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**Profit and Value Creation in
Pharmaceutical Industry Cross-Border
Mergers:**

**A case study of the Astra/Zeneca and Pharmacia/Upjohn
mergers**

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Abstract

Over the past ten years many industries have experienced a wave of mergers and acquisitions. The enthusiasm in consolidation is based on the belief that gains can accumulate through expense reduction, increased market power, and scale of economies. Whether or not a merged company achieves the expected performance is the critical question. Measuring the success of a merger depends on several factors, including which aspect of postmerger performance being measured and how success or failure is defined.

In this thesis, we attempt to investigate and evaluate the impact of mergers on corporate performance and stock prices by studying cases of two erstwhile Sweden based pharmaceutical companies. It is our intention to examine any changes in the firms' profitability and overall financial performance from premerger through to postmerger periods and find out if the mergers created or destroyed shareholder value.

Generally, the standard financial measures in our cases gave positive results. Sales, key ratios and other performance measures showed an increasing trend. Share prices of AstraZeneca showed an increasing trend throughout the periods, while that of PharmaciaUpjohn was u-shaped. Dividends paid to Swedish shareholders increased significantly in both merger cases.

We recommend further research using other measures of performance than those we have used.

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1. INTRODUCTION

1.1. Background

Merging a business is one of the most complex strategic moves a company can make. The potential rewards are many—mergers can contribute to growth by broadening product lines, increasing market share, strengthening financial position, stabilising a cyclical or seasonal business, and providing key executive or technical talent.

These potential benefits are even further enhanced in cross-border mergers. Cross-border mergers occur when a company in one country merges with a company in another country. These mergers offer advantages such as rapid penetration of new markets, economies of scale, and diversification, to mention only a few, that are critically important to businesses seeking to compete and thrive and often cannot be achieved in any other way. In the 1990s, a gigantic merger wave gripped the world economy. In 1999 alone, the United Nations Commission on Trade and Development reported that the value of cross-border mergers & acquisitions reached nearly US\$700 billion.¹ This figure gives an indication of the potential benefits perceived to accrue from such mergers.

Successful competition in international markets may depend on capabilities obtained in a timely and efficient fashion through mergers. Some have argued that mergers increase value and efficiency and move resources to their highest and best uses; thereby increasing shareholder value (Jenson 1984). Others are sceptical. They argue that the companies acquired are already efficient and that their subsequent performance after acquisition is not improved (Magenheim & Muller 1998). Others prove that the gains to shareholders merely represent a redistribution away from labour and other stakeholders (Shleifer and Summers 1988)².

¹ Michael Cronin

² Weston et al

According to Angwin and Sawill (1997), cross-border mergers seem to be slightly more successful, apparently especially in Europe. They speculate that cultural and geographical distance might have a positive effect, due possibly to less parent company interference. Cross-border acquisitions tend to be more close to the core area of business for the companies and, thus, less risky.

Though cross-border mergers may seem smart, beneficial and easy, looking just at their associated benefits, some analysts believe that they never come without headaches, often big enough to outbalance the benefits.

Porter (1990) invoked European companies 'to compete and not collaborate' with too many cross-border mergers or strategic alliances. He hinted that the benefits of the 1992 single market were most likely to be gained 'if competition is encouraged and collusive behaviour curtailed'. According to him, the trend towards alliances and cross-border mergers will not make firms more competitive as 'dominant firms, or ones caught in a web of links with rivals, will not innovate and upgrade. Supposed efficiencies from mergers will prove elusive in practice. Companies depending on collaborative activity will become mired in problems of co-ordination'.³

The results of a recent study from the consulting firm, KPMG, showed that contrary to conventional wisdom, almost all cross-border mergers or acquisitions fail to deliver proper value to shareholders. The study revealed further that fifty-three percent of cross-border arrangements between 1996 and 1998 actually destroyed shareholder value, while about a third resulted in no enhancement whatsoever. The findings are based on the top 700 cross-border deals during the period reviewed. According to the study, although cross-border mergers or acquisitions are commonly thought to allow the new business entity to cut costs and increase efficiency, the companies involved spent a great deal of time, resources and energy on such issues as due diligence, selecting a management team and resolving cultural issues.⁴

³ Porter, M.E., (1990)

⁴ *Look Before You Merge*

Merger activity in the European pharmaceutical industry appears to be heating up. The pharmaceutical industry is an important contributor to industrial development and employment growth in the global economy and has witnessed a trend toward consolidation during recent years. Until pharmaceutical companies are able to come up with breakthrough research, they have to find other sources for earnings growth in the meantime. One way of doing this is through mergers. In the past two years alone, drug companies put together some \$60 billion worth of major mergers and acquisitions.⁵ Part of the effort to gain scale and efficiency involves the rationalisation of company operations on a global basis. Company activities in both primary and secondary markets have been affected.

The investment case for the large European drug companies is compelling. This business has high growth rate potential due to advances in biotechnology and genetic research and an ageing population. New government regulations are reducing the times required to bring new drug products to market. Finally, the barriers to entry protecting the large drug makers are steep. New entrants face formidable difficulties in staffing and assembling a competent research organisation and few companies can afford the billions of dollars required annually to fund such research.

The pharmaceutical industry is one of the leading industries in Europe. Due to the unique nature of the industry, where national governments are the main purchasers of pharmaceutical products, the industry must maintain a delicate balance between the desire for profits and cost containment measures imposed by those governments. The rising cost of research and development has increased the cost of innovative drugs and imposed added pressure on their ability to market them in the European Union. This is in stark contrast to the United States' pharmaceutical industry, where no restrictions or cost containment measures are imposed on this sector. Mergers, a major factor in both markets, have slowed employment and affected growth in general. The opening up of markets such as Eastern Europe and Latin America should contribute heavily to company growth in Europe.

⁵ www.time.com

According to a Business Communications Co Inc., study of the European Pharmaceutical Industry, the European pharmaceutical market was expected to account for nearly 40% of global production with sales of about \$101.5 million (USD) in 2000. Growing at an AAGR (average annual growth rate) of 8.1%, this sector is expected to total \$150 million by 2005. The increase is due to European Single Market Convergence, which will provide competition incentives. The United States' pharmaceutical market is expected to grow at an AAGR of 12.3% during the 5-year forecast period. Even though Europe's share of the total market will fall to 35% by 2005, both the United States' and European markets will benefit by the rising ranks of the elderly, as well as intensified global research and development.

Europe's pharmaceuticals companies are locked in a high stakes multi-billion dollar struggle with their American rivals to stay in business beyond the first decade of the twenty-first century. The drugs sector on both sides of the Atlantic is caught up in a frenzy of take-over activity as companies seek economies of scale to finance spiralling research and development budgets.

The world-wide squeeze on health expenditure in the 1990's and the growth in the costs of developing new drugs has led to a series of large-scale cross-border mergers followed by rationalization and redundancies which have left most European countries without a wholly-owned major pharmaceutical company.

Sweden, which prior to 1993 had very little foreign participation in investment, experienced a net inflow of direct investment for the first time in 25 years. Foreign investment in Sweden amounted to SEK 50 billion (USD 7 billion) in 1994 and increased to almost SEK 100 billion in 1995.² The bulk of this was from mergers and acquisitions. There were a series of reforms in the late 1980s that can be said to have prepared the ground for this. The most significant changes being the abolition of currency exchange controls, elimination of restrictions on foreign acquisition of Swedish companies, and of clauses in corporate by-laws that limited foreign stock ownership. There was also a major tax reform in 1991 that reduced the corporate tax rate to 28 percent.

For the last fifty years, the chemical industry in Sweden outstripped most other major domestic industries in its rate of growth. Production has increased most rapidly in organic chemicals and plastics. The pharmaceutical industry has been the most successful sub-sector of the chemical industry. Due to the rapid globalisation of the industry in the 1990s, most of the chemical industries are foreign owned today.

1.2. The Statement of the Problem

Globalisation and the need for consolidation has resulted in companies merging to ensure that they are better placed and prepared to compete more effectively. A list of reasons is advanced to support these mergers, which seem very logical, at least from the onset.

Since the beginning of the 1990's, Sweden has experienced increased cross-border merger activities. Among the most popular of these were two mergers in the pharmaceuticals industry, namely the Pharmacia/ Upjohn and Astra/Zeneca mergers.

The potential benefits expected from these mergers include the ability of the companies to cut costs in order to fund more research and, hence, find new products, consolidate research departments to enhance efficiency and speed up the development of new drugs, cut down costs of operations, and make better use of excess manufacturing capacity.

Some past research, however, seems to paint a rather gloomy picture of mergers. Despite the number and size of headline-making merger deals in recent years and the glaring advantages, a significant body of research indicates that the success rate of mergers and acquisitions, both domestic and cross-border, is not very high.

⁶ www.orestad.se

It is no secret to corporate executives and policy makers that carrying out a merger strategy is a decision fraught with risk. In addition to the more typical business uncertainties (competition, pricing volatility, product obsolescence), companies face additional risks as operating risk, overpayment risk and, of course, financial risk.

This thesis intends to explore the profitability and value created for the shareholders of two erstwhile Swedish companies, AstraZeneca and PharmaciaUpjohn, as a result of the mergers. The two companies products are the biggest selling in the Swedish market (appendix 2).

1.3. The Objectives of the Study

The main objectives of this thesis are to investigate and evaluate the post-integration financial and operational performance of and value creation in the two biggest cross-border mergers in Sweden's pharmaceutical industry. Specifically, we would look at the following issues:

- We examine the companies operational and financial results to determine if they are favourable after integration, and consistent with its reputation as the most successful sub-sector of the chemical industry in Sweden.
- Also, we analyze how the companies' values changed after the mergers and determine whether the mergers created the expected value for shareholders, reflected in the share prices and dividends.

1.4. Significance of the Study

This thesis is intends to provide information for:

- Investors, on the measures to look for in assessing the merger performance, the profitability and returns to be expected, and to aid them in investment decision-making.

- Corporate management, on what to take into account when making cross-border mergers or acquisitions, and to aid them in evaluating alternative policy proposals and their impact on their companies.

- Students (researching similar or related topics) and the general public, as it will serve as vital reference material on the profitability and value creation resulting from the cross-border mergers in the Swedish pharmaceutical industry, adding to the list of empirical literature on the subject of study.

1.5. Methodology

In this section, we present the methodology used in our thesis. The research strategy, research and data collection methods used during the research are described here. We also make an effort to evaluate the quality of the offered research, according to two logical tests by Yin (1994):

- Validity
- Reliability

Research Strategy

In choosing a research strategy from the experimentation, survey, archival analysis, histories and case study strategies (Yin, 1994), we came to the conclusion that the case study method augmented by quantitative analysis would be the best approach to use for the purposes of this study. This is due to the fact that this method is best able to explore and estimate the postmerger performance as “a case study design can be used to gain an in-depth

understanding of the situation”.⁷ This method is preferred when examining the present-day events within their real-life situation.

Research Method Selection

A case study can be both quantitative and qualitative (Yin, 1994, p.14). Quantitative analysis is more formal and structured, while the qualitative method is engaged when a total perspective is required, or when a lot of information about a few units is needed.⁸ Qualitative studies make use of mainly an inductive research strategy. Words, rather than numbers, are used as an explanation. Quantitative studies are expressed in numbers but can also be quantitatively analyzed. The qualitative approach is the most appropriate for our case study, whereas a quantitative approach is suitable for the merger results’ assessment.

Data Collection

All data collected in the research process can be divided into two general types: primary and secondary. Primary data is gathered through interviews or surveys. Secondary data is investigated and published by other researchers in this field. We use secondary data as information sources. While exploring and assessing our case study we use internal data, available from the companies brochures and other publications, and external data, collected from trade association data, various books, journals, and world-wide net.

Scientific Evaluation

(i) Errors

When evaluating the research findings possible errors in measuring and analysing of performance results should be taken in consideration. We cannot say that the profitability data used here is free of error or bias. Accounting data (like stock price data) is imperfect. They have well-known shortages. With or

⁷ Marriam, 1997, p.19

⁸ Marriam, 1997, p.6

without merger revaluations, what corporate financial reports say about profitability can be affected by the choice of accounting policies (e.g. depreciation, stock valuation etc.) Inflation has tended to systematically make assets' book values understate market or replacement values. This phenomenon increases the more capital-intensive and slowly growing an entity's operations are. More about the probable errors - in the chapter 2, section 2.1.4 "Using financial accounting data".

(ii) Validity

Basically validity concerns whether the developed framework is a relevant representation of reality. The problem of validity is a common problem in research of this kind. A data-collection instrument is considered valid if it is free from systematic and random errors.

Construct validity states that a correct theoretical framework is being linked to the problems and the results of study. To improve the construct validity a chain of evidence can be established in order to validate the case study. To get better construct validity in this thesis we use multiple sources of data collection. We can say that the level of validity is rather high, because a lot of information was gathered to ensure validity as larger as possible.

(iii) Reliability

Reliability is concerned with the consistency and accuracy of the results. It refers to the extent to which the measurement process is free from random errors. An investigation with good reliability is not affected by who conducts it or by the surroundings. To some extent, the research is reliable if other researchers obtain the same results. In order to check the reliability of our thesis we compared our findings to other researchers' results and to secondary data.

1.6. Organisation of the Thesis

This thesis is divided in five chapters. Chapter One describes the background, objectives, relevance and methodology used in this thesis. In the second chapter, we present the theoretical framework for the empirical study. Further, the methodology of the empirical study is outlined and discussed. Chapter Three comprises a presentation of the merger cases (historical background) and in Chapter Four, we analyze the findings and make comparisons between the two companies. In Chapter Five, we present our conclusions regarding the success or failure of mergers and give suggestions for further study.

2. PREVIOUS RESEARCH

In this chapter we make the reader familiar with the concept of mergers, the motives behind them, and the different approaches that have been taken in research in order to evaluate the mergers. Also, we make him aware of previous theoretical and empirical studies, and raise the problem of financial accounting data.

2.1. Theoretical Studies

Theoretical work suggests that at least 70 percent of mergers and acquisitions fail. This is being proved by many corporations in today's business. So why do they fail? The argument is that most deals produce poorer shareholder value as merged entities than they did when they were separate. The promised synergy and cost savings don't materialize, the distraction hurts effectiveness in the market, customers are lost, and key staff get frustrated and leave. These damaging side effects are not what were expected when the analysis prior to the merger showed how well the organizations fit together and how their combined strengths would make a major, positive impact in the marketplace.

Why Do Mergers Occur?

The simplest explanation for the occurrence of mergers must be that both companies consider themselves to be better off with from the merger transaction than without it. However, this is not a full answer. Why do the parties become better off?

One possible reason is that there is a difference of valuation judgements, given the uncertainty about future conditions. A second reason is the suggestion that a merged company will be more profitable as a part. Such "synergies" might include: introducing superior management into the merged entity; the realisation of complementary in production or marketing; the exploitation of scale economies and the elimination of duplicative functions; risk-spreading

and its favourable consequences for the cost of new capital; a reduction of tax obligations through the pooling of losses and the internalisation of capital transfers; and the enhancement of monopoly power by consolidating competing interests. A third possibility is that those who control the companies seek the prestige and monetary rewards associated with managing a large corporate empire, whether or not the consolidation adds profits.

We would like to know the consequences of mergers and acquisitions; in particular what financial and stock-exchange effects appear after integration.

The research takes two main forms: the analysis of profit, sales, and other data generated internally by one or both of merging enterprises; and the analysis of external data, such as stock market reactions to events occurring all the time of merger or in its aftermath. Much of our research fits the first, more traditional, paradigm. The stock price approach has been widely adopted since 1974. In our opinion, both methodologies have strengths and weaknesses.

Stock Market Studies

Stock market analyses, which also called “event” studies, view the announcement of a merger as an “event” in the stock price history of the merging companies. When the merger and its accompanying premium are announced, the target’s stock prices rise sharply so that, on average, acquired firm shareholders realise “abnormal returns” of 10 to 50 percent relative to month-before-announcement data price levels (and rising on average since the 1950s). If the merger occurs, of course, the acquired company’s stock disappears. If the merger falls through, there is a tendency for the target’s stock prices to drift downward again.

