger from GKN in 2001
	BRITISH AIRWAYS			Dividends 1990-91	
	BAA			Labour 1990-91, dividend 1990-91, equity 1990-91, debt 1990-91	
	CAPITA GRP			Dividend 1990-91	
	RENTOKIL INITIAL			Labour for 1990-91	
	REXAM			Labor 1990-91, EBITDA 1990-91, dividends 1990-91, equity 1990-91	
	ROLLS-ROYCE GROUP				
	SMITHS GROUP				
	WOLSELEY PLC				
IT & telecom	DT TELEKOM N	All data for 1990, pretax 1990, taxes 1990, dividend 1990			IPO in 1996
	INFINEON TECH N	All data 1990-96			IPO in 2000
	SAP AG	Labour 1990			
	Alcatel				
	BOUYGUES				
	CAP GEMINI				
	France Telecom				IPO in 1997
	Stmicroelectronics		All data 1990-92, LT debt for 1993-94		IPO in 1994
	BT GROUP				
	CABLE & WIRELESS			Dividends 1990-91	
	SAGE GRP				
	VODAFONE GROUP				

Cont. table A 1.3, Missing data points (7/7)

Materials	BASF AG				
	BAYER AG				
	LINDE AG I				
	THYSSEN KRUPP	All data 1990-94, dividend 1995-96			Merger Krupp & Thyssen in 1999
	AIR Liquide				
	Arcelor		All data 1990-2000		IPO 2002 after merger in 2001
	Lafarge				
	ANGLO AMERICAN			All data 1990-99	Merger Angloa American & Minorco
	ANTOFAGASTA				
	BHP BILLITON			All data 1990-96	Merger BHP & Billiton in 2001
	BOC GROUP			EBITDA 1990-91	
	CORUS GROUP				
	HANSON			Labour 1990-91, EBITDA 1990-91, dividends 1990-91	
	ICI			Labour 1990-91, EBITDA 1990-91, dividends 1990-91	
	JOHNSON MATTHEY PLC				
	PERSIMMON PLC				
	RIO TINTO			Labour 1990-91, pretax 1990-91, taxes 1990-91	
	XSTRATA			All data 1990-2000	IPO in 2002

Source: Authors review of data from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 1.4 Estimation of data points (1/5)

		DAX30	CAX40	FTSE100
Consumer Disctretionary	ADIDAS SALOMON			
	BAY MOT WERKE			
	CONTINENTAL AG			
	DAIMLERCHRYSLER			
	TUI N			
	VOLKSWAGEN AG			
	Accor			
	Lagardere			
	LVMH			
	Michelin			
	Peugeot			
	Pinault Printemps			
	Publicis Groupe Sa			
	Renault			
	Thomson			
	Vivendi Universal			
	B SKY B GROUP			
	CARNIVAL			
	COMPASS GROUP			Labour 1996-98
	DLY MAIL&GEN TST A			
	ENTERPRISE INNS			
	GUS			Labour 1990, EBITDA 1990-91
	INTERCONT HOTELS			Labour 1990-91
	ITV			
	KAZAKHMYS			
	KINGFISHER			
	LADBROKES			Labour 1990-91, EBITDA 1990-91
	MARKS & SPENCER			
	PARTYGAMING			
	NEXT			
	PEARSON			
	REED ELSEVIER			Depr 1993-94
	REUTERS GROUP			
	WPP GRP			Labour 1990-92
	YELL GROUP			

Cont. table A 1.4 Estimation of data points (2/5)

Consumer Stapels	HENKEL KGAA VZ			
	METRO AG			
	CARREFOUR			
	Groupe Danone		Labour 1998-2000	
	L'Oreal			
	Pernod-Ricard		Labour 2003-04, EBITDA 2004	
	ASSOCIAT BRIT FOODS			Labour 1990, EBITDA 1990
	BOOTS GROUP			
	BRIT AMER TOBACCO			
	CADBURY SCHWEPPES			
	DIAGEO			Labour 1990-91, depr 1997, taxes 1997-98
	DSG INTERNATIONAL			
	GALLAHER GRP			
	IMPERIAL TOBACCO			Labour 1990-91
	MORRISON SUPERMKTS			
	RECKITT BENCKISER			Labour 1996-97
	SABMILLER			
	SAINSBURY			Labour 1990-91, net income 2003
	SCOTT & NEWCASTLE			Labour 1990
	TATE & LYLE			Labour 1990-91
	Tesco			
	UNILEVER			
Energy & utilities	E ON AG			
	RWE ST A			
	EDF			
	Gaz De France			
	Suez			
	Total			
	Veolia Envron			Labour 1990-91
	BG GROUP			Labour 1990-91, EBITDA 1990-91, depr 1990-91, pretax 1990-91, taxes 1990-91
	BP			
	BRITISH ENERGY			EBITDA 1997-2004
	CAIRN ENERGY			Preatx 1993-96
	CENTRICA			Pretax 1990
	INTERNATIONAL POWER			
	Kelda			
	NATIONAL GRID			
	ROYAL DUTCH SHELL-A			Labour 1990-91
	SCOT & STHN ENERGY			
	SCOTTISH POWER			
	SEVERN TRENT			
	UNITED UTILITIES			

Cont. table A 1.4 Estimation of data points (3/5)

Financials	ALLIANZ AG	EBITDA 1990-2004		
	COMMERZBANK AG			
	DEUTSCHE BANK N			
	DT BOERSE N			
	HYPO REAL ESTATE	EBITDA 2003-04		
	MUENCH RUECK N	Labour 1990, EBITDA 1990-98		
	AGF		EBITDA 1990-2004	
	AXA		Labour 1990, EBITDA 1990-2004	
	BNP PARIBAS		Labour 1992	
	CREDIT AGRICOLE			
	Dexia			
	Societe Generale A		EBIDTA 1998-2004	
	3I GROUP			Labour 1992
	ALL & LEICS			EBITDA 1990-91
	AMVESCAP			Labour 1990-91
	AVIVA			EBITDA 1990-91, depr 1990-99, taxes 1990-91
	BARCLAYS			
	BRITISH LAND CO			
	FRIENDS PROVIDENT			EBITDA 1990-2004
	HAMMERSON			EBITDA 1992-2004
	HBOS			
	HSBC HLDG			
	LAND SECURITIES			Labour 1990-94, EBITDA 1990-2004, depr 1990-91
	LEGAL & GENERAL			
	Liberty International			Labour 1992-93
	LLOYDS TSB			
	MAN GROUP			
	NORTHERN ROCK			EBITDA 1999-2004, depr 2000
	OLD MUTUAL			Labour 1992-95, EBITDA 1992-2004
	PRUDENTIAL			
	ROYAL BK SCOTL GR			Labour 1992-94
	ROYAL SUN ALLIANCE			EBITDA 1993-2004
	SCHRODERS			
	STANDARD CHARTERED			

Cont. table A 1.4 Estimation of data points (4/5)

Health care	ALTANA	Labour 1997-98		
	FRESENIUS MEDI			
	SCHERING AG			
	Essilor Intl			
	Sanofi-Aventis			
	Alliance Unichem			Labour 1990-91
	ASTRAZENECA			
	GLAXOSMITHKLINE			
	SHIRE			
	SMITH & NEPHEW			
Industrials	DEUTSCHE POST NA	EBITDA 1994-95		
	DT LUFTHANSA AG			
	MAN AG I			
	SIEMENS N			
	EADS			
	Saint Gobain			
	Vinci			
	Schneider Electric		Labour 1990-91	
	Thales			
	BAE SYSTEMS			
	BRAMBLES INDUSTRIES			
	BRITISH AIRWAYS			Labour 1990-91
	BAA			
	CAPITA GRP			Labour 1990-91
	RENTOKIL INITIAL			Labour 1990-91, EBITDA 1990-91, Equity 1990-91
	REXAM			
	ROLLS-ROYCE GROUP			
	SMITHS GROUP			
	WOLSELEY PLC			

Cont. table A1.4 Estimation of data points (5/5)

IT & telecom	DT TELEKOM N			
	INFINEON TECH N			
	SAP AG	Labour 1990		
	Alcatel			
	BOUYGUES			
	CAP GEMINI			
	France Telecom			
	Stmicroelectronics		Labour 2000-04	
	BT GROUP			
	CABLE & WIRELESS			
	SAGE GRP			
	VODAFONE GROUP			
Materials	BASF AG			
	BAYER AG			
	LINDE AG I			
	THYSSEN KRUPP			
	AIR Liquide			
	Arcelor			
	Lafarge			
	ANGLO AMERICAN			
	ANTOFAGASTA			
	BHP BILLITON			EBITDA 1990-91
	BOC GROUP			
	CORUS GROUP			Labour 1990-91, EBITDA 1990-91
	HANSON			Labour 1990-91
	ICI			
	JOHNSON MATTHEY PLC			
	PERSIMMON PLC			Labour 1990-91, pretax 1990-91
	RIO TINTO			
	XSTRATA			

Source: Author.

Table A 1.5, Classification of survivor and yardstick firms

	DAX30	CAC40	FTSE100
Survivor and yardstick firms	ALLIANZ ALTANA BASF BAY MOT WERKE BAYER COMMERZBANK CONTINENTAL DEUTSCHE BANK DT LUFTHANSA E.ON HENKEL KGAA LINDE MAN MUENCH. RUECK RWE SAP SCHERING SIEMENS TUI VOLKSWAGEN	Accor AIR Liquide Alcatel AXA BNP PARIBAS BOUYGUES CAP GEMINI CARREFOUR CREDIT AGRICOLE Essilor Int. Groupe Danone L'Oreal Lafarge LVMH Michelin Pernod-Ricard Peugeot Pinault Printemps Publicis Groupe Sa Saint Gobain Schneider Electric Societe Generale A Suez Thales Total Vinci Vivendi Universal	AMVESCAP ASSOCIAT BRIT FOODS ASTRAZENECA AVIVA BAA BAE SYSTEMS BARCLAYS BG GROUP BOC GROUP BOOTS GROUP BP BRITISH AIRWAYS BRITISH LAND BT GROUP CABLE & WIRELESS CADBURY SCHWEPPES CAPITA GROUP DIAGEO DLY MAIL&GEN TST DSG INTERNATIONAL GLAXOSMITHKLINE GUS HAMMERSON HANSON ICI INTERCONT HOTELS JOHNSON MATTHEY KINGFISHER LADBROKES LAND SECURITIES LEGAL & GENERAL MARKS & SPENCER MORRISON SUPERMKTS NEXT SAGE GROUP SAINSBURY SCOT & STHN ENERGY SCOTT & NEWCASTLE SCOTTISH POWER SEVERN TRENT SMITH & NEPHEW SMITHS GROUP STAND. CHARTERED TATE & LYLE TESCO UNILEVER UNITED UTILITIES VODAFONE GROUP W H SMITH WOLSELEY PLC WPP GRP

Cont. table A 1.5, Classification of survivors and yardstick firms

	DAX30	CAC40	FTSE100
Yardstick only		France Telecom Renault	3I GROUP ALL & LEICS CORUS GROUP INT. POWER NATIONAL GRID PEARSON PERSIMMON PLC RECKITT BENCKISER RENTOKIL INITIAL REUTERS GROUP REXAM RIO TINTO ROLLS-ROYCE GROUP ROYAL BK SCOTL
Survivor only	THYSSEN KRUPP	AGF Dexia Lagardere Sanofi-Aventis	CARNIVAL HSBC HLDG KAZAKHMYS LLOYDS TSB PRUDENTIAL REED ELSEVIER SCHRODERS
Other	ADIDAS SALOMON DAIMLERCHRYSLER DEUTSCHE POST DT BOERSE DT TELEKOM FRESENIUS MEDI HYPO REAL ESTATE INFINEON TECH METRO	Arcelor EADS EDF Gaz De France STMicroelectronics Thomson Veolia Environ.	ANGLO AMERICAN ANTOFAGASTA B SKY B GROUP BHP BILLITON BRAMBLES IND. BRIT AMER TOBACCO BRITISH ENERGY CAIRN ENERGY CENTRICA COMPASS GROUP ENTERPRISE INNS FRIENDS PROVIDENT GALLAHER GRP HBOS IMPERIAL TOBACCO ITV Kelda LIBERTY INTL MAN GROUP NORTHERN ROCK OLD MUTUAL PARTYGAMING ROYAL DUTCH SHELL ROYAL SUN ALLIANCE SABMILLER SHIRE XSTRATA YELL GROUP

Source: Author base on data from Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Appendix 2; Data definitions in databases

Sales

Sales should reflect turnover from sale of products and services in product markets. In the data sources it is defined as follows:

- S&P – "Sales" is defined as sales or turnover.
- Worldscope - "Net Sales or Revenues" (WS01001-industrial companies) represent gross sales and other operating revenue less discounts, returns and allowances.
    - It includes but is not restricted to: Franchise sales when corresponding costs are available and included in expenses, Consulting fees, Service income, Royalty income when included in revenues by the company. Contracts-in-progress income, Licensing and franchise fees, Income derived from equipment lease or rental when considered part of operating revenue, Commissions earned (not gross billings) for advertising companies, Income from leased departments
    - It excludes: Non-operating income, Interest income, Interest capitalized, Equity in earnings of unconsolidated subsidiaries, Rental income, Dividend income, Foreign exchange adjustment, Gain on debt retired, Sale of land or natural resources, Sale of plant and equipment, Sale of investment, Sales from discontinued operations, Security transactions, Income on reserve fund securities when shown separately, Operating differential subsidies for shipping companies, Net mutual aid assistance for airlines companies, General and Service Taxes, Value-Added taxes, Excise taxes, Windfall Profit Taxes.
    - Deutsche Bank – "Sales revenue" represent turnover as reported for the financial reporting period, excludes revenue collected on behalf of a third party, includes both continuing and discontinued operations where the company reports as such.

In the case of financials sales also include interest expense and as such sales reflect gross revenue rather than net revenue. This has implications for the calculation of procurement share (see chapter 4).

Staff costs

Staff cost should include salary expense and social benefits. In the data sources it is defined as follows:

- S&P – "Labour and related costs" is defined as staff and social benefits costs.
- Worldscope – "Staff Costs" (WC01084) represents wages paid to employees and officers of the company.
  - It includes but is not restricted to: All employee benefits such as health insurance and contributions to pension plans.
- Deutsche Bank – "Personnel costs" represent labour costs including social expenses.

Operating income before depreciation and amortisation

Operating income before depreciation and amortisation (i.e. EBITDA) represent a result after labour costs has been deducted but before depreciation and amortisation.. In the data sources it is defined as follows:

- S&P – Operating income plus depreciation and amortisation.
- Worldscope – "Earnings Before Interest, Taxes and Depreciation (EBITDA)" (WC19198) represent the earnings of a company before interest expense, income taxes and depreciation. It is calculated by taking the pre-tax income and adding back interest expense on debt and depreciation, depletion and amortization and subtracting interest capitalized.
- Deutsche Bank – "Operating EBITDA" represent earnings before interest, tax depreciation and amortisation.

Depreciation and amortisation expense

Depreciation and amortisation expense should represent the depreciation of tangible assets and amortisation of intangible assets. In the data sources it is defined as follows:

- S&P –"Depreciation and amortisation" represent depreciation and amortisation of tangible and intangible assets.
- Worldscope – "Depreciation, Depletion and Amortization" (WC01151) represents the process of allocating the cost of a depreciable asset to the accounting periods covered during its expected useful life to a business. It is a non-cash charge for use and obsolescence of an asset.
  - Depletion refers to cost allocation for natural resources such as oil and mineral deposits.
  - Amortisation relates to cost allocation for intangible assets such as patents and leasehold improvements, trademarks, bookplates, tools and film cost.

    Dry-hole Expense and Abandonments for extractive companies are included in Depreciation, Depletion & Amortization. If exploration expenses include dry-hole costs and impairment of unproved properties then it is included in Cost of Goods Sold.

    It excludes depreciation of discontinued operation

    It includes oil & gas property valuation provision

    If depreciation is not available from the income statement it is taken from the Statement in Changes in Financial Position
- Deutsche Bank – "Depreciation" represent depreciation of tangible fixed assets. "Amortisation" represents amortisation of goodwill plus amortisation of other intangibles and amortisation of capitalised interest.

Profit before tax

Profit before taxes should be profit before income taxes, minority and extra ordinary items. In the data sources it is defined as follows:

- S&P – "Pre-tax income" represent income before taxes.
- Worldscope – "Pre-tax Income" (WC01401) represents all income/loss before any federal, state or local taxes. Extraordinary items reported net of taxes are excluded.
- Deutsche Bank – Not disclosed.

Income taxes

Income taxes should include taxes paid by the corporation. In the data sources it is defined as follows:

- S&P – "Income taxes" represent all income taxes paid.
- Worldscope – "Income Taxes" (WS01451) represent all income taxes levied on the income of a company by federal, state and foreign governments.
  - It includes but is not restricted to: Federal income taxes, State income taxes, Foreign income taxes, Charges in lieu of income taxes, Charges equivalent to investment tax credit, Income taxes on dividends or earnings of unconsolidated subsidiaries or minority interest, if reported before taxes, Deferred taxation charges
  - It excludes: Domestic International Sales Corporation taxes, Ad Valorem taxes, Excise taxes, Windfall profit taxes, Taxes other than income, General and services taxes.
- Deutsche Bank – "Income tax expense" represent reported income tax expense, made up of current tax charge and any deferred tax provision. Includes tax on any associate or extraordinary income that is reported as a pre-tax number.

Total shareholder funds

Total shareholder funds include all shareholder funds and exclude minority funds. In the data sources it is defined as follows:

- S&P – "Stockholders equity" is defined as shareholders funds.
- Worldscope – "Common Equity" (WC03501) represents common shareholders' investment in a company.
  - It includes but is not restricted to: Common stock value, Retained earnings, Capital surplus, Capital stock premium, Cumulative gain or loss of foreign currency translation, if included in equity per FASB 52 treatment Monetary, correction-capital (WC03482), Goodwill written off (WC03491) For Non-U.S. Corporations preference stock which participates with the common/ordinary shares in the profits of the company. For Non-U.S. Corporations, if shareholders equity section is not delineated then the following additional accounts are included: Appropriated and unappropriated retained earnings, Net income for the year, if not included in retained earnings (majority share of income is only included), Compulsory statutory/legal reserves without specific purpose, Discretionary Reserves if other companies in that country include in their delineated shareholders' equity, Negative Goodwill.
    - It excludes: Common treasury stocks, Accumulated unpaid preferred dividends. For U.S. Corporations, excess of involuntary liquidating value for outstanding preferred stock over stated value is deducted. Redeemable common stock (treated as preferred)
- Deutsche Bank – "Shareholders' equity" includes Nominal Ordinary Share Capital, Share Premium, Retained Earnings and all other shareholder reserves.

Long term debt

Long term debt should include debt which matures after one year. In the data sources it is defined as follows:

- S&P – "Long term debt" is defined as long term debt excluding short term portion of long term debt.
- Worldscope – "Long Term Debt" (WC03251) represents all interest bearing financial obligations, excluding amounts due within one year. It is shown net of premium or discount.
  - It includes but is not restricted to: Mortgages, Bonds, Debentures, Convertible debt, Sinking fund debentures, Long term bank overdrafts, Long term notes, Long term bills, Medium term loans, Long term royalties, Long term contracts, Industrial revenue bonds, Notes payable, due within one year and to be refunded by long term debt when carried as non-current liability, Long term prepaid contracts, Advances and production payments, Talent and broadcasting rights, Capitalized lease obligations, Revolving credit, Long term advances from subsidiaries/associated companies, Compulsory convertible debt (South Africa), Eurodollar borrowing, Long term liability in connection with ESOP, Federal Home Loan advances.
  - It excludes: Current portion of long term debt, Pensions, Deferred taxes, Minority interest
- Deutsche Bank – Not disclosed separately.

Table A 2.1, Worldscope major balance sheet items by template

	WC-item		Template Industral	Bank	Insurance	Other financial
Assets	02001	Cash & short Term Investments	X	X		
	02003	Cash & short Term Investments			X	
	02004	Cash & Due from Banks				X
	02018	Customer Liabilities on Acceptances (Assets)				X
	02051	Receviables (Net)	X	X		
	02101	Inventories - Total	X			
	02130	Securtries Inventory		X		
	02132	Custody securities		X		
	02140	Prepaid Expenses	X			
	02149	Other Current Assets	X			
	02201	Current Assets - Total	X			
	02240	Real Estate				X
	02250	Other Investments	X			
	02255	Investments - Total		X	X	X
	02256	Investments in Associated Companies	X	X	X	X
	02258	Long Term Recivables	X			
	02260	Premium Balance Receivables			X	
	02276	Loans - Net				X
	02401	Accumulated Depreciation	X			
	02501	Property, Plant & Equipment - Net	X	X	X	X
	02652	Other assets		X	X	X
	02999	Total Assets	X	X	X	X
Liabilities & Equity	03019	Depositis - Total		X		X
	03030	Insurance Reserves - Total			X	
	03040	Accounts Payable	X			
	03051	Short Term debt & Current Portion of Long Term Bdet	X			
	03054	Accrued Payroll	X			
	03061	Dividends Payable	X			
	03063	Income Taxes Payable	X			
	03063	Other Current Liabilities	X			
	03101	Current Liabilities - Total	X			
	03249	Capitalised Lease Obligations			X	
	03251	Long Term Debt	X			
	03255	Total Debt		X	X	X
	03260	Provisions for Risks and Charges	X	X	X	X
	03262	Deferred Income	X	X	X	X
	03263	Deferred Taxes	X	X	X	X
	03257	Deferred Tax Liability in Untaxed Reserves	X	X	X	X
	03273	Other Liabilities	X	X	X	X
	03351	Total Liabilities	X	X	X	X
	03401	Non-Equity Reserves	X	X	X	X
	03426	Miniority Interest			X	
	03440	Policyholders Equity			X	
	03451	Preferred Stock	X	X	X	X
	03501	Common Equity	X	X	X	X
	03999	Total Liabilities & Shareholders Equity	X	X	X	X

Source: Thompson (2003).

Table A 2.2, Worldscope major income statement items by template

WC-item		Template Industral	Bank	Insurance	Other financial
01001	Net sales or Revenue	X	S	X	X
01016	Interest Income -Total		X		O
01021	Non-Interest Income		X		
01051	Cost of Goods Sold	X			X
01075	Interest Expense - Total		X		X
01076	Net Interest Income		X		
01079	Claims & Loss Expense - Total			X	
01080	Long Term Insurance Reserves			X	
01100	Gross Income	X			X
01101	Selling, General & Administrative Expenses	X		X	X
01151	Depreciation, Depletition & Amortisation	X			X
01230	Other Opertaing Expenses	X	O	X	X
01245	Non-Interest Expense		X		
01249	Other Expenses - Total	X		X	X
01250	Operating Income	X	X	X	X
01251	Interest Expense on Debt	X	O	X	S
01253	Extraordinary Credit - Preatx	X	X	X	X
01254	Extraordinary Charge - Preatx	X	X	X	X
01255	Interest Capitalised	X	O	X	S
01262	Other Income/Expense - Net	X	X	X	X
01266	Non-Opertaing Interest Income	X	O	X	X
01267	Pretax Equity in Earnings	X	X	X	X
01271	Provisions for Loan Losses		X		X
01301	Reserves - Increase/Decrease	X	X	X	X
01401	Pretax Income	X	X	X	X
01451	Income Taxes	X	X	X	X
01501	Minority Interest	X	X	X	X
01503	Equity in Earnings	X	X	X	X
01504	After Tax Other Income/Expense	X	X	X	X
01505	Discontinued Operations	X	X	X	X
01542	Realized Investment Gain/Loss			X	
01551	Net Income before Exraordinary Items/Preferred Dividends	X	X	X	X
01601	Extraordinary Items & Gains/Loss Sales of Assets	X	X	X	X
01640	Polciy Holders Surplus			X	
01701	Preferred Dividend Requirements	X	X	X	X
01706	Net Income after Preferred Dividends (Basic EPS)	X	X	X	X
01084	Staff Costs	S	O	S	S
04049	Depreciation and Depletition		O		
18196	Change in Inventory	S			
18197	Capitalised Costs	S			
18916	Earning before Interst, Taxes & Depreciation (EBITDA)	S	S	S	S
18198	Operating Income before Depreciation/Amortisation	S			
18224	Amortisation and Imparirment of Goodwill		S	S	S

Source: Thompson (2003). X=Major item, O=Minor item, S= Supplementary item.

Appendix 3: Accounting data retrieved, Europe 170

Table A 3.1, DAX30 Sales in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ADIDAS SALOMON		1714	1406	1344	1684	1789	2408	3424	5065	5353	5835	6112	6167	6267	6478
ALLIANZ AG	21598	27905	31312	37893	37424	48754	52035	60942	60437	70795	78481	89450	89193	89632	92199
ALTANA	1186	1316	1344	1409	1454	1024	1163	1345	1476	1586	1934	2308	2466	2735	2963
BASF AG	23836	23838	22762	20740	22328	23635	24937	28517	27641	29473	35946	32500	30456	33361	37537
BAY MOT WERKE	13895	15255	15972	14834	21536	23591	26720	30745	32277	34402	35356	38463	39973	41525	44335
BAYER AG	21290	21677	21061	20965	22198	22791	24851	28121	28059	25194	29986	28938	27377	28567	29758
COMMERZBANK AG	9300	9982	10715	11700	11122	13816	15150	17087	19105	24582	24403	27019	20436	15514	15299
CONTINENTAL AG	4372	4794	4954	4790	5050	5242	5333	5719	6743	9132	10115	11233	10785	11534	12597
DAIMLERCHRYSLER			50383	49968	53208	52939	54366	63420	131782	149985	162384	152873	141415	136437	142059
DEUTSCHE BANK N	19309	21369	23457	27999	26860	27893	31210	37095	41990	55950	72764	74640	52131	43004	47424
DEUTSCHE POST NA					12682	13640	13651	13873	14667	22363	32708	33379	37112	40017	36781
DT BOERSE N								708	1046	739	905	1007	1398	1718	1711
DT LUFTHANSA AG	7386	8231	8813	9065	9630	10174	10666	11835	11582	12794	15200	16690	16044	15957	16965
DT TELEKOM N		24128	27586	30158	31288	33811	32247	34536	35716	35470	40939	48309	50757	55838	57880
E.ON AG	26948	29244	31351	31336	33227	33907	34813	38889	39041	48963	74048	69839	34153	42541	44745
FRESENIUS MEDI								3194	3939	4315	4160	4118	4580	4458	4904
HENKEL KGAA VZ	6144	6598	7209	7089	7193	7259	8334	10258	10908	11361	12779	13060	9129	9436	10592
HYPO REAL ESTATE														8901	8533
INFINEON TECH N								1475	3175	4237	7283	5671	4784	6152	7195
LINDE AG I	3103	3533	3852	3667	4073	4235	4499	4880	5490	6194	8450	9076	8250	8992	9421
MAN AG I	9681	9730	9801	9699	9276	9510	10363	10917	12676	13255	14581	16300	15164	15021	14947
METRO AG				8867	11292	10856	28136	29059	46883	43801	46930	49522	48713	53595	56409
MUENCH. RUECK N	6447	7432	8318	15278	17006	18532	21631	24516	33718	35555	41215	43567	42206	47569	45815
RWE ST A	19828	22547	22446	23063	23547	27052	28007	31287	31382	33882	42426	56751	41112	42771	40996
SAP AG	255	362	425	563	936	1379	1903	3076	4328	5110	6265	7341	7008	7025	7514
SCHERING AG	3028	3251	3204	2742	2399	2376	2695	3193	3285	3674	4493	4842	4749	4828	4907
SIEMENS N	32303	37325	40138	41742	43250	45380	48149	54668	60172	68576	78396	87000	77198	74233	75167
THYSSEN KRUPP			11839	10483	10422	12032	12289	12831	8998	29794	37209	38008	33720	36137	39342
TUI N	11828	13014	12512	11907	11866	13473	12803	13629	17971	16499	21854	22411	19194	19215	18046
VOLKSWAGEN AG	34796	39016	43662	39154	40921	45051	51188	57896	68631	75160	85548	88540	82200	87153	88963

