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A Study of the Norwegian Stock Market, 1961-1989

Characteristics of the Oslo Stock Exchange and an Empirical Analysis of the Price-Book Anomaly

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Abstract

This thesis analyzes characteristics of the Oslo Stock Exchange (OSE) in the time period 1961-1989. Furthermore, this thesis extends the literature concerning the research on the P/B anomaly in the Norwegian stock market by investigating the relationship between the P/B ratio and future realized stock returns. The anomaly is heavily researched in other markets. Similar studies have also been conducted for the OSE after 1980. We extend the research of the anomaly with additional 19 prior years. The analyses are based on a self-assembled data set, supplemented with existing market values and stock prices.

Considering the characteristics of the OSE, both the market value and invested capital grew rapidly throughout the observed period. Key indicators, like the debt ratio, return on equity, price-book and price-earnings, have also been analyzed, and we find that the ratios historically reflect market factors and events.

In our analysis, we find a significant link between the contemporary P/B and the future long-term stock return. However, when we control for company size (market value), risk (debt ratio), profitability (ROE) and a 5-year lag of the long-term return, the significance diminishes. Further, we identify that the P/B effect can be explained by differences in firm size (the size effect). The similar relationship is researched through a portfolio analysis, where we compare the future return of a portfolio consisting of low P/B firms and the future return of a portfolio consisting of high P/B firms. Despite the equally-weighted low P/B portfolio providing a significantly higher future return, the superior gain disappears when comparing the future return of the value-weighted portfolios. These results provide further support for the size effect.

Preface

This thesis is a part of a greater project initiated by NHH Børsdatabasen. In order to obtain a deeper knowledge about the history of OSE, it has been desirable to digitalize and categorize financial statement information of listed companies at OSE and complement the accounting numbers with market information. Working with this thesis has given us the opportunity to deeply discover the years 1961-1989. The work has been challenging and time-consuming, but yet interesting and rewarding, especially due to the little amount of prior research of the OSE in this time period.

We would like to thank our supervisor Thore Johnsen for valuable advice, engagement and support throughout the semester. Also, we would like to thank Kjell Henry Knivsflå for his essential feedback and financial accounting expertise in the data assembling process. Haakon Buer also deserves gratitude for providing us with data on market values and stock prices.

We hope that the thesis will capture the readers interest and inspire others to go further back in history and contribute in creating a more complete and coherent database for the entire history of the OSE.

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List of Abbreviations

abn5YSRlag5	5-year lag of abnormal 5-year stock return (over market return)
abn5YSR$_{t-5}$	5-year lag of abnormal 5-year stock return (over market return)
abn5YSR	Abnormal 5-year future stock return (over market return)
avg5YSR	Value-weighted average of the 5-year future stock return
CAPE	Cyclically adjusted price-earnings
DS	DataStream
EMH	Efficient Market Hypothesis
DR	Debt ratio
PB	Price-book
ROE	Return on equity
ROE3YMA	3-year moving average of ROE
ROE5Y	5-year average of ROE
LN(MV)	The natural logarithm of market value
MDR	Market debt ratio
MPB	Market price book
MROE	Market ROE
OSE	Oslo Stock Exchange
P/B	Price-book
P/E	Price-earnings
ROE	Return on equity
5YMR	5-year future market return
5YMRlag5	5-year lag of average 5-year market return
5YMR$_{t-5}$	5-year lag of average 5-year market return
5YSR	5-year future stock return

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1. Introduction

1.1. Purpose and Motivation

In collaboration with NHH Børsdatabasen, this master thesis aims to provide elaborate insights of the characteristics of the Oslo Stock Exchange (OSE) in the time period 1961-1989. There is little research on OSE characteristics in the time period, as data on company's financial statements have not been fully digitalized[1]. The lack of available information has motivated us to assemble a data set of accounting information for a significant share of the companies listed at OSE[2]. Collecting the financial statements has been an extensive and time-consuming process, as the majority of the balance sheet items and income statements have manually been collected from handbooks, sorted and converted into digital form. We believe that our final data set will be a valuable contribution to the existing information and research on the OSE, as well as allowing for longer-term analyses of the tendencies and mechanisms affecting the Norwegian stock market. The collected financial data has been supplemented with existing market values and stock returns, and thus comprise a comprehensive database that can provide deeper insights about the OSE for our selected time period.

Previous research concerning the characteristics of OSE has primarily been based on data from 1980 and onwards[3]. As we provide data for an additional 19 years back in time, the analyses presented in this thesis aim to link market- and financial information to the historical context prior to 1980. In addition to presenting fundamental characteristics of the OSE for the period 1961-1989, this thesis further seeks to investigate the relationship between the price-book (P/B) ratio and future realized stock returns. The connection between these measures is heavily researched for other stock markets[4]. Similar analyses have been performed of the OSE for different time intervals, however, these analyses

[1]Financial information has been available for a share of our included companies for the time period 1980-89.

[2]Approximately 60 % of the total market value of OSE in 1961-1989 are categorized each year. Figure 4.1 presents an overview of the share of total market value categorized each year.

[3]See for instance Næs et al. (2008) and Hillestad (2007).

[4]Prior research papers are presented in section 1.2.

focus on time intervals after 1980[5]. The P/B analyses are based on two main hypotheses, presented in the next subsection.

1.2. Main Hypotheses

The main analyses presented in this paper consist of two approaches, both examining the relationship between the P/B and future stock returns. First, we aim to study the relationship between P/B and future long-term stock returns both on an aggregate (market) and firm level. The first approach is based on the following hypothesis:

i) *A low (high) P/B ratio is associated with a high (low) future long-term return.*

Previous research have addressed the relationship between the P/B value and the future stock return, both on the aggregate and firm level, and we initially expect a low P/B value to be correlated with positive future stock returns. The intertemporal relationship between the two economic variables is typically explained by temporary mispricing and/or risk compensation, see for instance Fama and French (1992), Chen and Zhang (1998), Lakonishok et al. (1994) and Skinner and Sloan (2002).

Fama and French (1992) showed that the P/B ratio of individual stocks may explain cross-sectional variation in future stock returns. The empirical findings triggered the interest of other researchers, elaborating on the results both on the firm level and the aggregate level. Among them, Kothari and Shanken (1997) found the aggregate P/B to be a good predictive indicator of the future market returns, which provides an additional basis for our first hypothesis.

Second, we wish to further analyze the relationship of interest through a portfolio-based approach, where portfolios consisting of low P/B firms are constructed and compared to portfolios of high P/B firms. The second approach is based on the following hypothesis:

ii) *Portfolios dominated by low P/B firms yield a higher mean return than portfolios dominated by high P/B firms.*

Initially, we expect that the low P/B portfolio will yield a higher future mean return than the high P/B portfolio. Previous empirical studies find equivalent results for other

[5]See for instance Næs et al. (2008) and Ådland and Hansen (2012).

countries (and for OSE after 1980) both during the period we investigate and other time periods (see for instance Rosenberg et al. (1985), Fama and French (1992), Lakonishok et al. (1994) and Piotroski (2000)). Our analysis will address whether the relationship also applies for OSE when considering 1961-1989.

The remainder of this paper is structured as follows. Chapter 2 gives a brief overview of the historical background of OSE in our selected time period whereas chapter 3 includes a literature review and relevant theory. Chapter 4 provides a walkthrough of the data assembling process. Further, chapter 5 presents characteristics of OSE from 1961 to 1989. Next, we describe the methodological approach applied to capture the relation between the P/B ratio and the future stock return in addition to presenting and discussing the empirical results of the analysis. Finally, chapter 7 provides some suggestions to further research and chapter 8 contains the conclusion of the thesis.

2. Historical Background

Post Second World War, social democracy had its victory in Norway. Some would probably perceive OSE as an "excess" institution in a system where the state should play the most central role for capital distribution and facilitator for the foundation of new industry (Bredal, 1994). Private actors faced political regulations, and the activity at OSE was low (Sejersted, 2009). Companies mainly issued debt, despite credit being regulated. The low interest rate policy during the postwar period also made debt favorable (The History of Oslo Børs). We find that the debt ratio for companies at OSE increased from 58 % in 1961 to 71 % in 1982[1]. Knutsen (1994) also reports that the level of debt increases in this time period. The rising debt ratio was not unique for Norway; Knutsen (1994) mentions that Japan, Germany and France also had high debt ratios. For the U.S and Great Britain, on the other hand, the debt ratio remained stable around 50 %.

When the oil field Ekofisk was discovered and declared to be a commercial exploitable field in 1969, the oil adventure started for Norway. The optimism also affected the OSE (The History of Oslo Børs). As over-subscribed shares were distributed proportionally, investors applied for shares in the name of their aunts, dogs and cats in order to get a sizeable stake in companies that were believed to bring substantial future profit. In 1970, the market index increased by 49.9 % and the stock return hits another peak of 97.6 % in 1973[2]. However, in 1974, the optimism turned to pessimism. The world economy experienced a substantial recession, much due to the oil price increase introduced by OPEC in 1973, which also negatively affected the price of other goods. The shipping sector struggled. The oil adventure ended abruptly as the Norwegian government announced that stricter licensing terms would be introduced and revenues from oil extraction would be heavily taxed. The trading activity at the OSE was modest for the rest of the 1970s. The share turnover leveled 3.7 billion in 1970 and had dropped to 3.5 billion in 1981 (Cameron, 1994, p. 149).

At the beginning of the 1980s, only the most hopeful and optimistic believed the position

[1]The numbers are based on equally-weighted averages, see tables 9.25-9.27 in appendix. The computation of the debt ratio will be elaborated later in this paper.

[2]The stock returns are based on a value-weighted average, see table 9.13 and 9.14 in appendix.

of OSE would change. The deputy chairman in the Norwegian Labor Party, Einar Førde, expressed *"Why bring oats to a dying horse"* to describe the role of OSE in the beginning of the 1980s (Bredal, 1994, p. 191). OSE was considered to be insignificant and of low importance. The Norwegian economy reached a low point in 1982 and the market index decreased by 19.1 %[3]. However, changes were about to come. 1983 marks a turning point of OSE's role as a capital distributor. The stock trading activity skyrocketed, caused by both private, foreign and corporate investors. The market index increased by 66 %[4], and the trading volume on a typical day in 1983 reached the level of an entire week of trading in 1982 (Kigen, 1994). The revival of the OSE facilitated an increased level of acquisitions, stock issues and other forms of equity inflows, improving the capital base of the listed companies (Cameron, 1994). The growth in real market value also shows a remarkable shift. For our selected companies, real market value grew by 286 % from 1982 to 1989. The modernization of the OSE continued in 1988, when the first electronic trading system was implemented (The History of Oslo Børs).

Entering the 1980s, political changes occurred in Norway (Sejersted, 2013). The social–democratic political direction that had been successful in the post Second World War period, was by many thought to be outdated. The society experienced a change in values from equality and regulation towards individualism and privatization. In 1981, the Conservative Party, led by Kåre Willoch, won the election. One of the modifications the new political path lead to was the deregulation of the credit market at the end of 1983 (Lie, 2012). The Government continued to execute the low interest rate policy and further decreased the rate in 1984. The growth in loans was substantial. In addition, share savings started to provide tax deductions in 1983, making stock trading more attractive. As investments in shares became a more favorable way of saving, the increased purchasing power positively affected the demand for stocks (NRK TV, 2013). The easing of political regulations can also be viewed as one reason why the activity at OSE started to increase in the 1980s (The History of Oslo Børs).

In line with the increasing debt level, Norwegian consumption also grew substantially.

[3]See table 9.15 in Appendix.

[4]See table 9.15 in Appendix.

The years after 1983 represent the "Yuppie" period in Norway, where goods were supposed to be luxurious, expensive and elegant (NRK TV, 2013). The "Yuppies" represented young, ambitious and professional individuals that wanted to do business, become wealthy and consume at a high level. As more debt was issued, the banks experienced a rapid increase in revenues, which led to more issuance of debt. Few feared the troubles with repaying debt if the market conditions changed.