The sharp merged firm stock price increases occurring when the merger is announced have two complementary explanations. First, the stockholders who hold a company’s stock at any moment in time are plainly those whose valuation of the stock exceeds the prevailing market price. If this was not true,

they would sell. To induce the majority to sell, a premium, often sizeable, must be offered. Negative target firm abnormal returns in the pre-merger period are viewed as evidence of managerial inefficiency: either the target's management has lost its grip, or it had deliberately chosen to stay from the path of profit maximisation. After the merger, the sluggardly managers will be replaced by more effective leaders, or firm policies will be modified in a profit-maximising direction. Also, premiums may be warranted because "synergies" will be realised between the merger partners, reducing operating, financing, or tax costs and/or raising product prices.

Critique

One difficulty with the view that stock market value increases reflects efficiency increases is that an alternative set of hypotheses can also explain the stock price patterns associated with merger events. It says that at any moment in time some companies are undervalued by the stock market, while others are overvalued. Companies with undervalued stock – that is, inappropriately negative cumulative abnormal returns – are "bargains". Hence, they become prime targets for acquisition, perhaps (in stock-for-stock exchanges) by companies possessing the uniquely economical currency of overvalued stock. In other words, the depression of merged forms' cumulative abnormal returns before the merger event is the result of mistakes by the stock market, not mistakes by managers who have failed to maximize profits. The premium paid then reflects not the expectation of enhanced future operating efficiency, but the difference between the bargain price at which the target firm's stock is selling before the merger and the price that would have to be paid in a competitive market recognizing the target's true value.

Event study supporters vigorously contest this interpretation, arguing that it is inconsistent with the assumption of "efficient" stock markets. An efficient market is one in which securities prices continually reflect all the information available on future earnings prospects and macro-economic conditions. If they do not, it is said, those who possess unaccounted for information will be able to

make profitable trades, driving prices to a level at which all relevant and available information is impounded.

A variety of objections have been raised to the assumption of stock market efficiency. For one, even in its strongest form, it does not imply that stock market reactions are necessarily correct in their predictions of merger consequences, but only that the best available information is impounded. If that information is faulty, for example because new merger strategies are being tried and investors have not been able to observe their effects sufficiently, the market's predictions may turn out to be erroneous after the fact.

Various anomalies inconsistent with the efficient markets assumption have come to light. For merger analysis, the most important are the tendency for the shares of companies with low stock price/earnings ratios to perform abnormally well, and evidence that acquiring firm share values exhibit negative cumulative abnormal returns when post-merger periods of more than a few weeks are examined. However, the reliability of the latter findings is questionable, since the statistical power of stock price analyses deteriorates as one- to three time frames are considered.

Even if the assumption of stock market efficiency were true, which is singularly difficult to prove or disprove, its truth would not preclude the possibility that merger activity is driven by a (perhaps mistaken) belief that undervalued assets do exist and can be exploited. There is much evidence from interviews and "how to do it" tracts suggesting that merger-makers do actively seek undervalued targets. There is also a paradox: if analysts and merger-makers did not allocate substantial resources to finding undervalued stocks, the quantity of information on the basis of which markets reach their "efficient" equilibrium would be much smaller. Thus, the under-valuation theory cannot be ruled out either logically or factually.

These difficulties demonstrate the need for research on the links between merger activity and efficiency gains outside the framework of the efficient markets theory. Developing evidence on the actual profitability consequences of merger is a major objective of the research reported here.

Using Financial Accounting Data

Our basic objective is to learn what actually happened after the mergers, both generally and in the substantial split of cases where mergers ended in divestiture. We seek, in particular, to determine whether mergers on average were followed by profitability increases, as suggested by stock market event study interpretations. Previous merger profitability studies show that they have labored under a lot of difficulties.

One set of problems involves the counterfactual question: what would have happened to profits without the merger? Such questions can never be answered with certainty, for history can not be changed. In the quantitative work on mergers economists have tried to deal with the problem by comparing merged entities' profit performance with that of control groups. They have been of two main kinds: before-and-after comparisons; and comparisons with units that had no merger but were similar in size, industry, etc.

A serious obstacle to before-and-after analyses is that, once merger occurs, the premerged entity disappears into the consolidated accounts. Confining the analysis to relatively large mergers is not a reliable solution for there are systematic profitability differences associated with merged entity size. Moreover, it is difficult to establish a control group of companies with similar industrial orientation but which are not involved in a merger.

These problems can be avoided by analysing post-merger performance at the level of individual operating units, or "lines of business", rather than at the whole company level.

Another set of problems comes from the way merger accounting is done. Two different methods of accounting for merged assets are used. Under pooling-of-interests accounting, the assets of the acquired firm are recorded at their pre-merger book value. If the acquirer pays more (or less) for the assets than their book value, the difference is debited (or credited) to the acquirer's stockholders' equity account. In contrast, under purchase accounting the acquired assets are entered at the effective price paid for them. If a premium is

paid over the acquired entity's book value, the acquired assets are "stepped up" relative to their pre-merger book values, and/or an addition may be made to the acquirer's "goodwill" account. Plant and equipment value increases attributable to purchase accounting premiums are always depreciated in following years, and goodwill amortisation is required.

Because of these differences, the post-merger profit performance of purchase accounting acquisitions is likely to be systematically different from the performance of pooling acquisitions. To the extent that a purchase premium over book value has been paid, the denominator of any profit/assets ratios will be greater under purchase accounting than under pooling, if all else is equal. If purchase accounting premiums are amortised, the numerator of any post-merger profit ratio will be smaller than that under pooling-of-interests accounting. Thus, again assuming that a premium above pre-merger book value is paid, both profit/assets and profit/sales ratios will be systematically lower under purchase accounting than under pooling accounting, although the deviation will be greater for asset-based than sales-based measures.

A related accounting choice bias is partly offsetting, but has similar analytic consequences. Purchase accounting depresses reported post-merger returns, the more so the larger the premium of the purchase price over pre-merger book value. Aware of this and anxious to show a favourable earnings record to the investing public, acquiring companies have tended to prefer pooling accounting when they paid large acquisition premiums and use purchase accounting mainly for acquisitions with lower (or negative) premiums. Since premiums above book value tend to be positively correlated with acquired company profitability, and assuming some persistence of profitability over time, this bias again means that units treated under purchase accounting are likely to exhibit lower post-merger profitability than pooling-of-interests acquisitions.

Especially during inflationary or deflationary periods, profit figures are sensitive to the choice between LIFO and FIFO inventory accounting methods. Standard accounting practice is to write off as a current expense investment in research, development, and advertising, whose time horizons can span more than a single accounting year. When the "true" profit rate exceeds the rate of

growth of such outlays, this practice causes accounting profits to be biased upward; the more so the larger the share of total costs the outlays represent. When company financial accounts are disaggregated to the level of individual operating units, inaccuracies may arise if costs common to multiple units are allocated among the units, or if inter-unit transfers are made at non-market prices.

That accounting data is imperfect and subject to error does not mean, as some critics argue, that they are useless for evaluating questions such as the profitability of mergers. If the errors are unsystematic or uncorrelated with the phenomenon under investigation, they merely add “noise” to any underlying profitability relationships, making them more difficult to detect. To extract such relationships from “noisy” data is what statistical technique is all about. More serious problems occur when the errors present in accounting data are systematically associated with the phenomena analyzed; for example, if more merger-prone lines tend to be heavier advertisers, grow more rapidly, or use LIFO inventory accounting methods more frequently. Whether or not such potential biasing factors exist is an empirical question.

We shall see that data has considerable intrinsic plausibility. Concretely, it will be able to anticipate or predict important behavioral phenomena with a degree of power quite at odds with critics’ claims that the data “are of doubtful value for the purposes of economic analysis” or that “there is no way in which one can look at accounting rates of return and infer anything about relative economic profitability. We are confident that our analysis will demonstrate that such objections are ill-founded.

The Accounting Studies

Having studied many theories concerning and explaining the nature of different kinds of investments we assume that mergers’ disclosure and assessment can be explicated by using a generally accepted theoretical framework for how investments, including corporate acquisitions and mergers, should be regarded, and their consequences assessed and evaluated. It is based on the theory of capital, which emphasises the value implications for the owner (in the case of a

merger – the value implications for the owner of emerging company), and according to which value is constituted by the cash flows that the company can expect. By assuming that the value of a new firm (after merger) is equal to the sum of the composed a merger firms' values, the value implications of a particular deal can be assessed isolated from each firm. Therefore, the theoretical approach manifests incremental assessments, where the important items are incremental cash flows resulting from the decision made by merged firm. They are converted to a present value by a discount rate, which takes into consideration the risk of the incremental cash flows and the time value of money.

The theoretical approach is primarily for the judgement of practical valuation models that are based on cash flows. These models can differ in terms of their detailed procedures; while some calculate the equity value directly (referred to as the “equity approach” to corporate valuation), others estimate the equity value indirectly (referred to as the “entity approach” to corporate valuation). These two kinds of models apply different cash flow definitions. In the equity approach, the relevant component is cash flow that is available to the owner; while in the entity approach, the important item is the company's cash flow before transactions with its capital providers. Besides being basic to cash-oriented valuation models, the theoretical framework for company estimation is also vital for valuations of models that use; for example, the accounting concept of income, since their general consistency with the theoretical valuation framework is an important factor when their quality is assessed.

The theoretical approach to corporate valuation is illustrated as the ideal research method⁹ (Halpern, 1983; Mueller, 1987); but in our opinion, it doesn't seem to have been adopted empirically. The issue of separation is certainly one explanation for it, but in research other reasons can also be determined. These include difficulties in accessing the necessary internal company data, and circumstances that impede statistical inferences regarding the success or failure of mergers. Instead previous studies have predominantly used aggregated data relating to the entire company. By comparing merging samples that have

⁹ Halpern, P., (1983), pp.297-317.
Mueller, D.C., (1987).

experienced mergers and control samples that normally have not, they have attempted to distinguish the incremental effects of corporate acquisitions.

2.2. Previous Empirical Studies

Previous research is made up of three main directions: the accounting studies; the market studies; and the interview studies. We consider the accounting approach to be more important than the others, because it is directly connected to the merger's outcomes.

We noticed that researchers in previous studies paid more attention to analysing the market studies than the other two approaches. The main question in the accounting approach is "Are mergers successful or unsuccessful?" In context with this there is a necessity to define terms of success and failure. The accounting approach has usually measured the outcome of company on the consolidation level. Success means that the merged company performs better than the parties would have done without merger. Failure is when the opposite occurs.

The history of merger activity is one of failure rather than success. "Study after study has shown that two out of every three deals have not worked" (The Economist, January 1999). One year after deal completion, "... 83% of mergers were unsuccessful in producing any business benefit as regards shareholder value" (KPMG, 1999b).

Numerous studies indicate that most mergers fail to fulfil management expectations. A few of these studies, along with their primary conclusions, are cited below.

I. Table "Merger & Acquisition Performance. Various Companies and Industries, 1960s to 1990s".

<p>Max M. Habeck, et al A.T. Kearney 1993-1996, 115 firms</p>	<p>58% of mergers “fail to create value for shareholders.”</p> <p>Within four years, 50% of alliances are deemed failures.</p> <p>After three years, profitability of combined companies drops by an average of 10%.</p>
<p>Kenneth W. Smith, et al Mercer Management Consulting 1980s and 1990s, 340 firms</p>	<p>In the 1990s, 48% of deals failed to outperform their industries 3 years after consummation.</p> <p>In the 1980s, 57% of deals failed to outperform their industries 3 years after consummation</p>
<p>Michael Hitt, et al Academy of Management Journal 1990-1991, 250 firms</p>	<p>Found no correlation, on average, between acquisition intensity and financial performance relative to industry, as measured by ROE, ROA and profit margin.</p>
<p>Tom Copeland , et al</p>	<p>In an analysis of 116 acquisitions, 61% failed to earn their cost of capital, or better, on funds invested in the merger.</p>
<p>Acquisition Horizons 1980s</p>	<p>40% of all companies viewed their M&A activity as “somewhat successful” or “unsuccessful.”</p>
<p>Dennis C. Mueller Review of Economics and Statistics</p>	<p>A majority of mergers and acquisitions have a negative impact on market-share, reduce profits and produce lower long-term shareholders returns.</p>
<p>Michael Fifth The Economic Journal</p>	<p>Debt and losses erode cost savings or increased profitability from mergers.</p>

A huge amount of research has been dedicated to mergers and acquisitions in Western developed countries, especially in the U.S. Previous studies analysing stock prices around the announcement of an acquisition (event study method) report similar findings: the acquired firms' shareholders enjoy significant positive excess returns, while the acquiring firms' shareholders receive, at best, modest excess returns (Jensen and Ruback, 1983; Asquith, 1983; Jarrell, Brickley and Netter, 1988). However, empirical studies investigating the accounting financial data show inconsistent results. Some find a negative impact on the earnings for the merging firms (Hogarty, 1970; Bradford, 1978; Ravenscraft and Scherer, 1989), while others report a positive effect on profitability for the acquiring firms (Lev and Mandelker, 1972; Smith, 1990) or on productivity (Lichtenberg and Siegel, 1990.) The inconsistent accounting test results may be due to the different measurement methodology employed and different sample selections.

Consolidation has been, for the most part, widespread in the pharmaceutical industry, involving some £140 billion of market capitalization (Societe Generale Securities, 1999). There are three reasons why drug company mergers are so prevalent. First, they offer the opportunity to cut costs through job losses and factory closures; second, to extend the scope of the firms' sales forces; and, third, and most important to increase the budget for R&D (The Economist, February 1998). Despite these anticipated benefits, the results of merger activity in the industry have been mixed. Some time ago, two high-profile pharmaceutical company mergers attracted media attention following integration difficulties. The SmithKline Beecham and Glaxo Wellcome merger initially failed after, "Original talks between the two companies aimed at creating the world's biggest drug company collapsed because of a clash between Glaxo executive chairman, Richard Sykes, and SmithKline chief executive, Jan Leschly, over who should run the group" (BBC Online, January 2000). In January 2000, their union was back on the agenda owing to the predicted retirement of the SmithKline chief executive.

Whether the recent wave of mergers and acquisitions in the pharmaceutical industry has been successful along different measurements is uncertain at this time. Studies of the groups most affected by the merger and acquisition activity

– customers, employees, and investors –revealed that the groups differed in their estimation of how successful individual mergers and acquisitions have been. In depth analysis and perhaps more time are needed to fully assess the impact of pharmaceutical industry consolidation.

The determinations of success and failure are based on a comparison, which is very complex to utilize in practice. The researchers apply several approaches to approximate how the merging parties would have developed in the case of there not being merger. The crudest approach is represented by the *absolute performance studies*, where the company's post merger return is compared to the weighted average of the merging parties' pre-merger return. A more complex approach is provided by the *relative performance studies*, where the merger's performance is compared to that of a control sample.

The accounting studies use different measures of accounting return, such as return on equity (ROE), return on assets (ROA), return on capital employed (ROCE) and return on sales (ROS). These accounting ratios describe different aspects of profitability. ROE measures the return from the shareholders' perspective; ROA, ROS and ROCE measure the operative profitability.

Absolute Performance Studies

The definition of *absolute performance studies* is given above and can be expressed by formula:

$$Pm(c) = Pm(b) - Pm(a) \quad ^{10}$$

Where Pm (b) is the merger's average performance during the applied postmerger period;

Pm (a) is the parties' average performance during the applied premerger period;

Pm(c) is the difference between Pm (b) and Pm(a).

The findings of the absolute accounting studies were summarized and presented by M. Bild in his research “Valuation of takeovers”, (1998)¹¹. These studies were published earlier, between 1921 and 1986.

II. Table “Summary of the results of absolute performance studies”.¹¹

Study	Performance measure	Tendency
Dewing (1921)	Operative profits	-
National Industrial Conference Board (1929)	ROCE	-
Singh (1971)	ROE	-
Ikeda and Doi (1983)	ROA	+
	ROE	+
McDougall and Round (1986)	ROA	0
	ROE	-

The third column indicates the tendency in the results: (-) means that the postmerger return was unsuccessful, (+) represents a positive performance of merger during postmerger period, (0) means that there were neither negative nor positive tendencies. The general tendency of the results is slightly negative.