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.2, DAX30 Labour costs in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ADIDAS SALOMON		223	200	164	193	179	241	343	513	580	650	695	717	733	816
ALLIANZ AG	1714	2092	2657	2939	2946	3074	3168	3737	4839	5423	6389	8373	10591	11014	11057
ALTANA	319	347	377	404	412	289	321	371	408	391	453	495	506	557	625
BASF AG	5757	5756	5712	5506	5312	5531	5636	5790	6010	6179	6595	6028	5649	5891	6249
BAY MOT WERKE	2917	2977	3266	3193	4308	4522	5033	5534	5896	6177	5976	6079	6228	7066	7855
BAYER AG	6843	7466	7379	7314	7391	7476	7718	8196	8105	6895	7735	7576	7730	8845	7837
COMMERZBANK AG	1159	1267	1330	1512	1520	1680	1803	1900	2065	2403	3007	3066	2533	2442	2420
CONTINENTAL AG	1709	1684	1709	1684	1669	1673	1672	1751	1937	2388	2581	2868	2505	2682	3322
DAIMLERCHRYSLER			16361	17275	15393	15377	14217	15440	25033	26158	26500	25095	22844	25209	25164
DEUTSCHE BANK N	2778	3216	3429	3870	4036	4476	4773	5664	6196	9670	13169	13360	11358	10495	10222
DEUTSCHE POST NA					10516	10458	10201	10032	10060	11503	11056	11240	13020	13329	14258
DT BOERSE N								168	204	117	105	112	232	318	336
DT LUFTHANSA AG	2438	2666	2982	2686	2687	2761	2943	3088	2867	3232	3625	4481	4406	4819	5158
DT TELEKOM N		7550	8657	8944	9180	9459	9600	9376	9169	9210	9718	12114	12744	15663	14971
E.ON AG	3558	3978	4756	5457	5552	5553	5426	5851	6259	7503	9142	9054	6112	5722	5480
FRESENIUS MEDI								705	1113	1227	1204	1230	1398	1416	1584
HENKEL KGAA VZ	1419	1542	1715	1701	1692	1575	1808	2104	2198	2318	2603	2698	1845	2018	2117
HYPO REAL ESTATE														134	189
INFINEON TECH N								383	978	1072	1476	1681	1632	1769	1840
LINDE AG I	838	934	1137	1147	969	1234	1309	1413	1559	1658	2223	2245	2110	2415	2392
MAN AG I	2548	2505	2631	2746	2595	2605	2854	2844	3073	3345	3606	4017	3714	3808	3393
METRO AG				1490	1920	1862	3969	4097	5452	5036	5281	5569	5403	5940	6206
MUENCH. RUECK N	146	169	197	788	862	873	874	991	2438	2070	2230	2407	2593	2744	2850
RWE ST A	4003	4525	4999	5412	5621	6459	6597	6628	7213	7120	7940	8768	7116	7918	6427
SAP AG	97	138	178	236	345	489	684	1061	1556	2032	2813	2908	2898	3047	3072
SCHERING AG	893	1044	1079	971	811	771	863	1056	1070	1160	1422	1461	1431	1574	1610
SIEMENS N	13798	16267	16890	18020	19580	19265	18823	20066	20391	23124	26601	27102	24988	27191	26862
THYSSEN KRUPP			3484	3108	2745	2893	3009	2685	1944	8404	9104	9695	8946	9437	10170
TUI N	2344	2344	2804	2908	2777	2802	2782	2829	2907	2287	2933	2912	2411	2569	2468
VOLKSWAGEN AG	8720	9648	10610	9656	9389	9716	10587	10576	11481	11966	13398	13213	12586	13878	14060

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.3, DAX30 EBITDA in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ADIDAS SALOMON		91	-7	57	123	202	265	392	514	579	516	565	542	600	696
ALLIANZ AG	886	1145	1285	1554	1535	2000	2517	3141	4367	4566	6054	4787	802	4428	7037
ALTANA	124	143	147	160	175	148	183	178	235	285	389	639	636	684	735
BASF AG	3093	2886	2480	2237	3248	3921	3992	4759	4883	4699	5999	4081	4829	5111	6889
BAY MOT WERKE	1458	1518	1452	1277	2003	2280	2500	3262	3090	2973	3715	6191	5205	5698	6411
BAYER AG	3132	2987	2724	2574	2899	3285	3632	4327	4761	5168	5426	4127	4620	3662	4106
COMMERZBANK AG	4068	4447	4666	5306	5335	5895	6326	6667	7248	6989	5277	4417	3134	1196	2536
CONTINENTAL AG	300	399	466	426	456	508	608	656	806	1085	1101	826	1303	1441	1749
DAIMLERCHRYSLER			4624	3434	4741	2815	4190	5622	14861	18514	17778	12984	16691	15480	15775
DEUTSCHE BANK N	4823	5585	5953	6720	7008	7773	8288	7507	11038	12620	18801	13705	12668	7770	7956
DEUTSCHE POST NA					860	925	926	1045	1380	1922	3426	3617	3203	4243	4772
DT BOERSE N								188	272	300	300	361	506	651	718
DT LUFTHANSA AG	697	488	236	814	979	1124	1055	1576	2320	1946	2504	1399	2680	1496	1714
DT TELEKOM N		13990	14682	14907	16370	16238	14352	17188	17425	14539	20713	18065	15236	17172	20802
E.ON AG	2668	2681	2670	2700	3350	3596	3894	4159	4647	4043	11515	6731	4576	7409	9181
FRESENIUS MEDI								625	863	274	905	596	816	785	854
HENKEL KGAA VZ	580	650	676	698	744	782	877	1304	1374	1510	1563	2103	1050	1141	1640
HYPO REAL ESTATE														171	227
INFINEON TECH N								214	-1646	-13	1670	0	-1135	-299	256
LINDE AG I	405	474	509	416	485	528	604	675	749	777	1389	1329	1323	1441	1494
MAN AG I	778	706	688	532	454	442	493	532	734	1081	1289	946	957	971	1128
METRO AG				457	451	490	1193	1237	2091	2054	2170	2385	2284	2615	2992
MUENCH. RUECK N	1711	1972	2207	4054	4513	4917	5740	5613	5289	4364	8686	3260	3145	5308	6119
RWE ST A	3018	3377	3175	3234	3346	3307	3431	3386	4132	5134	2543	6561	8361	8205	9019
SAP AG	74	101	101	147	276	407	567	924	1107	948	1026	1592	1790	1940	2228
SCHERING AG	411	424	419	434	427	473	494	664	617	746	878	925	1001	988	1044
SIEMENS N	3195	4084	3735	3020	2863	3993	3909	3854	4629	4633	8696	4240	5301	5865	5867
THYSSEN KRUPP			772	393	805	968	771	872	668	2203	3290	3202	2413	2458	3298
TUI N	630	630	742	572	708	756	706	857	998	1070	1450	1396	824	988	1144
VOLKSWAGEN AG	2292	2077	2275	1407	3428	5030	4736	6534	9192	8779	11875	12171	10472	8567	8418

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.4, DAX30 Pre-tax income in Million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ADIDAS SALOMON		23	-68	12	81	151	227	346	319	398	347	376	369	438	520
ALLIANZ AG	906	842	748	952	1077	1481	2057	2487	4085	4350	4913	1827	-1148	2528	5183
ALTANA	77	96	97	87	99	103	124	142	188	234	322	558	498	580	624
BASF AG	1405	1079	633	541	1079	2111	2256	2726	2771	2606	2827	6780	2497	2168	4019
BAY MOT WERKE	851	896	755	425	694	699	849	1292	1061	1111	1663	3242	3117	3205	3554
BAYER AG	1721	1639	1377	1204	1684	2140	2282	2611	2728	2836	2990	1115	904	-1994	985
COMMERZBANK AG	525	549	712	579	845	562	865	1040	1239	1371	2234	43	-352	-1980	828
CONTINENTAL AG	78	-63	79	38	47	100	127	235	313	359	250	-246	501	722	993
DAIMLERCHRYSLER			1295	777	1062	-2413	1003	2172	8154	9657	4476	-1483	5737	596	3535
DEUTSCHE BANK N	1204	1733	1871	2199	1459	1823	2500	1044	4031	4087	6729	1803	3355	2756	4029
DEUTSCHE POST NA					0	0	294	-82	350	864	2038	2153	1755	1915	2156
DT BOERSE N								122	205	130	292	319	354	448	452
DT LUFTHANSA AG	18	-286	-376	38	375	836	351	843	1269	1003	1215	-745	900	-785	591
DT TELEKOM N		0	0	0	3653	3042	2115	3679	5100	2944	6333	-2504	-25323	1398	6541
E.ON AG	1016	1160	1197	779	1297	1961	2267	2542	2392	3953	6551	3898	-666	5538	6799
FRESENIUS MEDI								183	303	-291	401	132	440	440	526
HENKEL KGAA VZ	352	379	318	299	345	389	396	1001	644	692	816	1059	628	768	1921
HYPO REAL ESTATE														156	221
INFINEON TECH N								-191	-1681	31	1738	-1019	-1072	-351	215
LINDE AG I	198	244	244	160	214	317	352	405	439	441	526	505	337	287	518
MAN AG I	372	415	356	173	94	197	264	254	418	557	668	213	207	303	453
METRO AG				220	149	235	543	476	623	690	754	673	785	817	1344
MUENCH. RUECK N	93	129	182	274	324	351	548	664	998	1701	2470	-645	414	1325	2604
RWE ST A	926	1205	1031	952	1012	1957	1922	2065	2448	2722	2151	2238	2573	2123	3935
SAP AG	55	84	82	131	241	345	494	852	982	980	1031	1069	1047	1777	2073
SCHERING AG	225	238	267	269	240	235	314	404	424	459	635	698	1082	701	752
SIEMENS N	1443	1748	1634	1489	1079	1330	1666	1807	1758	2870	5289	2678	3193	3372	4232
THYSSEN KRUPP			9	-226	85	382	202	344	388	624	1090	876	700	714	1580
TUI N	375	375	372	175	258	287	220	360	437	533	576	533	265	246	622
VOLKSWAGEN AG	1223	913	308	-836	236	569	1008	1966	3214	2522	3468	4409	3768	1529	1099

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.5, DAX30 Shareholders equity in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ADIDAS SALOMON		136	137	152	204	295	462	691	463	680	815	1015	1135	1356	1628
ALLIANZ AG	5102	5450	5672	6116	6536	7645	8299	9279	22703	29261	36079	34172	24904	31173	32439
ALTANA	193	216	235	355	383	574	599	649	802	884	984	1187	1312	1445	1661
BASF AG	7275	7438	7411	7558	8047	8985	10227	11775	12918	13816	13814	17162	17367	15878	15433
BAY MOT WERKE	2968	3218	3388	3535	3988	4128	4572	5173	6379	3932	4896	10770	14559	16150	17517
BAYER AG	7947	8343	8731	9039	8487	9108	10531	12007	12565	15006	16140	16922	16096	12213	12268
COMMERZBANK AG	4053	4454	4971	5900	7221	8067	8544	9996	11980	13561	15070	14273	11756	11514	11912
CONTINENTAL AG	807	704	749	768	748	758	814	1232	1346	1761	1844	1547	1800	1983	2842
DAIMLERCHRYSLER			9453	8990	10276	6628	13493	17937	30367	36060	42409	39004	36646	34481	33541
DEUTSCHE BANK N	8346	9525	11197	11847	11964	15717	16559	17784	19019	24528	28889	41393	32948	30512	25904
DEUTSCHE POST NA					1961	2484	2656	2907	2726	2652	4001	5353	5348	6106	7217
DT BOERSE N								238	317	258	420	1560	2259	2341	2545
DT LUFTHANSA AG	1583	1351	1163	1084	1861	2517	2730	3018	3303	3691	4114	3534	4330	2653	3974
DT TELEKOM N		18205	18414	17309	18334	12642	23214	23872	24297	34701	38414	60994	32987	29758	33918
E.ON AG	6708	7048	7282	7713	7963	8942	9964	11327	11766	14382	27807	24461	26926	29774	33560
FRESENIUS MEDI								2398	2648	2250	2652	2218	2529	2616	2862
HENKEL KGAA VZ	1873	1852	1605	1665	1872	1978	2201	2595	2570	2948	3223	3518	3442	3311	4588
HYPO REAL ESTATE														2770	3550
INFINEON TECH N								1139	2096	3655	5806	6900	6086	5666	5978
LINDE AG I	1317	1371	1396	1402	1452	1936	2064	2228	2351	3917	4096	4249	4289	3851	4043
MAN AG I	1548	1676	1755	1739	1756	1815	1894	1945	2115	2379	2653	2568	2760	2720	2945
METRO AG				732	851	1105	1968	2122	3603	3615	4064	4170	4346	4161	4739
MUENCH. RUECK N	712	1068	1145	1194	1579	1842	2337	2924	3841	18454	23602	19357	14640	18899	20196
RWE ST A	3854	3483	2841	3932	3991	3954	4160	4322	4659	6619	6366	7321	6748	7013	9656
SAP AG	219	259	459	515	631	780	1128	1558	1913	2559	2894	3110	3015	3709	4594
SCHERING AG	1221	1316	1404	1489	1575	1641	1787	1955	2010	2098	2636	2556	3080	2902	3009
SIEMENS N	8572	8840	9739	9752	10392	10718	12045	13642	14613	16228	23228	23812	23245	23715	26855
THYSSEN KRUPP			1215	855	979	1278	1300	1420	1509	8053	8797	8786	8190	7631	8327
TUI N	1310	1458	1594	1626	1640	1633	1540	1483	1314	2416	2980	3032	3054	2482	2753
VOLKSWAGEN AG	6906	7219	6917	5756	5615	5377	5862	6558	9124	9613	11233	23975	25856	24430	23865

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.6, DAX30 Long term debt in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
ADIDAS SALOMON		85	65	61	46	10	3	0	248	1484	1617	1570	1652	1241	876
ALLIANZ AG	1041	1152	1289	1735	1679	2132	2145	2301	22041	27650	30342	144369	50549	42471	36746
ALTANA	50	33	28	95	115	85	88	84	94	45	44	58	56	36	14
BASF AG	1148	1125	1288	1137	1059	963	695	763	664	717	1812	1926	1954	2436	1851
BAY MOT WERKE	1512	1920	2445	3046	3318	3858	3994	5376	5230	8083	7485	13945	13389	13430	15521
BAYER AG	1455	1500	1418	1215	1934	1436	1615	2150	2289	2359	2803	3071	7681	7113	7117
COMMERZBANK AG	11955	12332	13307	14860	13643	64074	79003	100265	145994	186863	186848	198350	104176	89950	92828
CONTINENTAL AG	446	708	828	729	730	480	548	531	1926	1172	1616	2566	2002	1415	1483
DAIMLERCHRYSLER			3506	5619	5095	3745	6076	7979	19122	27175	34596	42016	51204	47435	42492
DEUTSCHE BANK N	22238	22683	23762	9017	20644	51139	55772	63990	74731	113864	123503	151957	95794	82018	91838
DEUTSCHE POST NA					3565	377	371	236	843	1186	1136	841	3232	4121	4503
DT BOERSE N								0	0	10	90	90	302	503	502
DT LUFTHANSA AG	1951	2519	2686	2946	1896	1228	1188	729	216	414	1061	2568	2352	3016	3085
DT TELEKOM N		44580	45680	49701	35502	50721	44549	39950	34242	33414	45145	53679	55806	42310	33731
E.ON AG	1896	1798	1507	1648	1620	1542	1600	1997	2338	3565	7327	9188	18342	14803	13454
FRESENIUS MEDI								1964	2326	1818	1595	1834	2013	1898	1436
HENKEL KGAA VZ	237	233	219	89	71	71	205	480	540	590	633	401	329	1061	1385
HYPO REAL ESTATE														112629	100776
INFINEON TECH N								455	893	135	128	249	1690	2343	1427
LINDE AG I	172	147	202	120	112	67	94	141	160	1293	2718	2699	2633	2361	2230
MAN AG I	534	436	373	376	223	204	147	119	100	80	68	129	1138	627	366
METRO AG				377	294	185	542	1537	3169	2901	4639	5079	4997	6235	6418
MUENCH. RUECK N	1	6	6	29	24	10	0	1154	1385	734	1793	2474	5235	8524	8154
RWE ST A	482	509	890	529	699	801	494	512	765	1319	1333	8997	24280	24145	22488
SAP AG	1	1	1	1	11	11	5	3	26	33	7	7	12	13	9
SCHERING AG	93	118	93	72	60	68	68	74	58	35	17	45	40	36	199
SIEMENS N	812	1041	1498	1195	851	821	1281	2652	4325	4079	6222	9973	10123	11433	9785
THYSSEN KRUPP			1292	933	798	532	602	554	722	5812	6759	6722	4554	3912	3623
TUI N	583	417	399	330	323	395	509	441	645	1334	2995	2799	2537	2590	3329
VOLKSWAGEN AG	1989	2889	4490	5356	5335	5161	4580	4450	4470	4975	4425	12693	20437	25936	32198

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.7, CAC40 Sales in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Accor	2100	2152	4494	4294	4956	4606	4252	4782	5555	6043	6946	7218	6749	6774	7072
AGF						17710	16291	17010	24458	19491	20863	21712	17634	19455	23685
AIR Liquide	4408	4851	4563	4631	4841	4908	5242	5852	6088	6538	8100	8328	7469	8394	9376
Alcatel	21963	24406	24650	23835	25559	24457	24714	28338	21259	23023	31408	25353	15643	12513	12265
Arcelor												15075	23193	25923	30176
AXA	8918	9899	15930	24695	22795	23970	30628	67868	72126	82977	98752	73234	62048	98884	97773
BNP PARIBAS	22357	22941	24409	22043	16273	17926	18197	21549	23995	38159	64365	62823	50841	50351	55332
BOUYGUES	8252	9541	9634	9328	11040	11258	11186	13885	14790	15858	19062	20473	21032	21822	23402
CAP GEMINI	1398	1529	1812	1681	1551	1727	2259	3076	3955	4310	6931	8416	6662	5754	6291
CARREFOUR	11564	15304	17859	18784	20780	22048	23617	25807	27411	37368	64802	69486	64976	70486	72668
CREDIT AGRICOLE	25791	28855	32107	25319	23567	24792	26643	30364	30303	32376	37492	44088	48387	50411	58406
Dexia															
EADS			7967	7753	7404	7505	7758	8583	8365	12900	19427	30798	28268	30133	31761
EDF			27056	27990	27952	28747	29135	28437	28207	32060	34427	40716	45718	44919	46928
Essilor Intl.	760	833	858	901	961	997	1196	1426	1563	1662	1978	2070	2022	2116	2260
France Telecom	15697	17651	18696	19363	21739	22537	23061	23896	24650	27236	33674	43026	44084	46121	47157
Gaz De France											11211	14357	14546	16647	18129
Groupe Danone	8065	10073	10800	10689	11712	12113	12798	13489	12935	13293	14287	14470	12815	13131	13700
L'Oreal	4629	5099	5728	6123	7261	8137	9201	10538	11499	10752	12671	13740	13508	14029	14534
Lafarge	4962	4825	4643	4639	5007	5064	5376	6413	9802	10528	12216	13698	13812	13658	14435
Lagardere			8401	8230	8083	8016	8599	10048	10693	12285	12192	13296	12494	12454	13389
LVMH	3024	3360	3302	3631	4264	4540	4748	7324	6937	8547	11581	12229	12000	11962	12623
Michelin	9565	10314	10192	9651	10249	10079	10862	12150	12487	13764	15396	15775	14791	15370	15689

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.7, CAC40, Sales in million EUR

Pernod-Ricard	2241	2321	2210	2295	2414	2429	2564	2904	3138	3590	4382	4555	4572	3534	3572
Peugeot	24390	24420	23697	22173	25338	25042	26325	28478	33761	37807	44181	51875	51624	54407	56105
Pinault Printemps	4626	4769	10708	9651	10794	11861	12257	13596	16516	18913	24763	27799	25881	24361	24213
Publicis Groupe Sa	450	516	536	479	524	556	571	663	851	1042	1770	2434	2766	3863	3825
Renault	24946	25305	27359	25886	27220	28063	28065	31699	37191	37596	40175	36351	34352	37525	40715
Sanofi-Aventis			3269	3583	3980	3511	3605	3917	3936	5350	5963	6488	7041	8048	15043
Saint Gobain	10531	11445	11283	10907	11358	10720	13933	16325	17823	22952	28815	30390	28621	29590	32025
Schneider Electric	3524	3466	3542	2749	8533	9059	9397	7226	7626	8378	9696	9828	8566	8780	10365
Societe Generale A	19411	21772	19229	19734	17680	19499	20199	25893	26992	27483	30646	30601	31429	32872	36039
Stmicroelectronics				1323	1715	2288	2810	2882	3103	3672	5885	4949	4847	5165	5910
Suez	10776	13338	13776	14264	15241	15035	13969	29032	31361	31462	34617	42359	43573	39622	40739
Thales	5645	5363	5214	5228	5548	5412	5530	5875	6175	6890	8580	10268	10499	10569	10288
Thomson							5740	5805	5647	6691	9094	10494	9631	8459	7994
Total	19583	21805	20828	20655	20848	20709	26921	29133	24335	42178	114557	105318	96941	104652	122700
Veolia Environ.											13600	19613	26394	29127	28436
Vinci	5924	6796	6774	6597	6984	6899	6553	8141	8012	9057	14127	17172	16595	18111	19520
Vivendi Universal	15968	18368	21861	22505	23808	24845	25296	25479	31737	41623	41798	57360	54975	25482	21428

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.8, CAC40 Labour costs in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Accor	704	649	1722	1713	1844	1667	1464	1647	1908	2076	2379	2475	4884	5086	5402
AGF						1076	1166	1310	1420	1234	1513	1814	1905	1659	1699
AIR Liquide	879	974	1026	1050	1045	1041	1156	1261	1324	1390	1558	1603	1504	1641	1829
Alcatel	7138	7932	8003	7963	8000	7870	7887	8264	5666	6309	7609	6937	5188	4004	3740
Arcelor												2844	4412	5071	4868
AXA	441	489	1144	2211	1872	2023	2585	5398	5871	7555	10367	5700	5724	5554	5412
BNP PARIBAS	2476	2530	3030	2736	2718	2689	2732	2895	3085	4040	6250	6467	6093	6763	6872
BOUYGUES	1882	2202	2534	2576	2777	2922	2903	3376	3460	3605	4119	4475	4453	4615	4827
CAP GEMINI	713	805	1126	1060	965	1080	1412	1845	2265	2834	4001	4941	4494	3672	3995
CARREFOUR	953	1319	1550	1551	1725	1884	2045	2321	2556	3498	6177	6635	6149	6711	6850
CREDIT AGRICOLE	3039	3191	4313	3401	3433	3528	4105	4567	4675	5136	5673	2278	5403	3544	4724
Dexia															
EADS			2188	2013	1924	1927	2002	2053	1966	3103	4115	7120	7360	11191	7932
EDF			5678	5808	6115	6178	6439	6513	6543	7023	7390	8472	8685	9509	9596
Essilor Intl.	295	311	344	345	356	378	450	510	550	591	698	723	698	721	760
France Telecom	4537	3445	5195	5406	6229	6530	6665	6809	7070	7390	8399	9692	9869	9450	8874
Gaz De France											1710	1900	1984	2055	2220
Groupe Danone	1448	1677	2032	1999	2069	2129	2202	2309	2214	2275	2147	2174	1825	1853	1729
L'Oreal	946	1024	1283	1332	1522	1676	1851	2052	2195	1853	2218	2624	2606	2704	2702
Lafarge	798	809	1001	1023	1052	1050	1096	1214	1845	1892	2253	2250	2599	2380	2407
Lagardere			1816	1844	1816	1748	1816	2048	2123	2439	2445	2625	2512	2522	2718
LVMH	445	471	582	605	702	770	843	1207	1219	1382	2732	2242	2252	2171	2206
Michelin	3490	3804	4172	4004	3870	3698	3787	4111	4359	4684	5137	5242	4871	4997	4872

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.8, CAC40, Labour costs in million EUR

Pernod-Ricard	333	348	380	394	405	401	417	462	473	518	611	606	622	481	486
Peugeot	4105	4201	4749	4594	4629	4623	4805	5044	5693	6187	6680	7544	7488	8217	8516
Pinault Printemps	1549	1374	1529	1353	1461	1612	1679	1827	2200	2544	3352	3754	3653	3504	3417
Publicis Groupe Sa	264	270	267	257	282	304	310	368	475	576	984	1363	1568	2254	2197
Renault	4226	4255	4888	4898	5031	5244	5340	5581	5706	5666	6112	5013	4965	5115	5426
Sanofi-Aventis			908	995	1090	958	1001	1096	1125	1440	1541	1708	1831	1992	3723
Saint Gobain	2638	3263	3287	3163	3043	2847	3631	3998	4247	5701	6416	6519	6112	6277	6540
Schneider Electric	1092	1074	1097	975	3026	3172	3290	2530	2674	2972	3105	3079	3120	2998	3380
Societe Generale A	2032	2131	2237	2412	2365	2478	2745	3615	3972	4760	5893	5805	5729	6323	6603
Stmicroelectronics				385	453	545	659	702	816	929	1489	1252	1226	1307	1495
Suez	2464	3029	3479	3655	3814	3888	3713	7076	7661	8051	7728	8427	8787	8236	7636
Thales	1697	1787	2045	2131	2249	2241	2304	2270	2458	2752	3106	3576	3651	3681	3659
Thomson							1037	1101	1520	1107	1287	1690	1740	1692	1574
Total	1259	1553	1693	1791	1810	1867	1981	2117	2166	3143	6471	6489	12156	12276	12214
Veolia Environ.											3950	5733	7296	8034	8218
Vinci	1428	1686	1932	1970	2011	2015	1901	2390	2327	2479	3495	4410	4391	4738	5034
Vivendi Universal	4254	5022	6011	6419	6765	7088	7241	6761	8166	10367	9487	11926	11484	2767	2023

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.9, CAC40 EBITDA in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Accor	278	374	574	482	748	725	684	782	882	1050	1275	1268	1138	1053	1093
AGF						516	462	564	822	926	1123	854	394	1017	1944
AIR Liquide	900	984	934	975	1043	1077	1109	1280	1406	1583	1893	2003	1934	2005	2191
Alcatel	1842	2121	3256	3017	2533	1174	1410	2252	1811	2796	4037	2855	824	1514	1829
Arcelor												310	1742	2228	4341
AXA	731	551	491	612	725	893	1352	3154	3717	4182	9177	1721	2455	2587	5167
BNP PARIBAS	1901	2200	2122	1923	2054	2108	2296	2714	3098	8982	11244	11844	11186	12335	13929
BOUYGUES	389	764	472	346	578	550	483	810	939	1239	1773	1630	0	2519	2818
CAP GEMINI	183	154	111	92	117	142	210	324	488	555	848	640	415	362	314
CARREFOUR	469	571	536	631	778	894	1118	1394	1591	2346	4565	4675	4541	4999	4878
CREDIT AGRICOLE	3687	4144	4288	5741	5914	5726	5399	5739	6849	7317	4721	2751	1801	5560	4852
Dexia															
EADS			275	410	440	405	402	436	307	840	1574	6074	2383	2769	3771
EDF			8134	7599	7293	7572	7529	7116	6484	9462	7393	7497	10037	11252	10283
Essilor Intl.	95	109	122	147	184	180	214	280	308	310	383	428	443	514	552
France Telecom	7397	9394	9829	10113	9935	9421	6710	8592	8560	9376	10807	12320	14102	17303	18261
Gaz De France											0	0	0	0	0
Groupe Danone	1349	1865	1628	1534	1647	1720	1818	1960	1995	2149	2543	2386	2185	2203	2334
L'Oreal	560	573	822	919	1138	1243	1440	1721	1875	1596	1926	2101	0	2414	2641
Lafarge	780	780	752	816	961	982	945	1169	1920	2222	2592	2862	2564	2743	2961
Lagardere			746	697	631	578	644	903	972	884	925	1000	840	1119	1325
LVMH	879	994	727	799	988	980	1132	1614	1527	1981	2500	2916	2862	3096	3091
Michelin	1126	798	1503	1246	1596	1683	1900	1777	1802	2072	2118	1978	2001	1962	2097

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.9, CAC40, EBITDA in million EUR

Pernod-Ricard	324	341	390	369	353	357	365	417	442	480	548	693	848	938	948
Peugeot	3079	2441	2238	1467	2683	2162	1876	1843	2919	3470	4025	4597	4801	4409	5090
Pinault Printemps	229	547	564	504	575	631	700	833	1125	1436	2286	2417	2157	1753	1940
Publicis Groupe Sa	87	95	98	80	91	93	93	112	145	188	368	426	504	677	584
Renault	1820	1766	2384	1405	1727	1636	708	1984	3518	3360	3618	2250	3339	3625	4646
Sanofi-Aventis			500	571	651	694	723	720	815	1291	1818	2407	2830	3336	6037
Saint Gobain	2084	2079	1770	1586	1853	1870	2258	2534	2810	3747	4324	4317	3956	3933	4086
Schneider Electric	215	45	325	356	749	841	887	977	1064	1320	1617	1470	1496	1542	1890
Societe Generale A	1693	2194	2139	5510	4692	4672	5451	6068	2021	3634	4942	3928	3013	5119	5869
Stmicroelectronics				287	474	675	912	808	891	1081	2191	1574	1544	1530	1726
Suez	1267	1609	1517	1115	1311	1354	1571	4067	4734	5193	6359	6765	5976	4692	4919
Thales	774	841	582	630	625	579	596	673	742	723	978	1506	1038	1150	1173
Thomson							177	327	463	656	885	1069	1053	849	712
Total	1730	2150	1753	1700	1750	2305	2544	3146	2690	5039	19072	16617	16835	18131	21774
Veolia Environ.											1850	2686	3311	3787	3820
Vinci	291	278	278	257	258	190	151	208	311	438	1131	1537	1622	1817	1989
Vivendi Universal	2018	2073	1921	1878	1832	1600	1797	1810	3172	4905	5645	22829	26309	6386	5957