On October 19, 1987, several stock markets around the world collapsed. The OSE was also affected, and the market index fell by 25 % from October 16th to October 20th (Kigen, 1994, p. 130). The crash in the stock market led to considerable losses for several short-term investors. The atmosphere was especially critical as a significant amount of stock investments were facilitated with borrowed money. In Norway, the stock market turbulence also coincided with an economic decline. In 1986, the Norwegian oil revenues were strongly reduced as the oil price dropped (Cappelen et al., 2014). Also, The Norwegian Labor Party led by Gro Harlem Brundtland regained the power. In order to ease the credit expansion, the interest rate was hiked (Sejersted, 2013). The banks suffered great losses as a substantial amount of debt was issued to the oil industry and private households, where many were unable to pay interest and deductions (NRK TV, 2013).

3. Literature Review

In the early 1970's, a new consensus emerged among economists, led by Fama and Malkiel (1970), suggesting that stock prices could be well approximated by a random walk process. A random walk is a stochastic process where each component is independent from each other, indicating that changes in stock returns are unpredictable. As a result of the random walk theory of asset prices, Samuelson (1965) introduced (a prominent version of) the Efficient Market Hypothesis, later formalized by Fama and Malkiel (1970). The Efficient Market Hypothesis (EMH) states that the market, in sum, will rationally adapt to the information available in the market. Stock prices will thus reflect all available information at all times. Fama defined three forms of the EMH (weak, semi-strong and strong[1]), where the semi-strong form of efficiency states that all publicly available information is already reflected in the market prices. Thus, according to the EMH, abnormal future stock returns cannot be obtained by exploiting information available today, as the prices on traded assets should already reflect the content of this information.

A significant amount of empirical studies show a high correlation between future returns and several different factors observable today, both on the aggregate level and on firm level. At the aggregate level, Fama and French (1992) and Kothari and Shanken (1997) show that the time-variation in expected returns can be predicted by interest rates, the yield spread, (aggregate) dividend yield and (aggregate) P/B ratios. In addition, Fama and French (1992) concluded that both firm size and P/B ratios can explain a significant part of the cross-sectional variation in returns on firm level. Rosenberg et al. (1985) documented an equivalent effect, controlling for market beta and size according to the Fama and French three-factor model[2] (Fama and French, 1992).

Potential explanations for the relationship between the P/B ratio and future stock returns is also addressed. Fama and French (1992) and Chen and Zhang (1998) claim that the subsequent excess return associated with low P/B companies represents the demanded

[1]The weak form suggests that future stock prices can not be predicted by considering historical prices. The strong form assumes that today's stock price consist of all available information, both private and public.

[2]The three-factor model includes size risk and value risk to explain differences in diversified portfolios, as an expansion to CAPM that only accounts for market (beta) risk.

risk compensation related to relative financial distress[3]. When a firm is risky, the investor typically demands a risk premium to hold the stock. This is in line with the EMH as this risk initially is priced correctly in the market.

Following Miller and Modigliani (1961), a theoretical approach to the correct P/B value can be derived. Miller and Modigliani established through *the investment opportunity approach* that the worth of a corporation's equity (P_0) can be explained by three factors; the required rate of return to shareholders (k), the current earnings the firm generates based on their prior investments (E_0) and the excess return of the firms future investments ($PVGO$ i.e. *present value of growth opportunities*). The relationship is presented in equation 3.1.

$$P_0 = \frac{E_0}{k} + PVGO \tag{3.1}$$

If both sides in equation 3.1 is divided by B_0 (current book value of equity), the P/B relationship is as presented in equation (3.2):

$$\frac{P_0}{B_0} = \frac{ROE}{k} + \frac{PVGO}{B_0} \tag{3.2}$$

In equation (3.2), the return on equity (ROE) equals E_0 /B_0. The P/B ratio equals 1 if the return on equity equals the shareholders yield. The return the company generates on its current investments is thus the same as the compensation the investors require. If the return of equity is higher (lower) than the investors required rate of return, the P/B ratio is expected to be above 1 (below 1). A high P relative to B may also be justified if a firm is expected to have a high future growth rate ($PVGO$). A positive $PVGO$ is achieved if a company's future investments yield a higher return than the shareholders required rate of return.

Modigliani and Miller's approach represents a theoretical proposition to the correct stock price and P/B value. However, the actual P/B ratio might differ from theory due to the occurrence of temporary mispricing. This approach is, in contrast to the risk compensation theory, not in line with EMH. Lakonishok et al. (1994) argue that firms with

[3]When a firm is in financial distress, the market often anticipates future losses (or even worse; bankruptcy), driving down the market value of equity and the P/B ratio (Campbell et al., 2008). Hence, the connection between low P/B firms and distress risk can be justified.

low P/B ratios represent "neglected stocks" where poor prior performance has resulted in overly pessimistic expectations about the future performance. This pessimism later unravels, in terms of positive earnings and returns in future periods. This is in line with a value-investing strategy, where investors hold stocks perceived as undervalued due to transitory circumstances in the market.

Considering prior research of the OSE, several papers have examined potential factors that affect future stock returns and whether value investing strategies have provided an excess (risk adjusted) return. Næs et al. (2008) investigate how the CAPM-anomalies size, book value, momentum and liquidity might affect the stock return pattern for OSE in 1980-2006. They find evidence that the stock return at OSE can be explained by the market index, size and liquidity. However, they fail to provide similar evidence for the P/B's effect on future returns, indicating that this ratio do not systematically affect the stock return at OSE[4]. Conversely, Egeberg and Enge (2009) and Rettedal (2012) examine the OSE for the periods 1998-2009 and 1994-2011 respectively, and report support for a significantly higher monthly return (unadjusted for risk) for companies with relatively low P/B values. Furthermore, Ådland and Hansen (2012) study the time interval 1983-2010 and found that stocks with low P/B and low P/E ratios also earn a higher stock return. However, when comparing with the MSCI Norway Index, the findings were not significant for the P/B multiple. As prior research only assesses the time after 1980, the main focus of our thesis will be on characteristics of OSE for the years 1961-1979.

[4]Næs et al. (2008) test the P/B relationship by constructing ten portfolios where portfolio 1(10) consist of 10 % of the companies with highest (lowest) P/B value. When examining the return difference between portfolio 1 and 10, they only find a significant return difference for the subperiod 1980-1989, not for the periods 1990-1999 and 2000-2006.

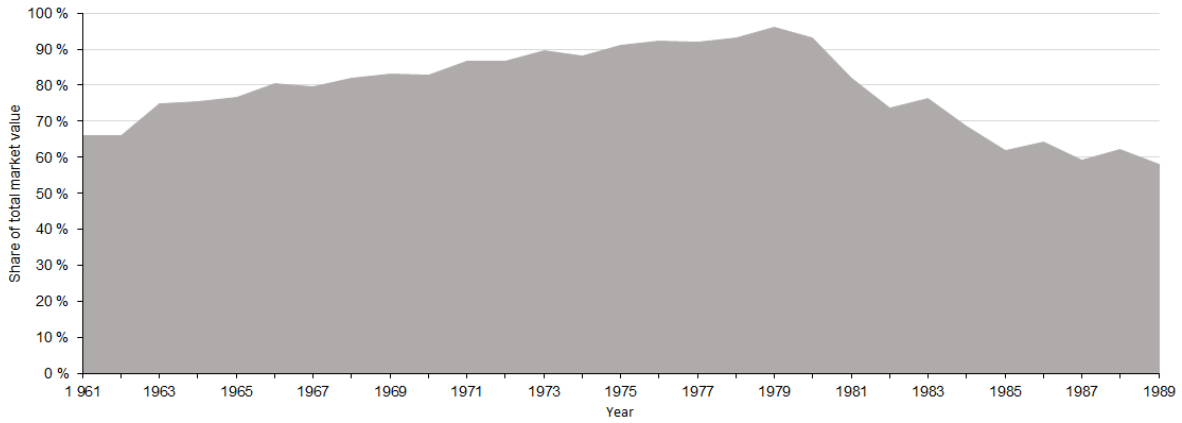
4. Data Description

The following section describes our data sources, while section 4.2 details how we put together the final data set. We will especially outline how the debt and equity items from the balance sheets have been categorized and how the adjusted profit is computed for each individual company. Section 4.3 presents the procedures for the data selection process before a discussion of the potential weaknesses regarding the data assembling process is included in section 4.4.

4.1. Data Sources

The data set includes accounting- and market information for a selection of listed companies at OSE in 1961-1989. Figure 4.1 displays how many percent of the total market value of listed companies included in our final data set. The computation of market share is based on the total market value of all listed companies retrieved from Buer (2013). The original data set might have undervalued the market value of a few companies, as some capital adjustments were omitted. We have completed the market value adjustments for the companies included in our data set. However, as there may be wrongly adjusted market values of the companies *not* included in our analysis, the share of market value shown in 4.1 may be overestimated. Buer (2013) uses numbers retrieved from OSE Information after 1980, where market values initially should be adjusted for *all* capital events. This may partly explain the decrease of our categorized share after 1980.

Figure 4.1 – Share of the total market value of the OSE included in the final data set.



We consider the share of included companies as sufficient to be a representative selection

of the full Stock Exchange. An excerpt of the data set is included in the appendix (table 9.13-9.36). The data set includes companies from the following sectors: Bank, insurance, whale, industry and shipping. As the whale sector merges with the shipping sector in 1969 (Kigen, 1994, p. 116), we treat the whale companies as shipping companies from the beginning of our time period. To avoid survivorship bias, the data set also includes companies that only have available data for a specific part of the time period in question.

4.1.1 Financial Statements

We use two sources, Kierulf's Handbooks and the database DataStream (DS), to retrieve information regarding the financial statements. For the time period 1961-1980, data on the companies' balance sheet is entirely based on accounting numbers from Kierulf's Handbooks. The handbooks were published by the company Carl Kierulf & Co A/S from 1900 and was viewed as a vital source for reliable information regarding the companies listed at OSE (The History of Oslo Børs). The books have been an indispensable source when collecting the necessary data used in this thesis, as they include detailed information about a company's share capital, balance sheet and income statement. For the years 1981-1989, balance sheets were either collected from DataStream or from the handbooks. For several companies, DataStream was not able to provide us with the necessary balance sheet items. For these companies, the accounting numbers were retrieved from the handbooks. Data required for computing adjusted profit were fully collected from the handbooks for all years.

4.1.2 Market Data

Data regarding stock returns, market values and shares issued are initially obtained from a data set Buer (2013) collected and developed based on daily price reports from OSE and data retrieved from Oslo Stock Exchange Information. For a few observations, the data set was incomplete and we use data collected from Kierulf's handbooks to fill in the missing values. When companies had deviating accounting periods, the stock price on the true closing date has been used instead of the 31st of December. Buer (2013) mentions that if a stock was missing a listing price at year-end, the price on the closest day of trading was recorded.

4.2. Data Assembling

To analyze the features of the OSE in our period of interest, we have assembled a data set linking accounting numbers, market data and key indicators for all included companies over time. To obtain this information, a time-consuming categorization and adjustment of the accounting numbers have been necessary. In the following subsections we will elaborate this process.