Relative Performance Studies

The formulation of how the merger’s absolute average performance is related to the absolute average performance of the control sample can be obtained through the following expression:

¹⁰ Bild, M., (1998), p.141.

¹¹ Bild, M., (1998), p.142.

$$P_{mc} = \frac{P_m(b) - P_m(a)}{P_c(b) - P_c(a)},^{12}$$

Where P_c is the performance of the control sample.

The findings of the previous relative accounting studies are presented in table below.

III. Table “Summary of the results of relative performance studies”.¹³

Study	Performance measure	Tendency
Livermore (1935)	ROE	+
Kelly (1967)	ROS	-
Reid (1968)	EPS growth to total assets	-
Hogarty (1970)	EPS	-
Singh (1971)	ROCE	-
Weston and Mansinghka (1971)	ROA	++
	ROE	++
Lev and Mandelker (1972)	ROA	+
	ROE	-
	ROS	-
	EPS	+
Melicher and Rush (1973)	ROA	-
	ROE	+
Utton (1974)	ROCE	-
Mason and Goudzwaard	ROA	-

¹² Bild, M., (1998), p.143.

¹³ Bild, M., (1998), p.144.

(1976)		
Meeks (1977)	ROCE	-
Cable et al (1980)	ROA	++
	ROE	++
	ROS	++
Cosh et al (1980)	ROCE	++
	ROE	++
	ROS	++
Jenny and Weber (1980)	ROA	--
	ROE	--
	ROS	--
Kumps and Wtterwulghne (1980)	ROA	++
	ROE	++
Mueller (1980)	ROA	--
	ROE	++
	ROS	--
Peer (1980)	ROA	--
	ROE	--
	ROS	--
Ryden and Edberg (1980)	ROA	--
	ROE	--
	ROS	--
Hoshino (1982)	ROA	-
Ikeda and Doi (1983)	ROA	+
	ROE	+
Kumar (1984)	ROCE	-
McDougall and Round (1986)	ROA	+
	ROE	+

Some of the reports used two control samples, this is represented by dual signs in the last column. All signs have the same meaning as in the previous table. No clear tendency can be traced; the number of positive results is slightly below the negative number, improvements in the merger's cash performance

and also a positive relation between cash flows and abnormal stock returns around the time of merger announcement.

Cash Performance Studies

The methodology of cash performance studies is basically the one of the relative accounting studies. The cash performance studies emerge as a latest alternative to the absolute and relative performance studies, but it seems that in recent years it was not studied broadly, at least we didn't find any recent published works. The main difference between these studies is that the usual return measure in the relative accounting studies (that is, a ratio between accounting income and accounting capital) is replaced by a cash performance measure. In a while, it was defined as the ratio between the operating cash flow and the market value of the associated assets, the operating cash flow is calculated as earnings before taxes and interest, then plus depreciation.

Some of those who looked at the postmerger cash performance studies were Healy, Palepu and Ruback (1992)¹⁴. In their research work, they find that the mergers experienced important improvements in their cash performance relative to their industries, and this trend was stronger when the mergers were more related. They also found a strong positive relationship between operating cash flows and abnormal stock returns around the time of merger announcements.

¹⁴ Healy, P.M. et al, (1992), p.135-175.

3. HISTORICAL DEVELOPMENT OF THE COMPANIES IN THE STUDY

In this chapter, we attempt to trace the historical development of the four companies under investigation and see how each of them has grown from their inception till the occurrence of the merger. We are particularly interested in identifying their main products, the stock exchanges on which they are listed, and the basis and reasons for the mergers.

3.1. History of Astra

Astra began in 1913 as a small pharmaceutical company near Södertälje, south of Stockholm. At that time, due to the dependence of Sweden on imports of pharmaceuticals from other countries, particularly from Germany and Switzerland, Astra's founders, (Adolf Rising, Hans von Euler and Knut Sjöberg), were determined to form an effective Swedish competitor to the importers in the domestic market.¹⁵ The company began manufacturing its first product, Digitotal (digitalis) in 1914. Though many difficulties were encountered during World War I, by 1917 Astra made a profit of SEK 148,000 and employed 200 people.

Astra was nationalised in 1920, but strong criticism of this resulted in its sale in 1925 to a private consortium consisting of Erik Kistner, Joseph Nachmansson, Jacob Wallenberg and Richard Julin for the sum of 1 Swedish Krona. In 1927, they recruited Börje Gabrielsson as President and CEO of the company and he remained in this position for 30 years.

As the years went by, the company continued to grow, mainly through acquisitions. Notable amongst these was the 1942 acquisition of P.G. Nordström's pharmaceutical factory in Hässleholm. Also, a central laboratory was opened in Södertälje, the largest in Scandinavia at the time.

¹⁵ www.astrazeneca.com

Astra expanded to the USA in 1947, and also set up subsidiaries in the UK, Italy, Canada, West Germany, Colombia, Mexico and Australia during the same decade. By 1950, due to the strategy of consolidation pursued by the company, all non-pharmaceutical operations, with the exception of medical devices were sold off. By the time of the merger, the company's employees numbered approximately 17 000, 65 percent of whom were outside of Sweden.

Products

Astra has strong foundations in four areas: cardiovascular medicines, local anaesthetics, anti-asthmatic agents, and antibiotics. Among its product portfolio are many award winning and large-selling products:

- the beta-blocker Seloken (one of the world's ten largest-selling pharmaceuticals)
- the award-winning inhaler, Turbuhaler; the vascular selective calcium antagonist Plendil (felodipine)
- the acid-pump inhibitor Losec (omeprazole), which has become the world's top-selling pharmaceutical (Appendix 1)
- Atacand (candesartan cilexetil), a new angiotensin II type 1 (AT₁)-receptor blocker, for the treatment of hypertension, to further support the broad portfolio of cardiovascular drugs.

Stock Exchange Listings

Astra's shares were introduced on the Stockholm Stock Exchange in 1955 and on the London Stock Exchange in 1985. The company was presented in the prospectus as the largest pharmaceutical enterprise in the Nordic region, with subsidiaries in about 20 countries. Astra shares were listed on the New York Stock exchange in May 1996.

3.2. History of Zeneca

Zeneca was formed in 1993 when Imperial Chemical Industries (ICI) demerged three of its businesses (Pharmaceuticals, Agrochemicals and Specialties) to form a separate company.

ICI's own genesis can be traced to 1856, when an 18-year-old laboratory assistant at London University's chemistry school, William Henry Perkins, discovered the synthetic mauve known as aniline purple. At 36 years of age, Perkins retired and another chemist, Ivan Levenstein, continued his work. By 1914, Levenstein and his family had built up an international dyestuffs business, which occupied 90 acres at Blackley, near Manchester in the UK. Just four years later, they were producing 169 products in huge quantities. Levenstein Ltd and British Dyes Ltd merged in 1919 to form British Dyestuffs Corporation and in 1926, the British Dyestuffs Corporation merged with three other companies to form the Dyestuffs Division of ICI.

In the mid-1930s, ICI ventured into pharmaceutical development and during the world war, was requested to work on developing some essential drugs. This led to the formation of the Imperial Chemicals (Pharmaceuticals) in 1942 to handle and develop these drugs. This was the first step towards a fully-fledged pharmaceuticals marketing organisation. Pharmaceuticals sales turnover amounted to £247,000 in the same year and rose 16-fold during that decade to over £4 million.

By the 1990s, ICI Pharmaceuticals employed more than 12,000 people, had 21 production sites, 150 sales offices around the world, and major research laboratories in the USA, France and the UK. Annual pharmaceutical sales surpassed the £1.8 billion goal.

Products

Zeneca continued to build on its pharmaceutical inheritance in cardiovascular, anti-cancer, anti-infective and anaesthetic medicines. Pharmaceutical Products that performed strongly were Zestril, for the treatment of hypertension,

congestive heart failure and heart attacks, Zoladex for prostate cancer treatment and Diprivan, a leading intravenous anaesthetic. Also, the herbicide range - Gramoxone, Fusilade, Surpass and Touchdown was in strong demand, and the insecticide, Karate also contributed well.

Stock Exchange Listings

Zeneca's ordinary Shares were listed on the London Stock exchange and other major European Stock exchanges. They were also listed in the form of ADSs on the New York Stock exchange.

3.3. The merger: Astra Zeneca

Astra AB of Sweden and Zeneca Group plc of London officially completed a \$37 billion merger on April 6th, 1999, to form the company AstraZeneca. The merger created one of the world's largest pharmaceutical companies. AstraZeneca was expected to be a market leader in five key therapeutic areas: gastrointestinal, cardiovascular, respiratory, oncology and anaesthesia.

The stock exchanges in Stockholm, London and New York approved the documentation regarding the merger on January 21, 1999, and an international prospectus was made available. By 3.00 pm (Stockholm time) and 9.00 am (New York time) on 30 March 1999, (being the end of the initial acceptance period under the merger offers) valid acceptances had been received in respect of 1,289,503,363 Astra A Shares and 290,644,247 B Shares, representing in aggregate 96.2 per cent of the total Astra Shares and 96.4 per cent of the total voting rights attaching to Astra Shares.

Dealings in the new AstraZeneca shares and American Depositary shares commenced on April 6th, 1999 at 9.00am (London time), 10.00am (Stockholm time) and 9.30am (New York time) on the London, Stockholm and New York Stock Exchanges respectively. Dealings in AstraZeneca shares on April 6th,

1999 were cum dividend on the Stockholm and New York Stock Exchanges and ex dividend on the London Stock Exchange. On April 7th, 1999 dealings on all three Stock Exchanges were ex dividend.

Both shareholder reactions reflected on the stock dealings and remarks from the top executives of the merged companies echoed the air of optimism surrounding the merger. On the New York Stock Exchange, Astra AB's shares jumped \$3 5/8 to \$21 7/8 and British counterpart Zeneca Group PLC rose on \$4 1/4 to \$45 before trading in both stocks was halted at around 1:30 p.m. Eastern time. Shortly thereafter, the companies announced that they were in "advanced" discussions that could lead to a possible merger.

On the day the merger was announced, Dr Percy Barnevik, Chairman of AstraZeneca said "This new company combines the best of two innovative companies with strong track records of organic growth and with great synergies together." Dr Tom McKillop, Chief Executive of AstraZeneca PLC remarked, "Today marks the formation of a new company in the world pharmaceuticals market. I am determined that the energy, thoroughness and co-operation which has enabled the new company to be created in such good time will now be devoted to ensuring that AstraZeneca builds further on its platform for growth."

3.4. Reasons for the Merger

The main reasons advanced for the merger can be discussed under the following main headings:

- **Research and development costs**

The cost of getting a drug to market had risen sharply as competition intensified and companies were forced to rush out remedies as soon as possible. The average bill for producing a product was \$500m. By pooling resources the two companies hoped to create a research and development powerhouse.

- **Patent problems**

The patent on Astra's main money maker, anti-ulcer drug Losec, expires in 2001. Similarly Zeneca stood to lose the exclusive rights over some of its main pharmaceutical products over the next few years. When drugs come off patent, competitors usually come into the market, pushing down prices and taking a big chunk of sales.

Concerns had been raised about the future prosperity of both companies. By combining forces they hoped to cover the cracks in their product pipelines.

- **Cost savings**

By merging, the two companies hoped to save \$1.1bn. Most of the savings were expected to come from slashing 6,000 jobs, and combining their marketing and research and development functions.

- **Intense competition**

Analysts criticised Zeneca and Astra for having unambitious management teams, which are slow to grasp the changes sweeping across the industry. This was because other groups have joined forces and grown much stronger, leaving Zeneca and Astra behind.

Pressure from shareholders for action and a desire to compete more effectively in the crucial US pharmaceutical market helped prompt the move. The new group expected to have nearly half its sales in the US, and half in Europe.

- **Good fit**

The companies appeared to be a good fit. They had complementary drugs, with

few remedies in direct competition with each other. Their similarity in size also helped facilitate the merger.¹⁶

It was expected that the combined company would support Zeneca's stable of cancer treatments, led by Zestril, and Astra's well-established Losic ulcer franchise, which is marketed as Prilosc in the U.S. and accounted for about 55% of Astra's Q3 sales in 1998.¹⁷

3.5. History of Pharmacia

The roots of Pharmacia AB can be traced back almost one hundred and fifty years to 1853 when a leading Italian pharmacist, Carlo Erba, started his own company, which later became Farmitalia Carlo Erba. This company later united with Kabi Pharmacia, which itself began in 1931. These two companies, along with Pharmacia Aktiebolag, form the three main points of origin for Pharmacia AB, a Swedish-based company.¹⁸

Pharmacia grew rapidly and extended its activities. The first subsidiary was formed in the USA in 1952. Several years before the merger with Upjohn, Pharmacia had 56 subsidiaries in 22 countries, and the total number of employees was 20,000. The company maintained very close ties with the Upsalla University, which was like its research and development wing.

The company struggled financially for many years, but by 1988, it turned its fortunes around and acquired companies in Germany, other parts of Scandinavia, and Italy. Around this time, it was ready to introduce a drug for the treatment of glaucoma, but it needed a partner to mass market it in the United States. Pharmacia was also stymied by distribution troubles in the United States. Its biggest drug, the growth hormone Genotropin, faced severe price competition, and the company needed to refill its pipeline. An American

¹⁶ <http://news.bbc.co.uk>

¹⁷ <http://www.fool.com/EveningNews/1998/EveningNews981208.htm>

¹⁸ <http://www.sverigeturism.se/smorgasbord/smorgasbord/industry/com/astra.html>

company could give it access to the world's most profitable prescription drug market.

Products

Pharmacia was a pharmaceutical and biotech company with an internationally prominent position in many fields. One such product area is its drugs for the treatment of cancer, such as breast cancer, prostate cancer, and leukaemia. Another business field is growth hormones, for children not growing at a normal rate. The company also developed a high-tech system for the diagnosis of allergies and anti-smoking treatment in the form of chewing gums, plasters and sprays containing nicotine. Pharmacia Biotech was a leading supplier of chemicals and systems for biotechnical research and production. Being the one among the largest pharmaceutical companies in the world Pharmacia has a large and diverse portfolio of marketed products for customers. The company has several business segments, which are: Primary Care (Celebrex, Ambien, Detrol/Detrusitol, Vestra, Axert), Hospital Care (Zyvox, Fragmin, Valdecoxib), Cancer Care (Camptosar, Ellence, Aromasin, Celebrex), Endocrine Care (Genotropin), Consumer Healthcare (Nicorette, Nicotrol, Rogaine, Regaine). Pharmacia's product portfolio also includes products for women's healthcare needs (Depo-Provera, Activella, Vagifem, Lunelle) including contraception and menopause. Pharmacia is an industry leader in the field of ophthalmology (Healon, CeeOn Intraocular Lenses, Xalatan, Xalcom).

Stock Exchange Listings

Pharmacia's ordinary Shares were listed on the New York and Stockholm Stock exchanges.

3.6. History of Upjohn

William Erastus Upjohn, M.D. and his brother Henry founded the Upjohn Company in 1886. At that time, it was called The Upjohn Pill and Granule

Company and based in Kalamazoo, Michigan (USA). William Upjohn patented a process for making an unbreakable pill, which was so popular that the image of a thumb crushing a pill became the trademark of the company.

Two early and extremely successful products were quinine pills to prevent malaria and Phenolax wafers, which were the first candy laxative. Upjohn remained a family business and, until 1968, its board of directors was composed only of family members and employees. The company continued its growth throughout the nineteenth century, eventually evolving into an innovative, international company.

In 1995, Upjohn's stock price was flagging and it was often rumoured to be an acquisition target. The company had a mature product line: patents were about to expire on some of its most important drugs (like its anxiety product Xanax). Halcion, an insomnia drug, was plagued by safety concerns. Upjohn's CEO at the time, thought a friendly merger would revitalise the company by giving it access to new markets, while allowing it to retain its core character.