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.10, CAC40 Pre-tax income in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Accor	235	192	193	162	178	170	281	381	479	597	793	853	584	467	336
AGF						516	462	564	822	926	1123	854	394	1017	1944
AIR Liquide	571	599	555	551	603	650	673	768	827	912	1011	1067	984	1089	1135
Alcatel	1340	1597	1476	1366	490	-3971	414	853	2371	1639	2296	-4266	-3829	-1151	862
Arcelor												-1055	329	557	3240
AXA	731	551	491	612	725	893	1352	3154	3717	4182	9177	1721	2455	2587	5167
BNP PARIBAS	286	486	499	173	396	480	711	1144	1490	3536	6328	6393	4894	5838	7201
BOUYGUES	179	167	171	107	222	-236	279	418	431	335	812	800	1073	1005	1591
CAP GEMINI	135	112	16	-51	24	54	135	253	409	516	705	290	-272	-110	-183
CARREFOUR	339	276	318	419	515	650	799	944	983	1292	2018	2179	2362	2788	2810
CREDIT AGRICOLE	1080	1263	1352	1193	1295	1791	2059	2395	2948	3948	4388	2554	3862	2481	4321
Dexia															
EADS			-356	-246	-87	-257	84	187	140	133	-1144	2001	177	692	1897
EDF			0	0	0	969	1170	1080	1238	1532	1222	1551	1975	3320	3463
Essilor Intl.	40	35	33	58	81	104	121	145	191	193	223	233	263	316	363
France Telecom	839	2537	2793	3047	2648	2692	927	3182	3750	4503	6429	-5117	-9607	4246	7572
Gaz De France											0	0	0	0	0
Groupe Danone	605	943	902	784	887	604	950	1060	1103	1262	1380	672	1832	1474	1527
L'Oreal	451	503	584	659	786	864	972	1145	1295	1125	1322	1502	1606	1870	2063
Lafarge	469	252	319	378	562	592	537	1169	1130	1370	1438	1576	1231	1488	1438
Lagardere			268	230	276	240	278	470	596	494	1097	839	-259	626	757
LVMH	768	743	561	690	841	1012	1015	1186	1013	1435	1692	667	1245	1618	2113
Michelin	-756	-93	234	-564	351	602	695	866	879	556	772	690	983	937	880

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.10, CAC40, Pre-tax income in million EUR

Pernod-Ricard	227	203	270	238	236	238	256	305	302	332	316	631	573	698	0
Peugeot	2146	1292	649	-394	689	370	161	-534	838	1149	2216	2647	2482	2315	2492
Pinault Printemps	96	396	242	198	280	345	470	684	834	1069	1598	1528	2543	952	1536
Publicis Groupe Sa	69	67	67	53	61	67	72	94	126	166	264	312	376	455	422
Renault	43	407	962	167	531	301	-861	624	1699	1160	1723	1020	2323	3023	4252
Sanofi-Aventis			253	253	258	335	353	339	420	923	1606	2421	2439	3125	-2245
Saint Gobain	928	668	630	385	1107	1096	1157	1527	1788	2278	2531	2072	1750	1808	1870
Schneider Electric	44	-138	-34	-26	258	312	420	672	775	936	1164	-569	352	790	1149
Societe Generale A	559	858	786	869	862	857	1048	1540	1591	3182	4394	3251	2198	4237	5021
Stmicroelectronics				117	271	412	548	375	392	517	1387	252	404	173	454
Suez	325	314	264	417	527	449	524	1939	2612	3267	3375	3632	896	-433	3882
Thales	370	402	286	-338	-83	-84	182	373	-252	427	414	478	370	329	435
Thomson							-513	-422	22	275	375	403	393	97	-547
Total	1091	1166	821	839	906	726	1373	1973	1347	2457	13157	13016	9770	11625	18159
Veolia Environ.											381	257	1235	-1706	832
Vinci	68	55	55	42	39	-149	-67	52	90	185	455	843	834	1056	1295
Vivendi Universal	423	494	461	401	436	-670	211	839	1381	1223	4885	4232	90	2704	2634

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.11, CAC40 Shareholder equity in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Accor	1305	1437	1621	1831	1785	2025	2460	2844	2874	3279	3843	4139	4086	3587	3755
AGF						3474	3723	4897	5660	5792	6050	6120	6266	6526	9969
AIR Liquide	2249	2535	2802	3140	3168	3399	3759	4172	4347	4927	5286	5353	5478	5079	5374
Alcatel	5049	7607	7906	9153	9450	5214	6219	6992	10310	12051	14945	9630	5255	3030	3368
Arcelor												4143	7066	6733	10902
AXA	4194	4556	4804	5045	5147	5091	6836	11994	13538	16357	24322	24780	24887	23401	26157
BNP PARIBAS	5233	6226	7002	7492	7695	7899	8993	9353	10277	20136	21957	24954	28117	28633	30502
BOUYGUES	762	851	1104	1210	1418	959	1073	1254	1288	2178	4500	4740	5260	5131	3983
CAP GEMINI	480	874	790	732	924	891	1214	1407	2073	2611	4148	4303	3679	3351	3000
CARREFOUR	1045	1249	1436	1818	1968	2353	2905	3315	3911	6331	7610	6986	6469	6559	6886
CREDIT AGRICOLE	9936	11152	12248	13198	13966	14833	15875	18727	20538	22903	25794	14994	31233	23571	24940
Dexia															
EADS			586	674	596	447	578	804	957	1613	10250	9877	13398	16149	16973
EDF			3584	3375	3354	3224	3509	12154	12462	12644	13527	13711	14572	18924	17567
Essilor Intl.	372	372	391	438	475	532	627	801	929	1147	1047	1207	1273	1208	1335
France Telecom	10219	18009	18375	19107	20774	21471	11967	14287	16993	18905	33157	21087	-10445	12028	15681
Gaz De France											5050	5962	9259	9587	10377
Groupe Danone	3430	4003	4235	4866	5347	5527	6157	6513	6514	6146	7189	5947	5339	4824	4577
L'Oreal	1495	1749	2197	2462	3355	3593	4036	4589	4942	5626	6590	7199	7790	8124	10560
Lafarge	1762	1980	2071	2895	3300	3538	3683	412	4501	5851	6043	7882	7327	8185	8477
Lagardere			297	401	813	794	1100	1814	1947	2322	3711	4112	3867	3882	4031
LVMH	2521	2955	3134	3567	4626	4726	5289	6179	6317	6704	7031	6901	7421	7034	7478
Michelin	1680	1697	1691	1109	1327	1803	2443	3665	3903	3975	3844	3998	4544	4327	4602

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.11, CAC40 Shareholders equity in million EUR

Pernod-Ricard	964	1074	1168	1283	1371	1415	1597	1767	1828	2061	2072	2452	2696	2731	2776
Peugeot	7152	7846	8102	7705	8160	8329	8462	8080	8503	8332	9361	10282	11529	11864	12923
Pinault Printemps	471	739	855	1185	1863	2063	2312	2682	3086	3716	4358	5692	6790	6899	7693
Publicis Groupe Sa	176	194	212	201	203	217	238	240	314	345	299	283	1575	726	881
Renault	2594	4777	5178	5165	6523	6677	5758	6696	7861	8186	9652	10051	12415	13591	16060
Sanofi-Aventis			1922	2451	2647	2805	3103	3457	3822	3578	4304	5768	6334	6323	35574
Saint Gobain	4125	4611	4921	4949	5904	6384	7220	8415	8770	9538	10901	11925	11878	11087	11556
Schneider Electric	305	153	108	84	2493	2462	2820	3645	3637	4260	4545	8381	8171	7659	7575
Societe Generale A	4256	4946	6118	8183	7590	8162	8818	10393	10453	12700	15047	17640	18265	18997	20625
Stmicroelectronics				662	1107	1730	2246	2401	3009	3336	4642	4769	5406	5783	6149
Suez	1730	1968	1911	2291	2468	2510	2810	7517	8931	11271	13134	14397	11102	6898	7923
Thales	2635	2767	2916	2294	2021	1906	2091	2369	2222	2367	2425	2146	2245	2014	2097
Thomson							-537	586	864	1719	2860	3958	4143	3583	2670
Total	4016	5879	6221	7538	7829	7989	9035	10159	10347	27669	32401	33932	33741	30408	31260
Veolia Environ.											3051	421	6208	5740	6644
Vinci	288	361	410	455	627	481	434	447	526	567	1834	2373	2726	2937	3148
Vivendi Universal	2442	2800	3655	4820	5252	4601	5135	6847	7840	10892	56675	36748	14716	11923	13621

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.12, CAC40 Long term debt in million EUR

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Accor	1283	2189	2106	2204	2689	3134	2892	2996	2091	2998	3397	3441	3539	3344	3371
AGF						5661	9354	10101	12537	11010	10446	7671	9527	10251	2139
AIR Liquide	767	675	570	559	626	545	791	1322	1628	1909	2415	2753	2403	1985	4301
Alcatel	2771	2875	3429	3783	4784	4288	3571	3341	2318	3478	5577	5879	5597	5055	3968
Arcelor												2642	4822	4871	4348
AXA	480	456	1958	3866	3995	7285	6021	8688	9323	13417	15451	19516	18893	14089	17121
BNP PARIBAS	14441	13214	19270	17361	14684	14529	15339	41587	15186	82313	86586	253678	247100	256138	115900
BOUYGUES	786	797	678	494	510	638	639	1683	1618	2454	2920	2960	4666	4149	4835
CAP GEMINI	323	247	344	531	387	506	608	476	192	143	91	120	163	722	653
CARREFOUR	207	633	803	673	636	686	576	1331	2211	6733	7904	10304	8744	7231	7127
CREDIT AGRICOLE	22694	42270	47442	28142	23627	28580	34862	27597	25975	28077	31606	33735	36288	55089	58995
Dexia															
EADS			1786	2116	2043	1706	1460	1390	1339	1642	4861	5038	3979	3789	4406
EDF			25821	21919	19440	16918	22475	13333	12428	13968	17219	19168	22426	19714	20922
Essilor Intl.	206	214	185	220	201	170	203	167	122	182	347	352	368	598	596
France Telecom	15064	17733	13682	13047	11630	10011	9185	9028	12081	12234	30547	54543	49225	44043	36026
Gaz De France											0	0	0	0	0
Groupe Danone	2184	1897	2037	2626	2714	2739	3588	3284	3103	3507	4171	5425	4295	4171	3614
L'Oreal	353	337	518	335	247	213	261	427	548	489	754	875	866	759	715
Lafarge	0	0	1540	1342	946	981	1622	5059	4274	5959	7490	11041	10781	7370	6948
Lagardere			2633	2167	1471	1511	1498	1285	1308	1691	1786	2855	3301	3757	3160
LVMH	1740	1993	2215	1873	1457	1202	1256	1906	1889	3491	3844	5686	5013	4369	4128
Michelin	4157	3919	3933	4079	3648	4684	2516	2303	2074	2651	2478	3039	3201	3240	2874

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.12, CAC40 Long term debt in million EUR

Pernod-Ricard	347	379	381	330	435	161	295	345	319	114	261	3985	2788	1575	1560
Peugeot	998	858	814	1362	1947	1860	1901	2388	4438	5376	4739	9008	11293	13545	15933
Pinault Printemps	187	239	876	734	1474	1183	944	1093	1858	3964	7607	8602	7920	5247	6095
Publicis Groupe Sa	0	0	0	0	0	0	0	0	0	0	180	311	2111	2453	2235
Renault	2768	2354	2424	4875	4857	3621	3597	4336	4730	6931	8655	8621	12130	15158	16115
Sanofi-Aventis			159	267	93	677	681	645	402	137	121	119	68	61	8638
Saint Gobain	2255	2556	2273	2753	1922	1674	2247	2701	2898	4530	5390	5638	6958	6688	5566
Schneider Electric	0	0	267	256	1486	1286	1092	927	488	1522	2074	1776	1809	1435	1294
Societe Generale A	11087	13435	24551	20037	21483	50677	49071	59677	55730	53905	59584	72592	28277	26244	27590
Stmicroelectronics				0	0	130	134	259	557	986	2047	2176	2162	2102	1193
Suez	1979	2342	2660	2734	2843	2662	3643	11346	11774	17845	21951	23651	22198	25607	15364
Thales	0	0	644	683	602	742	947	410	359	437	3169	3150	2251	1979	2020
Thomson							765	700	334	27	845	838	1503	2043	1597
Total	3279	3278	3676	3887	3474	3691	3100	3315	3647	10172	11509	11165	10661	9783	9734
Veolia Environ.											2342	19619	11469	13134	13554
Vinci	331	328	319	357	400	358	293	179	223	501	2958	3830	5293	6172	6468
Vivendi Universal	2919	3998	4521	5494	7366	7329	6891	6907	10944	20793	30291	27777	12023	9621	4549

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.13, FTSE100 Sales in million GBP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
3I GROUP	328	292	234	238	244	268	275	315	336	325	358	355	461	262	291
ALL & LEICS	2534	2805	2529	2091	2047	2180	2035	2183	2585	2365	2723	2760	3807	2617	3069
AMVESCAP	111	125	136	178	183	197	241	540	814	1084	1646	1630	2031	1165	1170
ANGLO AMERICAN										7155	9799	10261	10102	11406	13612
ANTOFAGASTA															
ASSOCIAT BRIT FOO	2775	3510	3984	4422	4513	4894	5707	5203	4195	4299	4406	4418	6647	4909	5165
ASTRAZENECA	3810	3929	3979	4440	4480	4898	5363	5194	5510	11399	11966	11437	11900	11536	11699
AVIVA	4537	5139	6732	7259	8558	13163	13135	13886	26585	28915	34704	31435	38686	43645	45139
B SKY B GROUP			233	380	550	778	1008	1270	1434	1545	1847	2306	4004	3186	3656
BAA	834	909	952	1098	1159	1253	1373	1679	1959	2121	2226	1987	1882	1970	2115
BAE SYSTEMS	10540	10562	9977	10760	7153	5741	6464	7267	7042	7043	9646	9041	12134	8387	9095
BARCLAYS	17458	16652	14853	14504	13452	14807	12645	12812	13118	13197	16757	19131	26554	18867	21530
BG GROUP	7983	10485	10254	10386	9698	8601	9453	5351	4474	4787	4769	2672	3922	3587	4082
BHP BILLITON								3230	3289	2856	3299	12346	10609	9552	12496
BOC GROUP	2644	2718	2731	3068	3292	3544	3752	3678	3295	3053	3580	3773	5377	3718	3885
BOOTS GROUP	3565	3656	3962	4167	4308	4125	4578	5022	5045	5187	5226	5328	5328	5325	5469
BP	33039	32613	33250	34950	33116	36106	43908	42843	41256	51644	97869	120907	119207	142333	155642
BRAMBLES INDUSTRIES													2937	2089	2141
BRIT AMER TOBACCO						6751	7219	7129	7120	9072	10915	11371	15927	10570	10764
BRITISH AIRWAYS	4838	4937	5566	6303	7177	7760	8359	8642	8915	8940	9278	8340	11891	7560	7813
BRITISH ENERGY															
BRITISH LAND CO	150	128	193	215	245	287	349	397	472	604	567	591	891	639	721
BT GROUP	13154	13337	13242	13675	13893	14446	14935	15640	16953	18715	20427	20559	28965	18519	18623
CABLE & WIRELESS	2593	3176	3826	4699	5133	5517	6050	7001	7944	9201	8099	5911	6792	3671	3222
CADBURY SCHWEPP	3146	3232	3372	3725	4030	4776	5115	4220	4106	4301	4575	5519	7960	6441	6738
CAIRN ENERGY															
CAPITA GRP	20	25	33	50	74	87	112	173	238	327	453	691	1349	1081	1285
CARNIVAL										1305	1602	1701	1685	4111	5311
CENTRICA								7842	7481	7217	9933	12611	21509	17931	18303
COMPASS GROUP							2636	3507	4214	5770	8302	8716	15609	11286	11772
CORUS GROUP	5041	4598	4303	4191	4784	7048	7224	6947	6259	6455	11698	7699	10800	7953	9332
DIAGEO	2513	2942	3179	3439	3460	3486	4730	12280	9874	11795	11870	12821	16273	9440	8891
DLY MAIL&GEN TST A	644	644	664	684	779	874	1007	1200	1418	1620	1860	1963	2859	1933	2109

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.13, FTSE100, Sales in million GBP (2/3)

DSG INTERNATIONAL	1695	1863	1986	1921	1647	1920	2443	2774	3156	3890	4688	4888	8973	6492	6983
ENTERPRISE INNS						25	38	60	81	124	172	245	542	481	713
FRIENDS PROVIDENT												2251	1982	6501	6366
GALLAHER GRP			895	963	919	777	963	969	938	961	1039	1373	3544	2586	2547
GLAXOSMITHKLINE	3179	3397	4096	4930	5656	6993	8341	7980	7983	8490	18079	20489	31872	21441	20359
GUS	2523	2597	2810	3094	2664	2758	2855	3363	5467	5658	6041	6457	11053	7548	7787
HAMMERSON	158	166	220	193	196	179	170	177	176	182	203	208	354	250	251
HANSON	7153	7691	8798	9760	11199	11184	12484	5211	1825	1921	3136	3824	5483	3619	3464
HBOS			6488	5320	5447	6966	6593	8266	9854	9142	10410	19295	30225	22650	27645
HSBC HLDG			11269	14925	14421	14421	18877	23274	26372	24161	30398	31273	27951	37944	43965
ICI	12906	12488	12061	10632	9189	10269	10520	11062	9286	8449	7748	6425	9203	5849	5601
IMPERIAL TOBACCO						747	780	834	948	1202	1300	1474	3262	3200	3032
INTERCONT HOTELS	3764	3688	4307	4451	4452	4541	5109	5254	4609	4686	5158	4033	5315	3483	2204
INTERNATIONAL POV	4378	4701	4348	3641	3953	3948	3535	3354	3009	3773	1885	557	1077	852	768
ITV			345	497	918	1506	2652	3703	4214	4815	4204	2445	2098	1759	2053
JOHNSON MATTHEY	1728	1733	1854	1955	2178	2529	2423	3139	3385	3866	5904	4830	6688	4493	4639
KAZAKHMYS													5198	3771	3959
Kelda															
KINGFISHER	3117	3389	3548	4479	4888	5281	5815	6409	7458	10885	12134	12134	16280	8799	7656
LADBROKES	3800	3786	4167	4248	4361	3848	3825	3816	4681	4299	3952	4162	8232	8931	11893
LAND SECURITIES	360	407	437	449	460	462	471	484	500	528	647	937	1068	1286	1641
LEGAL & GENERAL	4104	3674	3516	5998	5548	6452	10413	12580	20081	23756	23234	20988	22415	19996	27367
LIBERTY INTL															
LLOYDS TSB			3616	3304	3122	13715	13172	13737	14441	13890	15501	16270	21982	15458	15569
MAN GROUP					239	267	267	284	304	326	324	347	406	641	874
MARKS & SPENCER	5775	5793	5951	6541	6807	7232	7842	8243	8224	8196	8076	8135	12493	8302	7942
MORRISON SUPERMI	910	1118	1317	1538	1779	2099	2176	2297	2534	2970	3500	3918	6509	4944	12116
NATIONAL GRID	1144	1320	1392	1425	1428	1487	1458	1609	1514	1615	3800	4401	9400	9033	8521
NEXT	878	462	485	544	653	774	947	1177	1239	1425	1589	1872	3343	2516	2859
NORTHERN ROCK							899	1117	1461	1354	1610	1684	2561	1868	2360
OLD MUTUAL										8866	7305	9298	10874	11166	12409
PARTYGAMING															
PEARSON	1535	1600	1636	1870	1550	1830	2186	2293	2395	3332	3874	4225	6491	4048	3919
PERSIMMON PLC	136	144	144	169	206	249	451	525	572	696	742	1477	2571	1883	2131

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.13, FTSE100 Sales in million GBP (3/3)

PRUDENTIAL			12090	12791	12791	18413	19809	23265	24417	32590	20043	22050	27480	23590	26298
RECKITT BENCKISER	1764	1987	1904	2096	2079	2353	2322	2197	2202	3054	3202	3439	5305	3713	3871
REED ELSEVIER			1197	2796	3035	3649	3381	3417	5604	3464	3836	4627	5094	5006	4906
RENTOKIL INITIAL	309	389	466	588	720	842	2270	2812	2878	2963	2545	2144	3355	2366	2322
REUTERS GROUP	1369	1467	1568	1874	2309	2703	2914	2882	3032	3125	3592	3885	5372	3197	2885
REXAM	1274	1206	1510	2112	2342	2391	2307	2002	1895	2371	2730	3387	4637	3112	3081
RIO TINTO	3867	3552	3248	3184	2288	5155	4530	5624	5562	4443	5198	5662	5641	5648	6194
ROLLS-ROYCE GROU	3670	3515	3562	3518	3163	3597	4291	4334	4496	4744	5864	6328	8697	5645	5939
ROYAL BK SCOTL GR	3923	3869	3478	2868	3677	4535	5106	5106	7282	7458	21519	22613	34626	25723	31497
ROYAL DUTCH SHELL-A						69595	82079	78224	56590	65116	98586	93836	119680	123458	144794
ROYAL SUN ALLIANCE			6098	7622	4976	7894	13721	15218	16200	15613	14124	10771	17091	11504	8787
SABMILLER			4105	5125	5444	5747	6423	4333	3619	2782	2658	3610	4551	5718	5791
SAGE GRP	13	20	27	41	51	102	136	152	192	307	412	484	811	560	688
SAINSBURY	7813	8695	9686	10583	11357	12627	13395	14500	16433	16271	17244	17162	26959	26959	15409
SCHRODERS				765	1043	1371	1556	1688	1730	1998	1250	524	743	470	619
SCOT & STHN ENERG	566	670	718	792	833	887	951	1035	2809	3048	3586	4006	6288	5124	7425
SCOTT & NEWCASTL	1107	1193	1204	1461	1713	2365	2591	2588	2540	2807	3511	3304	5378	4120	4432
SCOTTISH POWER	1242	1385	1486	1569	1716	2272	2941	3128	3242	4115	6349	6314	8157	5797	6849
SEVERN TRENT	627	822	905	998	1076	1158	1215	1251	1364	1567	1682	1794	2864	2015	2081
SHIRE							21	23	80	134	344	580	1071	761	755
SMITH & NEPHEW	730	792	858	949	965	1026	1069	1048	1053	1120	1135	1082	1668	1179	1249
SMITHS GROUP	673	656	635	726	759	899	1008	1076	1199	1324	1464	4958	4687	3056	2733
STANDARD CHARTER	2699	2454	2676	2951	2934	3506	3605	4012	4559	4398	5400	5298	4412	3874	3955
TATE & LYLE	3432	3262	3294	3698	4074	4510	4879	4353	4117	3844	3827	3944	4898	3167	3342
TESCO PLC	6346	7097	7582	8600	10101	12094	13887	16452	17158	17158	20988	23653	25654	30814	33974
UNILEVER	22258	23163	24700	27863	29666	31516	33522	29766	27094	26994	28977	32042	30314	29501	27239
UNITED UTILITIES	599	789	878	924	1012	1839	2377	2150	2277	2356	1698	1791	2906	2060	2254
VODAFONE GROUP	537	585	664	851	1153	1402	1749	2471	3360	7873	15004	22845	46981	33559	34133
W H SMITH	1971	2127	2312	2442	2689	2828	2763	3456	2391	2584	2735	4294	2900	2834	2497
WOLSELEY PLC	1847	1738	1954	2491	3254	3784	4314	4602	4760	5505	6403	7195	11586	8221	10128
WPP GRP	1264	1204	1273	1431	1427	1555	1691	1747	1918	2173	2981	4022	5872	4106	4300
XSTRATA												426	1256	2416	4228
YELL GROUP													1723	1187	1285

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.14, FTSE100 Labour costs in million GBP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
3I GROUP	25	25	25	26	36	39	42	53	63	84	97	98	127	110	107
ALL & LEICS	133	168	194	192	203	210	210	203	189	196	204	235	380	256	255
AMVESCAP	41	46	50	68	74	82	94	178	269	349	516	558	780	459	453
ANGLO AMERICAN										1947	2138	2148	1979	2617	2979
ANTOFAGASTA															
ASSOCIAT BRIT FOO	412	521	657	1230	1213	1223	1348	631	543	553	581	562	948	703	660
ASTRAZENECA	946	976	988	1060	1134	1224	1298	1216	1318	2301	2432	2593	3129	3070	3034
AVIVA	241	273	358	386	455	700	700	716	1318	1407	2099	2091	2620	1776	1727
B SKY B GROUP			28	35	43	63	92	210	232	368	493	516	799	610	676
BAA	371	405	424	438	460	476	246	297	361	401	448	427	420	475	503
BAE SYSTEMS	2258	2403	2209	2061	1283	1128	1151	1164	1327	1652	2893	2815	4189	2966	3327
BARCLAYS	2132	2379	2472	2728	2680	2907	2980	3035	2811	3057	3219	3714	5642	4295	4998
BG GROUP	1183	1553	1519	1850	1804	1492	1162	757	543	577	600	177	255	206	244
BHP BILLITON								420	428	373	408	1468	1357	1163	1277
BOC GROUP	658	712	717	822	854	875	917	909	851	747	787	824	1620	1038	1016
BOOTS GROUP	668	730	785	818	854	768	864	939	986	960	981	1064	1573	1025	1026
BP	2662	2628	2679	2393	1858	1830	3457	1738	3350	3439	4854	5303	5262	5897	5842
BRAMBLES INDUSTRIES													676	446	485
BRIT AMER TOBACCO						1036	1073	1000	996	1251	1497	1565	2602	2076	1966
BRITISH AIRWAYS	1338	1420	1551	1646	1898	2057	2248	1855	1953	2097	1973	2124	2967	2049	2160
BRITISH ENERGY															
BRITISH LAND CO	5	6	7	9	10	14	12	13	13	19	20	25	46	35	38
BT GROUP	4354	4450	4062	4052	3882	3650	3714	3778	3917	3871	4296	4625	4321	4254	4412
CABLE & WIRELESS	465	540	626	720	829	897	1750	2004	2739	3398	3360	2296	3109	1622	1206
CADBURY SCHWEPP	551	577	606	647	692	731	787	674	689	691	712	799	1319	1215	1286
CAIRN ENERGY															
CAPITA GRP	9	10	12	23	32	39	52	78	104	140	178	261	563	431	524
CARNIVAL										162	185	208	221	911	1095
CENTRICA								400	425	538	771	849	1588	1283	1409
COMPASS GROUP							1021	1358	1860	2235	1943	3173	6078	4460	4605
CORUS GROUP	1000	981	915	912	947	.1331	1465	1348	1352	1352	2606	1633	2448	1810	1863
DIAGEO	406	476	514	568	563	561	587	1400	1446	1620	1612	1605	1975	1080	997
DLY MAIL&GEN TST A	180	185	194	197	212	257	271	314	375	428	485	530	852	593	653

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.14, FTSE100 Labour costs in million GBP (2/3)