4.2.1 Categorization of the Balance Sheet

The categorization of the debt and equity side of the balance sheet has been employed for all companies in our final data set. The balance sheet items have been separated into *i) share capital, ii) taxed equity, iii) untaxed equity, v) interest bearing debt, vi) non-interest bearing debt and vi) minority interest.* We have used this classification for observing changes in the financial structure throughout the selected time period, both on the aggregate and firm level. The categorization is based on accounting theory. In some cases, the position in the balance sheet has been used to decide category, as the items lacked sufficient information to base the division solely on the determined method[1]. Our main goal has been to attain a categorization that is consistent over time and across firms for the entire data sample, making the changes in financial structure comparable both between companies and across time. In the following paragraphs, a brief description of each category is presented.

i) Share capital

Both Kierulf's Handbooks and DataStream provide the relevant information regarding the share capital, making the classification of items in this category straight-forward without much uncertainty. In some cases, a company has issued both A- and B-shares. B-shares typically have fewer voting rights as compared to A-shares (Bråthen, 2000). However, B-shares are generally more liquid as A-shares often are held by the founders of the corporation instead of being traded more frequently in the market. Both A- and B-shares are categorized as share capital. Some companies have issued both ordinary

[1]If an item is placed at the end of the income statement, the position implies that the item is a provision that needs to be adjusted for.

shares and preference shares. Preference shares have the first right to dividends, but the voting rights are limited (Hobson, 2012, p. 7). As the share class is not graded and priced at OSE, only ordinary shares are categorized as share capital.

ii) Taxed Equity

In this category, all fully taxed equity posts are included. It follows that the funds categorized as taxed equity can be used without causing a tax effect. Some taxed equity items have been challenging to identify. For example, dividend provisions may qualify as taxed equity if the provision is interpreted as retained earnings. However, dividend provisions may also be defined as non-interest bearing debt as the provision can be seen as a debt the company has to its stakeholders. To be able to fully determine the correct category, a detailed analysis of the individual firms and how they handle their balance sheet items is required, which is way beyond the scope of this thesis. Hence, to be consistent, we choose to classify dividend provisions as taxed equity for all companies.

iii) Untaxed Equity

In contrast to taxed equity, untaxed equity are provisions that consist of both equity and a potential tax component. Prior to the tax reform in Norway in 1991-1992, the accounting law and tax regulations allowed parts of the taxation to be postponed by allocating a share of the profit to funds aimed at covering future expenses (Gabrielsen, 1992). Due to these regulations, balance sheet items with these features were common in our time period of interest. Thus, the category "untaxed equity" is essential to identify in order to separate equity from debt. The tax rate for corporations fluctuated around 50 % in Norway prior to the tax reform in 1991-1992. The effective tax rate may have been somewhat lower due to a tax system opening for tax credit and tax deduction opportunities. Regardless, we have chosen to recognize 50 % of the untaxed equity as equity and the remaining half as non-interest bearing debt, as this assumption makes the categorization consistent over time. Consequently, the chosen level may create biases in the identified equity share in years with deviating tax rates.

iv) Interest Bearing Debt

Interest bearing debt is liabilities that require interest payments. It is important to distinguish between debt with and without interest in our analysis. To be able to separate

interest-bearing debt from non-interest bearing debt, we have to invoke a couple assumptions, as the information retrieved from the balance sheets was not always sufficient to decide with certainty whether a debt item carried interest or not. For example, we have assumed that debt identified as long-term debt is consistently classified as interest bearing debt.

v) Non-Interest Bearing Debt

Non-interest bearing debt is liabilities without interest payments. As with the interest-bearing debt, some assumptions regarding the categorization has been necessary. Short-term liabilities rarely carries interest (except for bank debt). Consequently, we have classified short-term debt as non-interest bearing debt if it is unclear whether the liability item carries interest or not. Also, provisions for pension funds may be justified as either taxed equity or non-interest bearing debt. We define these provisions as a periodical cost, rather than a provision of retained earnings. Thus, it seems accurate to classify the item as non-interest bearing debt. Furthermore, for several companies, the balance sheet includes debt items that are debt to subsidiaries or group companies. Here, the items have mainly been classified as non-interest bearing debt.

vi) Minority Interests

Minority interest is a balance sheet item where another company owns a significant portion, but less than 50 %, of the outstanding shares in the company. Although the item is rarely observed in our company's balance sheets, we still found it appropriate to separate it in an individual category. The values constituted a consistently low fraction of the total asset value.

4.2.2 Computation of Adjusted Profit

A time-consuming part of our data preparation process has been to compute adjusted profit for the companies included in the final data set. As mentioned earlier, the data required to accomplish the adjustment is fully based on Kierulf's Handbooks where information regarding the income statement/ winning and loss account for every company could be retrieved. The main motivation for the computation has been to adjust the company's profit to reflect *i) yearly movements in the untaxed equity items and ii) expenses*

considered as primarily tax motivated. Adjusting for net changes in untaxed equity will construct a profit expression that is more consistent with the revenue recognition principle. Revenues are taxed when they are recognized, and expenses are tax deductible when they incur. The tax system and accounting law prior to 1992 made it feasible for a company to deduct tax on for instance supplementary depreciation costs, a rule that implied that many companies expensed costs before the cost was realized. When costs are being expensed before they incur, the profit measure is less representative and comparable between firms. Instead of bearing the additional cost, the funds could become a part of the company's retained earnings. Thus, we have chosen to adjust for costs that is expensed due to the favorable tax deduction and not due to the actual realization of the cost. The adjustment is based on the formula presented in equation (4.1), where t is the tax rate.

$$Adj.Profit = Unadj.Profit + (1-t) * (NetUntaxedProvisions + TaxMotivatedExp) \tag{4.1}$$

The net provision to funds categorized as taxed equity make up the "unadjusted profit" in equation (4.1). If a company allocates a fraction of excess profit to taxed equity-funds, this will incorrectly reduce the bottom line. Contrary, if a cost is financed by a prior provision to a taxed equity-fund, this will not affect the profit of the firm as a cost generally should. By not adjusting the profit, revenue deposited to provisions and costs financed by provisions would not affect the firm's bottom line.

The adjustments of expenses considered as tax motivated have been challenging to complete and are based on both rules and discretion. In the following, we present some of our assumptions that the adjustments of tax motivated expenses are based on.

Opening Depreciation and Additional Depreciation

Depreciation is a method of allocating the cost of the use of an asset over the asset's lifetime. The yearly depreciation cost is supposed to reflect the decrease in the value of assets due to ordinary wear and tear. The taxation law provides standards of how much of the depreciation costs that is tax deductible for a company. The taxation law in Norway introduced on the 6th of July 1957, gave Norwegian companies the opportunity to depreciate a higher amount than ordinary depreciation costs in an asset's first years of

operation (Central Bureau of Statistics Norway, 1958). The law distinguished between opening- and additional depreciation.

Additional depreciation could, under certain circumstances, appear as an increase of the ordinary depreciation costs. The additional amount depreciated could constitute 50 % of the ordinary depreciation costs in the first five years of the assets operation time. However, the amount could not make up more than 2 % of the acquisition cost for a particular year. Also, the additional depreciation should not affect the ordinary depreciation cost and the cost of the assets would consequently be partitioned over a shorter time period.

Opening depreciations were relevant for plants and machinery used in commodity production or by for instance the reparation of ships. From the beginning of the construction work, and to the fifth year after the plant/ship was in operation, the company could deduct tax for 25 % of the cost that exceeded 500 000 NOK per year (Central Bureau of Statistics Norway, 1958).

As it appears from the law of taxation for our time period, opening and additional depreciations were mainly tax motivated. Consequently, we have chosen to adjust the firm's profit for these depreciation costs.

Depreciation with Sales Gain

An item that also is important to justify the treatment of, is depreciation cost made with sales gain. When a company obtains a sales gain a specific year, the profit could either cover costs occurring in the same period or be set aside as a provision for funding future cost. In our categorization process, depreciation with sales gain only affects the adjusted profit if it emerges as a provision to a fund categorized as untaxed equity or if the position in the financial statement indicates that the cost is tax motivated.

Extraordinary Depreciation

In some cases, companies have extraordinary depreciation costs. In contrast to opening and additional depreciation, we do not have sufficient information to identify the reasoning behind the extraordinary depreciation costs. Thus, we have only adjusted for these expenses if they appear as tax motivated depreciation based on its position in the

financial statement.

Revaluation Gains and Impairment Costs
As with the depreciation of sales gain and extraordinary depreciation costs, revaluation gains and impairment costs only affect the adjusted profit if its position in the financial statement suggests that it should. The assumption is interpreted strictly, which implies that the position of the item is important to identify and consider. As the income statement format differs throughout our time period, our interpretation might bias our adjusted profit to some degree (see subsection 4.3.2 which considers the deviation between adjusted profit and reported profit).

As described in the section above, computing a measure for adjusted profit has proven to be unmanageable without some degree of subjective interpretations.

4.2.3 Adjusted Market Value/Stock Price

Referring to section 4.1.2, the market values and adjusted prices included in our final data set are mainly retrieved from Buer (2013). Market values are computed in applying formula (4.2).

$$MarketValue_t = SharesOutstanding_t * UnadjustedSharePrice_t \tag{4.2}$$

For a few companies, the shares outstanding deviated from the share information available in Kierulf's handbooks. In these cases, the number of shares outstanding was updated in order to compute an accurate market value. The unadjusted share price was retrieved from Buer (2013) except for a few cases where we had to use the handbooks.

To compare the historical stock returns over time, the stock prices were adjusted for changes in share capital (Buer, 2013). The majority of the prices were already adjusted by Buer (2013). However, as some capital adjustments were omitted, we made some necessary adjustments to complete the data set, following the same procedure as described in in Buer's thesis (Buer, 2013, p 17).

4.3. Data Selection

To arrive at the final data set, several assumptions and somewhat critical choices have been crucial to implement. We elaborate on these choices in the following subsections.

4.3.1 Selection of Group Balance or Parent Balance

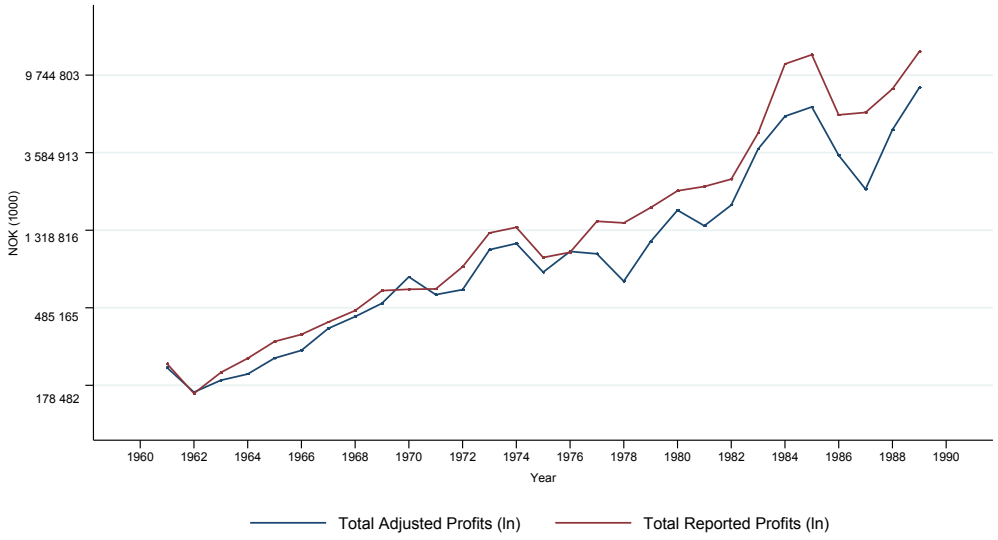
For some companies, Kierulf's handbooks contained information regarding both the group balance and the parent balance. For these companies, the consolidated balance is implemented in the data set, as the market value of a company initially reflects the entire group, not only the parent company. The consolidated balance sheet presents the aggregate financial position of the group where internal items are netted. However, the difference between the total assets values of the two balances were marginal. One exception was A/S Sigmalm, a shipping company included in our data set. In this case, the deviation between the consolidated balance and the parent balance was substantial. Furthermore, one of the subsidiary companies were already included in our set of data. Thus, the registration and categorization are based on the parent balance instead.

The occurrence of two different balances might have biased the data set as the handbooks in rare occasions only provided the income statements for the parent company and not the consolidated income statements. Thus, the unadjusted and adjusted profit were not fully consistent with the implemented balance sheet. However, as most of the companies reported complete information regarding both the group and parent company, in addition to only minor differences occurring between the two balance sheets, we regard this potential bias as modest.

4.3.2 Reported (Unadjusted) Profit and Adjusted Profit

The final data set includes two measures of profit; registered profit and adjusted profit. Referring to section 4.2.2, adjusted profit is computed based on the income statement/winning and loss account collected from the handbooks. The reported profit is retrieved directly from the handbooks without further adjustments. The development of the total reported and adjusted profits are plotted in figure 4.2. As can be seen from the figure, the two measures are highly correlated.