Products

The Upjohn Company produced the following products: Adeflor, Cheracol, Cleocin, Lincocin, Trobicin, Cortef, Medrol, Solu-cortef, Solu-medrol, E-mycin, Kao-Pectate, Motrin, Neo-cortef, Orinase, Tolinase, Panmycin, Pensyn, Unicaps, Viticillinvk, Zymacaps.

Upjohn also manufactured Act-dione, Albacilin, Atgam, Biodry, Botran (DCNA), Cortaid, Cytosar-U, Delta Albaplex, Deltasone, Depoprovera, Didrex, Enide, Florone, Gelfoam, Halcion, Halotestin, Hylorel, Lincomix, L-S-50, Loniten, Lutalyse, Maolate, MGA, Micronase, Mycitracin, Pamine, Parvex Plus, Predef 2X, Provera, Sigtab, Solu-B, Special Formula 17900 Forte, Unipet, Xanax, Zanosar. Various veterinary drugs for use in treating animals were also part of their product portfolio.

Stock Exchange Listings

The Upjohn Common Stock was listed on the NYSE. As of September 14, 1995, there were 44,919 holders of record of Upjohn Common Stock.

3.7. The merger: PharmaciaUpjohn

In 1995, the US giant Upjohn and the Swedish company Pharmacia announced plans to merge on a 50/50 basis in a \$6.8 billion deal. The announcement came two days after Rhone-Poulenc Rorer launched a hostile bid for the British Fisons company. At the time, the Swedish government owned 14 percent of Pharmacia.

Pharmacia & Upjohn Inc. became one of the 5 biggest pharmaceutical companies in Europe, one of the 15 biggest in North America and one of 20 biggest in Japan. It is also counted among the ten biggest pharmaceutical companies in the World and had about 34 000 employees, with around \$7 billion in annual sales envisaged at its inception.

The new company headquarters was to be in London. The first CEO was an American (John Zabriskie), and the chairman, a Swede (Jan Ekberg). 16-member board was comprised of an equal number of Swedes and Americans.

The company became a global provider of human healthcare products, animal health products, diagnostics and specialty products. In 1998, Pharmacia & Upjohn relocated its global headquarters from the United Kingdom to the United States (New Jersey). In September 1999, the company established its global headquarters on a 70-acre campus in Peapack, New Jersey. This site is now the management and pharmaceutical headquarters for Pharmacia Corporation.

The merger was accounted for as a pooling of interests under U.S. generally accepted accounting principles. All data prior to the November 2, 1995 merger date has been combined as if the companies had been merged during the prior

periods. When comparing the results of the new company's activity for the years preceding the merger and merger year 1995, the merger and restructuring costs should be taken into consideration. In 1995, the costs for restructuring totalled MUSD 103.4 (or USD 0.13 per share) and costs for merger were MUSD 138.2 (or USD 0.42 per share). Company's sales raised as well.

Pharmacia & Upjohn has its primary listing on the New York Stock Exchange, as well as a listing on the Stockholm Stock Exchange. The company is incorporated in the State of Delaware. U.S. GAAP (Generally Accepted Accounting Principles) rules apply to the accounts.

Pharmacia has recently expressed interest in developing innovative immunological products for cancer.

3.8. Reasons for the Merger

The main reasons advanced for the merger were to strengthen research and development, get a wider range of products, strengthen the market organization and increase the market share. The combination sought to take advantage of certain synergies between Pharmacia and Upjohn in fundamental research, product development, manufacturing, sales, and marketing, in order to both increase the Company's combined revenues and reduce its costs. The goal of the new company, PharmaciaUpjohn, was not just to share product lines and sales forces but also to cut costs. One of the first tasks of the new company was to lay off 4,000 workers.

Though Pharmacia was in better financial shape than Upjohn, it's management believed a merger with Upjohn would leverage the two companies' complementary research strengths — Upjohn was strong in infectious diseases, Pharmacia in cancer.¹⁹ The two companies complemented each other. While Pharmacia had a good supply of new drugs under development, Upjohn's medicine chest was understocked with new products. Upjohn was strong in marketing in the U.S., whereas Pharmacia was weak.²⁰

¹⁹ <http://www.strategy-business.com>

²⁰ <http://www.time.com/time>

One of the focuses of the new company was to be anticancer drugs.²¹ “For its part, the Scandinavian group brings new products to the party - particularly in cancer care”, according to the Financial Times of 8/21/95.

²¹ Moss, R.W., (1995)

4. ANALYSIS

This chapter reviews the two companies' financial performance over the 5 years before the merger and then up to 5 years following (depending on the availability of data). In order to examine the medium-to-long term merger effect, we assume that the firm's financial data must consist of not less than four years before the merger is completed, and four years after the merger. For the Pharmacia/Upjohn merger, we did not include the year 2000 because of the merger of Pharmacia&Upjohn with Monsanto and related data distortion. The chapter also attempts to identify specific measurements of performance that will be appropriate for these companies. These analyses will be based on graphs, financial ratios and analysis of changes in key figures.

Comparing the postmerger performance with the premerger performance provides a measure of the change in corporate performance. We do not exclude the possibility that some of the differences between the premerger and postmerger performance may be due to economy-wide and industry factors. Furthermore, we do not affirm that we restricted premerger financial data only to the real companies' ones, since the mergers and acquisitions were executed continuously (in the case of Pharmacia, they made the following mergers and acquisitions: FICE in 1993, Amersham Life Science in 1997), that had consequences on performance indicators.

4.1. Financial and Operational Review

In analysing the companies' operations, we thought it would be good to look at several things, rather than just concentrating on profit and loss figures, which can be misleading in any set of accounts. We decided to look at the trends of various key indicators that we believe present a clearer picture of a company's health. We make use of graphs, since they help to see clearly what the trends are, and give a more accurate view of any company.

Sales Growth and Other Key Indicators

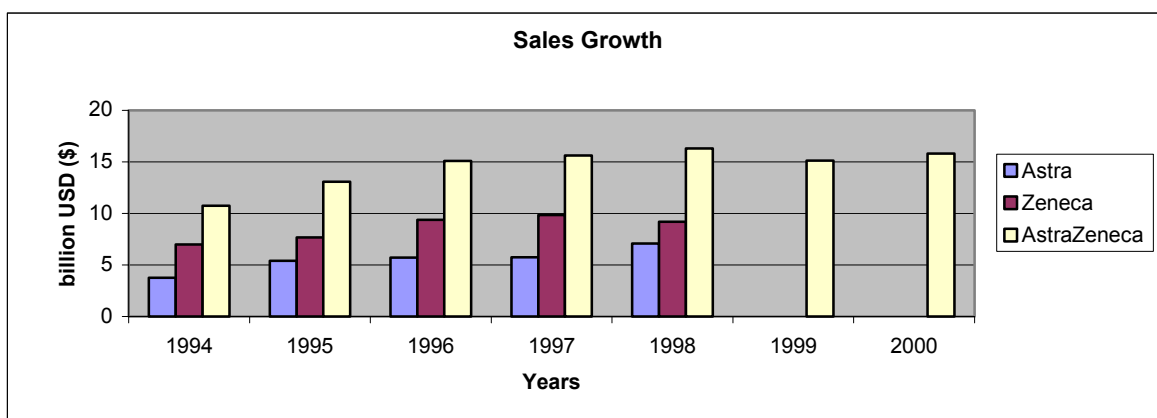
Astra, Zeneca and AstraZeneca

Below we make a graphical presentation of sales of the individual companies and the merged entities for the years ended 1994 to 2000. We analyse the companies' sales because that is the main source of revenue from which shareholders could expect to be paid dividends. Also, it is difficult to manipulate or change the turnover or income of a company. When evaluating stocks, revenue growth is often an indication of how healthy a company is, though sometimes acquisitions and divestitures skew revenue growth figures.

Zeneca's historical sales for 1996-1998 amounted to £5630, £5940 and £5,510M. When converted at the exchange rate as at December 1996 to 1998 of USD 1.6639, 1.6597 and 1.6708 respectively to the British pound (exchange rates at respective year-ends) gives figures of \$9368, \$9859 and \$9206 (million) respectively.

In 1998, profit before tax and exceptional items of £1.097 billion was achieved on sales of £5.5 billion, compared with £1.083 billion and £5.9 billion in 1997 and £1.043 on £ 5.6 for 1996. The company suffers from adverse effects resulting from the strength of the pound sterling. Though these adverse effects are noted to have been reduced, it continued to impact reported results. Expressed in constant currency, in 1998 Zeneca's profit before tax and exceptional items grew by 10% from sales which increased by 10%. In the period under review, Zeneca performance showed an improving trend.

As shown by the graph below, Astra's sales also show increases in these periods, from \$3,773 million in 1994 to \$7,085 million in 1998. Sales increases were 28% in 1995, 9% in 1996, 15% in 1997, 27% in 1998, resulting in an average increase of approximately 20% during the five years prior to the merger.



AstraZeneca's sales for the year ending December 31, 1999 were \$18,445 million (from both continuing and discontinued operations) and \$15,134 million from only continuing operations. This represented an increase of 9%. Sales for 2000 were \$18,103, \$15,804 of which were from continuing operations. (The specialities business was discontinued). Despite the slight decrease in sales in 1999, we think that sales were maintained to say the least, taking into consideration the fact that during 1999 and 2000, the company pruned off some of its businesses. AstraZeneca sold out the majority of its specialities business and demerged the Agrochemical business in 2000, to leave the company positioned as a pure health-care company with a primary focus on pharmaceuticals.

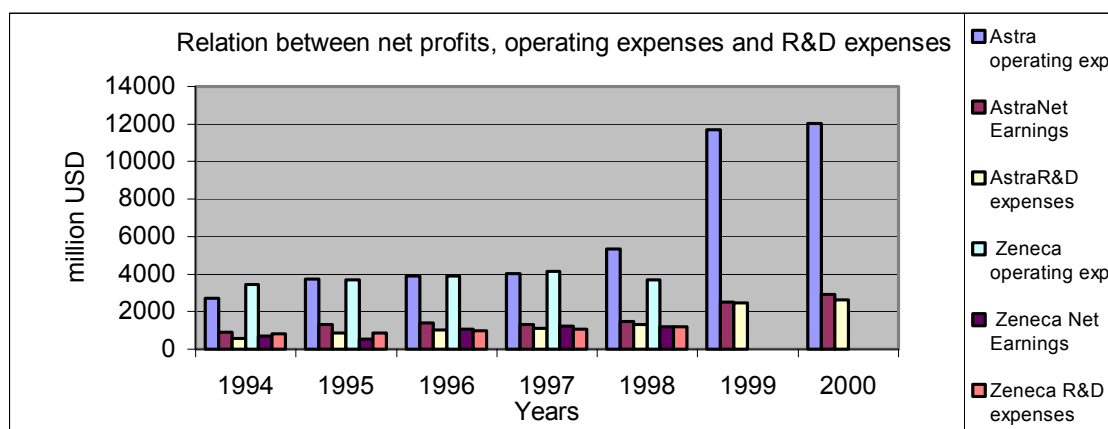
The historical sales figures of both companies (from both continuing and discontinued operations) were consolidated in their new reporting currency and showed a growth from \$9,202M in 1997, \$11,318M in 1998, \$15,134M in 1999 and \$15,804M for 2000, while operating profits were \$2,350M for 1997, \$2,546M in 1998, \$3,570M in 1999 and \$3,984M in 2000. The group's operating profit before exceptional items was \$3,908 million for 1999, an increase of 12% and \$4,330M for 2000, representing a 13% increase. The operating expenses incurred compared to total sales showed that sales grew at a faster rate than operating expenses grew. This was seen as an indication of efficiency in the use of resources.

The group incurred exceptional costs of \$892 million, comprising \$864M for its integration and synergy programme and \$28M rationalisation cost for US Astra operations. Synergy and integration costs in 2000 were \$322M, bringing

the total thus far to \$1186M. Cost synergy envisaged at the inception of the merger amounted to \$1.1billion, expected to be realised by the end of 2001. Cost savings of \$130 M were delivered in 1999, as against the target of \$100M. There were also merger costs of \$1,013M charged against profits before tax in 1999.

The stock to sales ratio of a company is a key indicator and expected to show a reduction in the amount of stock supporting sales over the period. For Astra, this ratio was 11 times in 1994, 13 for both 1995 and 1996 but decreased to 12 in 1997 and even further to 10 in 1998. After the merger, it was reduced to 7 times.

Research and development is the lifeblood of any pharmaceutical company and in line with this importance, the companies' investments in this area have grown over the years. This was one of the key reasons for the merger.



Zeneca spent around 260 million dollars annually on research and development. One of its principal research and development sites was situated in Berkshire, northwest of London, England. The Jealott's Hill research Station occupies some 250 hectares and employed around 1000 research scientists and support staff working on a wide range of crop-related projects.

Astra's research and development over the years underwent extensive international expansion. The largest expansion of Astra's research and development in modern times was carried out in 1995 with acquisition of new

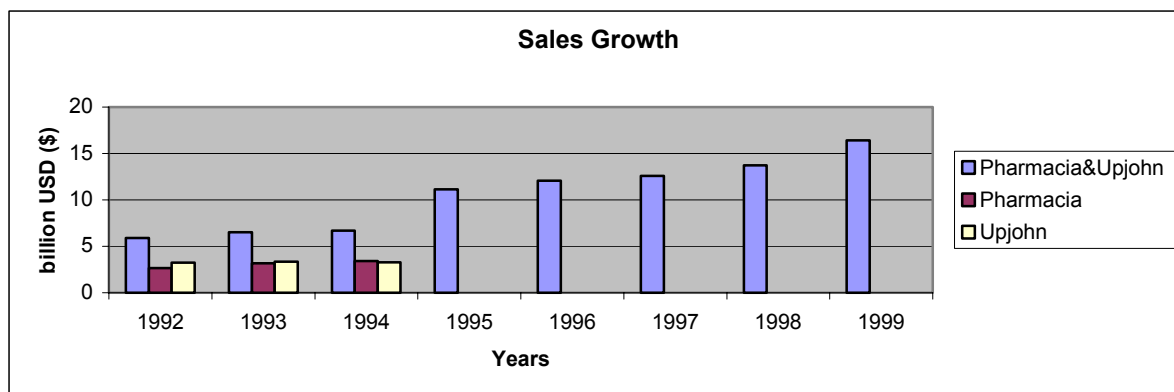
research facilities in the UK (Astra Charnwood) and USA (Astra Arcus USA). As at the end of 1996, it had grown to become a high-grade international operation with more than 4,000 employees and a network spanning a large part of the globe. It had five major product companies, four in Sweden and one in Loughborough, England, plus a smaller preclinical research unit in Rochester, New York. In 1999, AstraZeneca's research investments amounted to \$2.5 billion and in 2000, Pharmaceutical R&D spending totalled \$2,616 million, 17% of pharmaceutical sales. This places it amongst the largest in the industry.

It is also noteworthy that much of the sales growth in the years following the merger was derived from new products. The combined company's annual investment in pharmaceutical research and development is concentrated in seven areas of medical need: cardiovascular, central nervous system, gastrointestinal, infection, oncology, pain control and anaesthesia, and respiratory. The company's research organisation is globally managed, employing 10,000 staff at eight major sites in North America, Sweden and UK. Research and development expenditure is charged against revenue in the years the expenditure is made.

Pharmacia, Upjohn and PharmaciaUpjohn

During 1992-1993 the company reported optimistic results from financial activity. However, as mentioned earlier, some acquisitions or divestitures could bias growth figures.

In 1993, Pharmacia merged with Italian Farmatalia Carlo Erba (FICE). During that year turnover increased by more than 22%. The upward of turnover was to a large degree due to the FICE merger. Japan became the largest market for Pharmacia and made up 15% of company's turnover, followed by the USA, and the third was Italy. In 1994, Pharmacia persisted the integration with FICE. Sales increased on 3% during 1994.