DSG INTERNATIONAL	193	213	225	194	172	209	260	295	344	423	496	549	978	708	778
ENTERPRISE INNS						1	3	4	4	7	10	20	22	20	29
FRIENDS PROVIDENT												195	294	202	205
GALLAHER GRP			331	329	292	192	126	124	113	109	109	207	474	281	277
GLAXOSMITHKLINE	710	811	944	1187	1300	1710	1866	1827	1808	2042	4487	4686	8240	5709	5000
GUS	316	325	325	311	362	344	491	634	945	1036	1109	1355	2091	1384	1331
HAMMERSON	9	10	11	11	9	11	9	10	15	8	10	14	24	19	24
HANSON	1118	1202	1375	1500	1709	1582	1448	911	400	412	613	705	1022	715	671
HBOS			334	367	406	492	535	573	622	697	739	1425	2332	1755	1875
HSBC HLDG			1802	2502	2646	2646	3069	3660	3818	4136	4979	5654	5975	8078	8869
ICI	3173	3070	2965	2242	1791	1791	1860	1952	1867	1626	1402	1321	2022	1310	1281
IMPERIAL TOBACCO						79	83	94	111	141	153	184	443	487	389
INTERCONT HOTELS	669	655	765	812	797	807	848	887	895	976	1150	1098	1680	1046	682
INTERNATIONAL POV	327	351	270	220	180	167	151	165	350	358	86	130	222	154	193
ITV			150	202	366	586	1080	1493	1697	1943	992	430	246	224	255
JOHNSON MATTHEY	135	131	137	150	117	141	175	206	263	188	177	210	378	287	270
KAZAKHMYS													752	554	570
Kelda															
KINGFISHER	399	433	451	584	668	726	792	867	151	1479	1651	1651	2250	1287	1087
LADBROKES	837	834	917	922	911	849	795	439	496	532	572	613	1071	728	780
LAND SECURITIES	12	13	15	13	15	15	17	18	18	18	28	56	117	80	104
LEGAL & GENERAL	411	109	327	179	101	192	190	188	209	239	245	255	283	298	315
LIBERTY INTL															
LLOYDS TSB			657	600	567	2264	1925	1847	1736	1717	1888	1985	3782	2588	2547
MAN GROUP					106	109	109	117	134	138	160	121	153	226	316
MARKS & SPENCER	732	712	700	753	770	828	1845	1003	1125	1164	1138	1207	1950	1215	1154
MORRISON SUPERMI	84	103	121	146	173	208	223	242	282	340	391	445	790	589	1665
NATIONAL GRID	165	200	194	195	170	149	176	148	137	151	371	448	448	1170	1083
NEXT	136	65	85	94	108	123	284	183	200	265	278	330	588	457	526
NORTHERN ROCK							46	59	66	54	58	75	128	101	119
OLD MUTUAL										433	567	802	1161	896	957
PARTYGAMING															
PEARSON	441	471	481	548	384	354	508	510	543	803	896	1233	1910	1188	1196

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.14, FTSE100 Labour costs in Million GBP (3/3)

PERSIMMON PLC	10	12	12	13	15	17	31	37	43	51	60	114	191	132	150
PRUDENTIAL			334	353	353	508	598	560	661	735	757	843	1121	812	873
RECKITT BENCKISER	288	304	292	317	306	336	315	259	267	422	361	396	667	513	506
REED ELSEVIER			295	689	748	915	848	857	850	973	1114	1365	1463	1450	1414
RENTOKIL INITIAL	120	151	181	255	342	417	1111	1382	1399	1398	1201	1028	1643	1153	1130
REUTERS GROUP	389	413	436	513	643	766	856	835	928	983	1212	1445	2087	1188	1020
REXAM	329	311	390	552	590	595	589	496	482	578	568	630	832	683	594
RIO TINTO	805	739	676	717	388	763	781	764	686	720	743	806	893	1020	1100
ROLLS-ROYCE GROU	1097	1100	1066	1046	998	1079	2176	1219	1244	1306	1593	1647	2385	1672	1563
ROYAL BK SCOTL GR	412	442	462	453	606	665	709	709	927	956	3547	4059	6719	4518	5344
ROYAL DUTCH SHELL-A						3955	4029	3728	5981	3360	2891	3099	3721	5638	5390
ROYAL SUN ALLIANCE			448	559	365	579	1039	991	1049	1121	1290	1300	1970	1058	809
SABMILLER			658	868	933	952	1064	722	603	445	313	426	734	876	890
SAGE GRP	2	4	7	12	14	33	44	51	68	105	157	192	331	225	287
SAINSBURY	879	988	1036	1132	1184	1355	1507	1623	1874	1800	1803	1981	3072	3072	1757
SCHRODERS				169	258	355	464	530	579	714	479	256	362	231	415
SCOT & STHN ENERG	62	74	79	82	82	77	79	81	238	245	247	289	445	307	356
SCOTT & NEWCASTL	249	268	271	327	381	511	536	547	542	639	823	692	1305	825	633
SCOTTISH POWER	153	163	186	175	181	233	325	347	374	519	756	859	1123	758	823
SEVERN TRENT	135	189	173	194	275	230	254	245	280	399	410	433	699	490	554
SHIRE							3	5	16	21	39	100	146	103	86
SMITH & NEPHEW	199	219	228	250	234	261	499	262	268	265	285	292	473	330	346
SMITHS GROUP	224	225	216	243	243	280	304	315	340	372	416	1414	1423	975	939
STANDARD CHARTER	330	365	458	557	556	585	578	610	638	713	915	861	847	828	838
TATE & LYLE	331	315	340	377	390	405	421	401	372	372	352	303	416	277	270
TESCO PLC	1214	1358	1451	1631	1900	2249	2570	1642	1730	1730	2047	2336	2336	3394	3762
UNILEVER	3656	3870	4145	4635	4793	4987	5200	4436	4065	3839	4205	4435	4401	4301	4052
UNITED UTILITIES	92	129	135	147	157	214	323	271	279	274	284	318	512	436	562
VODAFONE GROUP	44	43	52	79	108	128	171	256	349	874	1540	1996	3670	2410	2388
W H SMITH	246	265	286	295	340	347	321	384	270	300	337	582	360	336	273
WOLSELEY PLC	235	225	249	316	406	473	542	578	606	707	829	946	1704	1234	1368
WPP GRP	632	602	637	652	648	799	869	878	953	1091	1616	2269	2242	2362	2502
XSTRATA												60	178	351	460
YELL GROUP													464	322	369

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.15, FTSE100 EBITDA in million GBP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
3I GROUP	43	47	47	61	70	81	93	109	128	144	126	130	119	185	145
ALL & LEICS	123	111	123	228	316	341	355	423	455	500	447	396	468	525	556
AMVESCAP	30	27	26	44	48	59	74	214	247	405	608	543	364	285	110
ANGLO AMERICAN										1261	2179	2537	2327	1931	2856
ANTOFAGASTA															
ASSOCIAT BRIT FOO	277	351	396	414	448	489	567	526	448	384	441	439	785	585	606
ASTRAZENECA	710	886	454	887	874	1026	1241	1307	1345	2353	3298	3489	3546	3305	3297
AVIVA	195	221	290	254	444	1001	790	745	1098	1229	-809	566	-330	2024	2192
B SKY B GROUP			-40	70	176	243	321	379	357	-239	32	-237	565	469	302
BAA	317	331	436	452	491	543	601	641	759	776	840	807	845	874	974
BAE SYSTEMS	818	640	250	329	191	474	631	1225	753	770	828	1059	1534	892	1330
BARCLAYS	1261	1067	312	1248	2373	4134	3442	3110	3668	4179	5612	6452	5534	5984	6924
BG GROUP	1795	3071	2619	2658	2495	2413	2458	2120	2313	2379	2170	1119	1695	1501	1797
BHP BILLITON								626	645	517	705	3366	2888	2878	3683
BOC GROUP	405	416	418	428	360	753	808	817	458	681	813	861	1112	741	788
BOOTS GROUP	485	489	524	544	636	560	613	664	626	697	697	810	829	688	648
BP	3537	3492	3560	4445	4478	4900	5696	5699	6443	8222	16661	16435	13130	15862	17379
BRAMBLES INDUSTRIES													676	400	470
BRIT AMER TOBACCO						2548	2551	2191	973	1611	2516	2964	4351	3096	2896
BRITISH AIRWAYS	690	423	622	870	1076	1189	1052	1055	1061	732	1095	820	1851	1084	1227
BRITISH ENERGY															
BRITISH LAND CO	110	138	138	145	148	166	212	277	315	247	391	343	425	406	461
BT GROUP	5427	5433	3973	4706	4370	4902	5175	6052	6397	6439	6095	8229	8979	5896	5701
CABLE & WIRELESS	885	981	1247	1557	1711	1890	2188	2299	2732	3760	2526	822	517	235	492
CADBURY SCHWEPP	434	470	495	587	666	765	854	753	803	822	879	1039	1647	1394	1330
CAIRN ENERGY															
CAPITA GRP	3	4	5	6	9	11	12	20	31	43	65	93	193	156	191
CARNIVAL										312	346	354	393	634	928
CENTRICA								380	410	625	872	943	1270	1361	2333
COMPASS GROUP							127	175	214	249	370	720	1504	1025	1029
CORUS GROUP	559	271	136	356	678	1222	674	571	139	-174	22	13	20	305	940
DIAGEO	977	1120	979	1032	1035	1021	1043	2000	2169	1957	2351	2358	3470	2326	2137
DLY MAIL&GEN TST A	101	106	109	113	130	90	123	196	256	280	306	299	452	308	355

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.15, FTSE100, EBITDA in million GBP (2/3)

DSG INTERNATIONAL	99	93	104	81	131	164	217	248	269	297	321	386	799	440	446
ENTERPRISE INNS						11	10	19	31	49	71	86	279	258	390
FRIENDS PROVIDENT												16	-108	309	310
GALLAHER GRP			323	358	356	343	345	406	417	449	479	530	980	718	714
GLAXOSMITHKLINE	1157	1252	1476	1747	2104	2753	3542	3195	3069	2997	5246	5545	9597	7252	6981
GUS	363	374	404	464	519	549	575	685	862	765	704	769	1333	1107	1166
HAMMERSON	71	56	32	40	108	58	71	62	90	95	89	71	137	68	128
HANSON	1043	1122	1283	1264	1606	1963	1972	786	370	452	612	520	1001	618	606
HBOS			743	939	1037	1193	996	1787	1853	1776	1887	3168	5323	4490	5415
HSBC HLDG			2098	3135	3735	4353	5239	5818	2979	3695	4934	4668	5348	6117	6680
ICI	799	773	747	1119	932	1298	944	952	852	884	845	656	1095	621	648
IMPERIAL TOBACCO						358	387	404	452	538	593	653	1239	1218	1297
INTERCONT HOTELS	868	832	780	783	819	878	964	1008	957	1045	1188	987	1385	786	529
INTERNATIONAL POV	392	785	756	850	1086	1080	1038	1095	1148	-478	60	257	473	234	217
ITV			45	56	85	130	176	239	289	337	706	152	297	248	359
JOHNSON MATTHEY	79	83	96	105	114	118	142	175	210	183	215	242	402	269	274
KAZAKHMYS													367	261	264
Kelda															
KINGFISHER	307	298	277	395	399	420	526	642	776	951	938	938	1345	826	839
LADBROKES	324	323	355	288	381	265	266	304	407	407	469	414	708	464	549
LAND SECURITIES	335	361	378	386	394	401	414	422	440	473	474	530	478	564	-13
LEGAL & GENERAL	101	39	133	198	188	341	1872	886	751	686	580	-130	-485	631	666
LIBERTY INTL															
LLOYDS TSB			1043	1291	1671	2132	2969	3707	3542	4192	4740	4564	3797	5638	4683
MAN GROUP					105	116	116	117	128	136	96	177	202	299	437
MARKS & SPENCER	739	788	861	1010	1047	1101	1444	1395	748	733	716	893	1542	1108	980
MORRISON SUPERMI	68	85	107	126	150	168	183	205	238	260	294	328	567	425	718
NATIONAL GRID	557	653	709	760	823	829	824	702	711	730	949	1194	1194	3249	3228
NEXT	15	67	60	82	99	114	156	178	184	216	253	312	546	435	516
NORTHERN ROCK							148	185	240	259	302	350	413	494	569
OLD MUTUAL										1554	1151	181	1098	807	1129
PARTYGAMING															
PEARSON	218	185	197	270	305	318	332	347	331	542	489	437	899	594	547
PERSIMMON PLC	34	26	18	19	28	27	49	63	75	95	119	217	460	388	504

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.15, FTSE100, EBITDA in million GBP (3/3)

PRUDENTIAL			462	625	625	1317	1632	1185	1845	1571	1647	164	-504	1198	1586
RECKITT BENCKISER	301	344	324	372	226	412	423	416	336	236	529	599	990	768	856
REED ELSEVIER			187	717	779	936	945	479	725	496	315	511	640	779	801
RENTOKIL INITIAL	96	124	146	176	210	247	442	599	685	739	599	582	888	614	552
REUTERS GROUP	463	536	502	584	682	801	924	904	926	889	746	629	911	618	532
REXAM	165	157	196	277	332	299	294	298	278	336	353	395	750	511	563
RIO TINTO	1056	687	581	609	746	1706	1240	2292	1169	1515	2005	1767	1913	1531	1920
ROLLS-ROYCE GROU	300	224	200	181	200	262	221	317	429	486	528	477	798	548	590
ROYAL BK SCOTL GR	407	201	140	398	785	1052	1268	1421	1928	2227	3926	5813	6315	7617	8670
ROYAL DUTCH SHELL-A						11850	14409	12824	12286	13443	21406	16016	15777	18205	21050
ROYAL SUN ALLIANCE			-77	279	378	676	729	1188	1284	706	470	-1053	-413	315	183
SABMILLER			452	547	657	713	867	658	619	569	625	863	988	1314	1450
SAGE GRP	4	6	9	10	17	26	35	43	55	87	121	141	224	168	202
SAINSBURY	666	753	940	1003	1127	1084	1002	1179	1269	959	958	1039	1779	1779	814
SCHRODERS				205	210	215	258	263	253	372	324	65	93	84	206
SCOT & STHN ENERG	160	191	219	222	241	245	293	307	507	720	766	800	1237	827	964
SCOTT & NEWCASTL	309	320	282	327	396	465	533	594	591	596	678	634	1016	572	478
SCOTTISH POWER	298	318	379	417	433	521	777	951	1028	1120	1321	1512	2370	1589	1680
SEVERN TRENT	246	322	375	420	425	542	542	582	675	645	652	690	1057	729	747
SHIRE							4	-1	10	32	116	195	-556	-165	155
SMITH & NEPHEW	164	159	176	199	181	210	226	203	186	172	225	226	383	281	318
SMITHS GROUP	118	105	114	127	138	168	187	225	256	283	314	654	742	513	404
STANDARD CHARTER	308	342	337	545	1033	1244	1453	1566	1595	1202	1914	1207	830	824	855
TATE & LYLE	388	359	311	359	430	479	433	339	337	432	312	301	509	320	353
TESCO PLC	498	591	705	735	825	1009	1091	1038	1360	1360	1634	1856	1846	2532	2797
UNILEVER	2713	2713	2896	2912	3413	3467	3855	5782	3951	3763	3169	4960	4763	5263	3711
UNITED UTILITIES	268	317	340	391	418	431	623	742	884	929	824	861	1386	951	1033
VODAFONE GROUP	299	344	379	420	453	566	684	925	1260	2228	4763	7385	17181	12551	12468
W H SMITH	148	165	171	181	181	67	121	176	156	178	171	254	114	17	114
WOLSELEY PLC	161	121	128	185	242	292	295	315	332	381	460	500	809	566	727
WPP GRP	173	137	106	128	138	151	199	224	264	306	448	630	856	621	665
XSTRATA												89	284	481	1388
YELL GROUP													494	360	403

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.16, FTSE100 Pre-tax income in million GBP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
3I GROUP	37	41	56	65	75	89	106	124	137	119	120	109	266	139	156
ALL & LEICS	199	100	123	204	284	288	306	395	455	500	447	396	704	525	608
AMVESCAP	19	15	13	33	39	50	66	177	161	283	446	280	154	36	-138
ANGLO AMERICAN										1741	2542	3515	2092	1636	2534
ANTOFAGASTA															
ASSOCIAT BRIT FOO	284	332	270	363	382	375	430	850	391	300	247	357	614	457	494
ASTRAZENECA	352	520	102	642	659	619	975	1081	1045	1211	2543	2829	2693	2572	2776
AVIVA	50	50	31	211	402	804	589	568	771	808	-1169	514	-1059	1646	1786
B SKY B GROUP			-188	-76	93	155	257	314	271	-389	-263	-515	-1841	128	480
BAA	247	192	285	322	366	418	407	480	516	377	531	318	832	539	733
BAE SYSTEMS	376	-81	-1201	-237	211	234	425	230	973	459	179	70	-926	233	-232
BARCLAYS	731	486	-242	664	1859	2083	2356	1716	1918	2460	3496	3608	4816	3845	4603
BG GROUP	1051	1469	846	-613	918	690	-237	1251	1227	1202	954	902	1193	1290	1544
BHP BILLITON								576	506	357	553	1432	1819	1790	2467
BOC GROUP	332	294	215	338	253	402	445	445	247	363	457	392	493	352	412
BOOTS GROUP	369	342	405	416	850	508	571	432	170	562	492	596	765	581	428
BP	1120	110	1120	1302	2281	1946	3667	3646	2925	4342	11193	9091	7513	10042	13237
BRAMBLES INDUSTRIES													219	75	98
BRIT AMER TOBACCO						2384	2495	1794	738	1371	1522	2065	3175	1567	1886
BRITISH AIRWAYS	345	130	185	301	327	585	640	580	225	5	150	-200	209	230	415
BRITISH ENERGY															
BRITISH LAND CO	31	33	35	54	59	66	90	102	123	153	86	171	267	186	22
BT GROUP	3075	3073	1972	2756	2662	3019	3203	3219	4295	2942	-1031	1461	4883	1948	2343
CABLE & WIRELESS	594	621	918	1088	844	1341	1418	2184	1822	4024	3393	-4718	-9857	-224	363
CADBURY SCHWEPP	277	306	333	416	479	526	592	987	579	958	756	813	1247	564	642
CAIRN ENERGY															
CAPITA GRP	3	3	4	5	8	9	12	18	27	32	40	53	117	94	117
CARNIVAL										221	210	209	151	748	1038
CENTRICA								175	201	440	462	533	745	864	1043
COMPASS GROUP							114	137	159	190	0	254	562	358	370
CORUS GROUP	254	-55	-149	80	578	1102	451	315	-142	-177	-1271	-462	-607	-255	559
DIAGEO	719	782	795	702	915	876	975	1210	1401	1467	1451	1722	3369	654	1969
DLY MAIL&GEN TST A	33	42	44	67	92	67	86	144	197	202	176	83	158	108	125

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.16, FTSE100, Pre-tax income in million GBP (2/3)

DSG INTERNATIONAL	80	68	75	25	100	102	200	219	231	472	647	282	434	366	337
ENTERPRISE INNS						8	5	13	19	31	44	41	136	173	213
FRIENDS PROVIDENT												-3	-176	260	256
GALLAHER GRP			204	231	161	196	302	337	319	341	340	323	568	379	429
GLAXOSMITHKLINE	1182	1283	1427	1675	1840	1198	2964	2686	2671	2575	6029	4517	8273	6329	6119
GUS	431	458	475	519	563	581	571	624	450	380	310	380	633	692	693
HAMMERSON	71	56	31	40	108	58	70	62	89	95	89	69	137	67	127
HANSON	1242	1299	1286	1016	1346	1275	1806	849	197	316	307	275	411	137	213
HBOS			680	866	975	1101	893	1631	1705	1616	1715	2630	4371	3766	4592
HSBC HLDG			1710	2584	3166	3166	4524	4971	3969	4933	6041	5288	6697	8548	10776
ICI	823	813	-384	374	408	927	498	518	293	503	-87	205	476	85	359
IMPERIAL TOBACCO						348	366	307	325	400	450	494	622	656	688
INTERCONT HOTELS	535	508	501	508	552	599	671	477	834	572	1987	690	785	36	210
INTERNATIONAL POV	250	514	580	677	705	794	718	731	571	452	-156	204	293	-184	148
ITV			35	42	56	73	128	138	159	190	700	-105	-556	39	207
JOHNSON MATTHEY	64	64	74	65	95	102	108	130	131	157	181	157	272	178	131
KAZAKHMYS													185	179	184
Kelda															
KINGFISHER	252	226	205	309	244	302	389	521	629	726	691	691	750	427	671
LADBROKES	299	204	40	62	-230	95	112	203	277	163	196	200	235	171	311
LAND SECURITIES	215	228	233	237	245	238	244	266	293	328	315	364	494	373	-156
LEGAL & GENERAL	81	28	116	181	165	321	1867	871	734	676	573	-149	-505	611	646
LIBERTY INTL															
LLOYDS TSB			43	301	504	1900	2505	3162	3015	3621	3886	3534	3917	4348	3493
MAN GROUP					78	81	58	59	88	108	-36	159	193	234	339
MARKS & SPENCER	616	589	737	852	924	966	1102	1168	546	418	146	336	1048	782	745
MORRISON SUPERMI	50	63	84	98	116	127	136	151	175	189	219	243	420	320	297
NATIONAL GRID	386	498	533	580	611	617	591	575	1285	1501	625	-462	602	1362	1152
NEXT	15	25	29	74	107	142	159	184	167	195	218	266	457	353	421
NORTHERN ROCK							157	149	203	215	250	295	490	387	431
OLD MUTUAL										1488	1097	81	726	485	934
PARTYGAMING															
PEARSON	185	180	151	137	298	365	357	129	629	480	284	-438	-38	152	171
PERSIMMON PLC	29	23	10	19	25	23	33	50	61	82	104	167	386	342	460

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.16, FTSE100, Pre-tax income in million GBP (3/3)

PRUDENTIAL			442	605	605	1297	1614	1169	1827	1551	1627	144	-524	1178	1566
RECKITT BENCKISER	228	233	169	260	160	418	335	303	228	53	447	498	819	660	770
REED ELSEVIER			137	534	620	736	806	346	567	275	192	275	289	519	562
RENTOKIL INITIAL	75	95	122	147	177	215	318	417	491	541	401	374	586	397	298
REUTERS GROUP	318	340	383	440	510	599	701	626	580	632	657	158	-741	49	437
REXAM	101	110	147	212	226	180	-190	179	182	187	60	229	-59	5	195
RIO TINTO	724	428	537	435	922	1424	1108	1210	910	1254	1657	892	876	1282	1963
ROLLS-ROYCE GROU	174	45	-190	76	101	175	-28	276	325	360	166	192	158	180	306
ROYAL BK SCOTL GR	234	51	21	265	532	602	695	695	1001	1211	3373	4275	7157	6159	6917
ROYAL DUTCH SHELL-A						7976	10867	9298	2405	8974	15888	13809	11468	13573	17682
ROYAL SUN ALLIANCE			-130	222	316	615	648	1110	1223	618	277	-1221	-1633	215	110
SABMILLER			376	450	505	540	606	462	441	485	474	588	514	851	1198
SAGE GRP	5	7	9	10	14	22	30	38	48	74	109	121	190	151	181
SAINSBURY	518	627	733	369	809	712	609	719	888	509	434	571	1032	1032	15
SCHRODERS				196	195	197	239	245	232	324	275	-8	28	66	191
SCOT & STHN ENERG	95	123	146	164	169	195	205	247	293	526	550	586	953	607	785
SCOTT & NEWCASTL	217	221	183	222	264	157	372	422	324	262	-272	347	443	359	126
SCOTTISH POWER	163	260	297	351	375	405	558	640	644	1159	380	-939	1078	792	-29
SEVERN TRENT	249	264	270	281	268	373	367	374	350	274	206	216	285	254	217
SHIRE							3	0	9	21	77	81	-791	-298	57
SMITH & NEPHEW	132	132	155	171	-6	177	179	152	135	182	261	194	267	230	178
SMITHS GROUP	120	120	102	105	117	138	170	192	218	238	256	-112	416	217	300
STANDARD CHARTER	138	189	202	401	510	661	870	870	703	507	949	797	842	944	1178
TATE & LYLE	213	231	190	223	274	311	276	159	165	260	-228	159	289	224	197
TESCO PLC	436	546	581	436	551	675	750	728	842	842	1054	1201	1201	1600	1962
UNILEVER	1782	1739	2197	2427	2581	2757	3111	2951	2871	3012	3224	3589	3728	3865	3521
UNITED UTILITIES	215	230	247	269	284	273	284	467	456	459	485	308	507	338	370
VODAFONE GROUP	248	282	322	363	371	475	539	650	935	1349	-8095	-13539	-9602	-5047	-4702
W H SMITH	84	118	114	83	101	-195	51	257	134	140	114	130	52	-135	68
WOLSELEY PLC	121	80	91	121	202	245	243	264	274	306	302	291	597	426	559
WPP GRP	90	56	23	54	85	114	153	177	213	255	366	411	193	350	457
XSTRATA												17	123	246	950
YELL GROUP													-82	-44	154

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.17, FTSE100 Shareholder equity in million GBP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
3I GROUP	1192	1268	1330	1851	2049	2529	2897	3489	3604	5174	4973	3945	4640	3395	3637
ALL & LEICS	723	803	890	1016	1206	1410	1556	1678	1853	1752	1657	1765	2769	1694	1776
AMVESCAP	24	15	18	40	67	93	112	-21	331	437	2103	2281	3676	2232	1864
ANGLO AMERICAN										9996	10275	9318	10846	12481	13649
ANTOFAGASTA															
ASSOCIAT BRIT FOO	1637	1637	1708	1879	2090	2258	2453	2917	2997	2674	2763	2881	4627	3272	3469
ASTRAZENECA	296	418	55	1602	1685	1861	2034	2160	2514	6367	6293	6791	7452	8065	7872
AVIVA	775	1034	1501	2529	3173	4074	3902	4486	9039	9567	13633	11872	15567	6554	8320
B SKY B GROUP			-1508	-1579	-1486	-768	-608	-422	-301	-625	646	1061	-458	-108	90
BAA	1876	1880	2047	2543	2845	3167	3461	3739	4234	4517	4839	4807	7230	5018	5501
BAE SYSTEMS	2534	2697	1780	1510	876	928	1693	1736	2020	7360	7152	6638	9138	5591	4724
BARCLAYS	6104	5739	5279	5312	6161	7027	7267	7620	7923	8483	13187	14508	24480	16473	17417
BG GROUP	19164	19764	19933	19124	19181	18919	17800	8865	9976	8833	3550	3406	5352	3925	4570
BHP BILLITON								315	2768	2866	3288	7870	8241	7352	7665
BOC GROUP	1171	1276	1388	1489	1510	1656	1819	1893	1841	2013	2274	2306	2648	1735	1675
BOOTS GROUP	1271	1432	1479	1609	2007	2202	1621	1639	1780	1852	1976	2018	3160	1881	1609
BP	10989	10642	9979	9748	11057	11814	12795	14112	25239	26748	48528	51611	46296	46474	41854
BRAMBLES INDUSTRIES													578	356	307
BRIT AMER TOBACCO						6323	6299	5845	64	4821	5178	4754	8348	4483	5220
BRITISH AIRWAYS	1232	1278	1214	1827	2090	2494	2984	3321	3355	3147	3215	2016	3252	2218	2491
BRITISH ENERGY															
BRITISH LAND CO	829	689	776	1307	1580	1869	2337	2932	3118	3450	4005	4108	6526	4669	5579
BT GROUP	10572	11754	12218	13026	11997	12678	11116	10785	14940	15795	14069	-358	4175	3094	3851
CABLE & WIRELESS	2236	2363	3018	3275	3339	3259	3749	3098	4571	8096	15380	9024	3396	1744	1818
CADBURY SCHWEPP	768	876	1084	1365	1499	1316	1287	1669	1843	2240	2633	2880	4862	2950	2859
CAIRN ENERGY															
CAPITA GRP	3	8	9	7	8	9	11	5	40	115	247	281	510	342	360
CARNIVAL										1353	1628	1833	1877	8441	8605
CENTRICA								1311	872	967	1193	1502	3619	2537	2352
COMPASS GROUP							-558	-871	1364	1406	2798	2789	4452	2579	2482
CORUS GROUP	4050	3911	3720	3754	4087	4723	4757	4622	4346	4346	3495	3061	4382	2797	3258
DIAGEO	3403	3472	3571	3729	3947	4286	4152	6749	4629	4026	4711	5187	9147	4954	3692
DLY MAIL&GEN TST A	315	340	384	405	436	381	295	245	110	183	347	300	460	338	411

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.17, FTSE100, Shareholders equity in million GBP