Figure 4.2 – Development in total adjusted profit and reported profit, 1961-1989.



In the period 1961-1977, the reported profit was defined as "earnings after depreciation costs". From 1978 to 1989, the reported profit was measured as "earnings before provisions". Adjusted profit will correct for the majority, but not all, of the provisions reported after "earnings before provisions". This may explain why the adjusted profit consistently is lower than the reported profit for the latter of the two time periods.

Both the adjusted profits and the reported profits give rise to different types of uncertainty. The process of adjusting the companies' bottom line is based on multiple assumptions, outlined in subsection 4.2.2, that may not always hold true. Furthermore, the reported profit might report a bottom line that deviates from the companies' true performance for a specific year, due to the common practice of exploiting tax-beneficial provisions. Despite unequal sources to uncertainty, figure 4.2 shows that the correlation between the two measures is high. Thus, we have chosen to primarily include adjusted profit in the following descriptive analysis of the OSE as the reported profit measure generally exhibits the same findings. The reported profits term, and the indicators calculated based on it, is mainly used as a control measure to ensure the reasonability of the adjusted profits.

4.3.3 Reported (Unadjusted) Equity and Adjusted Equity

Referring to subsection 4.2.1, the untaxed equity share is equally proportioned to taxed equity and non-interest bearing debt. Thus, we have two equity measures included in our data set; reported (unadjusted) equity and adjusted equity. Reported equity solely consists of the items classified as taxed equity and adjusted equity comprises reported equity plus 50 % of the untaxed equity items. We will base our analyses on the adjusted equity term. The reported equity, and the indicators calculated based on it, are primarily used as control measures to ensure the reasonability of the adjusted equity.

To prepare the data set for the analyses, all observations where the adjusted or reported equity is below zero are removed, in line with Fama and French (1993). As these observations are extreme and unusual, they could create an unnecessary bias in the analyses.

4.3.4 Measures of Central Tendency

When analyzing the overall trend of our assembled data set, we will mainly make use of three different kinds of measurements; the equally-weighted average, the value-weighted average (weighted by market value) and the median. Whereas the equally-weighted average is generally more affected by the smaller stocks, the value-weighted average to a larger extent is driven by large companies such as Norsk Hydro. Additionally, the volatility tends to be higher for the equally-weighted average as the smaller-cap firms often are more volatile. The median is a measure of central tendency that in general is not affected by extreme observations.

As the main approach, the value-weighted mean is used as the measure of central tendency. Exceptions are made when the effects of extreme observations are excessively large.

4.4. Possible Weaknesses

4.4.1 Selection Bias

It is crucial that our data set constitutes a representative sample of the OSE. If the selection procedure excludes companies (observations) on a non-random basis, this can

give rise to selection bias (Berk, 1983). Our data set consists of few very small firms, as we have selected companies based on the size of their market value. Therefore, our sample might not fully represent the characteristics of the smallest firms listed on OSE.

As explained at the beginning of this chapter, companies in our data set make up for a smaller share of the total value of OSE during the 1980s compared to the 1960s and 1970s (review figure 4.1). Even though this may weaken our sample's representativeness in this period, the decline in share is justified by the motivation of our data set assembling. When assembling the data set, our main goal has been to extend and supplement the existing available information about Norwegian companies' financials. Until now, this has only been available from 1980 and onward. The companies dominating the OSE during *the 1960s* and *the 1970s* are the most influential of our data set. Although we have supplemented the sample with information about the most dominant firms during the 1980s that initially was not included, there will still be instances of companies of a considerable size which are not included. Another priority in our thesis has been to include a significant amount of companies representing the different sectors at the OSE. The desired diversification may have been achieved at the expense of some relatively large companies in other sectors. For example, smaller shipping companies might have been included, instead of an industrial company of larger size, to ensure the representativeness of the shipping sector. Tables 9.28-9.36 give an overview of the market value each sector represents and the amount of companies from each sector the data set consists of.

4.4.2 The Use of DataStream

From 1981, DataStream (DS) is able to provide us with financial statements for several companies included in our data set. Thus, numbers that are manually sorted from Kierulf's handbooks will be compared directly to the numbers obtained from DataStream. Table 4.1 shows which economic variables from DS we have chosen to match our manually sorted categories. Even though this has slightly reduced the workload associated with the data collection, it has also introduced some additional potential weaknesses to our data set.

Most importantly, there may be some differences concerning the underlying assumptions

behind the categorization, resulting in some deviations with regards to the different financial numbers. For example, what we have categorized as interest-bearing debt may not correspond to what is qualified as interest-bearing debt ("Total Debt") in DS.

Secondly, as DS only could provide information about some of the companies included in the data set, the potential differences in assumptions between the sources is only relevant for a share of our companies. Thus, the possible deviations are not consistent between firms.

Table 4.1 – DataStream Terms

Kierulf's Handbooks	**DataStream (mnemonic)**
Taxed (Reported) Equity	Equity Capital and Reserves (WC03501)
Interest-Bearing Debt	Total Debt (WC03255)
Non-Interest Bearing Debt	Total Liabilities (WC03351) – Total Debt (WC03255)
Untaxed equity	Total Assets (WC02999) – Equity Capital and Reserves (WC03501) - Total Liabilities(WC03351)
# of Shares*Share Price 31.12	Market Capitalization (WC08001)

Corresponding terms for Kierulf's Handbooks and DataStream (mnemonic)

4.4.3 Lack of Coinciding Information

In our data set, we link market and accounting information at year-end. However, disclosed accounting information is typically not available until March/April the following year. Thus, the stock value at year-end will not fully reflect the current year's accounting information. Despite the disadvantages this causes, the simplification has been necessary as our sources only provided one stock price per year.

5. Characteristics of the Oslo Stock Exchange

5.1. Market Value

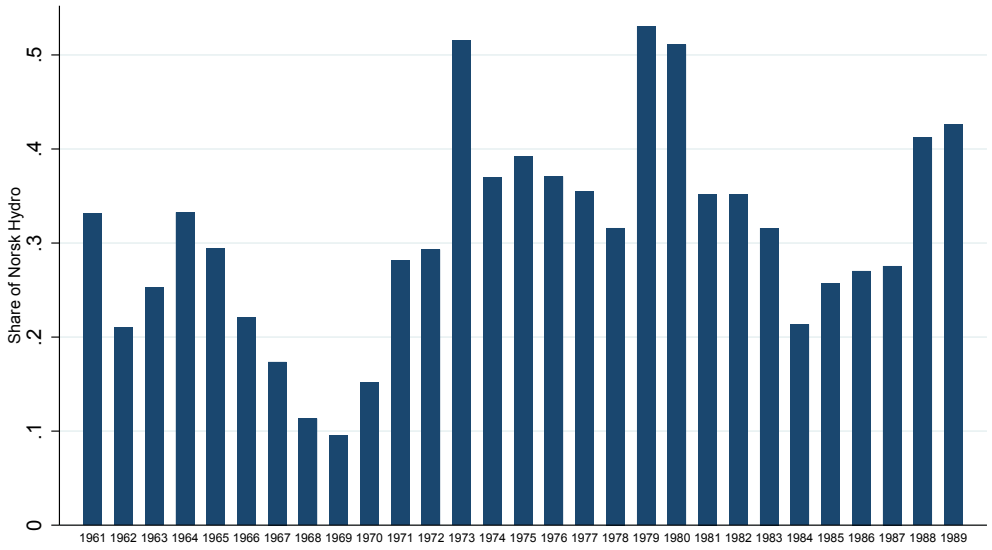
During our period of interest, OSE was characterized by a large increase in market value from the end of 1982, after a dip during the second half of the 1970s. 1975-1983 was characterized by unstable stock prices, where an optimism and increase in price one year was followed by pessimism and stock price decrease the next year (Kigen, 1994). The development in real and nominal market value is displayed in figure 5.1. 1983 marks the beginning of an increasing trend in market value that continued for the rest of our time period. As mentioned in chapter 2, an increasing demand for stocks can be viewed as one reason for the expansion. Also, the Norwegian economy experienced an upturn and firms were earning higher profits (the development in real adjusted profit is displayed in figure 9.1 in appendix). As corporations obtained better results, their retained earnings increased, which again positively affected the market value of equity.

Figure 5.1 – Development in Real and Nominal Market Value, OSE 1961-1989

5.1.1 Company Composition

Our data set includes companies from four different industries: shipping, banking, insurance and the industrial sector. The industrial sector is the largest one, representing 66.5 % of the total market value included in our data set. From 1961-1989, the OSE was dominated by a few large companies, where Norsk Hydro on average amounted 48.5 %[1] of the total market value listed on the stock exchange (figure 5.2 displays the market share of Norsk Hydro for 1961-1989). The largest companies' share of the market value at OSE has always been significantly large, but has varied over time. One example occurs during the 1970s when Norsk Hydro's contribution boosted due to oil discoveries on the Norwegian continental shelf. Furthermore, the fluctuation in Hydro's market value and market share can also be explained by variations in the oil price. For example, the market value of Hydro peaked, as a share of total market value, around 1979 when the oil price increased by over 50 % (Lie, 2015).

Figure 5.2 – The Share of the Norsk Hydro stock based on total market value at OSE, 1961-1989

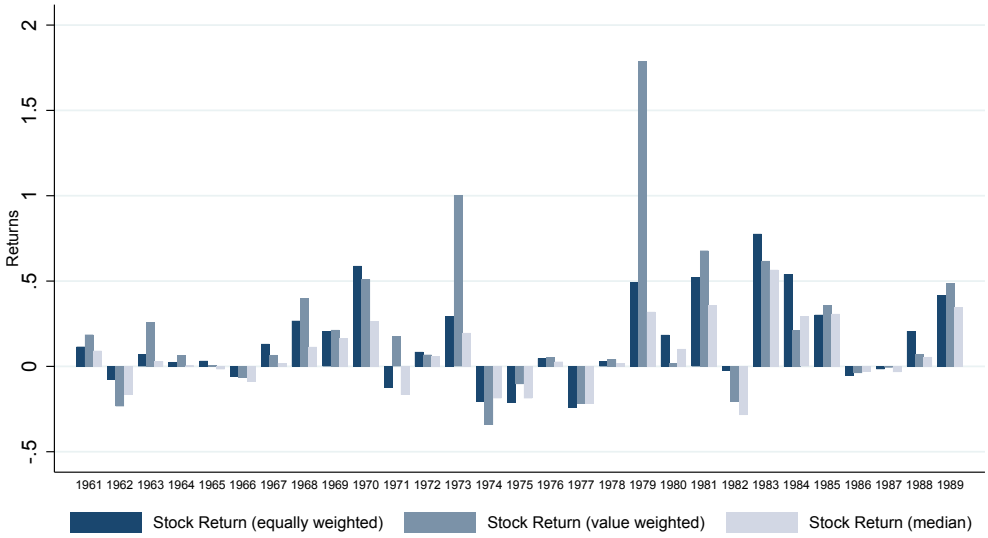


5.1.2 Stock Returns

The yearly stock return for OSE, based on equally-weighted average, value-weighted average and the median is presented in figure 5.3. The stock returns are generally in line

[1] Aritmetic average over time

Figure 5.3 – The yearly average stock return based on equally-weighted average, value-weighted average and the median, OSE 1961-1989. Stock returns are based on the adjusted closing price each fiscal year.



with what we would expect when the historical context is taken into consideration. The Norwegian economy has, since the 1970s, been an oil dominated economy, and has been a large international exporter of oil (Driesprong et al., 2008). Thus, the Norwegian market is generally positively affected by oil price increases. As figure 5.3 shows, the stock returns experienced a peak in 1973 due to OPEC's oil price increase. A following dip occurs in 1974 as the oil crisis affected the word economy. Similarly, the oil price increase in 1979 resulted in an increase in stock returns. Looking at the different average stock return measures, we observe that the value-weighted average experiences a larger increase. This is due to Norsk Hydro's strong dependence on the oil price and its dominance on the OSE. An additional peak occurs in 1983, most likely due to the introduction of the more liberal credit policies, increased retained company earnings and the increased activity at the OSE (Kigen, 1994). These events have largely affected the economy as a whole. Lastly, the stock returns are negative in 1986 and 1987 due to the oil price decrease, the international stock market crash and the following bank crisis.