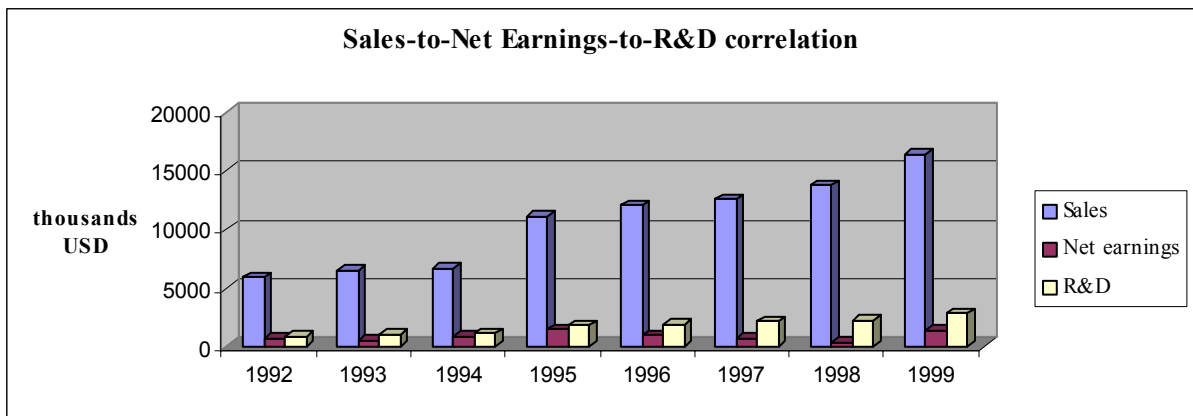


After the merger with American Upjohn, we observe the following increases in worldwide sales of 3% in 1996 and 4% in 1995, whereas sales declined 8% in 1997 to \$6.6 billion. Volume growth of 2% was greatly offset by a 1% price decrease, a 6% unfavourable exchange rate effect, and a 3% decline due to the exclusion of Biotech and Biacore sales from the consolidated total. In 1997, sales outside the U.S. represented 68 % of worldwide sales consistent with 1996 and down from 70% in 1995. The magnitude of sales in Japan and key European markets resulted in significant adverse exchange effects to the company as the U.S. dollar strengthened relative to the yen and most major European currencies throughout 1997. In 1998, Pharmacia&Upjohn could turn the decreasing tendency of previous years to increasing one. Sales that reduced in 1997 grew by 9,2% during the year 1998. For the year 1999, net sales composed an increase of 19,6%. Sales in the USA continued to represent an increasingly significant percentage of worldwide sales.

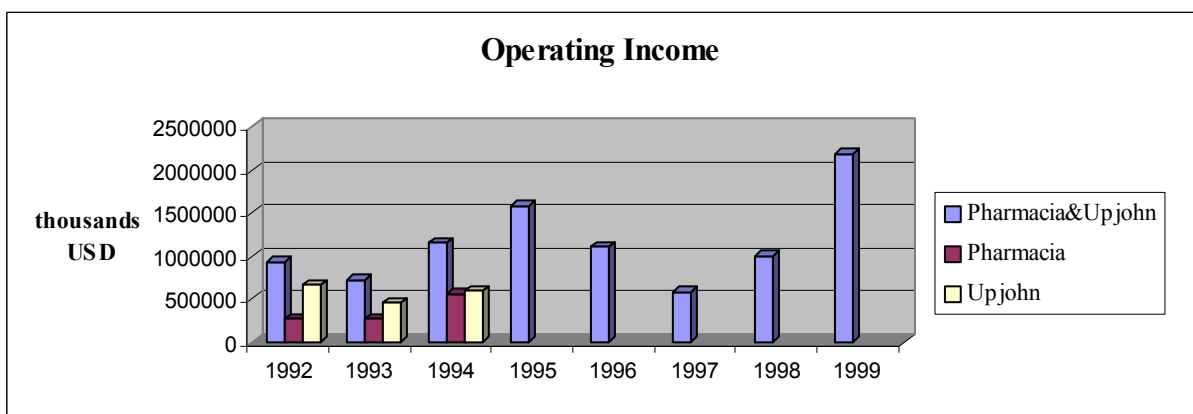
In the graph below we present the assessment of sales-to-earnings-to-R&D correlation. As it is illustrated on the graph net earnings were comparatively the same during 1991-1994. The year the companies merged, net earnings grew almost on 80% measured up to 1994. Afterwards they were falling steadily during 1996-1998, and only in 1999 net earnings raised to 1,38 MUSD (change in 2,8 times if weigh against 1998).

Even before the merger Pharmacia and Upjohn aimed to direct their research and development effort to develop new innovative pharmaceuticals and other health care products in a number of therapeutic areas in which the companies believed they had ability to establish a leading global position. In Upjohn, total

research and development expenditures have been increasing almost every year for more than five years, amounting to USD 553,3 million in 1992, USD 612,5 million in 1993 and USD 607,2 million in 1994. In 1994, this amount presented 18,5% of total assets, one of the highest rates in the industry. Pharmacia's 1992, 1993, and 1994 research and development expenses were MSEK 1,859, MSEK 2,812 and MSEK 3,488, respectively. So, as it visibly demonstrated on the graph, both companies' R&D costs were maintaining constant level till merger; after the merger years, they were increasing continuously.



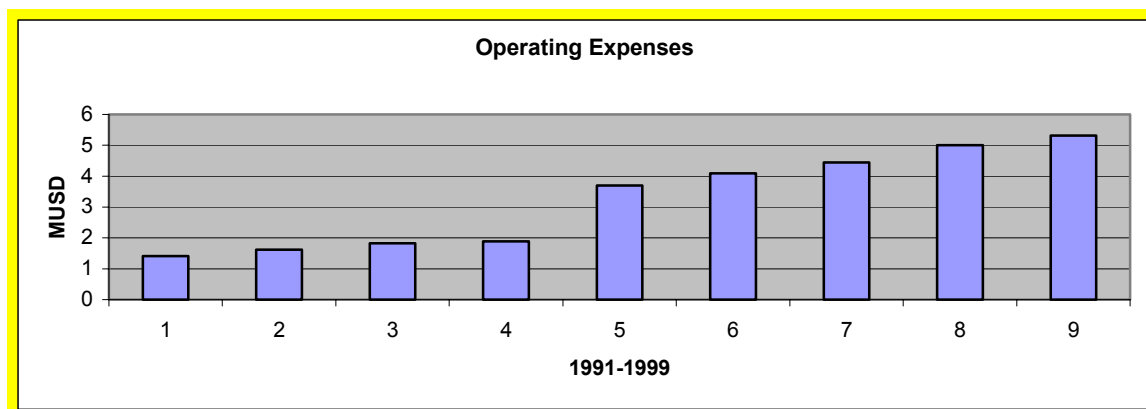
In 1998 and 1999, Pharmacia&Upjohn devoted 15,8% and 17% of its annual sales to research and development. Earnings declined in 1997 compared with the previous two years. The year-to-year earnings comparison is significantly affected by the restructuring of the company since 1995.



The restructuring costs were inevitable to transform the company from two unique operations into an effective, well-integrated global enterprise. Restructuring charges were \$316 million (\$.39 per share) in 1997; \$518 million

(\$.62 per share) in 1996; and \$104 million (\$.13 per share) in 1995. Restructuring charges in 1997 were associated with the global turnaround program designed to achieve simplified infrastructure and improved efficiency. In 1996 and 1995, the company reduced 4,350 positions in order to eliminate the duplicate facilities, and other activities associated with the merger.

In addition, merger costs of \$67 million (\$.09 per share) were reported in 1996 and \$138 million (\$.22 per share) in 1995. These costs consisted of certain nonrecurring organizational activities, establishing the corporate identity for the new company, and other costs of combining the two predecessor companies. Changes in ownership of non-core businesses also have materially affected the year-to-year earnings comparison.



Conclusions

The postmerger sales and earnings grew for the both mergers, compared to premerger sales. As at 1999, AstraZeneca was rated second among the top 15 pharmaceutical companies' sales of medicines in the world (Appendix 3).

However, it is our opinion that the companies did not achieve substantial growth in operating income, and consequently in net earnings. As it is clearly seen in the graphs above, the postmerger income growth continues though it lacks significance. Both mergers, however led to vast expenses. Thus the increasing affinity in operating expenses in postmerger period was constructed by the merger restructuring costs.

Capital Structure

Astra, Zeneca and AstraZeneca

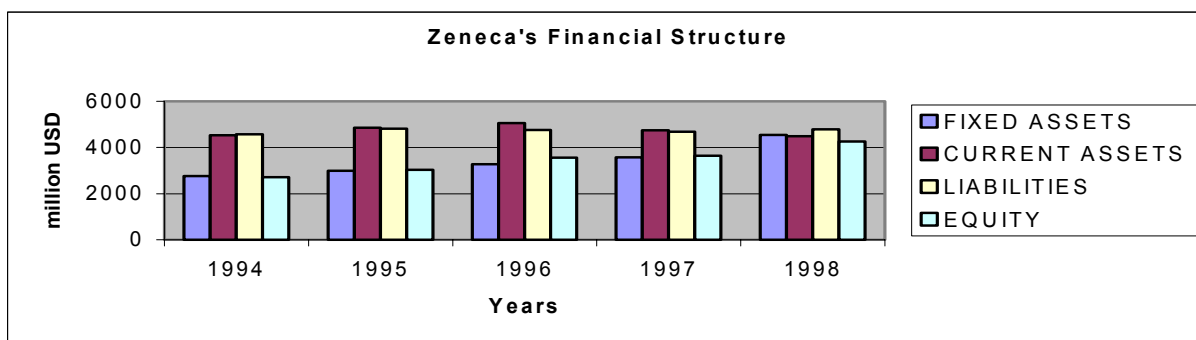
Astra's shares are of two classes, the class A and the class B. Each A-share is entitled to one vote and the B-share is entitled to one tenth of a vote. Both shares are the same in all other respects and had a par value of SEK 2.50 each.

At the end of 1995, Astra had approximately 91,500 stockholders. Foreign ownership in Astra at the end of that period accounted for about 47% of the capital and 43% of voting rights.

The number of shareholders has increased to 115,000 with 47% foreign ownership and 44% of voting rights by December 1996. The Board of Directors proposed a stock dividend of 1 share for each 3 shares held and a stock split of 2 to 1 in 1997. This was approved by shareholders, thereby reducing the par value of all the company's shares from SEK 2,50 to SEK 1,25 each.

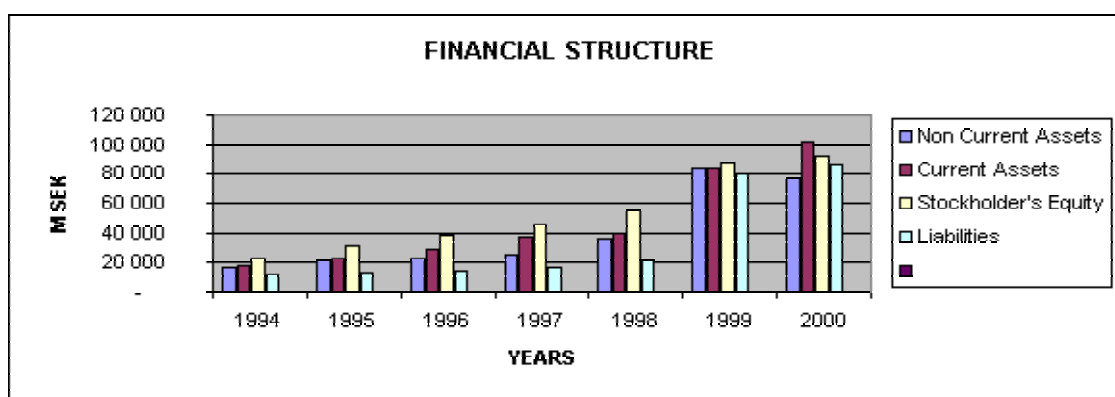
At the end of 1997, Astra had approximately 243,600 stockholders and foreign ownership reduced to 42% and about 40% of voting rights. The year 1998 saw even further reduction in foreign ownership and voting rights. The number of shareholders increased to approximately 256,400 while foreign ownership was reduced further to 39% foreign ownership vis-a-vis 38% of votes.

The following tables and graphs show a simplified picture of the financial structure of Zeneca, Astra and AstraZeneca for 1994 to 1998 through to 2000. The models explain the relationship between the balance sheet items, and can be used as a tool to assess the financial position.



Zeneca had more debt compared to equity than Astra. We would have liked to analyse the make of it's equity to determine the level of retention but didn't have access to that information.

The greater proportion of Astra's capital was from retained earnings. Shareholders equity for the year 1994 to 1998 were 1,541 MSEK and increased



to 2,054MSEK in 1997. The company has a high retention ratio and most of its growth is financed from this. Almost three quarters of it's shareholder equity is from retained gains (self-generation). Prior to the merger, Astra had a very small proportion of long term liabilities.

AstraZeneca had net funds of \$2169M as of 31 December 1999, and a gearing of nil. In 1999, 826 million shares of the merged company were issued to Astra AB shareholder and a further 3 million in respect of share options. The group also embarked on a share buy-back scheme and had repurchased 4, 338,444 shares by the end of the year, making the total number of shares in issue

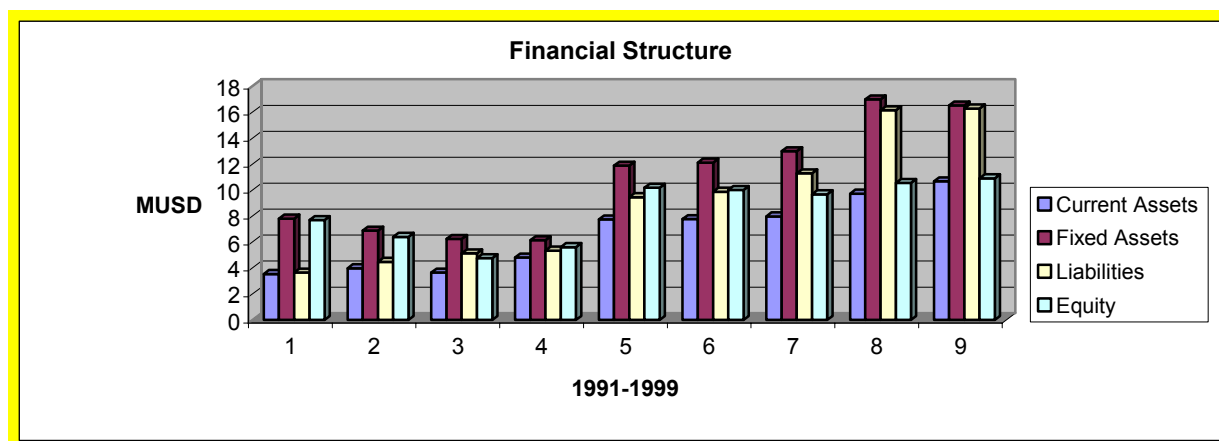
1,775,067,825. Group reserves were reduced by \$630M due to exchange rate movements and shareholders funds reduced by a net of \$627M to \$10,302M.

In 2000, the company had net funds of \$3,605M as of 31 December. Repurchased shares numbered 9.4 million, costing \$353 M. This brought the total number of repurchased shares to 13.7 million at a cumulative cost of \$536 M. Shareholders funds were reduced by a net of \$781 M to \$9521 M at the end of the year.