DSG INTERNATIONAL	326	333	290	285	326	361	511	633	755	977	1495	1581	2712	1428	1433
ENTERPRISE INNS						54	72	106	131	237	252	350	1091	1082	1354
FRIENDS PROVIDENT												2225	3028	1965	2444
GALLAHER GRP			678	684	771	825	295	-541	-501	-492	-550	-323	-583	-307	-251
GLAXOSMITHKLINE	2732	3208	3572	4546	5043	91	1225	1843	2702	3142	7711	7517	10595	7720	5925
GUS	2846	3048	3298	3617	3541	3758	2859	2311	2409	2466	2423	2417	4019	2847	2810
HAMMERSON	1383	1060	742	860	1061	1065	1101	1253	1399	1694	1937	2049	3285	2170	2581
HANSON	2834	3325	4224	3953	4598	3623	2535	877	1539	1847	2417	2721	4283	2722	2725
HBOS			3178	3849	4501	6509	6881	7215	7149	6254	6833	11468	22168	15368	17623
HSBC HLDG			8011	9334	10790	10790	15187	16442	16551	20646	28162	30392	36370	49673	53013
ICI	4671	4792	4286	3983	3736	3924	3606	148	149	244	-216	-283	803	450	721
IMPERIAL TOBACCO						425	612	-1077	-1661	-1476	-1287	-1122	-145	76	118
INTERCONT HOTELS	2928	3615	3343	3413	3582	3697	3911	3769	2577	3313	5379	5449	8439	2554	1977
INTERNATIONAL POV	1777	2027	2314	2643	2548	2666	1935	1951	2487	2283	1683	1825	2801	1523	1825
ITV			44	40	-144	-489	-558	-871	-882	-798	9732	2076	2581	1685	3407
JOHNSON MATTHEY	291	210	333	372	380	451	465	493	562	755	851	814	1415	862	861
KAZAKHMYS													1041	312	370
Kelda															
KINGFISHER	975	1082	1158	1091	1219	1289	1433	1771	2251	2629	2983	2983	7335	4404	4922
LADBROKES	2493	2853	2513	2164	1904	1791	1728	1679	1463	2410	2500	2689	3977	2444	2551
LAND SECURITIES	3371	2800	2544	3453	3534	3525	4037	5002	5470	5782	6151	6037	8792	6038	6637
LEGAL & GENERAL	287	241	262	324	332	426	2074	2438	2700	3085	3187	2762	5128	3260	3376
LIBERTY INTL															
LLOYDS TSB			1638	1740	1932	4209	5074	6254	7475	8693	9737	10760	12835	9624	9977
MAN GROUP					243	280	288	317	317	250	433	532	1534	1149	1324
MARKS & SPENCER	2426	2669	2950	3324	3715	4120	4529	5066	4884	4905	4645	3081	4802	2454	521
MORRISON SUPERMI	188	323	372	426	478	546	615	693	782	877	993	1114	2060	1317	4018
NATIONAL GRID	935	1152	1404	1695	1968	1102	1389	889	1744	2909	3476	3197	1113	1213	1359
NEXT	159	167	199	243	292	359	421	490	543	607	500	547	452	221	227
NORTHERN ROCK							650	675	758	884	916	1063	1947	1388	1542
OLD MUTUAL										3513	3618	2470	4485	2863	3245
PARTYGAMING															
PEARSON	706	975	1068	997	1036	833	389	153	1048	1321	4044	3588	5374	2952	2603
PERSIMMON PLC	89	130	129	145	198	202	270	293	321	364	418	793	1509	1132	1387

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.17, FTSE100, Shareholders equity in million GBP

PRUDENTIAL			504	788	788	1747	2757	2783	3249	3424	4020	3950	5905	3278	4281
RECKITT BENCKISER	431	514	613	700	686	900	777	910	967	944	1116	1281	1934	1470	1676
REED ELSEVIER			1430	1714	1419	2075	2071	1494	2450	3041	1855	2659	2917	2267	2434
RENTOKIL INITIAL	105	114	144	108	175	230	-130	-36	189	457	-527	-647	-1140	-619	-570
REUTERS GROUP	551	719	869	657	715	947	1260	1661	372	601	1102	1109	799	286	412
REXAM	310	390	470	642	655	701	655	690	489	667	661	961	1558	803	786
RIO TINTO	2500	2533	2899	3190	3448	4510	4413	4460	4033	4407	4913	4945	5000	6143	6871
ROLLS-ROYCE GROU	1164	1122	899	1225	1242	1345	1303	1443	1705	1988	2063	2068	3276	2141	2303
ROYAL BK SCOTL GR	1507	1600	1780	1897	1936	2164	2510	2510	2953	4202	23116	26785	43554	28088	31865
ROYAL DUTCH SHELL-A						37970	37177	36452	54962	34714	37734	38975	40063	44583	46178
ROYAL SUN ALLIANCE			1548	2012	1756	2640	6341	7333	7269	6484	6323	4770	4899	3001	2672
SABMILLER			961	1124	1091	1044	1498	984	1320	1446	1680	2632	4136	3773	4185
SAGE GRP	4	2	5	2	0	-16	-23	-46	-80	75	454	539	978	716	732
SAINSBURY	1672	2641	3029	3040	3289	3534	3671	4112	4644	4742	4911	4848	7907	7907	4374
SCHRODERS				675	731	849	941	1046	1171	1370	1161	1113	1694	1040	1103
SCOT & STHN ENERG	527	581	639	713	778	866	882	943	1577	1664	1833	1706	2342	1728	1902
SCOTT & NEWCASTL	1253	1331	1423	1675	1839	2060	2208	2240	2349	2321	2067	1970	4988	2900	2733
SCOTTISH POWER	553	676	800	942	1106	1208	1523	1708	1946	6364	5893	4731	7330	4691	3982
SEVERN TRENT	1828	1830	1980	2139	2290	2511	2530	2280	2446	2547	2609	2294	3505	2217	2198
SHIRE							25	14	51	679	804	3394	4424	2309	2232
SMITH & NEPHEW	190	213	282	348	446	405	435	461	486	552	330	405	833	641	727
SMITHS GROUP	300	309	330	267	212	226	212	240	222	352	490	866	1559	863	1123
STANDARD CHARTER	990	967	1004	1297	1530	1970	2339	2553	2820	3366	4261	5123	4887	4722	4606
TATE & LYLE	353	484	630	710	786	909	998	993	931	1101	1100	1043	1599	989	1018
TESCO PLC	2160	2447	2753	2749	3104	3588	3890	3876	4382	4382	5356	5530	5530	7945	9006
UNILEVER	2802	3405	4487	4611	5235	5514	5092	7337	3267	3892	4160	3478	2842	3128	2850
UNITED UTILITIES	1648	1698	1834	2051	2246	1992	2142	2046	2305	2517	2830	2536	4004	3083	3117
VODAFONE GROUP	418	452	596	698	817	1022	770	283	815	140833	145393	130573	203352	111924	99317
W H SMITH	252	435	482	476	485	393	358	511	540	601	626	945	433	256	-111
WOLSELEY PLC	317	350	343	423	558	635	782	842	936	1095	1309	1496	2499	1774	1902
WPP GRP	-265	-289	-253	-162	-110	-62	22	-25	188	318	3410	3600	5918	4020	3915
XSTRATA												374	2475	4529	5566
YELL GROUP													-196	890	884

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Table A 3.18, FTSE100 Long term debt in million GBP

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
3I GROUP	626	705	1206	825	825	902	832	1279	1213	1445	1529	1634	1938	1421	1623
ALL & LEICS	2300	2350	2373	2433	2222	4867	3431	1594	1716	3061	3421	4151	7633	6050	7376
AMVESCAP	59	59	78	69	39	36	28	228	686	659	960	844	959	730	683
ANGLO AMERICAN										1518	2356	1778	3895	4079	3974
ANTOFAGASTA															
ASSOCIAT BRIT FOO	9	161	159	186	158	159	163	157	157	157	160	157	599	382	357
ASTRAZENECA	1711	1724	904	561	526	550	494	522	460	457	417	441	219	185	562
AVIVA	483	396	411	420	1133	523	521	472	884	942	1092	1916	2869	3451	3137
B SKY B GROUP			924	1224	1739	800	681	676	583	715	1412	1768	2404	1152	1076
BAA	515	794	791	756	715	1099	1401	1693	1911	1787	1783	2533	4711	3551	4116
BAE SYSTEMS	925	1036	1386	1337	1142	1093	691	1097	898	1155	1063	2119	3080	1749	1665
BARCLAYS	1467	1982	4619	6187	5341	5257	4680	5743	5532	7522	15698	15443	31941	41879	35525
BG GROUP	1034	2513	3224	3625	2753	2870	2421	2003	3199	5333	233	463	1111	539	762
BHP BILLITON								864	673	621	936	4526	3691	3848	2977
BOC GROUP	356	530	611	659	855	668	767	1001	992	979	891	1020	1763	1085	929
BOOTS GROUP	266	223	370	268	224	108	237	217	187	449	413	402	571	342	550
BP	5207	6507	7728	7144	5705	4760	3475	3211	6594	5960	9764	8555	7952	7876	7047
BRAMBLES INDUSTRIES													306	864	782
BRIT AMER TOBACCO						3050	2619	1780	2135	4643	5068	4642	7435	6089	5955
BRITISH AIRWAYS	1624	2157	3175	3721	4539	4551	4063	4968	6121	6509	6672	6834	9890	5146	4045
BRITISH ENERGY															
BRITISH LAND CO	745	1013	946	1061	1192	2126	2214	2315	2722	3713	3521	3760	6743	4555	5784
BT GROUP	4468	3768	3386	3199	3361	3322	2693	3889	3386	5354	18775	16245	21266	12428	8091
CABLE & WIRELESS	581	777	934	1167	1340	1689	1823	4176	4801	5484	2364	2022	1139	875	801
CADBURY SCHWEPP	408	542	462	386	404	864	797	673	499	311	417	1399	2460	3575	3586
CAIRN ENERGY															
CAPITA GRP	0	0	0	0	0	0	0	1	0	4	4	73	236	145	145
CARNIVAL										130	697	959	1677	4234	3435
CENTRICA								19	91	153	126	598	1262	781	660
COMPASS GROUP							584	987	1102	1177	2699	2586	2906	2383	2524
CORUS GROUP	258	475	504	459	386	534	618	687	825	852	1766	1612	2299	1280	1407
DIAGEO	878	1493	1548	1366	1113	776	622	3022	2925	3429	3751	4029	5690	3170	3316
DLY MAIL&GEN TST A	328	353	352	243	234	237	411	520	453	598	814	955	1474	873	672

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.18, FTSE100, Long term debt in million GBP (2/3)

DSG INTERNATIONAL	170	166	225	217	216	316	200	199	203	557	462	303	870	298	318
ENTERPRISE INNS						23	79	84	126	287	418	890	2332	1276	3509
FRIENDS PROVIDENT												269	887	797	1184
GALLAHER GRP			36	61	48	41	25	1120	1180	825	1381	2336	3843	2429	2179
GLAXOSMITHKLINE	100	100	137	212	272	1466	1699	1841	1804	1260	1751	2108	4978	3651	4381
GUS	33	26	12	6	6	6	541	513	513	1162	670	806	2660	1321	1676
HAMMERSON	801	749	888	680	572	539	682	620	1033	976	1429	1529	2895	1523	1799
HANSON	4258	4880	5069	7221	5038	4129	3068	1031	1007	1006	1634	1599	1565	1466	1058
HBOS			3301	3957	6073	7689	7632	6594	6718	7861	8302	18406	44273	40938	51527
HSBC HLDG			4600	6380	7432	7432	8784	11372	12429	15745	17985	16719	21379	60238	82977
ICI	1744	1858	1984	1717	1522	1332	1186	2975	2954	2252	2231	1705	2194	1353	1117
IMPERIAL TOBACCO						0	0	1275	1135	1339	819	1385	5732	3427	3208
INTERCONT HOTELS	1480	1336	1374	1428	1199	1177	1181	1097	1886	2101	1213	1019	992	988	1156
INTERNATIONAL POV	371	570	577	1016	645	634	1938	2440	2559	2223	1090	1428	927	904	3251
ITV			36	57	250	516	536	936	896	1136	1887	20	20	54	852
JOHNSON MATTHEY	62	50	70	61	52	51	82	147	115	70	78	186	721	455	412
KAZAKHMYS													22	480	445
Kelda															
KINGFISHER	369	233	210	385	346	463	194	252	678	541	792	792	2340	744	772
LADBROKES	1590	1424	1419	1167	1351	1051	771	475	814	1192	1247	1239	2198	1409	1322
LAND SECURITIES	1276	1521	1453	1573	1570	1763	1833	1651	1567	1530	1727	1987	4186	1996	2857
LEGAL & GENERAL	303	260	205	249	306	430	413	425	279	1204	1460	1100	2386	1115	1787
LIBERTY INTL															
LLOYDS TSB			701	708	899	4511	4561	4862	4800	7967	9821	14418	21196	36376	15872
MAN GROUP					270	587	665	326	326	264	11	277	756	521	679
MARKS & SPENCER	549	399	446	599	569	498	424	108	740	746	650	2047	2647	2293	1899
MORRISON SUPERMI	60	61	60	60	0	75	75	75	75	0	0	0	0	0	990
NATIONAL GRID	0	0	0	650	350	1096	804	1321	1637	3006	3181	7001	12233	11542	10963
NEXT	90	2	1	1	0	0	0	0	1	0	0	0	0	301	301
NORTHERN ROCK							1579	1625	1576	2510	2764	2926	7056	5033	8609
OLD MUTUAL										271	2413	1095	3328	1572	1169
PARTYGAMING															
PEARSON	437	236	337	335	359	476	556	609	2562	2286	2715	2616	2797	1349	1714
PERSIMMON PLC	1	1	1	14	19	20	123	66	85	126	118	451	520	297	265

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Cont. table A 3.18, FTSE100, Long term debt in million GBP (3/3)

PRUDENTIAL			585	587	587	756	558	1525	1203	2298	1775	2436	4223	3304	3240
RECKITT BENCKISER	592	605	357	443	417	659	631	594	665	620	483	460	673	319	118
REED ELSEVIER			947	579	749	930	717	689	1130	873	620	2270	2502	2105	1971
RENTOKIL INITIAL	0	1	1	1	0	2	610	441	342	288	922	1145	2321	1398	1139
REUTERS GROUP	19	20	19	15	22	34	22	18	4	261	288	338	568	406	329
REXAM	313	240	243	231	213	436	153	67	441	362	2007	743	2140	1021	1027
RIO TINTO	1379	1321	1360	1338	406	1421	1400	754	1008	906	1028	1768	1814	2356	1822
ROLLS-ROYCE GROU	198	367	212	392	385	408	403	249	540	1271	1058	1104	1671	1197	1364
ROYAL BK SCOTL GR	1107	1136	1122	1569	4642	5182	3702	3702	4940	5891	16260	18676	32429	25639	29955
ROYAL DUTCH SHELL-A						4747	3614	3508	6032	3714	2690	1271	4547	5569	4696
ROYAL SUN ALLIANCE			155	359	450	316	761	551	449	1286	1166	1868	1275	1100	1296
SABMILLER			500	579	515	435	385	406	523	198	678	1476	743	1894	1379
SAGE GRP	0	0	0	0	1	18	18	41	90	87	78	226	247	171	199
SAINSBURY	726	571	705	602	659	617	737	925	781	961	972	1197	2924	2924	1704
SCHRODERS				10	62	39	50	51	49	238	0	98	126	45	0
SCOT & STHN ENERG	232	232	116	116	0	132	149	149	706	806	802	1071	1765	1379	1652
SCOTT & NEWCASTL	256	261	267	333	346	327	401	510	481	1228	1511	942	5295	1775	1601
SCOTTISH POWER	284	284	142	142	142	443	695	1032	1685	4335	4887	5362	7550	4661	5341
SEVERN TRENT	83	481	609	743	763	726	902	1001	1225	1475	1707	1980	3219	2378	2494
SHIRE							0	0	0	79	85	270	399	206	0
SMITH & NEPHEW	117	114	23	28	18	11	13	15	13	20	187	163	264	100	144
SMITHS GROUP	7	6	5	73	73	66	93	86	71	67	218	894	1048	679	447
STANDARD CHARTER	1230	1215	1393	1471	1780	2002	2146	2170	1846	2847	3695	4973	6228	4928	4076
TATE & LYLE	472	561	527	523	662	760	928	890	787	632	654	623	858	512	783
TESCO PLC	364	648	640	852	888	570	588	792	1218	1218	1824	2741	2741	4346	4511
UNILEVER	1759	1689	1684	1473	2065	2194	2148	1729	1609	1152	8153	8689	7117	5994	4997
UNITED UTILITIES	259	491	657	755	745	1044	1009	1466	2157	2202	2842	3213	5944	4387	4497
VODAFONE GROUP	1	4	4	2	140	140	523	643	1137	6038	10772	12584	20822	12224	11613
W H SMITH	194	100	71	97	194	147	89	42	30	28	26	63	2	2	46
WOLSELEY PLC	73	62	21	200	215	216	216	156	188	191	405	677	793	843	855
WPP GRP	459	503	489	322	291	233	167	88	194	367	795	1228	2258	1229	1319
XSTRATA												293	455	1560	1265
YELL GROUP													3613	1156	1070

Source: Standard & Poors (2005), Worldscope (2006), Deutsche Bank (2002, 2004, 2005), Annual reports, and F20's.

Appendix 4: Interview questionnaire and transcript

Appendix 4.1: Interview questionnaire

Interview questionnaire

Strategy as a Quest for Value

Tord Andersson (University of Hertfordshire PhD student)
Professor Colin Haslam (Supervisor)

In recent years European companies have been influenced by the need to generate value for shareholders especially from the asset management industry and also consultancy companies that are installing shareholder value metrics and governance practises into European companies.

Could you inform us as to:

1. When your company first adopted value based management systems to enhance shareholder value?

2. To what extent would you say this was driven internally or externally in the first instance?

3. How did you make senior managers and employees aware of the need to focus on shareholder value?

Many companies in Europe have installed shareholder value metrics to measure performance for shareholder value both strategically and operationally. The most common of these in Europe is EVA™ but others such as Cash Flow Return on Investment (CFROI) are also used.

1. Could you tell us which financial performance metric is employed to summarise overall value generating performance for shareholders in your company?

2. Are there any weaknesses in employing one main method and if so do you tend to also supplement this measure with others?

3. Would you say that these metrics are now well understood by senior managers and employees as being central to the way in which resources are managed within your organisation?

4. To what extent would you say that your company operates a "hybrid" of financial and non-financial measures that are unique to your own needs and which are then translated into more general financial measures?

It is argued that financial metrics alone cannot deliver shareholder value and that firms in Europe are supplementing their financial metrics within non-financial indexes of performance such as physical targets.

1. Has your company employed physical targets in addition to financial targets?

2. Could you possibly illustrate one or two examples of key physical targets employed in your company?

3. Do you feel that it is important to translate financial into physical targets?

4. Have the priorities changes between physical and financial targets in the last fifteen years?

During the 1980s industry analysis was encouraged through the work of Porter and others in relation to strategy. The transformation of product market insights into financial metrics are of particular interest for us.

1. What framework is used for strategic (industry) analysis?

2. How are insights from the strategic analysis transformed to the financial metrics chosen?

3. If economic numbers, such as GDP is used, how it is transformed into the financial metrics chosen?

During the 1980s European companies were particularly interested in benchmarking their performance with close competitors so as to learn and adapt to intensified competition.

1. Do you carry out reviews of competitors in the same line of business?

2. Have these comparisons impacted on your own strategic choices for example:

   -In relation to your product development and position in the product market
   -Internal resource management

3. Are there any key financial performance yardsticks that you use when comparing your own company with that of competitors?

Once you have identified strengths or weaknesses in performance could you briefly describe of how you would feed this information into the strategic planning process to set new or modified objectives.

Most European companies are incorporating shareholder value metrics into the reward packages for senior managers. For example 75 % of European companies use Earnings per Share (EPS) to help structure senior manager bonuses.

1. Has your company adopted shareholder value performance metrics into the remuneration packages of its senior managers?

2. What are the key financial metrics used to help decide managerial bonuses?

3. Is your company executing share buy backs to finance share options for senior managers?

4. Over the last 5 to 10 year have the remuneration schemes with managers changed substantially?

Finally

What do you consider to be the major challenges facing your company especially in relation to sustaining value growth for investors?

We do appreciate your help and time given in support of this research project.

Tord Anderssson

Professor Colin Haslam

Appendix 4.2: Interview transcript with Ericsson

The semi structured interview was done at Ericsson headquarter the 21st of June 2006 with three persons, representing Financial reporting (person A), Strategic planning (person B) and Investor relations (person C).

Question 1

Researcher: When did your company first adopted value based management systems to enhance shareholder value?

Person A: Can you elaborate a bit about that? What do you mean?

Researcher: Put it in this way. In recent years a lot of European companies have adopted value based management systems, such as Economic Value Added framework, for creation of shareholder value. But there are others as well.

Person A: The EVA type?

Researcher: Yes, that type of more of well defined/structured system, normally delivered by consultants, to enhance shareholder value. Or I could rephrase the question as, how do you assure that specific strategic moves that you do, from a financial perspective, create shareholder value?

Person A: Specifically we don't use EVA.

Researcher: Do you use any other system, or frame work?

Person A: We have, I suppose a more traditional accounting structure, and our measurements are very much based on the matrix organisation we have. We focus of course on the income statement, balance sheet and the cash flow in all dimensions.

Person C: I think here also, that you should add the long term incentive plans, where we have certain goals within that at the end would create value for our stakeholders in a broad sense.[1].

[1] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C.

Person A: But that is only the derivation of the income statement, anyway, but that particular calculation. We have short term incentive plans, long term incentive plans.

Person A: We have financial targets, and non-financial targets. I read in the questionnaire that you asked about physical targets, and is not sure what it means, but we divide it in financial and non-financial.

Question 2

Researcher: It seems that the second question is not applicable (as you have not implemented a value based system).

Researchers note after the interview: The question 2 was "To what extent would you say this was driven internally or externally in the first instance?" and as such the question is related to question 1, i.e. the implementation of value based management systems. Sine no system has been implemented question 2 was omitted.

Question 3

Researcher: How did you make senior managers and employees aware of the need to focus on shareholder value? You talked about incentive plans, but is there other ways of increasing their awareness.

Person A: Just a general opinion that a successful Ericsson is god for us, it's good for our customers and it's good for our shareholders. That is the general part of everything.

Person B: Exactly, so we talk about the total picture here.

Person A: But poor performance for our company is not good for shareholders.

Researcher: But then how do you ensure that you will be able to deliver good value to the shareholders? How do you ensure that you can deliver a good performance?

Person B: We have the long term strategy planning, which then is translated into short term target setting, which is then followed up as a performance. So we think that we know where we are going in five, three years, then we also set the more KPI's[2] and so on a one year target level. And then we follow up that, so that is a clear connection between the long term objective we have and the short term targets.

[2] Key Performance Indicator.

Person C: And outside it we have the balanced scorecard measurement

Researcher: You have a balanced scorecard?

Person A: Yes, we have a balanced scorecard in our operational dimension

Person B: And that is divided into five perspectives, which one of them is financial and the other four are non-financial, with market position or competitive position, its employees, its customers and internal efficiency.

Person C: And also, maybe we should also add to this that some research been done in the area relating to employees and customers in form of surveys3.

[3] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C

Person A: Those measurements are in the scorecard for operational excellence.

Question 4

Researcher: Could you tell us which financial performance metric is employed to summarise overall value generating performance for shareholders in your company?

Person A: Do you mean which are the most important financial key ratios?

Researcher: Yes.

Person A: I would say; orders booked, orders growth, net sales, sales growth, we have our operating margin of course, derived from our gross margin and our performance in the operating expenses. We have capital ratios, like cash flow and what we call DSO[4], our performance in the accounts receivable, and we have of course measurement for inventory turnover days. We have also payable days. We have different purpose for different objects in our organisation. We need to balance what they can achieve in the income statement in the short term and what they have to achieve in the capital structure.

[4] Days of Sales Outstanding

Question 5

Researcher: I would call this a more traditional framework in your approach in creating shareholder value. Do you see any weaknesses in employing this type of method compared to the EVA method?

Person A: We had a glance on the EVA some years back now and we noted the calculation on the interest rate (WACC), we use internally to express/show internally the awareness of the cost of capital. And I think that is one part of it that we use, but I think you are right in that we in the financial area are more traditional. We have a quite sophisticated measurement in what we call consolidated operational dimensions, I would say, but the calculations themselves are traditional. But that is just one part of the balanced scorecard, the financials, we have four more perspectives. And we have targets for.

Person B: I also would argue that the way we drive the strategic work is not traditional, since we involve so much employees in the set up. The top management are very much involved in creating the strategy and creating an understanding on why we have to go a different way. Which means that we have a very forward understanding when it comes to implementation, which I think is quite unique, which of course then have an impact on the performance when people really understand where and when to go in that direction.

Person C: I really want to mention that our financial objectives include various targets as day's sales outstanding, inventory turnover and payable days. As such we look on the components of ROCE rather than ROCE itself, such as operating margin[5].

[5] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C

Person A: Yes, and capital turnover.

Person C: But I mean we are still measuring its components, but we don't have an external communicated specific target.

Question 6

Researcher: Would you say that these metrics are now well understood by senior managers and employees as being central to the way in which resources are managed within your organisation?

Person B: Yes, absolutely, that's part of the game and the right way to get people to do it, and then understand why.

Person A: We will focus on pretty easy thing, but otherwise it is not, they are not able to launch it further down in the organisation and we, there is a point of having some consistency over years, because change it every year is not feasible.

Person C: And then we should also mention that we have specific Long Term Incentive goals on the corporate level, which may be on a too high level for all units and thus not really motivating people in our organisation[6].

[6] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C.

Person B: So, we want the organisational understanding.

Person A: Then it is of course expressed in our financial model.

Person B: Keep it simple, that's what we try to do.

Person A: It is no meaning to measure things that they can really have influence on. That's all the work regarded, what they can or cannot.

Question 7

Researcher: This question is more related to the balanced scorecard. To what extent would you say that your company operates a "hybrid" of financial and non-financial measures that are unique to your own needs and which are then translated into more general financial measures?

Person A: Our objectives in the balanced scorecard are unique for us, of course.

Person B: And they vary also over the years, depending on where we have problems, where we have to set the focus. Then with the strategic work, we develop some of the core areas, things that the company focuses on during the coming years, which is an issue for us.

Researcher: But if I understood it right you have, in your balanced scorecard, employees as a separate dimension, which is not normally the case if one follows Kaplan and Norton approach, because they have employees as an overall objective. What is the specific reason for choosing employees as a separate dimension?

Person A: I thought that employee was a quite normal dimension in balanced scorecard, but maybe I have not read Kaplan and Norton well enough.

Person B: I mean that they are, the employees to have to do the whole thing, so of course we have to focus on them.

Researcher: But if you read the text books on balanced scorecard employees is not an obvious dimension, if understand it correctly. But I will check this!

Person A: We don't have once scorecard for Ericsson, we have one scorecard for each operational unit and we have divided the global area into 24 market units, each one have their own scorecard.

Researcher: You have a structure for the scorecard, but they choose the metrics themselves.

Person A: More or less, there are some given. Let's say that the financials is given by us on the corporate. That is what we would measure for our purpose.

Person C: When it comes to employees satisfaction, we have of course our annual measure on that. Everyone tries to participate in the "dialogue" survey since it is also part of manager's incentive plans[7].

[7] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C

Person A: Something's is measure annually, something's maybe several times a month.

Question 8

Researcher: Has your company employed physical targets in addition to financial targets?

Person A: Yes, but we call it non-financial targets.

Researchers comment: Long pause.

Question 9

Researcher: Could you possibly illustrate one or two examples of key physical targets employed in your company?

Person B: We have for instance the dialog result, the different index, the human capital index/empowerment index, that's a way of aggregation of different parts of the employees satisfaction measurement. That is calculated as an index, which is part employees dimension in the balanced scorecard. And we have the same in customer satisfaction.

rson C: We have also targets as technical leadership, maintain investment grade and best-**class** operating margins.[8]

he words was initially lost due to low voice and tape noise, but has been added after discussion with person C

esearcher: Could you elaborate on that.

rson A: Delivery precision for instance. I'm not the right man to talk about R&D, but the **ogress** in R&D is an objective of course.

esearcher: But are there some of these non-financial targets that are very, very important, **at you** look on? Which you consider that are of significant importance?

erson B: They are all of important, of course, it is a balanced scorecard, so we are dependent **n each** other. And they vary as we said from year to year, depending on where the focuses **re right** now, where we have to improve the most.

esearcher: So it is more time and situation dependent?

erson B: Well, again everything is important when it comes to the level that it is included in **he balanced** scorecard. There are so many objectives that you can have, but the one we have **chosen** is important of course.

Question 10

Researcher: Do you feel that it is important to translate financial into physical targets?

Person B: Or the other way around.

Researcher: Could elaborate on how it is done and why it is important.

Person B: But the strategies we have will of course have a financial consequence. So, you **could** say that the financial is some sort of lagging indicator that is the consequence of the **strategies** that we have and the things you do. But also when you see that this is not good

enough, of course, we turn it around and say that this financial we must obtain or reach, what that means, but we have to do that. So we always look it from both directions.

Question 11

Researcher: Have the priorities changes between physical and financial targets in the last teen to fifteen years?

Person A: We did not use balanced scorecard fifteen years ago, so I think that the balance is better now.

Researcher: When did you introduce balanced scorecard?

Person A: It was on own initiative down in the organisation maybe teen years back. Something like that. More and more it is corporate driven and now we have a kind of template to use and we have organisation to use that.