5.2. Book Values

5.2.1 Invested Capital

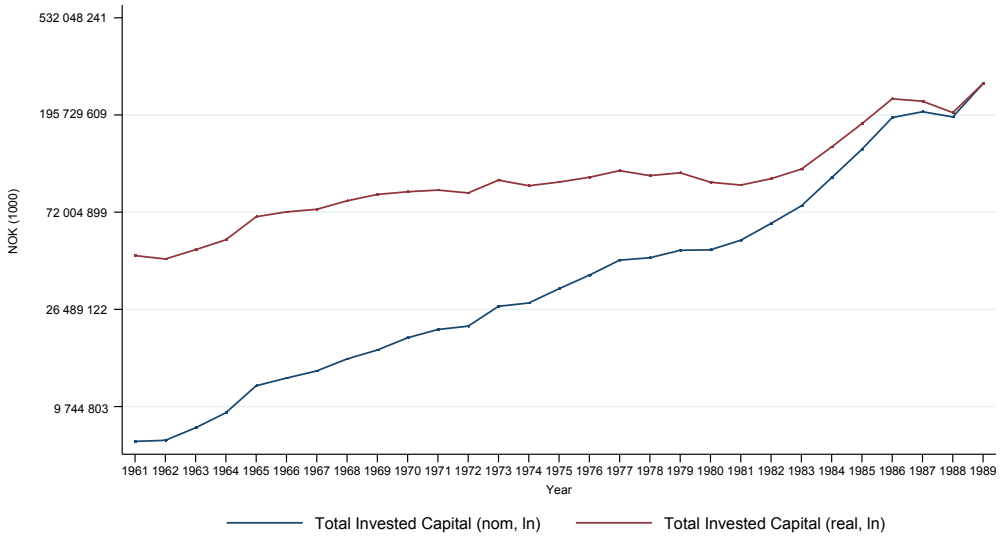
Referring to subsection 4.2.1, interest bearing debt was separated from non-interest bearing debt when the firm's balance sheets were categorized. In our further analysis, it is appropriate to compute the firms invested capital, i.e. the net amount a company has invested in its business and which require a return through the business activities (Petersen et al., 2017, p. 114). Invested capital is initially defined as the difference between operating assets and operating liabilities, or as equity plus interest bearing liabilities minus financial assets and represents the most crucial source of value creation in a business. The amount of interest bearing debt and equity solely disclose the financial structure of the business, not what a company do to generate value.

Total assets can be separated in operating assets and financial assets, where the operating assets is the capital the firm is dependent on to run their daily operations. As our categorization is limited to the right side of the balance sheet, we have not been able to deduct the financial assets from operating assets. This is a weakness in our computation of invested capital. Furthermore, we have identified non-interest bearing debt as operating liabilities. We consider the liabilities as the necessary amount required for running the daily operations of a business. Based on these assumptions, invested capital is computed as shown in equation (5.1):

$$InvestedCapital = TotalAssets - NonInterestBearingDebt \tag{5.1}$$

Figure 5.4 plots the development in the total invested capital for companies listed at OSE for 1961-1989. At the same time as the total market value increased during the 1980s, the invested capital also expanded. There are at least two possible explanations for the correlation between the two quantities. First, the market value may increase as a result of the company's increased investments. Second, the relationship may also be justified by the fact that companies are more able to invest when their capital base increase. As figure 5.4 illustrates, the amount of investments steeply increases in the period 1983-1986 before the growth rate slightly drops during the oil price fall in 1986 and the bank crisis in 1987.

Figure 5.4 – Development in Total Invested Capital for companies listed at OSE, 1961-1989



5.2.2 Capital Structure

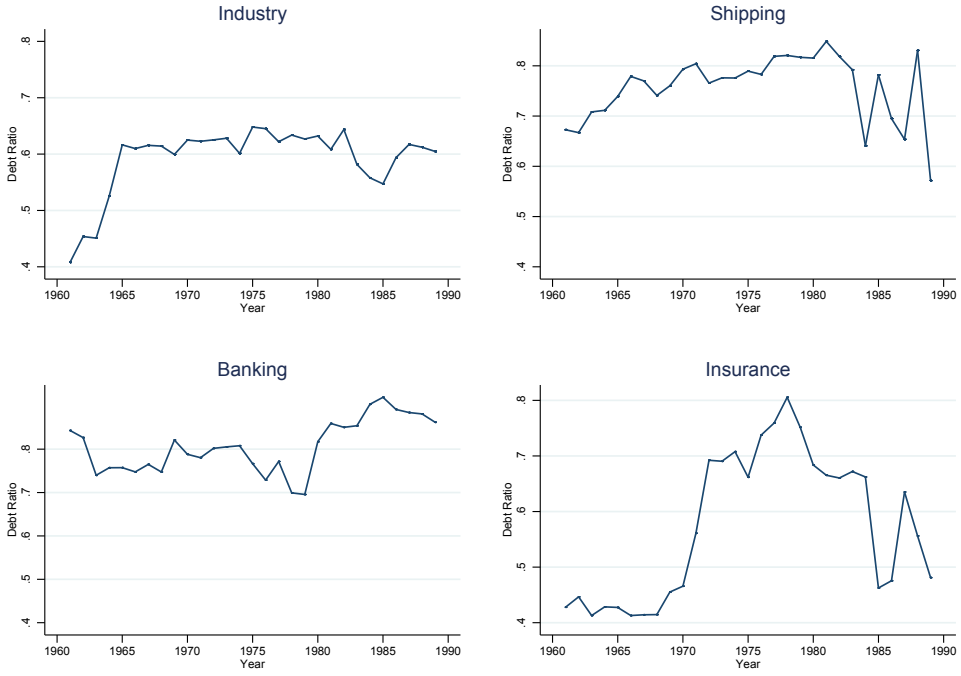
The share of equity has traditionally been low in the Norwegian corporate environment. Despite various initiatives over the years, it has historically proved difficult to raise the level of equity to a decent level. However, when the OSE changed character in the beginning of the 1980s, the opportunity to turn this trend around emerged (Cameron, 1994).

To take a closer look at the capital structure of the companies during our time period, we have examined the debt ratio over time, calculated as the interest bearing debt divided by the invested capital. Figure 5.5 depicts the debt ratio for 1961-1989, and figure 5.6 illustrates the debt ratio for each specific sector.[2] During the 1960s and 1970s, the credit market was strictly regulated. However, the activity at the OSE was low, and the companies therefore mainly issued debt. Figure 5.5 shows a growth in debt ratio in these two decades. Considering figure 5.6, the industry sector had a low debt ratio in the 1960s and in the beginning of the 1970s. As the industry sector comprised the majority

[2]Our calculated debt ratio level seems to be slightly lower than equivalent numbers provided by Jensen (1969) and NOS Accounting Statistics (1968-78), sources obtained from (Knutsen, 1994, p. 68). They compute a debt ratio fluctuating around 70-80 % during the 1970s, compared to our ratio in the lower 70 %.

Figure 5.5 – Development in the total debt ratio for all sectors measured by value-weighted average and equally-weighted average, OSE 1961-1989

Figure 5.6 – The sector-specific equally-weighted average debt ratio of the companies represented at OSE, 1961-1989



of the companies with the highest market values, the aggregate value-weighted average presented in figure 5.5 is driven down.

In the beginning of the 1980s, the credit market was deregulated. The deregulation made debt more accessible for companies. On the other hand, companies generally obtained higher earnings during the 1980s (figure 9.1 in appendix displays the development in real adjusted profit). The increased retained earnings made equity financing more accessible. The increased interest rate that followed the Brundtland government in 1986 also affected the debt ratio negatively. These effects may have limited the growth of debt, in the period 1984-1987 shown in figure 5.5, to some extent.

Similarly, the level of earnings of the different sectors affect the sector-specific level of debt ratio. For instance, the relatively high debt ratio of the shipping sector may be explained by the fact that they generally had low earnings (see table 9.4 in appendix). Likewise, the industrial sector has a low debt ratio, compared to the other sectors, due to the sector being profitable and obtaining bottom-lines of considerable sizes (shown in table 9.2 in appendix).

Overall, the aggregate debt ratio grows from 1984 to 1987. The debt ratio declines after the stock market crash and bank crisis in 1987. This may be due to companies that were heavily debt financed going bankrupt.

During the 1980s, the market value of companies listed at OSE also increased drastically. If the debt ratio calculation takes the market value of equity into account, we observe that the market debt ratio decreases by 21 %[3] from 1982 to 1989.

5.3. Key Indicators

5.3.1 Return on Equity

The return on equity (ROE) is used to measure the profitability of the firms and is computed as shown in equation 5.2, where adjusted profit is measured after tax. We have chosen to smooth the adjusted profit by creating a 3-year moving average ($3YMAROE_t$)

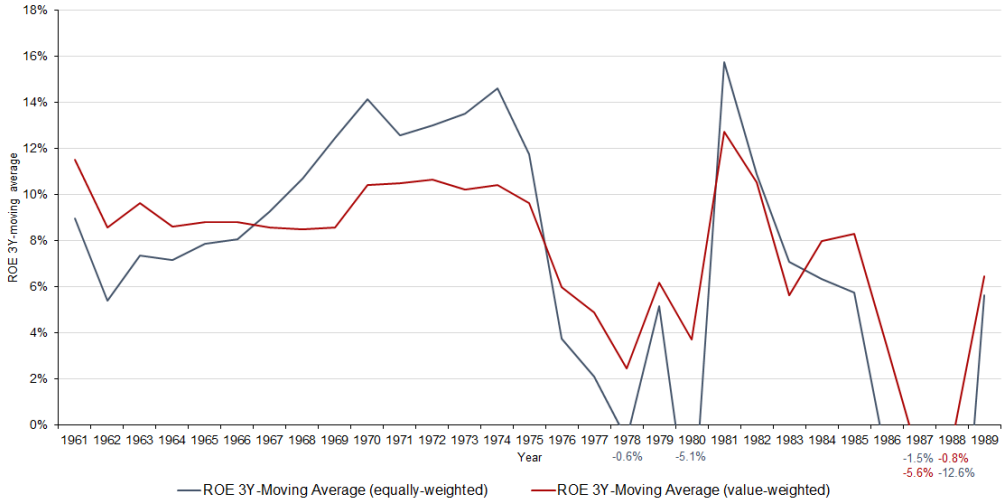
[3]21 % is computed by dividing total interest-bearing debt over interest-bearing debt plus aggregate market value.

as earnings during our selected time period have proved to be volatile. ROE for the period 1961-1989 is presented in figure 5.7.

$$3\text{YMAROE}_t = \frac{1}{3}\left(\frac{AdjProfit_{t-2}}{AdjBookValueofEquity_{t-2}} + \frac{AdjProfit_{t-1}}{AdjBookValueofEquity_{t-1}} + \frac{AdjProfit_t}{AdjBookValueofEquity_t}\right) \tag{5.2}$$

The 1960s have often been referred to as "the golden years", characterized by a long,

Figure 5.7 – Development in the 3-year moving average of return on equity (3YMAROE) for companies listed at OSE in 1961-1989. Both value-weighted and equally-weighted measures are shown. 3YMAROE is based on adjusted equity and adjusted profit.



coherent boom (Hodne and Grytten, 2000). This is reflected in the steadily high return on equity in this subperiod. Even though the rise in the oil price in 1973 should have resulted in a positive profitability increase of the overall Norwegian economy, due to its oil-dominated features, the effect is minimal. The oil price boom permanently increased the price and wage level in Norway compared to competing countries, resulting in decreased competitive power (Hodne and Grytten, 2000), which may explain the modest upturn in figure 5.7. During the oil crisis in 1974, figure 5.7 shows a sharp downturn in profitability. A lower ROE also appears for the consecutive years. Further, the beginning of the 1980s was characterized by large increases in company profitability, with a downturn during the recession in 1982 and the stock market crash and bank crisis in 1987.