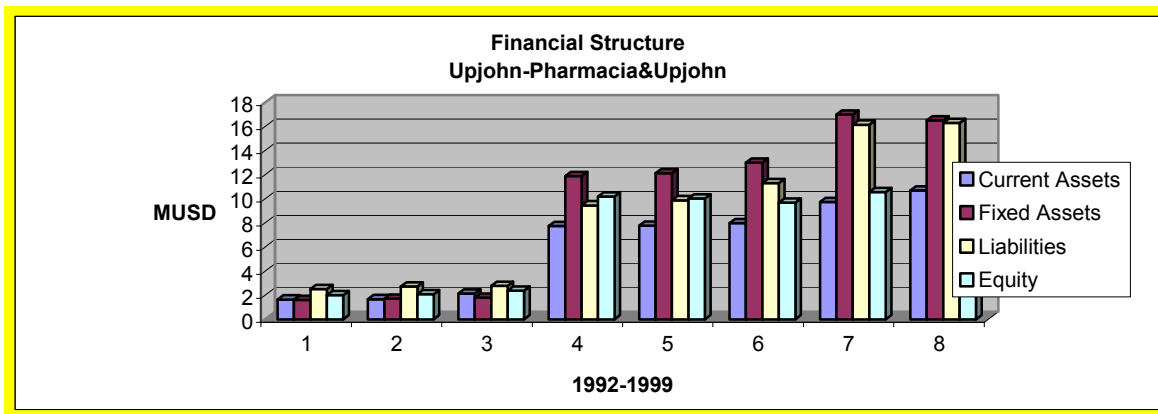
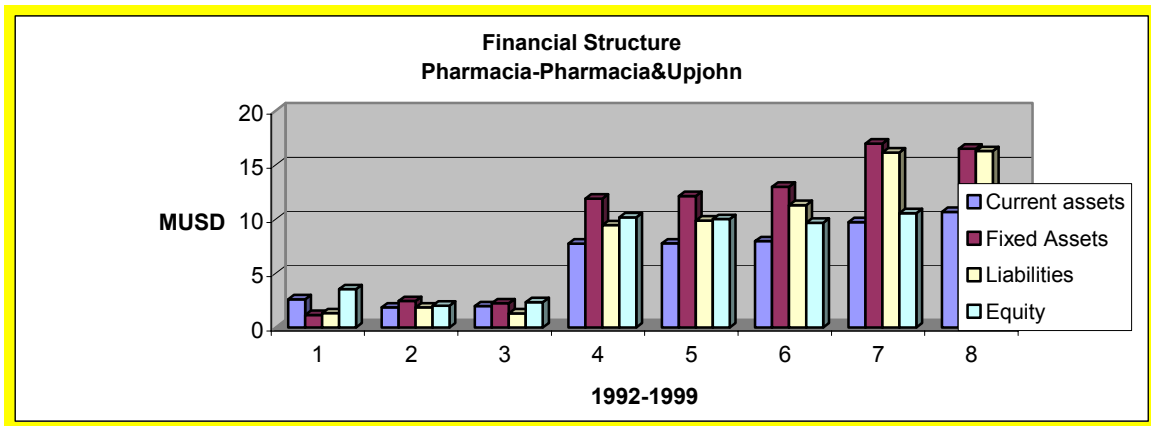
The UK or US applicable accounting standards adopted are not expected to have material impact on the company’s financial position and results.

Pharmacia, Upjohn and PharmaciaUpjohn

To provide the readers with a very clear image of Pharmacia&Upjohn’s capital structure, we apply the next graphs (see below) and tables (see Appendix 6).



The assets grew significantly, primarily due to merger related consolidations. As indicated below, net financial assets have remained relatively constant from 1995 through 1997, increasing slightly each year. The company’s liabilities, to some extent, repeat the dynamic of assets’ changes. They raised due to the merger spending from 1995 till 1999.



The shareholders capital has risen quite a lot. That can be explained by the merger event, when the share capitals of both companies were combined and issued additionally more shares.

Financial Ratios

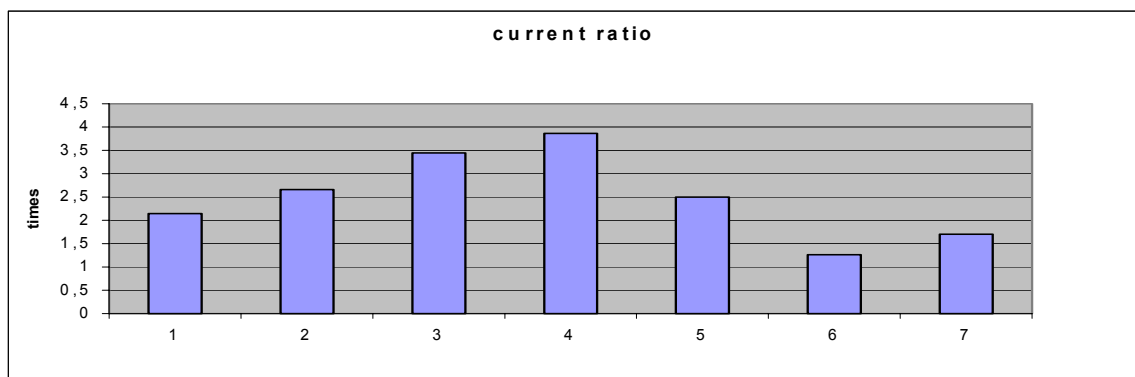
It is only by applying these ratios that investors can be sure of a company's financial stability or otherwise. Des Luplau, a leading financial consultant and author of several books on analyzing company accounts, says the ability to interpret ratios can give investors the opportunity to forecast a company's earnings and profitability.

Current Ratio

One of the most widely used tests of a company's financial strength is the current ratio calculated by dividing its current assets divided by its current liabilities. This measures the theoretical ability of a company to repay its short-term debts in a hurry if it is in trouble. Most pundits claim that a ratio of 2.0 (twice as many current assets as current liabilities) is a good benchmark, but it depends on the business. High-growth companies, however, need a larger cushion to finance rapid expansion, while big, established firms can get away with less.

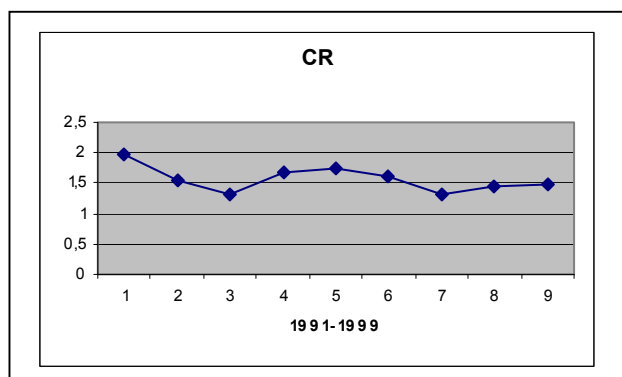
Astra and AstraZeneca

The graph shows that this ratio ranged between 2,1 times and 3,8 in the periods before the merger and 1,7 and 1,7 times after the companies merged. The more important issue is to take a look at the ratio trend over time. A low, but stable current ratio is less of a problem than a sharply declining ratio that might



signal either unsustainable growth or a deteriorating business. Both conditions are serious red flags for any investor. Based on just time ratio, we can not draw many conclusions, so we find it useful to compare with Pharmacia's ratios. The higher the ratio, the more liquid the company. The bigger the excess of assets over liabilities, the better for creditors, especially if the value of inventories were to decline.

PharmaciaUpjohn



As is seen from the graph, before the merger, the ratio was rather stable and hesitated between 1.3 and 2 times, the decreasing trend in current ratio examination can be observed from the merger up until 1997. This decreasing can be explained by declines in receivables and short-

term investments. At year-end 1998 and in 1999, the company's current ratio was generally constant and consisted of around 1,5 times. Generally, the company was liquid enough before and after the merger.

Conclusions

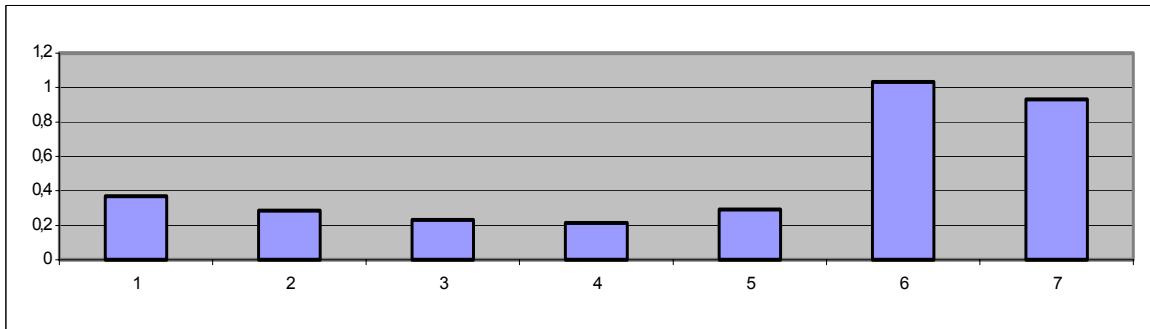
We perceive a significant change of current ratio in AstraZeneca case from premerger to postmerger periods. The current ratio decreased radically the year before the merger and during the following postmerger years. However, for PharmaciaUpjohn the change in current ratio was insignificant. The trivial downward change in liquidity (CR) during first two years after merger was noticed but with almost no difference in leverage (DE).

Debt –To-Equity Ratio

Dividing the amount of long-term debt of a firm by its shareholder's equity yields the debt-to-equity ratio, which gives some insight into how the firm is capitalised. Because interest payments on bonds are tax deductible to the corporation while dividends to shareholders are fully taxed, companies have an incentive to carry at least some debt on their books. However, getting overloaded with debt reduces management's flexibility and increases the risk to shareholders.

Astra and AstraZeneca

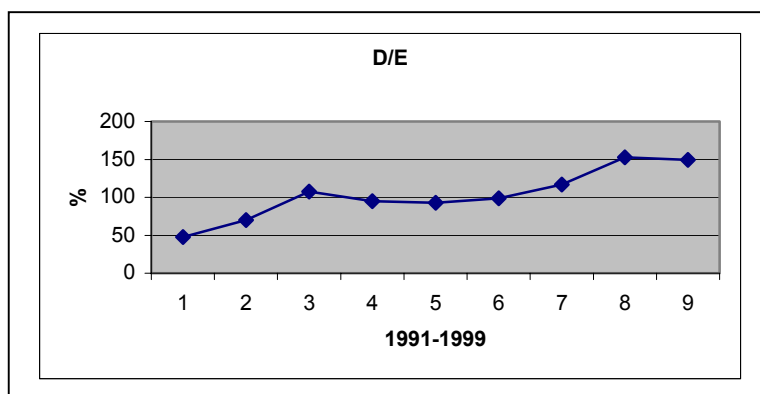
Astra, as the graph depicts, used a very small proportion of debt finance its assets, compared with equity. This lower debt/equity ratio generally means that a company has been aggressive in financing its growth with equity, which can



explain its stable earnings.

The basic belief is that it's not prudent to owe more than you own. After the merger, the combined company's debt to equity ratio increased, especially in 1999 when it was 1.03, but reduced to 0,93 in 2000.

PharmaciaUpjohn



As is seen from the DE ratio graph, after the merger, the company's assets were mainly financed with debt and that tendency was getting bigger. We can not say

that the company is in a risky position as the D/E ratio does not exceed 1.5 times, furthermore we can assume that the company's management realized the full potential of the business.

The percentage of debt to total capitalization in 1995 reflected higher debt levels. Despite a slight reduction in debt in 1997, the percentage of debt to total

capitalization increased over 1996-1997 due to a decline in shareholders' equity. The negative currency translation adjustments recorded in equity caused much of this decline coupled with lower 1997 earnings levels. The increase in the percentage of debt to total capitalization from 1997 to 1999 reflects growing debt levels.

Conclusions

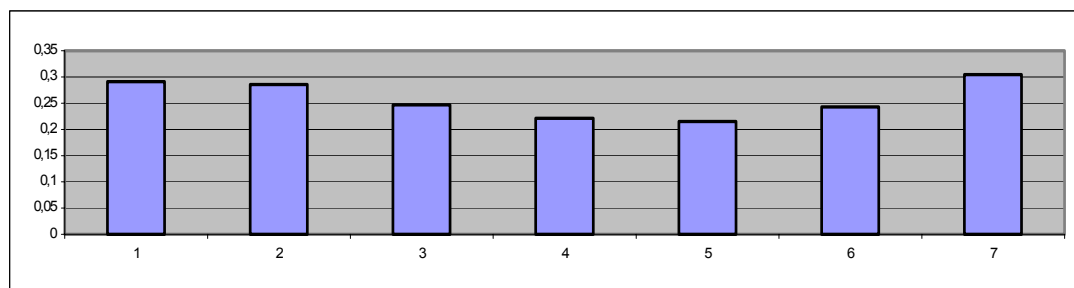
We found a huge upward direction for DE ratio for AstraZeneca in postmerger period, and a rather big enlargement of liabilities in postmerger period for both companies.

Return On Equity

A measure of a corporation's profitability, calculated as dividing net income by shareholders equity, is useful for comparing the return on equity compared to other firms in the same industry. This is one of the most important ratios for determining if the shareholders get enough profits to compensate for the risks in investing in the company.

Astra and AstraZeneca

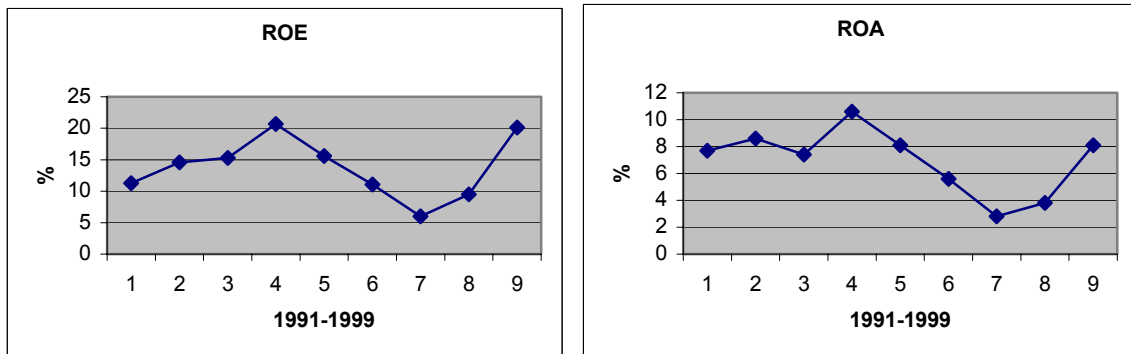
A turnaround is noticeable in the sense that the ratio seemed to be declining



over the years before the merger, but started to rise after the merger.

PharmaciaUpjohn

Return on Equity(ROE) : ROE over the past 10 years gives us a very good idea of the historical growth.



From the year prior the merger and the years followed it, ROE felled significantly (from 20% in 1994 to 5% in 1997). After 1997, the rising propensity is observed.

Return on Assets:- This is considered a measure of how effectively assets are used to generate a return. Year to year trends may be a good indicator, but changes in the total asset figures (a decrease or increase in the denominator) can effect the ratio and doesn't necessarily mean the business is improving or declining. Hence, we perceive that ROA is falling during the years 1994-1997, but if we look at the structure of assets during those years we distinguish the growth of the current and fixed assets.

Conclusions

ROE and ROA deteriorated in short-term premerger and postmerger periods relative to long-term premerger and postmerger periods for both AstraZeneca and PharmaciaUpjohn. As far as ROE, ROA results for both companies gave a similar trend, we can conclude that profitability measures declined after the merger but seemed to turn the trend upwards.

Earnings Per Share

This is measured by net income for a specific period divided by the number of outstanding shares. Companies usually use a weighted average number of shares outstanding over the reporting term. This is the single most popular

variable in dictating a share's price as it indicates the profitability of a company.