Researcher: When did you introduce that template? Or the corporate way of it?

Person C: I think we had that for some time, but the focus has been more or less pronounced on financial targets over time. During the financial crisis the focus was more on financial targets due to survival[9].

[9] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C.

Person A: But it was not really expressed in all parts of the matrix, maybe for the big business units they had it teen years back. But they had their own vision on how to do it and I know that Mobile Phones had it. But maybe they where the most early.

Person B: Then they done it more on a one company approach.

Person A: You can have a corporate unit that keep operational development and expenses and that kind of thing.

Person C: Yes, also maybe you can have long terms objectives as technical leadership, maintain investment grade, best-in-class operating margin through the use of operational excellence .[10]

[10] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C

Person B: And the short term of course.

Question 12

Researcher: Over the past 15 to 20 years there has been an increasing interest in the transformation of product market insights into financial metrics are of particular interest for us. What framework is used for strategic/industry analysis?

Person B: What we do is that, instead of like Porter scan which look on five areas, we look on 13 different areas, where we consciously scan what happens. Then one or twice a year we translate, or coordinate that and once a year we really look into it to see what the consequence of that is. That is part of our strategic planning process according to situation analysis to see what is happening, and then we look on all 13 areas, which could be technology development, it could be end user behaviour, competitors, customers, environment as such, the financials in a broader perspectives. Well it is all of them; we look on Intellectual Property Rights for instance and, what have you, standardisation, regulation, which is important for our business. That's we follow up and when we have seen the consequence of that we try to translate that into financial terms, to see what kind of market are we looking at three to five years ahead. So we are translating all the trends we see into a market size, and we do that both top down by looking at the strategic developments and which is very much related to the operators, our customers revenue and then we can also see the translation between their revenue, there CAPEX[11] and OPEX[12] spending. That means that we know how each "chunk" there is to fight for, from a top down perspective. We also do it from the bottom up perspective, from an end user perspective, how much more subscribers we will have in the world, and how much more traffic we will have and we translate that then into financial figures as well, because then we know the traffic and the amount of subscribers we have to dimension the network needed in the world and see how much money that is. Then we compare the bottom up with

the top down to see if it correlate, then we have a rather good view of how big the market is that we are fighting for and then we set our internal targets.

[11 & 12] Researchers comment: CAPital EXPenditure and OPerating EXPenditure.

Question 13

Researchers comment: This question was answered in connection with the previous question. And the question was "How are insights from the strategic analysis transformed to the financial metrics chosen?"

Question 14

Researcher comment: This question was missed by the researcher and the question was "If economic numbers, such as GDP is used, how it is transformed into the financial metrics chosen?"

Later the researcher received the following comment from person A: We look on external analysis, such as EMC, but also on industry events such as new operator license and operator consolidation as well as GDP in our bottom-up and top-down approach. As such we don't look on GDP in isolation.

Question 15

Researcher: Do you carry out reviews of competitors in the same line of business?

Person B: Yes, it is part of the analysis.

Researcher: Could you elaborate a bit more on how you do it and also how you define competitors, because I assume you evaluate competitors?

Person B: Well, in our traditional markets it is not that many, it is rather a handful of competitors fighting in this market place, so it is not that hard. And we look on them in the normal way; we look at the financials, their SWOT-analysis, we look at their R&D-muscles, and everything we can read about them. We get a pretty good grip about, but it becomes harder now when we go into new kind of industries to find who are the competitors there and define the market. So, it is a learning curve.

Question 16

Researcher: Have these comparisons impacted on your own strategic choices for example:

- In relation to your product development and position in the product market
- Internal resource management

Person B: Yes, it is always does because there is always this fight and we like to be the technology leader. We think that first you have an advantage of that. Of course we look on how the other are doing and if they are doing something then we try see if there is a shortcut we can do to be better, whatever.

Question 17

Researcher: Are there any key financial performance yardsticks that you use when comparing your own company with that of competitors?

Person B: What is a yardstick?

Researcher: Financial key ratio.

Person B: We look on the same as we look at our self. Provided that we can reach it of course, but it is important to go on open sources.

Person A: But that is another problem, that we don't have all the information.

Person B: And then we guess and so on as well, but. Normally we, there are so few we have to follow, so we get a rather good grip of them.

Person A: Non public companies as well, but they can be tricky to follow.

Question 18

Researcher: Once you have identified strengths or weaknesses in performance could you briefly describe of how you would feed this information into the strategic planning process to set new or modified objectives.

Person B: Strength and weaknesses of competitors or?

Researcher: You make the analysis of the industry and competitors, and out of that you would get new information that feeds into the strategic planning.

Person B: As I said in the situation analysis at the start it is part of our planning. We look on the world as objective as we can and then we see what and we also look on our self in a present situation analysis. That is us and that is the world and then we try to see what the implications going forward in this world, themes and different parameters we need to consider. That is thorough thing we do in the beginning of the planning process, where to go.

Question 19

Researcher: Has your company adopted shareholder value performance metrics into the remuneration packages of its senior managers?

Person C: Yes.

Question 20

Researcher: What are the key financial metrics used to help decide managerial bonuses?

Person C: Again, it is the long term and short term incentive plans. In the long term we have the EPS growth as a target, and in the short term we have targets as orders booked, sales, margins, cash flow, dialogue result, delivery time depending on organisational unit[13].

[13] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C

Person A: Operating income expressed in SEK or in per cent, and we have capital targets like DSO, cash flow. There is a difference between the objectives.

Question 21

Researcher: Is your company executing share buy backs to finance share options for senior managers?

Person C: Not any longer.

Question 22

Researcher: Over the last 5 to 10 year have the remuneration schemes with managers changed substantially?

Person C: We dropped options and instead stock purchase plans have been introduced[14].

[14] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C

Person A: The Swedish companies they work together to have a common understanding among the big companies. They are members of the boards of other Swedish companies.

Question 23

Researcher: What do you consider to be the major challenges facing your company especially in relation to sustaining value growth for investors?

Person C: We need to focus on our performance and not the share price[15].

[15] The words was initially lost due to low voice and tape noise, but has been added after discussion with person C

Person B: Good performance will create shareholder value.

Person A: Perseverance, one of our cornerstones.

Appendix 5: Introduction to the case study

Appendix 5 provided a more extensive introduction to the case study than outlined in chapter 7 and 8. The appendix starts with an overview of Ericsson and Nokia, and then continues to describe the growth trajectory of mobile communication and ends with a description of the industry structure.

The researcher starts by reviewing the history and business structure as well as the financial value chain of the two firms and then turns to growth trajectory and industry structure.

Ericsson: History and business structure

Ericsson origins can be traced back to 1876 when Lars Magnus Ericsson opened a small workshop in Stockholm to repair telegraph instruments, which was coincidentally the same year that Alexander Graham Bell filed a patent application for the telephone. Ericsson personally recognized the potential for voice based telecommunications and started to develop and sell his own telephone equipment. Since then the Ericsson culture has been influenced by technology and technology leadership. Today Ericsson is a world leading supplier of telecommunication equipment and services and, through the joint venture with Sony (Sony Ericsson Mobile Communication, SEMC), a leading provider of mobile phones. (Ericsson F20 2004).

Ericsson's revenue structure, in year 2005, was dominated by the business segment Systems (93%), with other operations accounting for the remaining 7%. The revenue in the System business can itself be broken down into three sub-sectors: Mobile Networks (74% of sales), Fixed Networks (3%) and Professional Services (16%). The geographic spread of revenues is well diversified with 31 per cent of income derived from sales in Western Europe, 27 per cent in Eastern Europe, 26 per cent in Middle East and Africa, 21 per cent in Asia Pacific (of which China 8 per cent), 13 per cent in North America (of which US 11 per cent) and 13 per cent in Latin America. (Ericsson 2005).

Ericsson has historically regarded themselves as the most global active company in the telecom industry, with operations in more than 140 countries (Ericsson AR 1998).

Table A 5.1, Ericsson business in 1996 and 2005

	Sales 1996 (MSEK)	Sales 2005 (MSEK)	Change
Mobile Networks	57511	112647	96%
Fixed Networks	38384	4585	-88%
Professional services	n.a.	24867	n.m.
Other operations	9337	10896	17%
Mobile Phones	21899	JV SEMC	n.m.
Inter segment sales	-2865	-1174	-59%
Group sales	124266	151821	22%

	Sales 1996 (MSEK)	Sales 2005 (MSEK)	Change
Europé	55714	41940	-25%
Eastern Europé, Africa and Middle East	6320	39948	532%
Asia Pacific	34456	31426	-9%
North America	15729	19432	24%
Latin America	12047	19075	58%
	124266	151821	22%

Source: Ericsson AR 1996 p 48, AR 1997 p 38 and AR 2005 p 57. The business mix is not full comparable between the years as organisational changes have been made.

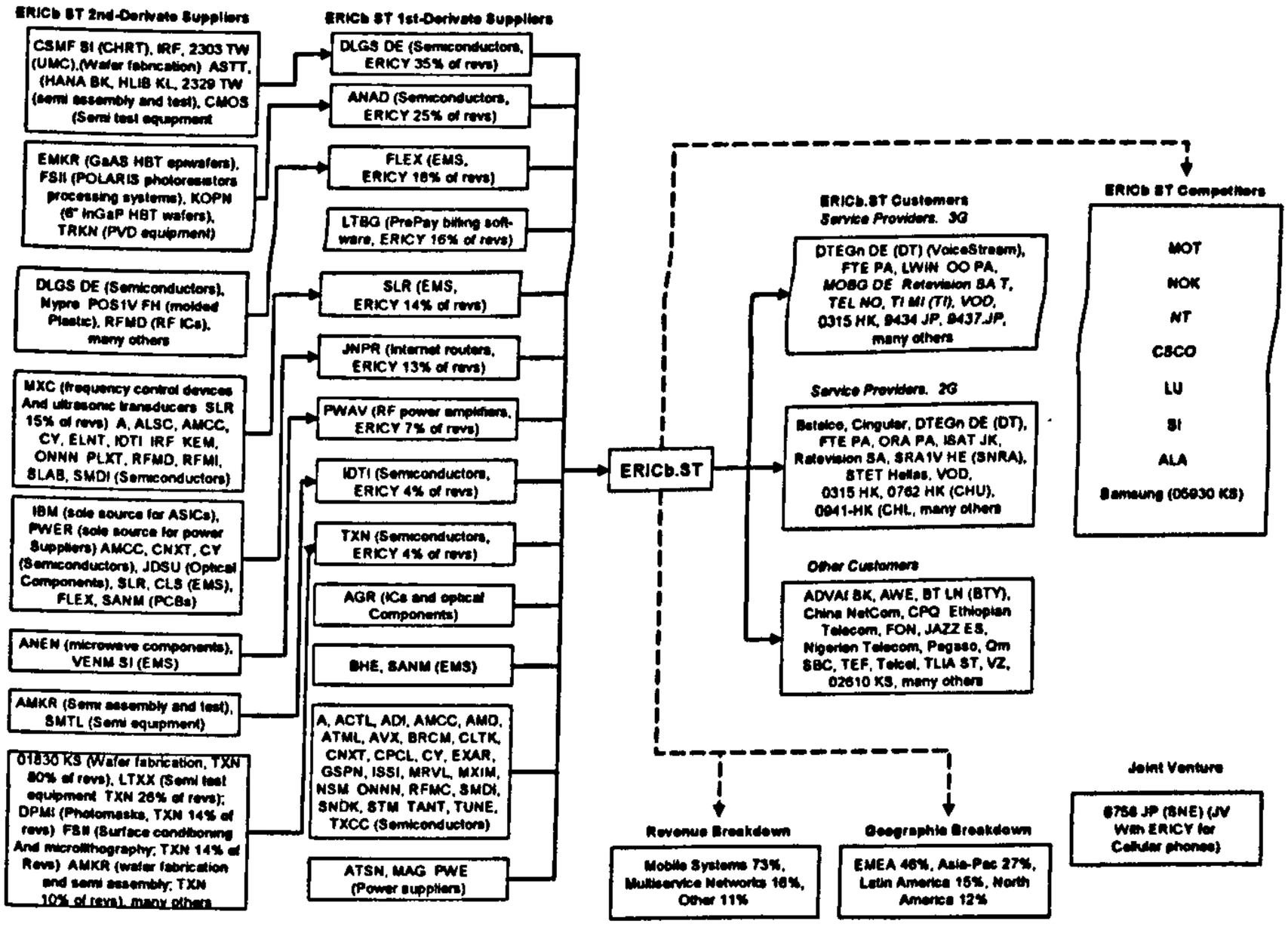
The change in business mix, both in terms of business segments and geographic distribution, reflect the change in product market conditions. In particular the shift from Fixed System to Mobile Networks provided a significant internal transformation for Ericsson. This shift was a result of Internet and mobile communication investments by telecommunication operators away from traditional POTS (Plain Old Telephony Service). In terms of geographical shift the growth in emerging markets in Eastern Europe, Africa and Middle East are significant.

Ericsson product offerings included within mobile systems: radio base stations, core network infrastructure and the service layer and covers all 2G mobile standards as well as main 3G standards (Wideband Code Division Multiple Access - WCDMA, Enhanced Data rates for Global Evolution – EDGE and Code Division Multiple Access 2000 – CDMA2000). Ericsson states that they are market leader with a 30% per cent global share of the addressable market (c.f. table A5.7 below), which they defined as open non-proprietary standards. Ericsson (204 F20) also claims an even higher market share within GSM/WCDMA.

Ericsson: Financial value chain

The Ericsson contractual relations in the financial value chain of mobile communications are illustrated in fig.A5.1.

Figure A 5.1, Global Tech Foodchain – Ericsson



Source: Davenport 2002 p 175.

It is clear that the financial results for the company as a whole are the outcome of executing a significant number of transactions as well as managing a large number of contractual relations that are impossible to track individually. Income and expenditure accounted for by a multifarious number of transactions and contracts that are aggregated into group accounts. These summary accounts reveal patterns of income and expenditure, cash flow and balance sheet items. The company provides some information revealing the complexity of product market and supplier relations in their F20 forms (2005):

- How equipment and services are supplied to almost all major network operators globally and that Ericsson derives most of its income from large, multi-year network build-out agreements with a limited number of significant customers. Out of their customer base of more than 425 network operators, the largest customer accounted for

9 per cent of net sales, the ten largest customers account for 50 per cent and the 20 largest customers accounted for 64 per cent of income.

- How Ericsson manufactures and assemble a large portion of products in-house, however, over half of their module production is outsourced to a group of electronics manufacturing services companies including Elcoteq, Flextronics, Sanmina-SCI and Solectron.

These complex customer and supplier product market relations are aggregated into the financial accounts in terms of sales revenue received and payments made to cover the cost of purchases. Using this financial information it is possible to reveal how changes in product market conditions impact on a firm's revenue growth trajectory and when one deduct the cost of external purchases one can reveal the proportion of the financial value chain retained within the company.

Nokia: History and business structure

Nokia was originally involved in paper manufacturing, but through a series of restructurings has become the world's largest manufacturer of mobile devices and a leader in mobile networks. Nokia took its current corporate form in 1967 which itself was brought about through a merger of three Finnish companies: Nokia AB, a wood pulp mill founded in 1865; Finnish Rubber Works Ltd, a manufacturer of rubber boots, tires and other rubber products founded in 1898; and Finnish Cable Works, a manufacturer of telephone and power cables founded in 1912. (Nokia F20 2004)

It is the strategic moves towards telecommunication that is of interest, which can be traced back to 1960 when an electronics department was established at the Finnish Cable Works to concentrate on the production of radio transmission equipment (Nokia F20 2004). At this time Nokia was becoming a diversified conglomerate which was legitimised on the basis that holding a portfolio of industries would act as a hedge against the business cycle.

Nokia strengthened its position in the telecommunications, consumer electronics and personal computer markets in the 1980's inorganically with some major acquisitions and became the largest technology company in the Nordic region by 1988. These acquisitions caused great difficulties in the early 1990's for Nokia due to dramatic reduction in sales caused by the European recession and the reduced trade with Russia (a consequence of the fall of the Berlin wall). In the early 1990s, Nokia made the strategic decision to make telecommunications their core business under the leadership of a new CEO, with the goal of establishing market leadership in every major global market. The logic of focusing on a core business strategy and developing core competences are also well recognised in the strategy literature (see Prahalad et al 1994). This strategic move also required a re-organisation of the company structure into two main business groups, Nokia Mobile Phones and Nokia Networks. Nokia divested its other non-core business segments during the period 1989 to 1996 (Nokia F20 2005).

In 2004 Nokia reorganized its structure again to further align the company's overall structure with its strategy, to better position each business group to meet the specific needs of diverse market segments, and to increase Nokia's operational efficiency and maintain economies of scale. As a result Nokia today has four business groups: Mobile Phones, Multimedia, Enterprise Solutions and Networks as well as two horizontal groups: Customer and Market Operations and Technology Platforms, which supports and service the mobile device business groups. (Nokia F20 2005).

The revenue structure in 2005 was dominated by Mobile Phones (61% of sales), Multimedia (17%), Enterprise Solutions (2%) and Networks (19%). The geographical exposure is well diversified with 42% in Europe, 13% in Middle East and Africa, 29% in Asia-Pacific (of which 11% in China), 8% in North America and 8% in Latin America.

From table A5.2 below, one observe that the strong growth in Mobile Phones drove the corporate growth accompanied by Networks, whereas the geographical strong growth is well diversified.

Table A 5.2 , Nokia business segment sales 1994 and 2005

	Sales 1996 (MEUR)	Sales 2005 (MEUR)	Change
Mobile Phones	3629	27653	762%
Networks	2242	6557	292%
Other	874	6	n.m
Intersegment sales	-132	-25	
Group sales	6613	34191	417%

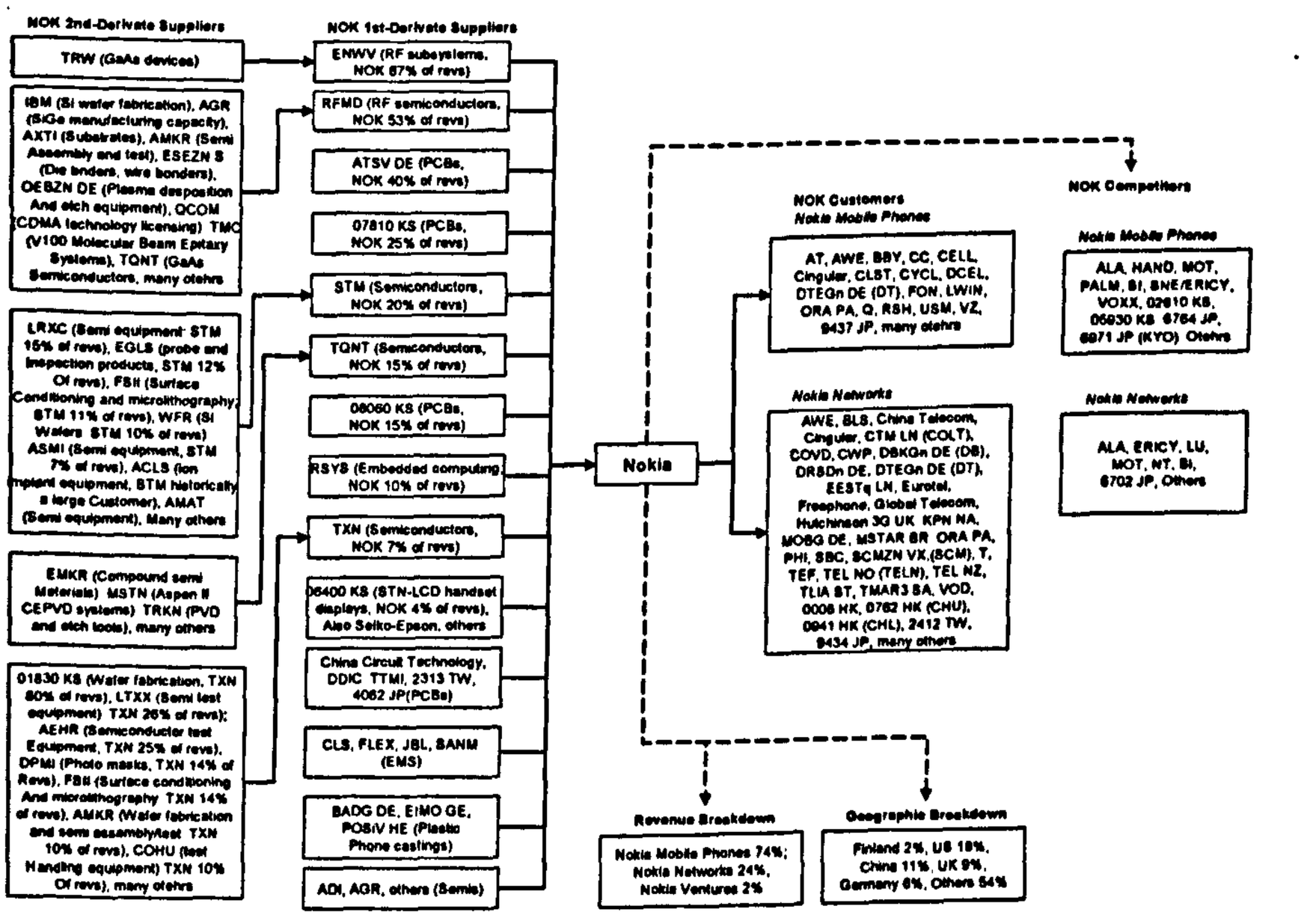
	Sales 1996 (MEUR)	Sales 2005 (MEUR)	
Europé	4070	14297	251%
Asia Pacific	1478	14407	875%
Americas	1065	5487	415%
Group sales	6613	34191	417%

Source: Nokia AR 1999 p 59 and F-20 2005 p F-21 and Q4 2005 p 11. Nokia business segments is not structured in the same way in 2005 as earlier, as a result we have summaries sales in Mobile Phones, Multimedia and Enterprise business for year 2005 to enable a comparison with 1996.

Nokia: Financial value chain

The Nokia financial value chain of mobile communication is illustrated in figure A5.2 and is fairly similar to the Ericsson accounting nodes in terms of its complexity.

Figure A 5.2, Global Tech Foodchan – Nokia



Source: Davenport 2002 p 179l.

Most of Nokia's mobile device business derives from sales to operators, distributors, retailers and enterprise customers, where the per cent age of the total sales from each channel varies by region. In addition to these activities in Customer and Market Operations, Nokia have also established specialized sales channels for certain business groups in order to reach customers in segments where they are introducing mobility, e.g. Enterprise Solutions and Multimedia. (Nokia F20 2005).

Nokia's (F20 2005) manufacturing operations relies on adequate supplies from vendors, such as electronic components (e.g. integrated circuits, microprocessors, standard components, memory devices, cameras, displays, batteries and chargers), mechanical components (e.g. covers, connectors, key mats and antennas) and software.

The researcher now turns to review the market conditions and growth trajectories for the two companies during the period.

Market conditions and growth trajectory

Market conditions and growth trajectories are important conditions for firm to cover factor costs, as such the researcher will review the product market conditions during the period 1990 to 2005.

Evolution of technology and growth

The public mobile communication industry, as we now know it, is more than two decades into a period of development which started in several countries in the early 1980's and is now dominated by two Nordic companies, Ericsson and Nokia. It was not obvious in the early to mid 1980s that these two companies would follow the mobile communication growth trajectory. What one does know is that for different reasons both companies had within their overall business a research and development capability which was favourable disposed when consumer demand increased. Compared to similar projects, in Germany and France, the open interface between the mobile phone and the mobile system for the Nordic NMT450 system established a competitive product market for our two case study firms. It also enabled international roaming, at least within Scandinavia and more flexible network design

configuration due to open interface between switches and radio base stations (Sandowski et al 2003).

From the early days in the 1980's to the end of the 1990's the mobile communication industry has been operating in a very favourable growth trajectory as subscribers increased teen fold every five years because just like Henry Fords' Model T cost reduction was passed on to consumers extending the market. Unlike the 4 stroke petrol engine one also observe rather rapid evolution in the technology of the mobile communication industry. This evolution has three major growth phases; the analogue phase (1980's), the digital narrowband phase (1990's) and the digital broadband phase (current). Each of the phases are related to specific regional standards, such as NMT, TACS, APMS, GSM, DAMPS, CDMA, WCDMA, which has been more or less successful (see table A5.3). As the market share of the standards has shifted so has also the position of suppliers. For example Nokia has gained market share through its position into GSM. More importantly as each new generation of technology was introduced consumers are forced to make a "new" rather than "replacement" purchase similar to the software sold by Microsoft which both encourages replacement with new generation software.

Table A 5.3, Geographic origin of standards

	Analogue standards	Digital standards, narrowband	Digital standards, broadband
Europe	NMT, Nordic Mobile Telephone TACS, Total Access Communication System	GSM, Global System for Mobile	WCDMA, Wideband Code Division Multiple Access
North America	AMPS, Advance Mobile Phone Service	DAMPS, Digital Advanced Mobile Phone Service CDMA, Code Division Multiple Access	CDMA 1X, Code Division Multiple Access 1XTREME
Japan	J-TACS, Japan Total Access Communication System	PDC, Personal Digital Cellular	

Source: Author

In a relatively short period of time what was first a luxury product for a few business men in the early 1980's and associated with "yuppies", became a low cost product for consumers with an extended market in the late 1990's. In October 1985 Ericsson (RL 1985) estimated the number of global mobile subscribers at roughly 0.54 million subscribers and in the

intervening period the number of subscribers has grown towards 2.2 billion by end of 2005 (see Nokia 2005 IR-Q4).

The trajectory of year on year subscriber growth has continued with growth levels around 20-30% in more recent years and this has come down from levels of 50 per cent or more that was common during the 1990's. Table A5.4 illustrates the growth in subscribers with mobile subscribers up from 1.3 million in 1986 to 2.2 billion in 2005. Apart from subscriber growth in this table shows net new additions and the change in net new additions. This is falling off and became negative in 2001 – 2002 as the rate at which new subscribers are added to the overall market starts to fall off. This again picks up in 2003 with net additional subscriber numbers well above previous levels, but at a lower growth rate.

Table A 5.4, Mobile communication evolution 1986-2005

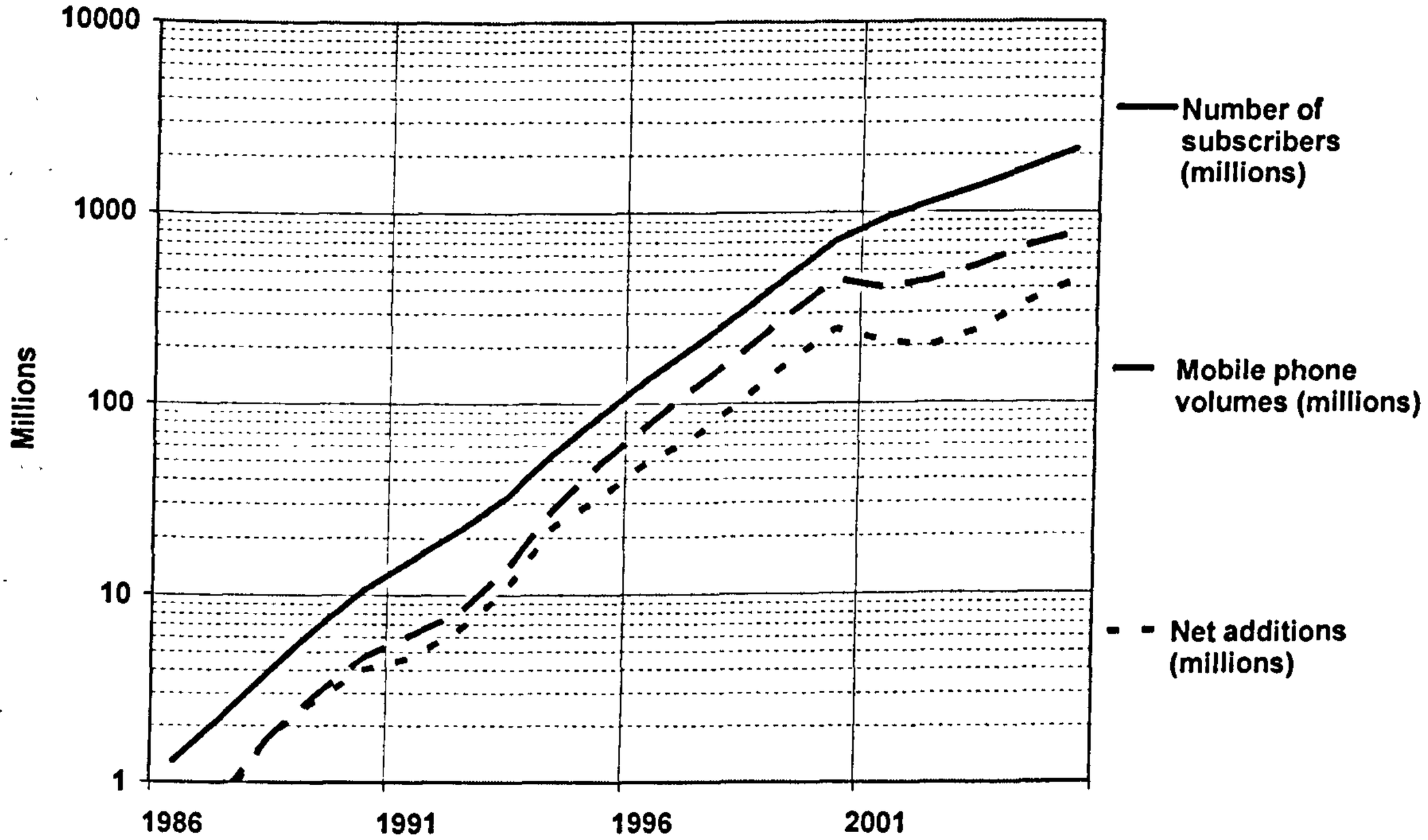
Year	Number of subscribers (millions)	Subscriber growth	Net additions (millions)	Change in net additions	Mobile phone volumes (millions)	Volume growth
1986	1					
1987	2	69%	1		1	
1988	4	77%	2	143%	2	113%
1989	7	69%	3	59%	3	71%
1990	11	61%	4	48%	5	59%
1991	15	43%	5	15%	6	33%
1992	22	42%	6	39%	8	31%
1993	32	49%	11	66%	14	69%
1994	55	70%	23	114%	28	106%
1995	87	59%	32	42%	49	76%
1996	137	57%	50	54%	78	58%
1997	204	49%	67	34%	123	58%
1998	307	51%	103	55%	186	52%
1999	473	54%	167	62%	297	59%
2000	720	52%	246	48%	445	50%
2001	931	29%	212	-14%	405	-9%
2002	1131	21%	199	-6%	438	8%
2003	1370	21%	239	20%	525	20%
2004	1702	24%	332	39%	658	25%
2005	2135	25%	433	30%	770	17%

Source: Ericsson RL 1986-94 and Bråtenius (2006).