It is also of interest to look at the profitability development over time for the different sectors, as they may have deviating reactions to economic events. Figure 5.8 displays

the value-weighted 3-year moving average of the ROE for each specific sector. A quick

Figure 5.8 – Return on equity (ROE) based on value-weighted 3 year moving average for the different sectors represented at OSE, 1961-1989. ROE is based on adjusted equity and adjusted profit.

glance at the cross-sectional profitability developments presented in figure 5.8 shows the increasing profitability in the shipping sector during the 1960s. The shipping industry contributed with 22-26 % of total investments made in Norway during this period. In addition, the investments in the shipping sector proved to be the most profitable (Norwegian Shipowners Association). The development in the offshore industry also introduced a new dimension to Norwegian maritime transport. Likewise, the oil activity stagnation during the oil crisis in 1974 resulted in an excess tonnage surplus, which substantially affected the profitability for the shipping sector. During the international stock market crash and bank crisis in 1987, the banking and insurance sectors were especially affected. The banking sector naturally experienced a substantial peak in ROE after the deregulation of the credit market. However, they also suffered great losses when the bank crisis emerged. Figure 5.8 shows that the ROE of the industry sector is relatively stable compared to the other sectors.

5.3.2 Price-Book Ratio

The Price-Book Ratio compares a company's market value to its book value. The ratio is computed by dividing the market capitalization, based on the closing price, by the book value of the company's equity at the end of a fiscal year (as shown in equation (5.3)). The ratio provides an indication of how much investors are paying for the net assets of a company.

$$P/B_t = \frac{MarketCapitalization_t}{BookValueofEquity_t} \tag{5.3}$$

Figure 5.9 – Aggregate adjusted P/B ratio, OSE 1961-1989. The computation is based on adjusted book value of equity.

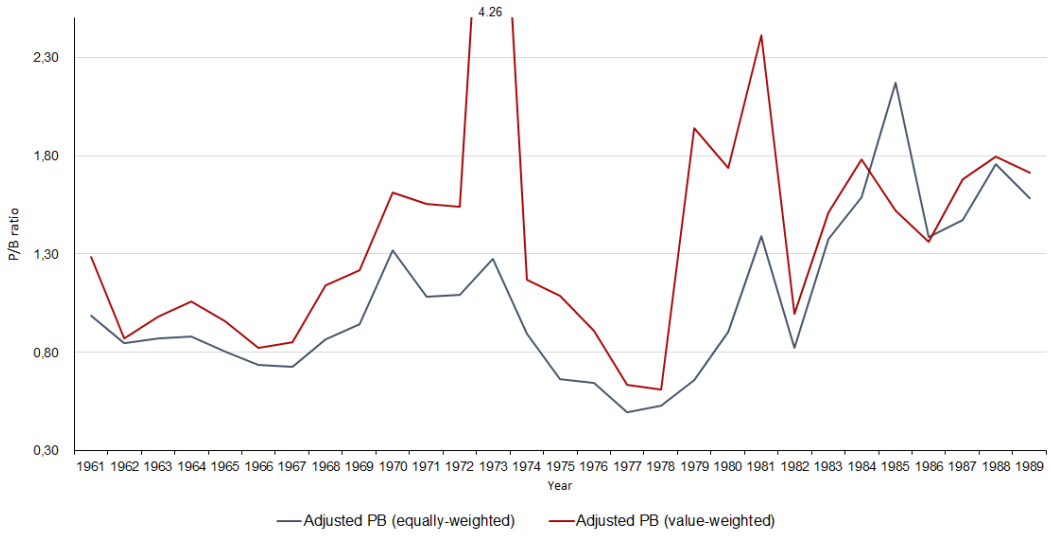


Figure 5.10 displays the aggregate P/B ratio based on adjusted equity for our time period[4]. Looking at the P/B ratio over time, an expected increase occurs in 1973. This is due to OPEC's oil price increase and the following optimism for Norway's oil dominated industry composition. The increase is mostly caused by Norsk Hydro, where operations were strongly dependent on the oil price. A similar rise occurs in 1979 when the oil price was increased even further. The peak in 1981 (when considering the value-weighted average) is driven by the firm Norsk Data. The Norsk Data stock increased by 517.3 % in 1981, which may be explained by their international financial break through as they

[4]Figure 9.6 in appendix plots the aggregate P/B ratio based on unadjusted equity.

were listed at the London Stock Exchange the same year. As expected, the P/B increases more steadily after 1983, as the market values also expanded[5]. Lastly, the aggregate ratio seems to not be as affected by the bank crisis in 1987 as we initially expected. The

Figure 5.10 – Sector specific variation in P/B, based on value-weighted average and adjusted equity.

sector-specific variation in adjusted P/B is presented in figure 5.10. As expected, the industry sector P/B is to a large extent affected by the oil price changes in 1973, 1979 and Norsk Data in 1981. The strong correlation between the industry sector and the oil price also drives the overall development of the P/B multiple.

The level of P/B is relatively low in the banking sector. This may be partly due to the characteristic features of the banks accounting sheets and standards. As banks have fairly liquid assets, the registered book value will be closer to the market value. In addition, strict regulations make it harder to expect high future growth rates for financial institutions.

The P/B of the shipping sector increased as Norwegian oil was discovered in 1969. Due to the shipping crisis and recession after 1973, the sector had lower P/B values in the following years. As already addressed, the P/B is often used to determine whether a stock is over or undervalued. If the stock is undervalued, positive future stock returns may be justified. This constitutes the basis for our further analysis presented in chapter 6.

[5]The development in market value is displayed in figure 5.1.

5.3.3 Price-Earnings Ratio

The Price Earnings ratio is another popular way to measure value as the ratio divides the market value of a firm by the companies' earnings. The ratio shows the multiple of earnings an investor is paying to own the stock. A high P/E ratio can for instance be justified when a company is expecting high growth in future earnings (which is reflected in the stock price of a company), compared to earnings today. In addition to exploring the relationship between P/B and future stock return, the papers authored by Fama and French (1992) and Lakonishok et al. (1994) also address the connection between the P/E multiple and the stock's future performance. Similar to the low P/B-firms, companies with low P/E ratio tend to earn a higher future stock return. Fama and French (1992) explain the relationship by risk compensation, as low P/E companies tend to be riskier. Also equivalent to the P/B-argumentation, Lakonishok et al. (1994) propose that investors have a tendency to exaggerate the importance of historical company performance on future company performance. A poor performing company will thus be undervalued, as the future earnings are underestimated.

Following Graham and Dodd (1934, obtained from Champbell and Shiller (2001)), prior earnings should be smoothed when computing the P/E ratio as earnings for a specific year is often too volatile to be a good measure of a company's true ability to achieve future growth. Champbell and Shiller (2001) further developed the importance of smoothed earnings through the CAPE ratio (cyclically adjusted P/E ratio, also known as the Shiller P/E). Initially, the CAPE ratio is based on smoothed earnings for a longer period of time (often 10 years). When operating with long time horizons, inflation adjustments are more important. As we are only operating with averages over three years, we have chosen to use nominal numbers in the computation of the CAPE ratio. The yearly aggregate CAPE ratio is computed based on equation 5.4.

$$CAPE_t = \frac{MarketValue_t}{(Adj.Profit_{t-2} + Adj.Profit_{t-1} + Adj.Profits_t)^{\frac{1}{3}}} \tag{5.4}$$

The time variation in the CAPE ratio for the aggregate economy, is presented in figure 5.11. Figure 5.12 shows the value weighted CAPE ratio for the four sectors respectively. Champbell and Shiller (2001) have examined how the outlook for the aggregate future

Figure 5.11 – The graph illustrates the variation in the yearly average of the cyclically adjusted price equity (CAPE) ratio for OSE, 1961-1989. The straight line display the average CAPE ratio for the selected time period. The CAPE ratio is based on a value-weighted 3 year average of prior adjusted profits.

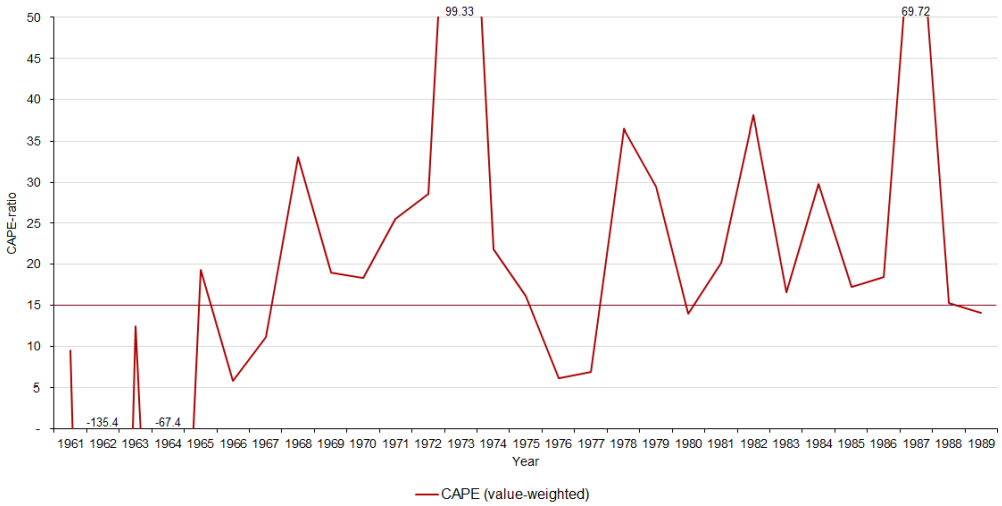
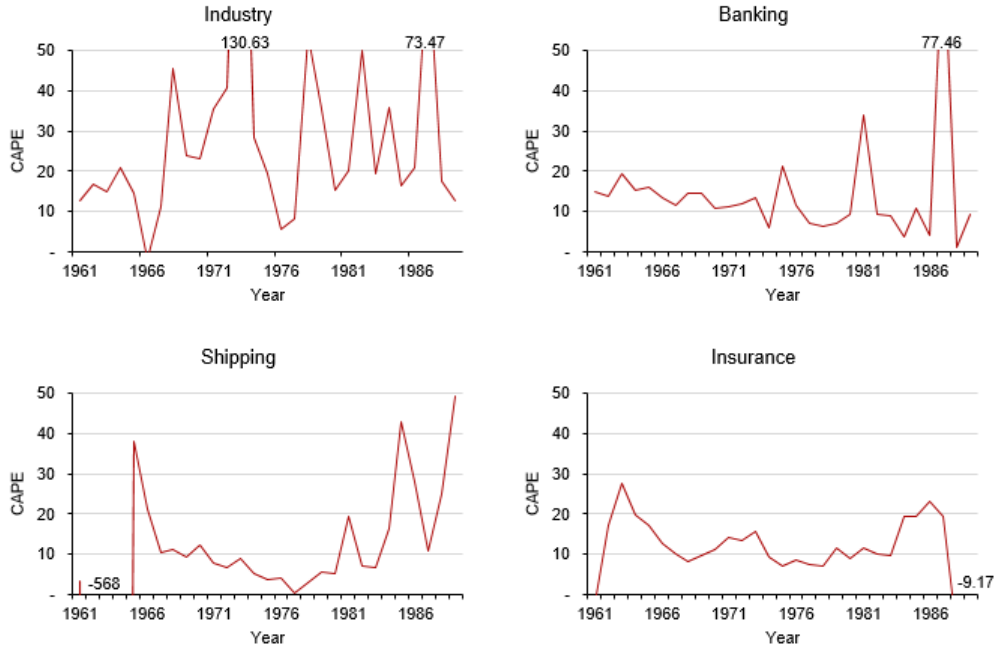


Figure 5.12 – Illustration of the variation in the yearly CAPE ratio for each sector at OSE, 1961-1989. The CAPE multiple is based on a value-weighted 3 year average of prior adjusted profit.



stock market develops when the CAPE ratio is deviating from normal historical levels. According to mean reversion theory, it seems reasonable to believe that a CAPE ratio deviating substantially from normal levels will move towards average levels over time. In figure 5.11, the straight line presents the average CAPE ratio for the period 1961-1989. When the ratio is close to a historical peak (1973 and 1987), the stock market is often at the brink of a decline. A high CAPE value could indicate that the stock market is overvalued, as the stock price is high relative to earnings on an aggregate level. Revisiting figure 5.3 in subsection 5.1.2, the CAPE ratio can be compared to the average yearly stock returns. The important turning point in 1973 can be reflected in the CAPE multiple and is followed by negative stock returns in the subsequent years. Taking figure 5.12 into consideration, the drops in the aggregate CAPE ratio are mainly due to the downturns in the industrial sector. The shipping sector is the industry with lowest CAPE ratios through most of the 1960s and the entire 1970s. The years 1984-1985 are also interesting to investigate. The oil price declines in 1986, which is reflected through the reduced CAPE ratio for the shipping sector. In 1987, the industry sector experienced a drastic CAPE-level increase, in contrast to the bank sector and shipping sector, where the ratio declines. While the industry CAPE ratio drops the following years, the bank sector and shipping sector experience a modest increase.