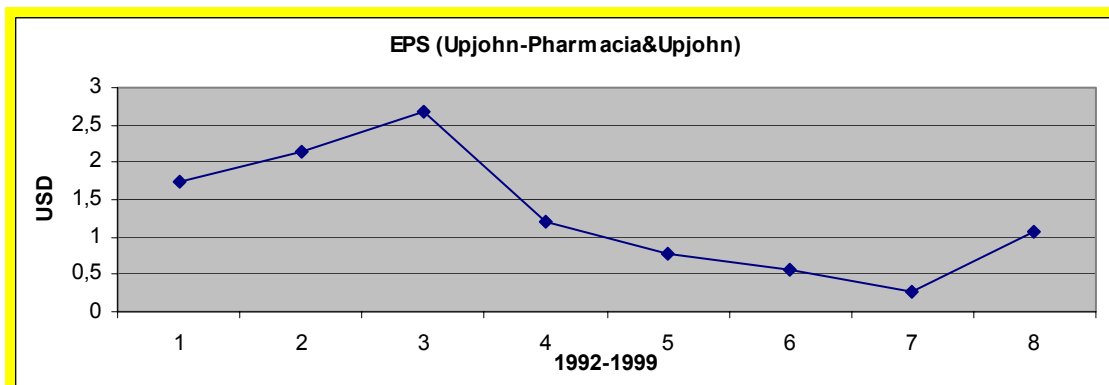
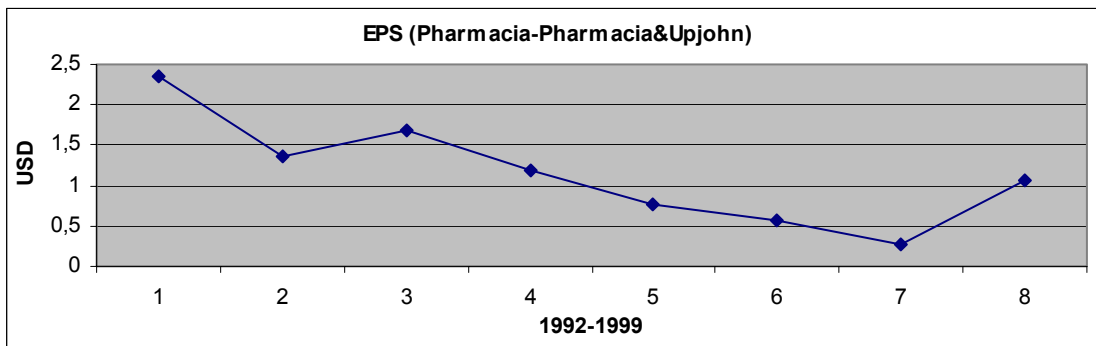
Astra and AstraZeneca

The earnings per share of Astra kept improving year after year throughout the periods from 1994 to 1998. It was noted, however, that in the postmerger period the increases have been more noteworthy. We are unable to make many conclusive assessments on this because if a company issues more shares then EPS are much harder to compare to previous years.

PharmaciaUpjohn

If EPS is compared to the EPS from the previous years it indicates the rate of growth that a companies earnings are growing on a per share basis.

EPS Analysis:



Earnings per share that were falling down up until 1997 when they increased by 12% in 1998. After a troubled start-up, the company issued a series of profit warnings before bringing in a new chief executive. The share price has reflected this rocky development, but has risen from a closing low of 219 SEK in April 1997. In January, 1998 P&U shares rose sharply and were evaluated at 437 SEK. On January 4, the Swedish government announced it wanted to sell its stake in the company. In the past 12 months, P&U shares have risen 57%.

In November 1998, the company announced a \$1 billion stock repurchase program. Management expects to complete the program over a two-year period. In January 1999, the company repurchased 1.8 million shares for approximately \$100 million.

The company's future cash provided by operations and borrowing capacity are expected to cover normal operating cash flow needs, planned capital spending, dividend pay-ments, and stock repurchases that may be approved by the board of directors for the foreseeable future. As of December 31, 1998, lines of credit available for company use totalled \$1,073 million, of which \$500 million are committed and \$27 million were used as of year end. The company had A-1+ and P-1 ratings for its commercial paper and AA- and A1 general bond ratings from Standard & Poor's and Moody's, respectively, as of December 31, 1998.

4.2. Shareholder Value Creation

The creation of shareholder value is believed to be the true measure of a company's success. This is an indication that the company's products and services are valuable to customers and worth rewarding. Returns to shareholders accrue in two ways. First, through the appreciation of their stock prices and second, through dividends paid out to shareholders.

A public company can measure its success in creating shareholder wealth by comparing its market capitalisation at the beginning of a period to its market capitalisation at the end of the period. Market capitalisation is calculated by multiplying share price by the number of shares outstanding at any given time.

It is the total value of the company. If market capitalisation increases over a period of time, wealth has been created; if it is negative, then wealth has been diminished. We concentrate on share price dynamics instead, in order to avoid any distortions caused by new share issues.

Share Information

Astra and AstraZeneca

Both Zeneca's ordinary shares in issue at the respective year ends and the weighted averages for the periods were 946 million in 1994, increasing to 950 million at the end of 1998. During the same period, the stock price also increased to £26.17 (see Appendix 7) at the end of 1998, with the lowest and highest prices in the period being £18.60 and £27.59. Market capitalisation was, therefore, £8,306 in 1994 but had increased to £24,861 by the end of 1998. Translated into Swedish currency this gives figures of 77,345 MSEK and 231,505 MSEK respectively.

In Astra's case, ordinary shares in issue at the end of 1994 and 1995 were 501,543,100 class A shares and 114,665,736 Class B shares, making up a total of 616,208,836 shares. In 1997, a Board proposal for a stock dividend of 1 share for each 3 shares held and a stock split of 2 to 1 was approved by the stockholders. Consequently, the par value of all the Company's shares was changed from SEK 2.50 to SEK 1.25 per share in connection with the split. Therefore the number of share in issue at the end of both 1997 and 1998 were Class A 1,337,448,266 and class B 305,775,296 shares, totaling 1,643,223,562

Please see appendix 7 for the stock price and the lowest and highest prices in the period. Market capitalisation was 118 billion SEK in 1994 but had increased to 272 billion SEK by the end of 1998. Translated into U.S. dollars, this gives figures of and respectively.

Pharmacia

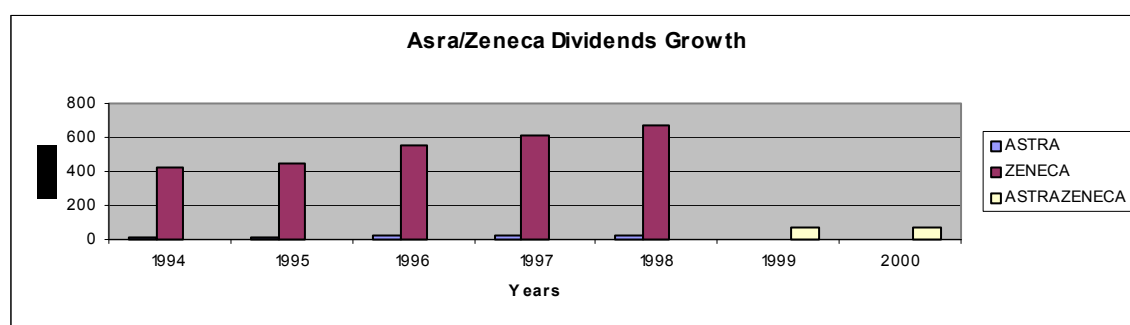
Looking at the Pharmacia's and Upjohn's share prices as of August 18, 1995 (the day of merger announcement), and the company's share prices in the postmerger period (please, refer to Appendix 7 for more details) it can be seen that the company's performance is generally improving. Information about stock prices prior to this date was unavailable to us. We, however, have information on stock price movements within the last two years (i.e. 2000 & 2001).

Dividend Performance

AstraZeneca

Both the Astra and the Zeneca boards had as its long term goal that the size of dividends be geared to the company's growth in earnings. Analysing the dividend growth over the periods under review, we noticed that the Astra's dividends proposed and paid increased from 0,84 SEK to 1,90 SEK, from 1994 to 1998.

However, Zeneca's dividend paid over the five years before the merger were very much higher (Appendix 7). The average dividends paid in these five years

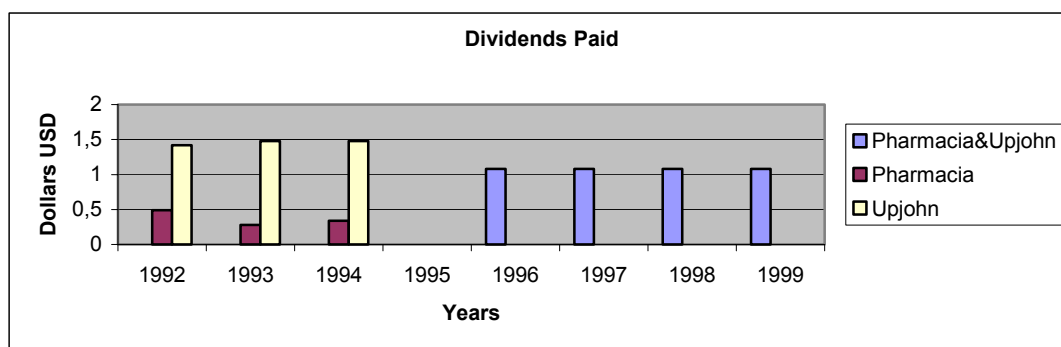


when converted, amounted to 40 Swedish Kronas. This figure is very high when compared to what was paid to the Astra shareholders. Part of the reason can be attributed to the strengthening of the pounds sterling and dollar and the weakening of the Krona. It must also be borne in mind that Astra had a very high retention ratio and financed most of its growth and business from this.

After the merger, a new dividend policy was announced. This policy, in the absence of unforeseen circumstances, anticipated that dividends could be maintained at \$0,70 per ordinary share until earnings cover dividends by between two and three times. Thereafter dividends are intended to be grown in line with earnings. Therefore, dividends paid for both years, after the merger, were \$0.70. In the pre-merger years, the average dividends paid to Astra shareholders was 2,59 SEK, but increased to an average of 6,51 SEK (after conversion) for the two years following the merger.

Pharmacia&Upjohn

Analyzing the dividends paid by companies to their shareholders before the merger we again observed a significant dissimilarity in the amounts of dividends paid by Upjohn and by Pharmacia. While Pharmacia offered its shareholders payments per share that did not exceed \$0,49 USD, Upjohn rewarded its investors with approximately \$1,48 USD.



Dividends paid throughout the postmerger period were also the same amounts – \$1,08 USD. Therefore, we can conclude that Pharmacia’s shareholders benefited from the merger with Upjohn, as they received the increase in dividends paid; while Upjohn’s shareholders lost a bit with the decreasing the dividend paid.

Conclusions

Shareholder value is, by definition, a long-term concept that takes into account the returns to shareholders (rises in share prices and dividends). It is driven by the strategic success of the company, and also by its operational performance. Capital appreciation accumulated in both mergers since the share price of the companies' equities grew on the stock market and dividends paid to their shareholders increased, especially for the Swedish companies.

5. Final Conclusions

In our thesis, merger performance is evaluated in terms of multiple financial performance measures. Mergers in chosen cases were undertaken to improve economic performance, to respond to the managerial challenge presented by the need to integrate, to gain the benefits of synergy and acquire increased market share. Economic motives were to be the most important and include pursuing market power, increasing profitability, shareholder value and sales, and achieving economies of scale.

Measuring merger performance is difficult; standard financial measures in our cases gave positive results. There were consistent improvements in both cases. However, our study of the historical stock prices and articles indicated that the Pharmacia&Upjohn merger had a rather troubled start. The prices of its stock went downhill, although this was not reflected in the company's figures. The AstraZeneca merger, on the other hand, saw increases in both company figures and stock prices.

A better measure could, therefore, be the achievement or otherwise of the original objectives of the merger. The reasons cited for the mergers were very similar in both cases. The study showed that the companies were able to achieve an increase in market power, sales and profitability, create additional shareholder value and made gains in economies of scale.

AstraZeneca has the second largest research and development budget in the industry and realised cost savings in 1999 and 2000. This was, in fact, in excess of the estimated figures at the inception of the merger. Its sales and market power has improved and it was noted that the bulk of those increases were attributable to new products. Market values have also improved along with dividends, especially for the erstwhile Swedish company's shareholders. We do not know how the merger was worked out with Astra's old shareholders. We were able to find out that each Zeneca share was exchanged for one AstraZeneca share.

After examining the accounting data of performances in each company, the conclusion was drawn that there were performance difficulties between merged companies. The years following the merger were characterized by a cultural dilemma (to a great extent in Pharmacia&Upjohn where the company's CEO had essentially transformed the company's culture into an American one, after experiencing many difficulties incorporating the Swedish and American company of Pharmacia), rising merger costs (both cases) and managers' disappointment with the progress of integration (especially in Pharmacia&Upjohn case). After the merger, both corporations managed to increase their sales worldwide but earnings plummeted.

In AstraZeneca's case, the post merger integration seemed to be smoother. We attributed it to cultural issues and human perceptions. It is our opinion that the time for preparing the merger may have been too short in the case of Pharmacia. We also suspect that the timing of the AstraZeneca merger, at a time when more efforts are being made by the Europeans to collaborate with each other, may have helped their post merger integration as there may have been less resistance to changes.

AstraZeneca PLC shocked the industry by coming out with growth numbers that far exceeded expectations. Third-quarter drug sales in the U.S., the world's fastest-growing market, soared 60%, to \$1.9 billion, and worldwide sales were up 31%, to \$3.7 billion, compared with the same period last year. AstraZeneca increased pre-tax profits by 54%, to \$941 million. These results underscore its CEO's argument that AstraZeneca is the one drug megamerger that's working.

Problems Encountered During Our Study

During the course of our study, we encountered certain problems, which we believe need to be brought to the reader's attention.

There was difficulty in communicating with the companies involved. Due in part to this and also to time limitation, we were unable to interview those stakeholders we would have wished to interview. We also encountered difficulties accessing information. For instance we would have liked to know

Pharmacia's and Upjohn's stock share prices and dividends paid in the premerger period, and number of shares of the companies. In AstraZeneca's case, we would have liked to have information regarding the basis on which Astra shares were exchanged for AstraZeneca's, exchange rates at which the company's pre-merger financial data were consolidated and peculiar problems associated with post merger integration in both companies.

Comparisons with Previous Research

Unlike the previous research cited, in both cases we found that the mergers could be said to be successful, at least when measured against those indicators that we chose. We also note that in most of the previous research, however, the number of companies studied was greater.

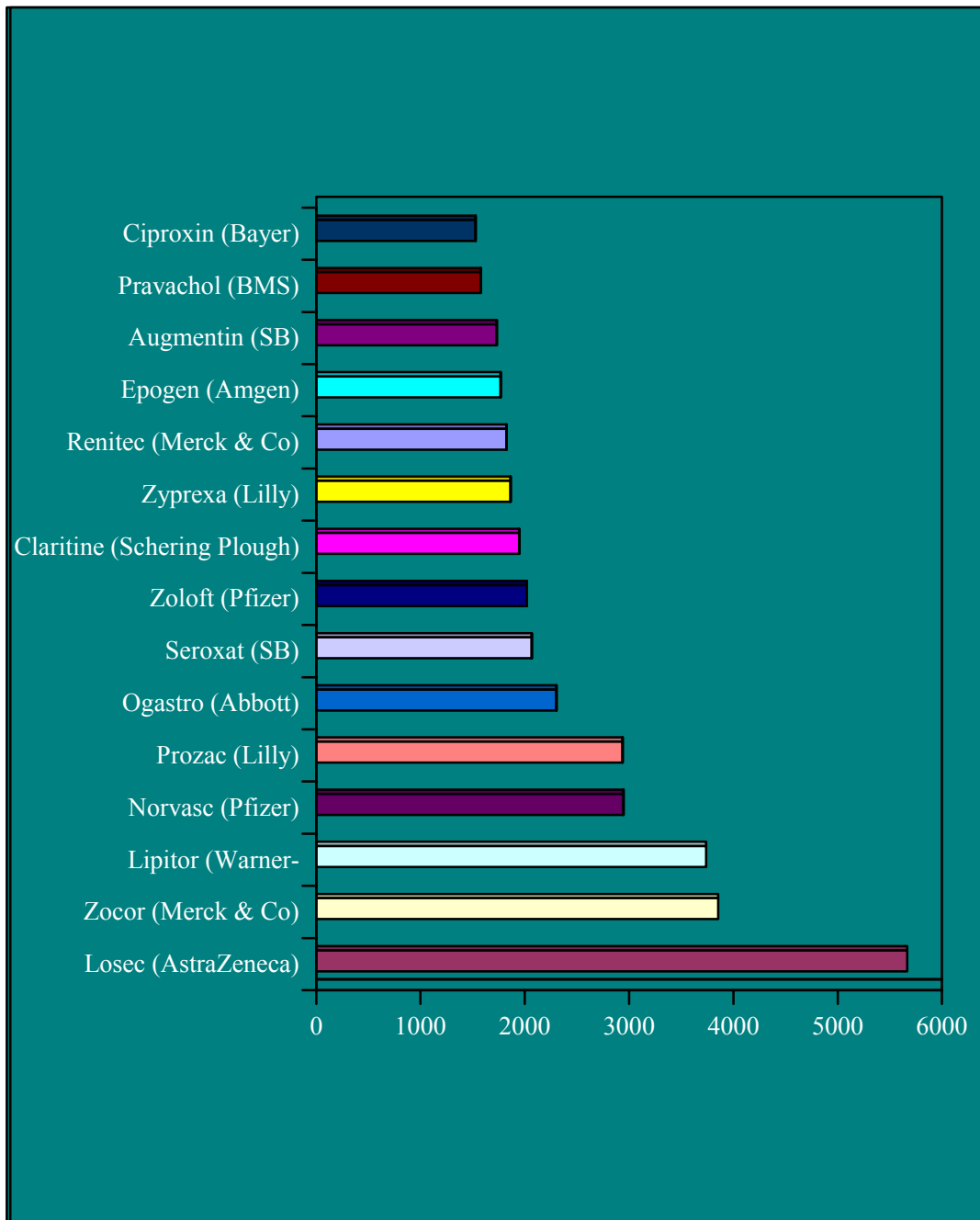
Future Research

We accept that merger success could be measured by more than just the short-term market prices of stocks and profitability, we recommend further investigation of mergers' results, since performance measurement is many-sided.