As can be seen from table A5.4 the mobile phone market was in the early days driven purely by net addition, but around 1990 one observe a small but increasing replacement market as mobile phones volumes increase faster than net additions. By 2001 the replacement market

had reached 55 per cent of mobile phones volumes. The improved market condition after 2002 has reduced the replacement share to around 44 per cent by year 2005.

Figure A 5.3, Mobile communication evolution 1986-2005



Source: Ericsson RL 1986-94 and Bråtenius (2006)

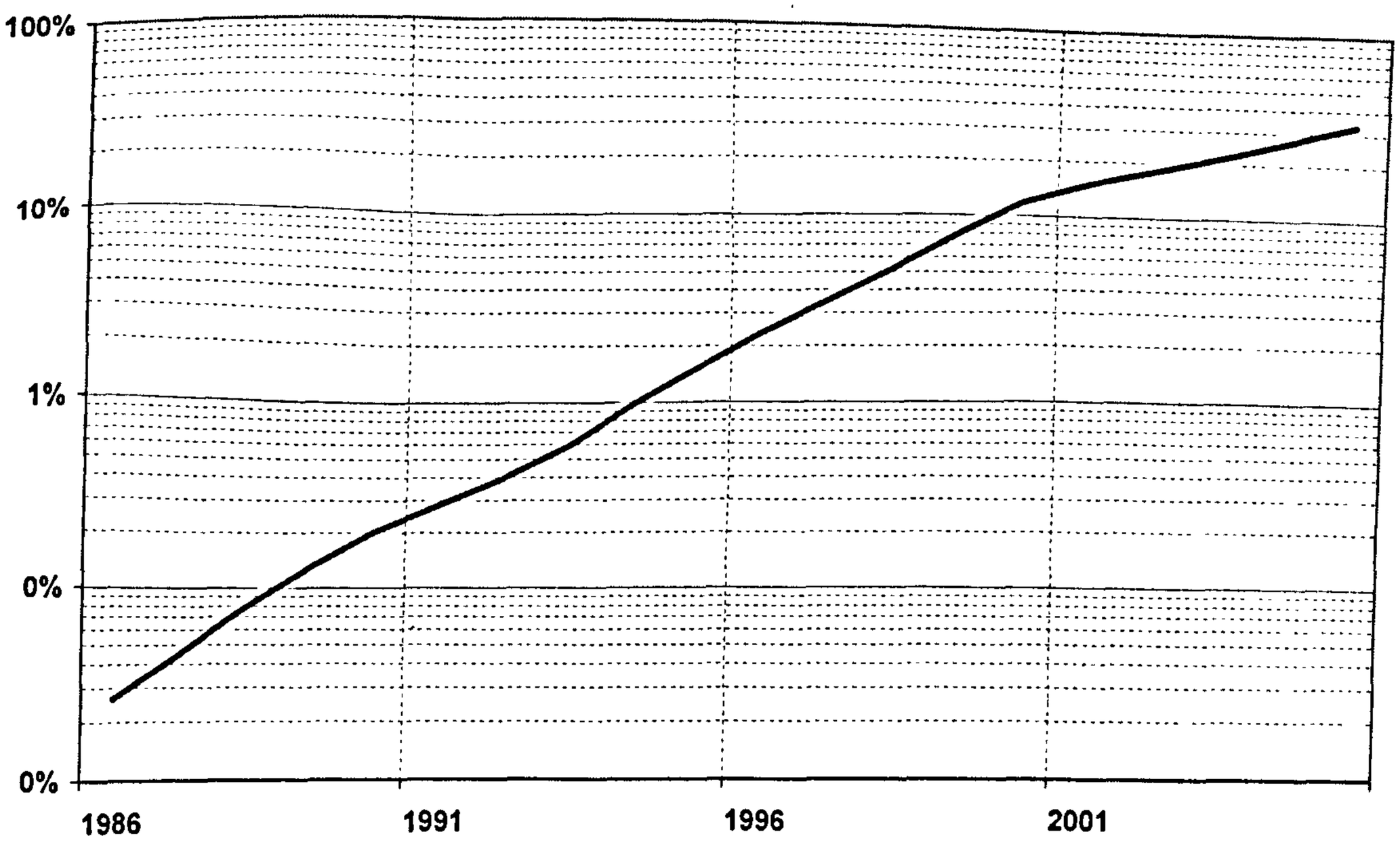
Of interest to the researcher is the exponential growth in end user demand from the mid 1980's until 2005 and how each of the shifts in technology has served to reinvigorate sales of mobile phones and network equipment. During the late 1990's innovations in service provision for example, prepay and voice mail stimulated additional growth, but not as much as the previous recovery phase in 1993-94. In the late 1990's new technologies relating to mobile internet, such as GPRS, created exuberant expectations in capital markets, but with little impact among subscriber behaviour.

It is clear that this is a product market that is increasingly segmented in terms of the mobile phone products on offer and within each product segment there are more competitors offering product. During the 1990's product innovation serves to boost demand for new mobile phones that offer access to new services and cost reduction has served to extend the geographic reach of the mobile phone. These favourable market conditions have so far tended to mask the traditional product market problem, which is that as the trajectory of new product

demand slows one also emerge into replacement demand which can be postponed and thus encouraging product market cyclicality and uneven patterns of income and profit. (Wellings 1998, Haslam 2002).

The mobile telephony had by end of the year 2005 reached over 30% penetration of the world population and provided the historical tenfold increase in penetration every five year it was only natural that saturation should occur after year 2000, as it would not be likely that all the people in world would be able to afford a mobile phone nor be within mobile radio network coverage.

Figure A 5.4, Mobile phone global penetration



Source: Author, based on UN (2004) "World population" and Brätenius (2006) "Number of subscribers".

In figure A5.4 one observe the mobile phone global market penetration curve follows the classical S-curve (but here with a logarithm scale) where a very rapid growth trajectory in the early years of a developing product market is then replaced by slower rates of year on year growth such that in the years 2001-2005 global market penetration increases by in average by 10-15 per cent per year compared to a previous five year period when sales increase tenfold or around 58 per cent per year. Firms that can capture the market in the growth phase can reap

substantial advantages because income often runs ahead of costs and boosts cash from operations and return on capital employed.

The increased number of mobile subscribers has also led to increased traffic in mobile communication networks, which showed strong growth up until year 2000. From year 2002 the growth has come down to 30-35% as an effect of lower growth in number of subscribers which is partly offset by an increased usage per subscriber (at least in the years 2003-04).

Table A 5.5, Mobile traffic growth

	Total voice minutes (billion)	Change	Minutes of usage per month	Change	Average number of subscribers (millions)	Change
1996	197		150		110	
1997	299	51%	149	-1%	167	52%
1998	459	54%	153	3%	250	50%
1999	742	62%	162	6%	382	53%
2000	1178	59%	168	4%	584	53%
2001	1724	46%	176	5%	816	40%
2002	2307	34%	188	7%	1023	25%
2003	3091	34%	208	11%	1238	21%
2004	4191	36%	230	11%	1519	23%
2005	5588	33%	245	7%	1901	25%

Source: Bråtenius 2006.

As mobile traffic per user has not changed as dramatically as the number of average subscriber, the slowdown in net addition of subscribers has also affected the mobile traffic growth. The increased functionality of mobile devices is expected to drive traffic growth per subscriber, but so far that has been limited and has not been able to compensate for the slowdown in subscriber growth.

Competition in the infrastructure market is intense as price is an important feature (Nokia F20 2004). Besides price, vendors also compete on low cost of ownership and network roll-out ability for existing technologies, whereas track record of network implementations and future technology offerings are important for new technologies, such as WCDMA.

The mobile communication industry

The mobile communications industry is faced with new market conditions as "more users in emerging markets gain access to mobile communications, end-to-end solutions increase in importance to customers, enterprises become increasingly mobile, and technology continues to evolve" (Nokia F20 2005 p- 25). The mobile communication industry may also become broader in the future as it consolidates with other industries, mainly the information technology, media and consumer electronics industries. This since advances in digital technologies will "enable a variety of products and services from the different industries to become interconnected" (Nokia F20 2005 p 25). Examples of this convergence are "the camera phone and the use of mobile devices for email, web browsing and applications, and music downloading" (Nokia F20 2005 p 25).

Mobile phone industry

The number of mobile phones sold during 2005 was estimated to 795 million units according to Nokia (2005 IR-Q4). With an Average Selling Price (ASP) of 103 Euro for Nokia (2005 IR-Q4) the total market for 2005 can be estimated to be worth around 80 billion Euro or around 100 billion US dollars. The industry structure is oligopolistic with the three major players taking more than 60% of the market, and where Nokia is the clear market leader with an estimated market share of 34%.

Over the past six years the major four players as well as some smaller players (Sanyo, Sharp and Fujitsu) have increased the volumes significantly (100% or more). Most other players have either had small volume increases or even lost volume, such as Sony Ericsson which increased their volume with 2% during the period.

Table A 5.6, Mobile phone markets share by volume 2000-2005

	2000	2001	2002	2003	2004	2005
Nokia	128,4	139,7	152,1	179,3	207,7	265,2
Motorola	62,7	55,1	62,3	63,4	88,9	126,8
Samsung	21,8	28,6	42,3	55,7	86,6	102,9
LG Electronics	6,9	10,3	16	27,4	44,4	54,9
Ericsson & Sony	50	35,2	22,9	27,2	42,5	51,1
Siemens	28,7	28,5	35,3	43,3	49,4	39,8
Sagem	13,1	6,1	4,8	8,1	14,9	17,8
Panasonic	22	14,4	12,9	16,7	17,3	13,1
Sanyo	4,4	5	5,9	8,4	10	11,8
NEC	12,4	14,2	8,4	14	13,6	11,7
Sharp	3	3,5	5,4	7,4	9,7	11
TCL	20,5	11,3	18,3	17,4	14,7	10,9
Kyocera	12,6	9,5	11,4	12,1	13,5	9,9
Philips	13,5	5	3,5	4,9	6,7	6,5
Toshiba	7,8	6,4	6,7	5,8	4,8	5,1
Fujitu	1,6	2,4	3	3,3	3	3,7
Mitsubishi	17,5	13	6	5	4,5	3,4
Other	18	16,9	21,3	25,3	25,5	26,3
Total	444,9	405,1	438,5	524,7	657,7	771,9

Source: Brâtenius (2006)

In table A5.6 the researcher shows that Nokia's market share is twice that of the next largest player Motorola and nearly three times the size of the third ranked company Samsung. There are advantages to being market leader not least the sheer volume effect of taking one-third of the global market. However, competition is still intensifying as consumer electronic firms, especially those based in Asia are making headway in terms of capturing market share (Ericsson F20 2004). One should also note that being a global market leader does not necessarily guarantee a robust financial future for example General Motors.

If one now considers how Nokia and Ericsson global market share has evolved over the last decade one reveal just how quickly market share can be lost as well as gained. In 1997 Nokia and Ericsson were more or less taking equivalent global market shares at 20.3 and 21.8 per cent respectively. In just one year Ericsson lost 7 per cent of its global market share and then another 3 per cent a year later and thereafter global market share is on a gentle slide downwards towards 6 per cent. By way of contrast Nokia's market fortunes are a mirror image of Ericsson's with global market share increasing from 20 per cent to 33 per cent with Nokia more or less soaking up all Ericsson's lost share of the market.

Table A 5.7, Mobile phone markets share, Ericsson and Nokia

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Ericsson	21,8%	14,3%	11,3%	10,6%	7,3%	5,7%	5,6%	6,6%	6,4%
Nokia	20,3%	24,3%	28,5%	31,2%	36,8%	37,6%	36,6%	32,3%	32,9%
Sum	42,1%	38,6%	39,8%	41,8%	44,2%	43,2%	42,1%	38,9%	39,3%

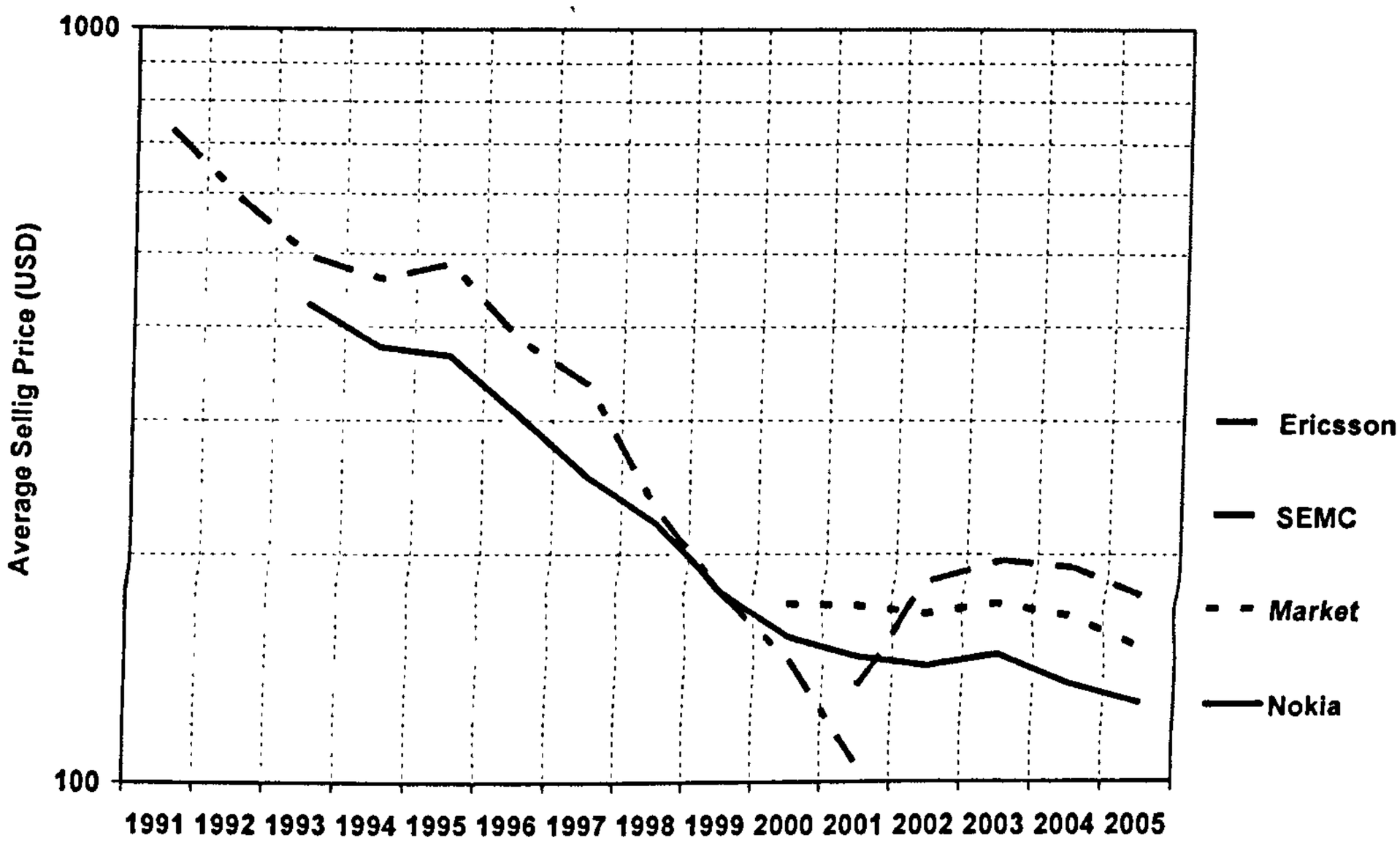
Source: Annual reports and quarterly reports.

Over the years the mobile phone market has changed from a pure voice-based communication market towards an internet driven market place with differentiated user applications based on consumer multimedia and enterprise mobility solutions (Nokia F20 2005). As such the converging multimedia technology leads to a more differentiated market as well as growth segments within the market place. Some of these sub-segments show strong growth, such as the camera phones and smart phones (Nokia F20 2005). And as the researcher has already noted running contrary to new produce market opportunity there is also a tendency for the mobile phone market to become mature and increasingly driven by the replacement cycle rather than the earlier strong addition of new subscribers.

A key driver that underwrites strong conditions of cost recover for mobile phones is the Average Selling Price (ASP) of mobile devices. The ASP is mainly driven by three factors (Nokia F20 2005): mix shifts, price erosion and industry competition. On the one hand Moore's law on semiconductors suggests that it should be a decline in ASP for mobile phones with similar semiconductor content. Increased volumes should contribute towards reduced the fixed costs, like R&D-expenses, per handset. And this leads on to continued price erosion, which depending on accounting currency and year has been a concern for shareholders who are looking for profit margins to be maintained.

During the strong volume growth until year 2000 the decline in average selling price was 50 to 60 per cent per five years or 15 per cent per year. After year 2000 when volume decline has become more mature in terms of growth the ASP decline is less sharp.

Figure A 5.5, Average Selling Price in USD



Source: Authors illustration of data from Bråtenius (2006)

The differentiation of mobile devices from pure voice to multimedia functionality promises the possibility that the ASP may be somewhat stabilised in nominal terms as long as these functionalities penetrate the mainstream of product markets with increased software complexity as well as an increased amount of semiconductor content.

The mobile system industry

The mobile system market is harder to estimate than the mobile phone market, both in terms of volume as well as value. Analysts estimate the market to be worth close to 50 billion Euro and Ericsson is the market leader with an estimated market share of around 30%.

Table A 5.8, Vendors mobile system sales

Million EUR	2000	2001	2002	2003	2004	2005
Ericsson	18702	17022	13129	11047	12976	14791
Nokia	7328	7130	6343	5451	6176	6360
Siemens	4239	5676	5157	4375	5117	5502
Lucent	6841	7153	5448	3768	4518	4750
Nortel	5928	6218	4490	3858	3891	4321
Alcatel	2373	2565	2809	2545	2870	3530
Motorola	6901	5759	3827	3078	3431	3427
NEC	*2393*	2497	2026	1675	1507	1794
Fujitsu	*525*	710	827	680	1021	959
Samsung	584	725	750	511	433	425
Other	*1364*	1885	1569	1388	1709	2339
Total	57178	57340	46375	38376	43649	48198

Source: Brâtenius (2006)

The shift in investments from second generation to third generation technology which initially led to a downturn in investments will now provide a period of growth in the market as well as scope for recovering replacement investments in GSM made in the late 1990's. At the peak of the technology bubble countries in Europe also awarded 3G-licenses either through auctions or beauty contests. As a result operators paid over 50 Billion Euro in license fees, which lead to reductions in other investments such as infrastructure and subsidies for new subscribers.

The mobile system industry consists of large and well-established communication equipment suppliers and the competition varies depending on the products, services and geographical regions. The main competitors are Alcatel, Lucent, Motorola, Nokia, Nortel and Siemens according to Ericsson (F20 2004). There is also emerging competitors like Huawei from China, but so far their global presence is limited. Factors driving competitive advantage in the industry are, according to Ericsson, (F20 2004): customer relationships, the ability to cost-effectively upgrade an installed base, technological innovation, product design, compatibility of products with industry standards, and the capability for end-to-end systems integration. According to Nokia *(F20 2005)* competition in the mobile system market remains intense, where competition in second generation system is driven by: "*price, solutions* that are able to offer low total cost of ownership, and the vendor's ability to roll-out mobile networks in new growth markets". In the third generation product market competition, according to Nokia, is driven by "price, track record of network implementations, and which future technologies they plan to offer and when" (Nokia F20 2005 p 27).

Within the mobile system market the increased interest among operators for outsourcing network management to become more cost efficient has become an emerging product market for system suppliers, as value added is shifting hands from operators to vendors. For operators there seems to be a rationale to "better manage the increased range and complexity of mobile services and technologies" (Nokia F20 2005 p 27).

Appendix 6: Accounting data, cases

Appendix 6.1: Income statement by nature of expense

Table A 6.1, Income statement by nature of expense, Ericsson

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Sales	45702	45793	47020	62954	82554	98780	124266	167740	184438	215403	273569	231839	145773	117738
Change in inventories of finished goods and work in progress	-196	71	905	2458	327	3019	263	2863	2192	-1732	8800	-5388	-7027	-3787
Work performed by the enterprise and capitalised	0	0	0	0	0	0	0	0	0	0	0	0	3442	2359
Output	45506	45864	47925	65412	82881	101799	124529	170603	186630	213671	282369	226451	142188	116310
Raw material and consumables used (residual)	-25258	-26491	-27320	-39912	-52055	-64266	-80331	-109884	-119261	-142817	-216064	-183213	-97393	-71612
Value added	20752	19745	21033	26030	31550	38089	45047	60719	67369	70854	66305	43238	44795	44698
Staff costs	-14436	-16349	-17640	-20240	-23576	-27010	-31518	-37568	-43178	-48373	-52131	-55520	-46871	-36264
EBITDA	6316	3396	3393	5790	7974	11079	13529	23151	24191	22481	14174	-12282	-2076	8434
Depreciation of tangiable assets	-1572	-1863	-2193	-2651	-3004	-3614	-4216	-5404	-5525	-6515	-9956	-6407	-5514	-3753
Amortisation of goodwill	-48	-61	-156	-173	-189	-202	-172	-165	-337	-684	-761	-1123	-1064	-1636
Amortisation of other intangiable assets	0	0	0	0	0	0	0	-171	-199	-166	-218	-251	-87	545
EBIT	4696	1472	1044	2966	4781	7263	9141	17411	18130	15116	3239	-20063	-8741	3590
Other operating revenues (excl capital gains etc)	504	372	428	530	724	556	849	1017	765	825	2374	2272	1265	1939
Other operating expense (excl capital losses etc)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBIT after other operating revenues and expenses	5200	1844	1472	3496	5505	7819	9990	18428	18895	15941	5613	-17791	-7476	5529
Non-recurring items in operating expenses	0	0	0	0	0	0	0	0	0	0	0	-15000	-11881	-15766
Non-recurring items outside operating expenses	194	360	52	-45	155	-69	344	-151	230	1399	25278	6126	-492	-398
Operating income	5394	2204	1524	3451	5660	7750	10334	18277	19125	17340	30891	-26665	-19849	-10635
Income from associates	300	87	230	79	893	414	424	480	148	250	268	-715	-1450	-604
Operating income, reported	5694	2291	1754	3530	6553	8164	10758	18757	19273	17590	31159	-27380	-21299	-11239
Financial income	1063	1299	1484	1390	908	1497	1908	2413	2228	2273	2929	4815	4253	3995
Financial expenses	-1226	-1488	-1688	-1382	-1294	-1439	-1496	-2365	-2465	-2971	-4449	-6589	-5789	-4859
Income from continuing operations	5531	2102	1550	3538	6167	8222	11170	18805	19036	16892	29639	-29154	-22835	-12103
Appropriations	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes on income	-1739	-848	-968	-335	-1823	-2341	-3399	-5755	-5409	-4358	-7998	8813	4165	1460
Minority interests	-342	-368	-104	-368	-395	-442	-661	-1109	-586	-404	-623	-923	-343	-201
Net income	3450	886	478	2835	3949	5439	7110	11941	13041	12130	21018	-21264	-19013	-10844
Discontinued operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Accumulated effect of change in accounting principles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extraordinary items	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net income	3450	886	478	2835	3949	5439	7110	11941	13041	12130	21018	-21264	-19013	-10844

Source: Annual reports.