In the following empirical analysis, we have chosen to only examine the relationship between the P/B ratio and future stock returns, as the CAPE ratio is subject to higher volatility compared to the P/B measure.

6. Empirical Approach and Analysis

In the two following sections, we will further analyze the P/B ratio of the firms listed at OSE in the period 1961-1989 through assessing our two presented hypotheses.

6.1. Hypothesis 1

A low (high) P/B ratio is associated with a high (low) future long-term return.

6.1.1 Methodical Approach

As previously discussed, the P/B has been found to be a good predictive indicator of the future stock return, both on the aggregate (market) level and on the firm level. The researched relationship between P/B and future stock returns mainly concerns the long-term stock return, rather than shorter time horizons. To measure the long-term future return, we compute the geometric mean of the annual stock returns in the subsequent 5 years ($5YR$), as presented in equation (6.1).

$$5YR = ((1 + r_1) * (1 + r_2) * ... * (1 + r_5))^{\frac{1}{5}} - 1 \tag{6.1}$$

As equation (6.1) illustrates, the five-year long-term future stock return in 1961 is the geometric mean of the stock returns in the years 1962-1966, the long-term future stock return in 1962 is the geometric mean of the stock returns in the years 1963-1967 and so on.

Market Level Analysis

First, we wish to examine the aggregate relationship by analyzing how the variation in future long-term market return (5YMR) can be explained by the variation in the market P/B ratio (MPB)[1]. Both variables are based on market value-weighted averages. Equation (6.2) shows the time-series regression analyzing the relationship on the aggregate level.

$$5YMR_t = \alpha + \beta_1 MPB_t + \epsilon \tag{6.2}$$

In the analysis, we have included robust standard errors to avoid problems with heteroscedasticity and autocorrelation in residuals. In the regression, we include a 5-year

[1] An Augmented Dicky Fuller test (displayed in table 9.2 in appendix) shows that the time-series is stationary, and differentiating is thus not necessary.

lag of the long-term return ($5YMR_{t-5}$) to pick up any effect caused by mean reverting trends in stock prices and returns. Poterba and Summers (1988) provide results indicating a positive relationship between previous and future returns in short horizons, but an inverse connection for longer horizons. However, at the same time, they were also unable to statistically reject a random-walk price process.

Apart from the lagged 5-year market return ($5YMR_{t-5}$) and the variables of interest (P/B), we also include the control variables *SIZE*, *RISK* and *PROFITABILITY*.

SIZE (MV)

The size of a market is driven by the size of the firms it consists of. The size of the firm is in itself a variable affecting stock returns according to fundamental value theory, as firms with a higher required rate of return have a lower market value (Berk, 1995). One possible explanation for the firm size's direct effect on the future stock return is presented by Klein and Bawa (1977, obtained from Banz (1981)). The amount of information available about a company's stock is related to the size of the firm, due to both the level of trading activity and number of sophisticated investors involved. As investors do not want to hold stocks when there is an insufficient amount of information available about the firm, they will limit their investments to the larger and more information-rich firms (Banz, 1981). As Banz (1978) showed that such "undesirable" stocks have higher risk-adjusted returns, the lack of information about small firms might explain why these stocks experience higher future returns. The future stock return being affected by the size of firms will later be referred to as "the size effect".

In addition to affecting the future stock return directly, size serves as a catch-all proxy for several other indicators like risk, growth, barriers-to-entry and economies of scale. Size can be a proxy for risk as small firms generally are more risky than larger firms. This is mainly because smaller firms have a smaller capital buffer in times of financial distress, making them more exposed to fluctuations in the business environment. Furthermore, size and growth are connected as smaller firms tend to be less mature (Lev, 1983). According to Life Cycle Theories, younger (smaller) firms grow at a faster rate than more mature firms. Barriers-to-entry can also be represented by the size of the firm, as it is harder to enter the market or threaten a company's market position if the firm is large and

dominant. Lastly, the larger the firm is, the easier it will be to exploit economies of scale.

We use market value as a measure of market/firm size. As the distribution of firm's market values is skewed, the natural logarithm of market value is used.

RISK (DR)

It is natural to assume that the bankruptcy risk of the firms in the market will have an impact on the future stock return, as investors will demand a premium for holding assets that are more likely to go bankrupt. The leverage of the firm functions as a proxy for this type of risk as risk increases when the level of debt does. In our model, leverage is measured as the debt ratio.

PROFITABILITY (ROE)

The profitability of firms has been found to have an impact on future stock returns (Hillestad, 2007). Having a high ROE may indicate that the company has a competitive advantage, making it easier to sustain their position in the market. Additionally, many investors are attracted to profitable companies, which will bid up the stock price (Frankel and Lee, 1998). There are also arguments for the opposite effect. Investors tend to expect that the historical performance will preserve in the future. This is not always the case, and stock returns may be inversely affected if the companies do not sustain the investors' expectations. In our analysis, ROE is used to measure the profitability of the companies in the market.

All the included control variables may explain some of the variation initially picked up by the P/B ratio. Thus, it is of interest to look at the correlation between the explanatory variables (see table 9.1 in appendix), to further examine whether they measure equivalent effects. For example, size and P/B are both dependent on market value and will increase as the market value increases, as shown by a positive correlation coefficient of 0.39 in the correlation matrix. Similarly, profitability and P/B both factor in the book value of equity, emphasized by a correlation coefficient of 0.36. Likewise, the market value and ROE have a correlation coefficient of 0.29. Despite the relationship between the variables, the correlation is low enough to dismiss potential multicollinearity problems.

By adding these control variables, we end up with the regression presented in (6.3)[2]. In the equation, $5YMR_t$ is the long-term *market* return, MPB_t is the *market* P/B, $ln(MV)_t$ is the *market* size, MDR_t is the *market* debt ratio and $MROE_t$ is the *market* profitability.

$$5YMR_t = \alpha + \beta_1 MPB_t + \beta_2 5YMR_{t-5} + \beta_3 ln(MV)_t + \beta_4 MDR_t + \beta_5 MROE_t + \epsilon \quad (6.3)$$

Firm Level Analysis

To analyze the relationship further, we conduct a panel data regression to examine the link between the future long term return and P/B both over time and across companies. To control for market index variations, we use the abnormal return over the market index return ($avg5YSR_t$) as the independent variable. The future long-term abnormal return is calculated as presented in equation (6.4).

$$abn5YSR_{i,t} = 5YSR_{i,t} - avg5YSR_t \quad (6.4)$$

In equation 6.4, $abn5YSR_{i,t}$ is the abnormal 5-year stock return over the market return for stock i at time t, $avg5YSR_t$ is the market index return in year t and $5YSR_{i,t}$ is the 5-year stock return for stock i at time t.

Equation (6.5) shows the panel data regression. The analysis is controlled for fixed effects (time-invariant effects). We have adjusted the standard errors of the coefficient estimates, as ignoring potential correlation in the regression may lead to biased statistical inference. In contrast to the time series analysis on the market level, it is not sufficient to only correct for autocorrelation when working with panel data; cross-sectional dependence must also be accounted for. Therefore, we run a regression with Driscoll-Kraay standard errors, which produces heteroskedasticity consistent standard errors that are robust to both cross-sectional and temporal dependence (Driscoll and Kraay (1998), collected from Hoechle (2007)).

$$abn5YSR_{i,t} = \alpha + \beta_1 PB_{i,t} + \epsilon \quad (6.5)$$

Similar to the market level analysis, we control for the 5-year lag of the abnormal long-term return ($abn5YSRlag5$) and the three control variables (*SIZE*, *RISK* and *PROF-*

[2]All variables in equation (6.3) are based on value-weighted averages.

$ITABILITY$). We also add an interaction variable of market value and P/B ($PB*lnMV$) to research whether the return-predictability of P/B is concentrated in firms of a specific size (small or large).

By adding the control variables ($ln(MV)_{i,t}$, $DR_{i,t}$ and $ROE_{i,t}$), the final panel data regression is illustrated in equation (6.6). A linear and exponential trend variable (t and t^2) is included to correct for trend stationarity in our panel data[3].

$$\begin{aligned} abn5YSR_{i,t} = \alpha + \beta_1 PB_{i,t} + \beta_2 abn5YSR_{i,t-5} + \beta_3 ln(MV)_{i,t} + \beta_4 DR_{i,t} \\ + \beta_5 ROE_{i,t} + \beta_6 t + \beta_7 t^2 + \beta_8 PB_{i,t} * ln(MV)_{i,t} \end{aligned} \tag{6.6}$$

As we have already mentioned, the OSE has been subject to substantial changes during our period of interest. Thus, it is of interest to run the firm level regression for the different subperiods. To supplement, we also wish to examine the cross-sectional differences by running our model for each individual industry.

6.1.2 Empirical Results

Market Level Analysis

On the aggregate level, regressing the future 5-year market return (5YMR) on the market price book (MPB), we obtain the time series regression results presented in table 6.1.

[3]To test for stationarity, we have conducted a Fisher-type unit-root test, providing a p-value of 0.504. The test is shown in table 9.3 in appendix and suggests that the series is trend-stationary.

Table 6.1 – Regression Results: Market Level Regression

	(1)	(2)	(3)
	5YMR	5YMR	5YMR
MPB	-0.0939***	-0.0898***	-0.0905***
5YMRlag5		0.0925	0.099
lnMV			0.002
MDR			-0.055
MROE			-0.023
Observations	28	28	28
Adjusted R^2	0.583	0.596	0.597

Standardized beta coefficients

Significance level denoted as: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5YMR = 5-year market return, MPB = Market P/B, 5YMRlag5 = 5-year lag of the average long-term market return, MDR = Market debt ratio, MROE = Market return on equity.

The regression yields an inverse and significant relationship between the MPB and the future long-term market return (5YMR), shown in model (1). The relationship persists even after controlling for size, risk, profitability and the five-year lagged market return as shown in model (3). These results indicate that a low market P/B may be a good indication of higher market returns in the future.

Firm Level Analysis

The results of the firm level regression of abnormal future long-term is presented in table 6.2. In model (1) and (2), the results show that the contemporary P/B significantly affects the future long-term stock return. As the coefficient is negative, a high (low) P/B ratio is associated with a low (high) future long-term stock return. We initially expect that the lagged 5-year abnormal stock return ($abn5YSRlag5$) may capture some of the variation earlier picked up by the P/B, as stocks with high (low) P/B typically also have high (low) past stock returns. This may explain the slightly higher explanatory power in model (2) compared to (1).

However, table 6.2 shows that the P/B effect disappears after controlling for size (market

Table 6.2 – Regression Results: Firm Level Regression

	(1)	(2)	(3)	(4)
	abn5YSR	abn5YSR	abn5YSR	abn5YSR
PB	-0.0779***	-0.0786***	-0.1238	-0.0706
t	0.0014	-0.0007	0.0019	0.0044
t2	0.0002	0.0003	0.0006*	0.0006*
abn5YSRlag5		-0.0004	-0.0299	-0.0258
lnMV			-0.113***	-0.118***
DR				-0.139**
ROE				0.0047
PB*lnMV			0.0062	0.0039
Constant	0.0631	0.0664*	1.944***	2.099***
Observations	975	659	659	652
Adjusted R^2	0.103	0.120	0.254	0.259

t statistics in parentheses

Significance level denoted as:* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

abn5YSR = abnormal 5-year stock return over the market return, t/t2 = trend variables, abn5YSRlag5 = 5-year lag of the abnormal long-term return, MV = market value, DR = debt ratio, ROE = return on equity.