Potential area for further research could be a study that uses a different form of accounting scientific approach or combines the applicable approaches in literature regarding the financial outcomes of mergers.

Appendixes

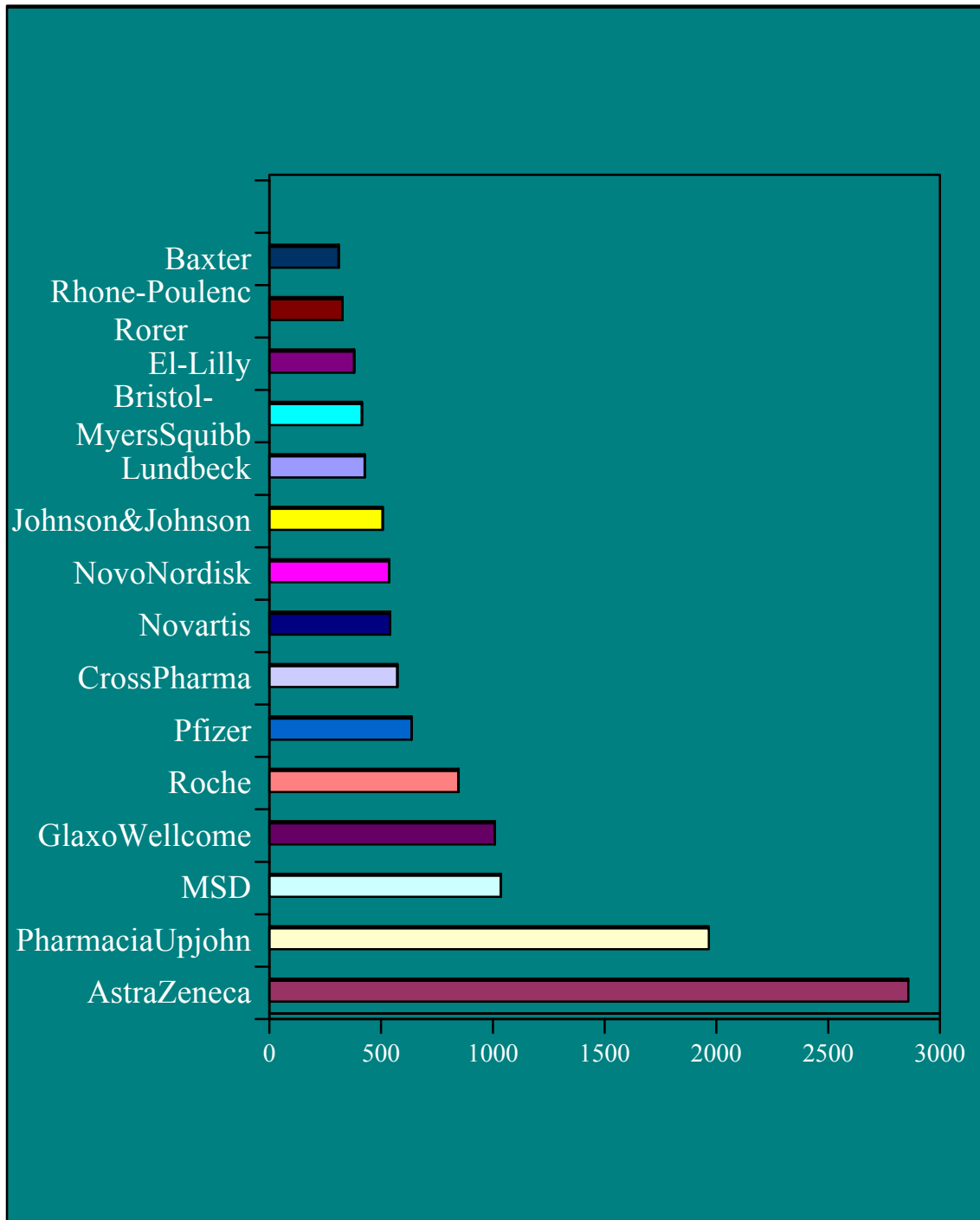
1. The top 15 pharmaceuticals in the world 1999 (MUSD)



Source: www.lif.se

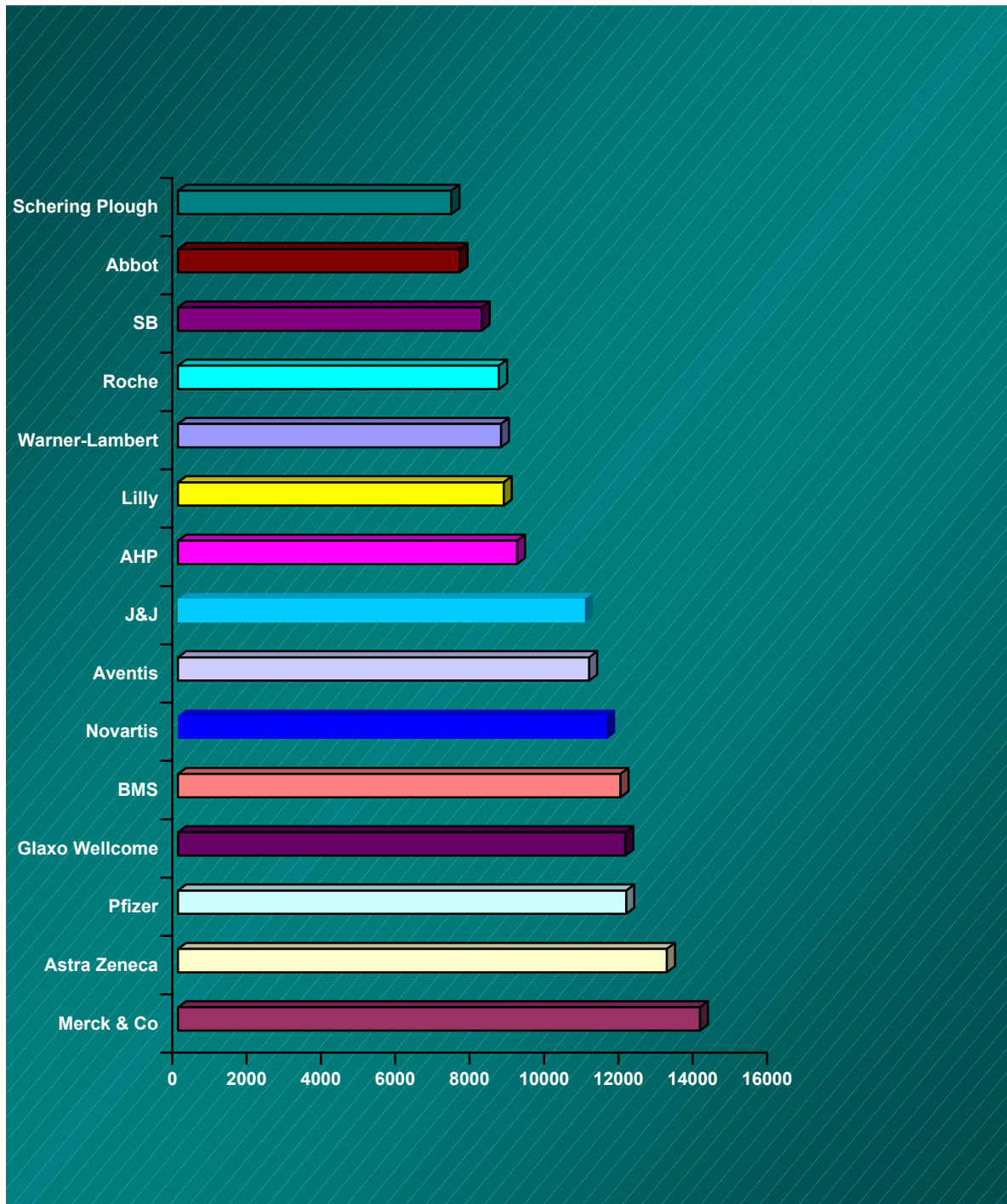
2. Sales in Sweden by the 15 largest pharmaceutical groups of companies 1999

Sales in MSEK at pharmacy purchasing price (AIP), incl. agency sales and vet. Glaxo Wellco



Source: www.lif.se

3. The top 15 pharmaceutical companies' sales of medicines in the world 1999 (MUSD)



Source: www.lif.se

BMS = Bristol-Myers Squibb
SB = SmithKline Beecham

AHP = American Home Products
J&J = Johnson & Johnson

4. Sales in million USD (\$)

	Astra	Zeneca	AstraZeneca
1994	3,773	6,980	10,753
1995	5,392	7,672	13,064
1996	5,710	9,368	15,078
1997	5,759	9,859	15,618
1998	7,085	9,206	16,291
1999	-	-	15,134
2000	-	-	15,804

	Pharmacia	Upjohn	Pharmacia&Upjohn
1992	2,654	3,256	5,910
1993	3,168	3,340	6,507
1994	3,429	3,275	6,704
1995	-	-	11,152
1996	-	-	12,066
1997	-	-	1,580
1998	-	-	13,737
1999	-	-	16,425

**5. Relationship between Sales, Net Earnings, Operating Expenses
and R&D**
(million USD)

	Astra's			Zeneca's		
	Operating Expenses	Net Earnings	R&D Expenses	Operating Expenses	Net Earnings	R&D Expenses
1994	2,690	915	555	3,453	690	807
1995	3,718	1,320	871	3,703	518	846
1996	3,920	1,384	1,033	3,895	1,070	1,002
1997	4,026	1,308	1,122	4,143	1,212	1,084
1998	5,355	1,462	1,313	3,677	1,193	1,183
1999	11,704	2,508	2,472			
2000	12,043	2,909	2,620			

Astra's figures in million SEK

Years	Sales	Net Earnings	R&D Expenses	Stock
1994	28,030	6,795	4,124	2,468
1995	35,800	8,764	5,784	2,793
1996	38,988	9,449	7,057	2,993
1997	44,904	10,201	8,,746	3,785
1998	57,187	11,803	10,600	5,668
1999	128,503	21,295	20,990	17,873
2000	152,673	28,102	25,310	20,828

Pharmacia&Upjohn (consolidated data)

	1992	1993	1994	1995	1996	1997	1998	1999
Sales	5910	6507	6704	11152	12066	12580	13737	16425
Net Earnings	692	548	821	1476	944	711	362	1378
R&D	908	1014	1123	1814	1936	2144	2176	2815
Operating Expenses	1623	1,822	1890	3700	4086	4444	5004	5319

6. FINANCIAL STRUCTURES

Zeneca

	1994	1995	1996	1997	1998
Fixed Assets	2,761	2,996	3,270	3,575	4,546
Current Assets	4,532	4,849	5,050	4,740	4,493
Liabilities	4,577	4,819	4,762	4,677	4,785
Equity	2,716	3,027	3,557	3,638	4,254

Astra and AstraZeneca

	1994	1995	1996	1997	1998	1999	2000
Non-Current Assets	17 197	21 094	22 994	24 987	36 571	84 078	76 501
Current Assets	18 121	22 621	29 230	37 293	39 567	84 180	101 579
Stockholder's Equity	23 301	30 679	38 279	46 015	54 855	87 814	92 180
Liabilities	12 017	13 036	13 945	16 265	21 283	80 444	85 900

Pharmacia

Upjohn

	1992	1993	1994		1992	1993	1994
Fixed Assets	2,604	1,858	1,974		1,646	1,672	2,13
Current Assets	1,163	2,446	2,24		1,596	1,701	1,799
Liabilities	1,328	1,859	1,312		2,498	2,726	2,78
Equity	3,54	2,012	2,35		2,005	2,086	2,383

Pharmacia&Upjohn (consolidated data)

	1995	1996	1997	1998	1999
Fixed Assets	7,745	7,769	7,976	9,724	10,682
Current Assets	11,891	12,122	12,994	16,981	16,512
Liabilities	9,454	9,875	11,292	16,146	16,283
Equity	10,182	10,016	9,678	10,559	10,911

7. SHARE INFORMATION

Zeneca share information	1994	1995	1996	1997	1998
Ordinary Shares in issue-millions					
At year end	946	947	947	949	950
Weighted average for year	946	946	947	948	950
Stock Market price - per 25p Ordinary Share	Pence	Pence	Pence	Pence	Pence
Highest	898.5	1334.0	1758.5	2265.0	2759.0
Lowest	674.5	841.5	1227.0	1594.0	1860.0
At year end	878.5	1246.0	1647.5	2141.0	2617.0
Market cap. at year end	£8,306	£11,799	£15597	£20318	£24861
(in millions)	\$12,941	\$18,176	\$25952	\$33722	\$41,538
SEK	77,345,472	109,872,288	145,239,264	189,201,216	231,505,632

Astra share information	1994	1995	1996	1997	1998
Shares in issue - millions					
Class A	-	50 1,543,100	501,543,100	1,337,448,266	1,337,448,266

Class B	-	114,665,736	114,665,736	305,775,296	305,775,296
Total	-	616,208,836	616,208,836	1,643,223,562	1,643,223,562
Market price (at year end)					
Class A	192	265	337	138	166
Class B	190	263	329	134	165

Market cap. at year end					
(in billions SEK)	118	163	207	225	272

AstraZeneca share information	1999	2000
Ordinary Shares in issue-millions		
At year end	1,775	1,766
Weighted average for year	1,776	1,768
Stock Market price - per \$0.25 Ordinary Share		
Highest (pence)	2946	3600
Lowest (pence)	2208	1926
At year end (pence)	2568	3375

8. Foreign Exchange Rates

Both AstraZeneca and Pharmacia's reporting before the merger were executed in SEK, but after the merger, the merged companies reported in US dollars. To facilitate analysis and make financial results analogous and more comparable, we converted all figures of the premerger period into USD.

The historical Financial Data for PharmaciaUpjohn have been translated into US dollars at a rate of USD 1 = SEK 7,2625 as of June 30, 1995 and for the years ended December 31, 1994, 1993, 1992 of USD 1 = SEK 7,7129; 7,8004; 5,8214, respectively.

For AstraZeneca, we have used respective year-end average exchange rates available from shown in the table below. These averages are based on daily

noon buying rates for cable transfers in New York City certified for customs purposes by the Federal Reserve Bank of New York, available from www.federalreserve.gov/releases/G5/.

Years	British Pound(£)	Swedish Krona
1994	1,5580	7,4285
1995	1,5405	6,6393
1996	1,6639	6,8283
1997	1,6597	7,7977
1998	1,6708	8,0716
1999	1,6132	8,4910
2000	1,4629	9,6604

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