Table A 6.2, Income statement by nature of expense, Nokia

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales	3722	2599	3055	3985	5075	6191	6613	8849	13326	19772	30376	31191	30016	29533	29371	34191
Change in inventories of finished goods and work in progress	-27	-28	-15	132	109	296	-320	168	12	-66	454	-159	-304	80	156	328
Work performed by the enterprise and capitalised	-6	4	5	15	15	163	142	212	235	437	526	542	493	305	187	212
Output	3689	2576	3046	4132	5199	6651	6435	9229	13573	20143	31356	31574	30205	29918	29714	34731
Raw material and consumables used (residual from 1993)	-2316	-1673	-2023	-2800	-3497	-4535	-4473	-6043	-8624	-13406	-21833	-21997	-20661	-20787	-21217	-25568
Value added	1373	903	1022	1332	1703	2116	1962	3186	4949	6737	9523	9577	9544	9131	8497	9163
Staff costs	-1003	-761	-814	-922	-927	-1092	-899	-1317	-1958	-2383	-2888	-3105	-3140	-3067	-3492	-3877
EBITDA	369	142	208	410	775	1024	1063	1869	2991	4354	6635	6472	6404	6064	5005	5286
Depreciation of tangiable assets	-139	-121	-123	-142	-148	-211	-241	-294	-339	-431	-672	-860	-779	-580	-460	-477
Amortisation of goodwill	-34	-25	-22	-12	-12	-10	-4	-58	-20	-71	-140	-302	-206	-159	-96	0
Amortisation of other intangiable assets	-15	-12	-14	-13	-10	-86	-131	-112	-150	-163	-197	-268	-326	-399	-312	-235
EBIT	182	-16	48	242	605	717	687	1405	2482	3689	5626	5042	5093	4926	4137	4574
Other operating revenues (excl capital gains etc)	0	0	0	41	38	132	29	49	43	195	168	182	227	244	183	161
Other operating expense (excl capital losses etc)	0	0	0	-37	-39	-36	1	-53	-66	-42	-128	-289	-185	-261	-154	-191
EBIT after other operating revenues and expenses	182	-16	48	246	605	813	717	1400	2459	3842	5666	4935	5135	4909	4166	4544
Non-recurring items in operating expenses (capital gains/losses etc)	0	0	0	0	0	30	0	22	30	66	110	-261	106	-24	160	95
Non-recurring items	0	0	0	0	0	0	0	0	0	0	0	-1312	-461	75	0	0
Operating income, reported	182	-16	48	246	605	843	717	1422	2489	3908	5776	3362	4780	4960	4326	4639
Income from associates	4	2	-1	5	4	14	6	9	6	-5	-16	-12	-19	-18	-26	10
Operating income, comparable	186	-15	48	251	608	857	724	1431	2495	3903	5760	3350	4761	4942	4300	4649
Financial income	99	115	109	121	171	112	100	152	172	207	299	266	282	417	507	373
Financial expenses	-165	-155	-184	-179	-107	-140	-168	-175	-211	-265	-197	-141	-126	-65	-102	-51
Income from continuing operations	120	-54	-27	193	673	830	656	1408	2456	3845	5862	3475	4917	5294	4705	4971
Appropriations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Taxes on income	-43	-39	-28	-50	-157	-129	-144	-382	-737	-1189	-1784	-1192	-1484	-1697	-1446	-1281
Minority interests	-19	-8	-15	-13	-13	-13	0	-17	-39	-79	-140	-83	-52	-54	-67	-74
Net income	58	-102	-69	129	504	687	512	1009	1680	2577	3938	2200	3381	3543	3192	3616
Discontinued operations	0	0	0	0	0	-394	37	44	0	0	0	0	0	0	0	0
Accumulated effect of change in accounting principles	0	0	0	0	35	82	0	0	70	0	0	0	0	0	0	0
Extraordinary items	-12	66	-52	-322	124	0	0	0	0	0	0	0	0	0	0	0
Net income	46	-35	-122	-193	662	375	549	1053	1750	2577	3938	2200	3381	3543	3192	3616

Source: Annual reports

Appendix 6.2: Balance sheets

Table A 6.3, Balance sheet, Ericsson

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Intangiable assets, goodwill	258	337	853	1107	944	823	695	541	6119	9519	11881	12081	8603	5739	5766	7362
Intangiable assets, capitalised R&D	0	0	0	0	0	0	0	0	0	0	0	0	3200	4784	8091	6161
Intangiable assets, other	0	0	0	0	0	0	224	207	235	1029	952	985	806	687	748	939
Tangiable assets, machinery & equipmer	5730	6665	6857	7554	8885	10348	11689	12174	13587	15144	15913	13443	8448	4321	3950	4645
Tangiable assets, land & buildings	2652	3096	3384	3944	3859	3960	4333	6054	7719	7947	4896	1935	1211	1898	1592	2034
Tangiable assets, other	676	716	852	865	934	1213	1732	997	1210	1628	1569	697	305	286	303	287
Financial assets, assocaites & JV	1537	2482	2399	2714	3019	3564	3773	4077	4215	4463	5274	7597	4078	3403	4698	7118
Financial assets, Customer financing	377	1314	496	806	320	334	2921	2000	5937	6657	6364	4225	12283	3027	2150	1322
Finnacial assets, deferred tax assets	0	0	519	1915	1601	1657	3017	3062	3275	3413	6533	20912	26047	27130	20766	17294
Financial assets, other	1494	1111	1948	2625	3200	1972	933	3365	2902	4972	3657	4148	2132	1342	1236	3514
Fixed assets	12724	15721	17308	21530	22762	23871	29317	32477	45199	54772	57039	66023	67113	52617	49300	50676
Inventory	9365	9164	10267	13830	12805	19351	19619	23614	26973	25701	43933	24910	13419	10965	14003	19208
Recivables	18311	16928	19835	23330	25540	32225	44156	62222	77051	93147	113736	90284	62367	45583	46329	57440
Avilable-for-sale investments	3632	4414	4796	3705	6845	8577	10410	20416	6356	13415	18779	36046	48252	56622	46142	39767
Bank and cash	3135	3398	4431	5095	5047	6808	8650	8711	11877	15593	16827	32793	17962	16585	30412	41738
Current assets	34443	33904	39329	45960	50237	66961	82835	114963	122257	147856	193275	184033	142000	129755	136886	158153
TOTAL ASSETS	47167	49625	56637	67490	72999	90832	112152	147440	167456	202628	250314	250056	209113	182372	186186	208829

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Shareholders equity	16753	16769	17720	21305	23302	34263	40456	52624	63112	69176	91686	68587	73607	60481	80445	104677
Minority interests	1787	2031	1801	1995	1787	1749	3410	4395	2051	2182	2764	3532	2469	2299	1057	850
Long term interest bearing liabilities	1073	1830	5298	7444	7763	5352	4539	10719	12609	24387	21550	51247	36117	27001	21837	14185
Long term non-interesting liabilities	1858	3002	877	334	374	464	1687	510	459	567	744	887	949	2771	1856	2740
Provisions	5864	6205	6621	6751	6589	6651	17938	21095	22284	22552	27650	34171	32354	36068	35286	22184
Current interest beraing liabilities	2354	3381	5054	3808	2869	3913	6525	4984	6615	12010	15477	20324	14321	9509	1719	10784
Current non-intrest bearing liabilities	17478	16407	19266	25853	30315	38440	37597	53113	60326	71754	90443	71308	49296	44243	43986	53409
TOTAL LIABILITIES AND EQUITY	47167	49625	56637	67490	72999	90832	112152	147440	167456	202628	250314	250056	209113	182372	186186	208829

Source: Annual reports

Table A 6.4, Balance sheet, Nokia

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Intangiable assets, goodwill	212	145	85	68	56	44	15	40	100	236	1112	854	476	186	90	90
Intangiable assets, capitalised R&D	0	0	0	0	0	161	161	227	289	413	640	893	1072	537	278	260
Intangiable assets, other	54	39	40	31	35	61	69	80	95	189	242	237	192	185	209	211
Tangiable assets, machinery & equipment	465	372	365	360	435	561	523	598	695	1174	1625	1432	946	702	690	751
Tangiable assets, other	358	352	366	442	422	466	429	451	636	857	1107	1082	928	864	844	834
Financial assets, associates & JV	210	363	339	352	304	141	152	57	90	76	61	49	49	76	200	193
Financial assets, Customer financing	30	53	49	47	37	39	23	27	10	20	808	1128	1056	354	0	63
Finnacial assets, deferred tax assets	0	0	0	0	0	0	0	0	196	257	401	832	731	743	623	692
Financial assets, other	92	66	39	44	46	48	43	109	109	265	392	405	292	190	227	253
Fixed assets	1421	1390	1283	1344	1336	1522	1414	1589	2220	3487	6388	6912	5742	3837	3161	3347
Inventory	676	573	646	863	1144	1679	1080	1230	1292	1772	2263	1788	1277	1169	1305	1668
Recivables	1021	800	1118	1047	1318	1601	1833	2141	3631	4861	7056	7602	6957	6802	6406	7373
Avliable-for-sale investments	398	519	410	370	671	486	990	1575	2165	3136	2774	4271	7855	10967	10707	8345
Bank and cash	132	107	115	184	215	223	279	485	726	1023	1409	1854	1496	1145	1090	1565
Current asseys	2227	2000	2289	2464	3348	3988	4182	5431	7814	10792	13502	15515	17585	20083	19508	18951
TOTAL ASSETS	3648	3389	3572	3809	4683	5510	5596	7020	10034	14279	19890	22427	23327	23920	22669	22298

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Shareholders equity	1261	1243	1131	1095	2088	2322	2678	3620	5109	7378	10808	12205	14281	15148	14231	12155
Minority interests	91	101	117	90	93	71	5	33	63	122	177	196	173	164	168	205
Long term interest bearing liabilities	866	655	525	571	516	357	356	227	257	269	173	207	187	20	19	21
Long term non-interest bearing liabilities	75	80	98	115	82	77	50	50	152	138	138	253	274	308	275	247
Provisions	0	53	58	241	0	278	0	0	0	0	1804	2184	2470	2422	2488	2479
Current interest bearing liabilities	568	653	850	601	459	760	666	554	760	793	1116	831	377	471	215	377
Current non-interest bearing liabilities	787	604	793	1095	1444	1646	1841	2537	3693	5579	5674	6551	5565	5387	5273	6814

Source: Annual reports

Appendix6.3: Cash flow statement

Table A 6.5, Cash flow statement, Ericsson

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Net profit	3450	886	478	2835	3949	5439	7110	11941	13041	12130	21018	-21264	-19013	-10844	17539	24315
Depreciation and amortisation	1572	1863	2193	2824	3500	4156	4659	5756	6081	7382	11020	7828	6537	8395	7004	5802
Adjustments, other	151	290	-101	370	296	510	316	1790	-2304	-1924	-22831	-21385	-8369	-2008	3486	5043
Net profit before changes in working capital	5173	3039	2570	6029	7745	10105	12085	19487	16818	17588	9207	-34821	-20845	-4457	28029	35160
Changes in working capital	-343	513	-1151	-712	2483	-6959	-2787	-4585	-9424	-4663	-23326	36239	10757	27324	-5550	-18491
Cash generated from operations	4830	3552	1419	5317	10228	3146	9298	14902	7394	12925	-14119	1418	-10088	22867	22479	16669
Interest recived	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest paid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other financial income and expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Income taxes paid	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net cash from operating activities	4830	3552	1419	5317	10228	3146	9298	14902	7394	12925	-14119	1418	-10088	22867	22479	16669
Capital expenditure	-3448	-3583	-3847	-3805	-4907	-6423	-6290	-7237	-8965	-9085	-12643	-8726	-2738	-1806	-2452	-3365
Other investing activities	357	-1190	689	-1411	19	765	1036	81	-8254	-6279	27112	13977	5722	-1606	-28386	4396
Net cash after investeing activities	1739	-1221	-1739	101	5340	-2512	4044	7746	-9825	-2439	350	6669	-7104	19455	-8359	17700
Proceeds from share issue (including minorty contribution)	0	0	0	0	0	7831	0	4875	19	58	1048	155	28940	158	0	0
Dividends paid	-673	-753	-834	-940	-1188	-1510	-1917	-2805	-3800	-4010	-4179	-4295	-645	-206	-292	-4133
Purchase of treasury shares	0	0	0	0	0	0	0	0	0	0	-386	-156	2	-150	15	117
Other financing activities	793	3367	3008	197	-650	-585	106	-5	2989	17502	8531	30042	-22700	-11726	-14281	-2070
Net cash after financing activities	1859	1393	435	-642	3502	3224	2233	9811	-10617	11111	5364	32415	-1507	7531	-22917	11614
Foregin exhange adjustments	-212	-348	980	215	-410	269	38	256	-277	-336	438	738	-1203	-538	214	-288

Source: Annual reports

Table A 6.6, Cash flow statement, Nokia

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Net profit	46	-35	-122	-193	662	375	549	1053	1750	2577	3938	2200	3381	3543	3192	3616
Depreciation and amortisation	180	152	155	168	170	307	376	465	509	665	1009	1430	1311	1138	868	712
Adjustments, other	24	15	25	409	-69	415	164	334	809	1331	1796	2702	1840	1854	1191	1062
Net profit before changes in working capital	250	132	58	383	763	1097	1089	1851	3068	4573	6743	6332	6532	6535	5251	5390
Changes in working capital	-22	45	-38	-179	-244	-900	503	148	-451	-21	-1377	978	955	-184	241	-366
Cash generated from operations	228	177	20	204	519	197	1592	1999	2617	4552	5366	7310	7487	6351	5492	5024
Interest recived	0	0	0	89	59	85	76	118	134	189	255	226	229	256	204	353
Interest paid	0	0	0	-153	-96	-112	-147	-173	-210	-212	-115	-155	-94	-33	-26	-26
Other financial income and expenses	0	0	0	0	0	-9	-11	47	-3	-113	-454	99	139	119	41	47
Income taxes paid	0	0	0	-22	-55	-185	-111	-275	-773	-1246	-1543	-933	-1947	-1440	-1368	-1254
Net cash from operating activities	228	177	20	119	428	-24	1399	1716	1765	3170	3509	6547	5814	5253	4343	4144
Capital expenditure	-178	-146	-141	-199	-331	-555	-341	-404	-761	-1302	-1580	-1041	-432	-432	-548	-607
Other investing activties	5	98	66	137	70	313	-141	-96	-19	-39	-951	-1638	-436	-2783	219	2451
Net cash after investeing activities	56	129	-55	56	166	-266	917	1216	985	1829	978	3868	4946	2038	4014	5988
Proceeds from share issue (including minorty contribution)	1	3	3	155	423	6	0	12	124	180	79	81	189	23	0	2
Dividends	-34	-36	-27	-29	-35	-133	-152	-178	-374	-597	-1004	-1396	-1348	-1378	-1413	-1531
Purchase of treasury shares	0	0	-58	0	-13	0	-35	0	0	0	-160	-21	-17	-1355	-2648	-4258
Other financing activities	-42	9	-5	-170	-160	230	-175	-278	187	-175	51	-559	-404	-70	-257	217
Net cash after financing activities	-20	105	-142	12	380	-163	556	772	922	1237	-56	1973	3366	-742	-304	418
Foregin exhange adjustments	0	0	0	18	-49	-15	4	19	-13	99	80	-43	-163	-146	-23	183
Net increase in cash and cash equivalents	-20	105	-142	30	331	-177	560	791	909	1336	24	1930	3203	-888	-327	601

Source: Annual reports.

Appendix 6.4: Enterprise value

Table A 6.7, Enterprise value, Ericsson

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Outstanding shares (basic?)	206	206	206	217	217	958	961	974	1951	1957	7910	8067	15975	16132	16132	16132
Share price at year end	184,00	108,00	185,00	341,00	410,00	130,00	212,00	298,50	193,00	548,00	108,00	57,50	6,10	12,90	21,20	27,30
Market capitalisation of outstanding shares	37854	22247	38145	74053	89064	124490	203766	290887	376611	1072512	854316	463824	97449	208106	342004	440411
Estimated market value of outstanding stock options	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Book value of minority interests	1787	2031	1801	1995	1787	1749	3410	4395	2051	2182	2764	3532	2469	2299	1057	850
Interest bearing debt	4212	6383	8827	6643	6115	6206	10479	7703	8972	14025	17541	26365	18313	12969	5568	13524
Enterprise value	43853	30661	48773	82691	96966	132445	217655	302985	387634	1088719	874621	493721	118231	223374	348629	454785
Financial assets	-6767	-7812	-9227	-8800	-11892	-15385	-19060	-29127	-18233	-29008	-35606	-68839	-66214	-73207	-76554	-81505
Enterprise value of production assets	37086	22849	39546	73891	85074	117060	198595	273858	369401	1059711	839015	424882	52017	150167	272075	373280

Source: Annual reports.

Table A 6.8, Enterprise value, Nokia

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Outstanding shares (million)	63	63	63	69	75	284	283	284	573	1163	4692	4736	4787	4700	4487	4172
Average share price at year end	8,97	9,87	14,09	46,08	111,52	28,82	44,85	65,21	104,28	180,00	47,50	28,96	15,15	13,99	11,62	15,45
Market capitalisation of outstanding shares	564	621	886	3174	8351	8195	12705	18504	59797	209371	222876	137163	72537	65757	52138	64463
Estimated market value of outstanding stock options	0	0	0	0	0	0	0	0	0	0	5819	2342	110	38	16	101
Book value of minority interests	91	101	117	90	93	71	5	33	63	122	177	196	173	164	168	205
Interest bearing debt	1434	1308	1376	1172	976	1117	1022	781	1017	1062	1289	1038	564	491	234	398
Enterprise value	2089	2030	2378	4437	9420	9383	13732	19317	60877	210555	230161	140739	73384	66450	52556	65167
Book value of financial assets	-434	-536	-492	-951	-1236	-898	-1463	-2225	-3286	-4757	-5037	-7411	-10423	-13121	-12847	-11048
Enterprise value of production assets	1656	1494	1886	3486	8184	8485	12269	17092	57591	205798	225124	133328	62961	53329	39709	54119

Source: Annual reports and own estimate of option values.

Table A 6.9, Capital employed in production, Ericsson

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total liabilties and equity	47167	49625	56637	67490	72999	90832	112152	147440	167456	202628	250314	250056	209113	182372	186186	208829
Long term non-interesting liabilities	-1858	-3002	-877	-334	-374	-464	-1687	-510	-459	-567	-744	-887	-949	-2771	-1856	-2740
Provisions	-5864	-6205	-6621	-6751	-6589	-6651	-17938	-21095	-22284	-22552	-27650	-34171	-32354	-36068	-35286	-22184
Current non-intrest bearing liabilities	-17478	-16407	-19266	-25853	-30315	-38440	-37597	-53113	-60326	-71754	-90443	-71308	-49296	-44243	-43986	-53409
CAPITAL EMPLOYED	21967	24011	29873	34552	35721	45277	54930	72722	84387	107755	131477	143690	126514	99290	105058	130496
Avilable-for-sale investments	-3632	-4414	-4796	-3705	-6845	-8577	-10410	-20416	-6356	-13415	-18779	-36046	-48252	-56622	-46142	-39767
Bank and cash	-3135	-3398	-4431	-5095	-5047	-6808	-8650	-8711	-11877	-15593	-16827	-32793	-17962	-16585	-30412	-41738
Financial assets, assocaites & JV	-1537	-2482	-2399	-2714	-3019	-3564	-3773	-4077	-4215	-4463	-5274	-7597	-4078	-3403	-4698	-7118
Capital employed in production	13663	13717	18247	23038	20810	26328	32097	39518	61939	74284	90597	67254	56222	22680	23806	41873

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Financial assets, Customer financing	377	1314	496	806	320	334	2921	2000	5937	6657	6364	4225	12283	3027	2150	1322
Finnacial assets, deferred tax assets	0	0	519	1915	1601	1657	3017	3062	3275	3413	6533	20912	26047	27130	20766	17294
Financial assets, other	1494	1111	1948	2625	3200	1972	933	3365	2902	4972	3657	4148	2132	1342	1236	3514
Financial assets used in production	1871	2425	2963	5346	5121	3963	6871	8427	12114	15042	16554	29285	40462	31499	24152	22130
Intangiable assets	258	337	853	1107	944	823	919	748	6354	10548	12833	13066	12609	11210	14605	14462
Tangiable assets	9058	10477	11093	12363	13678	15521	17754	19225	22516	24719	22378	16075	9964	6505	5845	6966
Inventory	9365	9164	10267	13830	12805	19351	19619	23614	26973	25701	43933	24910	13419	10965	14003	19208
Recivables	18311	16928	19835	23330	25540	32225	44156	62222	77051	93147	113736	90284	62367	45583	46329	57440
Assets used in production	38863	39331	45011	55976	58088	71883	89319	114236	145008	169157	209434	173620	138821	105762	104934	120206
Provisions	-5864	-6205	-6621	-6751	-6589	-6651	-17938	-21095	-22284	-22552	-27650	-34171	-32354	-36068	-35286	-22184
Non-interest bearing liabilities	-19336	-19409	-20143	-26187	-30689	-38904	-39284	-53623	-60785	-72321	-91187	-72195	-50245	-47014	-45842	-56149
Capital employed in production	13663	13717	18247	23038	20810	26328	32097	39518	61939	74284	90597	67254	56222	22680	23806	41873

Source: Annual reports

Table A 6.10, Capital employed in production, Nokia

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total liabilties and equity	3648	3389	3572	3809	4683	5510	5596	7020	10034	14279	19890	22427	23327	23920	22669	22298
Long term non-interesting liabilities	-75	-80	-98	-115	-82	-77	-50	-50	-152	-138	-138	-253	-274	-308	-275	-247
Provisions	0	-53	-58	-241	0	-278	0	0	0	0	-1804	-2184	-2470	-2422	-2488	-2479
Current non-intrest bearing liabilities	-787	-604	-793	-1095	-1444	-1646	-1841	-2537	-3693	-5579	-5674	-6551	-5565	-5387	-5273	-6814
CAPITAL EMPLOYED	2787	2652	2624	2357	3157	3510	3705	4434	6189	8562	12274	13439	15018	15803	14633	12758
Avilable-for-sale investments	-398	-519	-410	-370	-671	-486	-990	-1575	-2165	-3136	-2774	-4271	-7855	-10967	-10707	-8345
Bank and cash	-132	-107	-115	-184	-215	-223	-279	-485	-726	-1023	-1409	-1854	-1496	-1145	-1090	-1565
Financial assets, assocaites & JV	-210	-363	-339	-352	-304	-141	-152	-57	-90	-76	-61	-49	-49	-76	-200	-193
Capital employed in production	2047	1663	1761	1451	1967	2660	2285	2317	3208	4327	8030	7265	5618	3615	2636	2655

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Financial assets, Customer financing	30	53	49	47	37	39	23	27	10	20	808	1128	1056	354	0	63
Finnacial assets, deferred tax assets	0	0	0	0	0	0	0	0	196	257	401	832	731	743	623	692
Financial assets, other	92	66	39	44	46	48	43	109	109	265	392	405	292	190	227	253
Financial assets used in production	122	119	88	91	83	87	66	136	315	542	1601	2365	2079	1287	850	1008
Intangiable assets	266	184	125	99	91	266	245	347	484	838	1994	1984	1740	908	577	561
Tangiable assets	823	724	731	802	857	1027	952	1050	1331	2031	2732	2514	1874	1566	1534	1585
Inventory	676	573	646	863	1144	1679	1080	1230	1292	1772	2263	1788	1277	1169	1305	1668
Recivables	1021	800	1118	1047	1318	1601	1833	2141	3631	4861	7056	7602	6957	6802	6406	7373
Assets used in production	2908	2399	2709	2902	3493	4660	4176	4904	7053	10044	15646	16253	13927	11732	10672	12195
Provisions	0	-53	-58	-241	0	-278	0	0	0	0	-1804	-2184	-2470	-2422	-2488	-2479
Non-interest bearing liabilities	-862	-684	-890	-1210	-1526	-1722	-1891	-2586	-3845	-5717	-5812	-6804	-5839	-5695	-5548	-7061
Capital employed in production	2047	1663	1761	1451	1967	2660	2285	2317	3208	4327	8030	7265	5618	3615	2636	2655

Source: Annual reports

Appendix 6.6: EBITDA-contribution decomposition

Table A 6.11, EBITDA-contribution decomposition, Ericsson

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales	45702	45793	47020	62954	82554	98780	124266	167740	184438	215403	273569	231839	145773	117738	131972	151821
Capitalisation and inventory change	-196	71	905	2458	327	3019	263	2863	2192	-1732	8800	-5388	-3585	-1428	2585	5606
Output	45506	45864	47925	65412	82881	101799	124529	170603	186630	213671	282369	226451	142188	116310	134557	157427
Procurement	-24754	-26119	-26892	-39382	-51331	-63710	-79482	-109884	-119261	-142817	-216064	-183213	-97393	-71612	-81045	-94716
Value added	21256	20117	21461	26560	32274	38645	45896	60719	67369	70854	66305	43238	44795	44698	53512	62711
Staff costs	-14436	-16349	-17640	-20240	-23576	-27010	-31518	-37568	-43178	-48373	-52131	-55520	-46871	-36264	-33138	-34458
EBITDA	6820	3768	3821	6320	8698	11635	14378	23151	24191	22481	14174	-12282	-2076	8434	20374	28253

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales as % of outpt	100,4%	99,8%	98,1%	96,2%	99,6%	97,0%	99,8%	98,3%	98,8%	100,8%	96,9%	102,4%	102,5%	101,2%	98,1%	96,4%
VAM on output	46,7%	43,9%	44,8%	40,6%	38,9%	38,0%	36,9%	35,6%	36,1%	33,2%	23,5%	19,1%	31,5%	38,4%	39,8%	39,8%
GOSm	32,1%	18,7%	17,8%	23,8%	27,0%	30,1%	31,3%	38,1%	35,9%	31,7%	21,4%	-28,4%	-4,6%	18,9%	38,1%	45,1%

Sales growth	15,6%	0,2%	2,7%	33,9%	31,1%	19,7%	25,8%	35,0%	10,0%	16,8%	27,0%	-15,3%	-37,1%	-19,2%	12,1%	15,0%
Output growth	12,7%	0,8%	4,5%	36,5%	26,7%	22,8%	22,3%	37,0%	9,4%	14,5%	32,2%	-19,8%	-37,2%	-18,2%	15,7%	17,0%
VAm contribution to profit growth	2,4%	-6,1%	2,1%	-9,3%	-4,1%	-2,5%	-2,9%	-3,4%	1,4%	-8,1%	-29,2%	-18,7%	65,0%	22,0%	3,5%	0,2%
GOSm contribution to profit growth	7,2%	-41,6%	-4,9%	33,6%	13,3%	11,7%	4,1%	21,7%	-5,8%	-11,6%	-32,6%	-232,9%	-83,7%	-507,1%	101,8%	18,3%
EBITDA growth	23,7%	-44,8%	1,4%	65,4%	37,6%	33,8%	23,6%	61,0%	4,5%	-7,1%	-37,0%	-186,7%	-83,1%	-506,3%	141,6%	38,7%
Control of EBITDA-growth	23,7%	-44,8%	1,4%	65,4%	37,6%	33,8%	23,6%	61,0%	4,5%	-7,1%	-37,0%	-186,7%	-83,1%	-506,3%	141,6%	38,7%

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Output	698	54	169	1394	1688	1985	2598	5320	2175	3505	7228	-2807	4570	378	1323	3463
Procurement	134	-416	79	-356	-259	-218	-339	-493	330	-1968	-6562	-2649	-7983	-456	294	34
Staff costs	397	-2839	-186	1286	838	1019	471	3121	-1348	-2816	-7335	-33008	10278	10528	8584	3735
Contribution before interaction	1229	-3201	62	2324	2267	2786	2730	7948	1157	-1279	-6668	-38464	6865	10450	10201	7231
Contribution from interaction	78	149	-9	175	111	151	13	825	-117	-431	-1639	12008	3341	60	1739	648
EBITDA	1307	-3052	53	2499	2378	2937	2743	8773	1040	-1710	-8307	-26456	10206	10510	11940	7879

Source: Annual reports

Table A 6.12, EBITDA-contribution decomposition, Nokia

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales	3722	2599	3055	3985	5075	6191	6613	8849	13326	19772	30376	31191	30016	29533	29371	34191
Capitalisation and inventory change	-33	-24	-10	147	124	460	-178	380	247	371	980	383	189	385	343	540
Output	3689	2576	3046	4132	5199	6651	6435	9229	13573	20143	31356	31574	30205	29918	29714	34731
Procurement	-2316	-1673	-2023	-2800	-3497	-4535	-4473	-6043	-8624	-13406	-21833	-21997	-20661	-20787	-21217	-25568
Value added	1373	903	1022	1332	1703	2116	1962	3186	4949	6737	9523	9577	9544	9131	8497	9163
Staff costs	-1003	-761	-814	-922	-927	-1092	-899	-1317	-1958	-2383	-2888	-3105	-3140	-3067	-3492	-3877
EBITDA	369	142	208	410	775	1024	1063	1869	2991	4354	6635	6472	6404	6064	5005	5286

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales as % of outpt	101%	101%	100%	96%	98%	93%	103%	96%	98%	98%	97%	99%	99%	99%	99%	98%
VAM on output	37,2%	35,0%	33,6%	32,2%	32,7%	31,8%	30,5%	34,5%	36,5%	33,4%	30,4%	30,3%	31,6%	30,5%	28,6%	26,4%
GOSm	26,9%	15,7%	20,4%	30,8%	45,5%	48,4%	54,2%	58,7%	60,4%	64 6%	69,7%	67,6%	67,1%	66,4%	58,9%	57,7%

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales growth	-2,9%	-30,2%	17,5%	30,4%	27,3%	22,0%	6,8%	33,8%	50,6%	48,4%	53,6%	2,7%	-3,8%	-1,6%	-0,5%	16,4%
Output growth	-3,9%	-30,2%	18,2%	35,7%	25,8%	27,9%	-3,2%	43,4%	47,1%	48,4%	55,7%	0,7%	-4,3%	-1,0%	-0,7%	16,9%
VAm contnbution to profit growth	4,8%	-5,8%	-4,2%	-4,0%	1,6%	-2,8%	-4,2%	13,2%	5,6%	-8,3%	-9,2%	-0,1%	4,2%	-3,4%	-6,3%	-7,7%
GOSm contribution to profit growth	3,9%	-41,7%	29,8%	51,0%	48,0%	6,3%	12,0%	8,2%	3,0%	6,9%	7,8%	-3,0%	-0,7%	-1,0%	-11,3%	-2,1%
EBITDA growth	4,6%	-61,7%	47,1%	96,8%	89,1%	32,1%	3,8%	75,8%	60,0%	45,6%	52,4%	-2,5%	-1,1%	-5,3%	-17,5%	5,6%
Control of EBITDA-growth	4,6%	-61,7%	47,1%	96,8%	89,1%	32,1%	3,8%	75,8%	60,0%	45,6%	52,4%	-2,5%	-1,1%	-5,3%	-17,5%	5,6%

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales contnbution	-10	-111	25	63	112	170	70	360	946	1447	2335	178	-244	-103	-33	821
Capitalisation and inventory change	-3	0	1	11	-6	46	-103	102	-66	1	89	-132	-37	42	-8	24
Output	-14	-111	26	74	106	216	-33	462	880	1448	2424	46	-281	-61	-41	845
Procurement	17	-22	-6	-8	6	-22	-43	141	105	-247	-400	-8	270	-218	-382	-387
Staff costs	14	-154	42	106	197	49	123	88	56	207	340	-199	-46	-66	-686	-103
Contnbution before interaction	17	-287	62	172	309	243	47	690	1041	1408	2363	-162	-56	-345	-1109	354
Contribution from interaction	-1	59	5	29	56	6	-8	116	81	-45	-82	-1	-12	5	50	-73
EBITDA	16	-228	67	202	365	249	39	806	1122	1363	2281	-163	-68	-340	-1059	281

Source: Annual reports