Table 6.3 – Regression Results: Firm Level Regression for Different Subperiods

	(1)	(2)	(3)
	abn5YSR	abn5YSR	abn5YSR
	1960-69	1970-79	1980-89
PB	0.0567	0.0147	0.0072
abn5YSRlag5	-0.0157	-0.0700	-0.0418
lnMV	-0.187***	-0.0893**	-0.175***
DR	-0.0567	-0.0802	-0.0017
ROE	0.0018	-0.0005	0.0185
t	0.0030	-0.177	0.206
t2	0.0010	0.0067	-0.0040
Constant	3.191***	2.789***	0.917
Observations	241	316	95
Adjusted R^2	0.342	0.238	0.480

t statistics in parentheses

Significance level denoted as: sym* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

abn5YSR = abnormal 5-year stock return over the market return, t/t2 = trend variables, abn5YSRlag5 = 5-year lag of the abnormal long-term return, MV = market value, DR = debt ratio, ROE = return on equity.

value) as shown in model (3). Size has a negative effect on future stock returns, which is in accordance with the theoretical evidence discussed in section 6.1.1. The explanatory power also increases considerably when including the size-variable. These results imply that the significant P/B effect in model (1) and (2), is in fact largely driven by the size effect. Put differently, we assume that the P/B functions as a proxy for size[4]. Like Banz (1981), the relationship between P/B and size is tested in table 9.4 in appendix. The table shows that the size effect is still present after controlling for P/B (shown in model (1) and (2) in table 9.4), while the P/B effect is removed when size is controlled for (shown in model (3) and (4) in table 9.4). Therefore, we infer that P/B is a proxy for size, and not vice versa.

Furthermore, when controlling for the additional control variables, risk (DR), profitability (ROE) and the interaction variable (PB*lnMV), in model (4) in table (6.2), the explanatory power is not considerably affected. This emphasizes that the initial P/B effect is driven by size and not one of the other control variables. Risk has a negative and significant effect on the future stock return. The profitability effect is positive, but not significantly different from zero. The regression result shows a positive interaction effect, even though we initially would expect this to be negative. However, the effect is not emphasized as the coefficient lacks significance.

Running the regression model from equation 6.6 on the different subperiods yields the outcomes presented in table 6.3. There is no present P/B-effect in neither of the subperiods. The size effect is still negative and significant, which indicates that the abnormal future return is related to the size variations of the firms. The lower explanatory power in the 1970s, as well as the slightly less significant size effect, may be a consequence of the turbulent circumstances present during this period.

We also run the model for the different industries. The regression results are presented in table 6.4. For the industrial and shipping sector, the size effect is still the dominant factor in explaining the future long-term abnormal stock return. In the shipping sector,

[4]Even though P/B might function as a proxy for size, size itself will still pick up variation previously not accounted for by using P/B, as the explanatory power of the model in table 6.2 increases when adding the size-variable.

Table 6.4 – Regression Results: Firm Level Regression for Different Sectors

	(1) abn5YSR Industry	(2) abn5YSR Banking	(3) abn5YSR Shipping	(4) abn5YSR Insurance
PB	0.006	0.192	-0.060	-0.533
abn5YSRlag5	-0.047	-0.223	-0.011	-0.149
lnMV	-0.835***	-0.579	-0.555***	-0.398
DebtRatio	-0.027	0.188	-0.135**	0.283
ROE	0.009	-0.093	0.025	-0.042
t	-0.024	1.710	-0.138	-0.173
t2	0.613	-1.255	0.778**	0.441
Observations	293	59	249	51
Adjusted R^2	0.227	0.167	0.354	0.285

Standardized beta coefficients; t statistics in parentheses

Significance level denoted as:* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

abn5YSR = abnormal 5-year stock return over the market return, abn5YSRlag5 = 5-year lag of the abnormal long-term stock return, MV = market value, ROE = return on equity, t/t2 = trend variables.

the risk (debt ratio) is also significant. The effect is negative, which contradicts the theory presented in section 6.1.1, as we initially would expect increased leverage (and risk) to result in a risk premium.

To sum up our findings regarding our first hypothesis, we find that there is an inverse relationship between P/B and future long-term stock return on the aggregate (market) level. However, when examining the relationship on firm level , the P/B effect diminishes when we control for size. The firm level findings are persistent for the different industries and subperiods. This is in line with Næs et al. (2008), who also found that smaller firms listed on OSE have experienced a higher stock return. They only found P/B to be significant between 1980-1989, whereas size was found to be significant for their entire period of interest (1980-2006).

6.1.3 Weaknesses and Robustness of the Analysis

Future stock returns might be affected by macroeconomic variables not included in our study, like interest rate, inflation, exchange rate and the oil price. By not including these factors in our analysis, we may potentially encounter endogeneity problems, where unobserved macro variables affect both the independent and dependent variable and implicitly explain the underlying connection. However, given a potential relationship between a macroeconomic variable and the future stock return, such a correlation is challenging to detect empirically. Næs et al. (2008) have explored whether macroeconomic variables are priced in the Norwegian market[5], but they do not report significant results. It seems likely that these factors affect firms through their expected cash flows, and not through stakeholders return. Also, Næs et al. (2008) emphasize that the stock market can be viewed as a leading indicator for the economy, instead of the other way around. Including macroeconomic variables is thus a challenging task, as the stock price might reflect macroeconomic relations before they are observable in macroeconomic data. In order to solve potential endogeneity problems, our model controls for fixed effects to minimize the analytical consequences of the potential bias.

In addition to solving endogeneity problems, working with panel data has many advantages. First, it enables us to control for unobserved individual-specific and time-invariant heterogeneity, which initially could lead to biased estimators. Second, the sample sizes are larger than a single cross-section sample, which reduce the standard deviation and provides more precise estimates. However, when the length of the time period differs between firms (unbalanced data set), the use of panel data raises additional issues. When the variation is not random (for example by less profitable firms having higher exit rates), this should preferably be taken into account.

As mentioned in section 4.4.3, the financial statements of companies is not public until March/April. Therefore, financial information that initially should be comprised in the stock price is not available at year-end. This constitutes a weakness of our analysis, as we are matching stock returns and indicators based on the financial statements at the

[5]For the time period 1980-2006

end of the year.

Lastly, as we are operating with yearly returns, the periodicity of the data set is large. Using yearly data instead of monthly introduces additional weaknesses to our study. Causal variables that change and affect the future stock return on a more frequent basis are less integrated in the yearly analysis. However, more frequent data has not been available, both due to the lack of registration and low trading activity.

To test the robustness of our analysis, we winosorize our data set, limiting the extreme values to the value of the 10 % percentiles. We test the relationship between the P/B and future abnormal stock return on the modified sample. The results (displayed in table 9.6 in appendix) show the similar conclusions as drawn in our initial analysis. Thus, our results are not significantly affected by outliers in our data set.

In addition, we run the aggregate regression using equally-weighted averages instead of the value-weighted averages (regression results are displayed in table 9.5 in appendix). By doing this, we can ensure that the results are not necessarily driven solely by the large, dominating stocks present at OSE. The results show that the market P/B still has a negative effect on future market return, but the significance is weakened and is only significant at a 10 % significance level The size (MV) variable do not yield significant results.

6.2. Hypothesis 2

Portfolios dominated by low P/B firms yield a higher mean return than portfolios dominated by high P/B firms.

6.2.1 Methodical Approach

To approach our second hypothesis, we have constructed two portfolios: one consisting of an equally-weighted combination of the firms having a P/B above the yearly median, and one portfolio consisting of an equally-weighted combination of the firms having a P/B below the yearly median. We use the median instead of the average as this provides a less skewed distribution in terms of number of companies in the two different portfolios. Since we have created a floor for P/B by excluding all companies with negative book equity, we

will have fewer extreme observations on the left side of the distribution. We do not have the equivalent upper limit for the P/B, causing extreme values to still occur on the right side. These extreme values affect the average, resulting in a significantly lower number of companies satisfying the high P/B portfolio average constraint. The median is to a lesser extent affected and the companies are therefore more equally distributed.

As the P/B ratio varies over time, we have rebalanced the portfolios every year to ensure that they at all times are dominated by the intended firms. The firm-specific stock returns are calculated as a one-year buy-and-hold return, from the fiscal year end to the end of next year (31.12). As the portfolio is constructed by equally weighting the firms that fulfill the portfolio's P/B criteria, the average yearly return of the portfolio is calculated as shown in formula (6.7). In the formula, $r_{p,eq}$ is the portfolio return, N is the number of companies and r_i is the stock return of stock i.

$$r_{p,eq} = \frac{1}{N} \sum_{i=1}^{N} r_i \tag{6.7}$$

To account for the firm size differences in the two portfolios, we have also constructed the value-weighted portfolios. The portfolio return ($r_{p,vw}$) is calculated as shown in equation 6.8. TMV is the total market value of all firms, MV_i is the market value of firm i and r_i is the stock return of firm i.

$$r_{p,vw} = \sum_{i=1}^{N} \frac{MV_i}{TMV} * r_i \tag{6.8}$$

To measure whether the low P/B portfolio performs better than the high P/B portfolio over time, we wish to test whether the difference in next year portfolio return[6] is significant between the two. A t-test is usually used to compare two averages. However, an important assumption behind the t-test is that the portfolio returns are normally distributed. Brown and Warner (1985) report that stock prices and returns are distributed such that this assumption is violated. This is especially true as we are working with yearly returns and relatively long holding periods (time horizon), where the skewness in the distribution seems to become increasingly important (Fama and French, 1996). Thus, we opt for a non-parametric test. By using a non-parametric test, like the Mann-Whitney test, there

[6]The return difference is not adjusted for risk

is no need to make any assumptions about the distribution of the portfolio returns. To test whether the difference in next year portfolio return is significant between the two portfolios, we conduct a rank-sum test and a median test.

The Wilcoxon rank-sum test (often referred to as the Mann-Whitney U-test) tests whether the population mean ranks differ between our two samples. It determines whether the two samples are from the same population with the same distribution (Wilcoxon (1945) and Mann and Whitney (1947)).The median test performs a nonparametric k-sample test on the equality of medians. The null hypothesis states that the samples were drawn from populations with the same median.

6.2.2 Empirical Results

Equally-Weighted Portfolios

The summary statistics of the two equally-weighted portfolios are presented in table 6.5, and shows that the high P/B portfolio contains larger firms in terms of market value. Furthermore, investors are typically inclined to pay higher multiples of book value for a company that proves to be profitable. However, we observe that the low P/B portfolio has a slightly higher return on equity (9.7 %, compared to a ROE of 9.2 % for the high P/B portfolio. The difference is not significant). The high P/B stocks have the highest portfolio return today (23.6 % vs. only 4.9 % in the low P/B portfolio), while the low P/B portfolio has a higher next year return (17.5 % in comparison to 11.8 %). The development of the different features of the two portfolios over time is plotted in figure 9.7, 9.8, 9.9, 9.10 and 9.11 presented in appendix.

Looking at risk measures, in this case the volatility of next year's stock return and the beta, the low P/B portfolio is slightly riskier than the high P/B portfolio (standard deviation of 0.29 compared to the high P/B portfolio's standard deviation of 0.27). This observation may indicate that the superior future portfolio return provided by the low P/B portfolio is a result of the demanded risk compensation (according to the argumentation by Fama and French (1992)). However, by controlling for (market) risk through

Table 6.5 – Summary Statistics for the Equally-Weighted Low P/B and High P/B Portfolio

	Low P/B Portf	*High P/B Portf*	*LP/B – HP/B*	
	Average	**Average**	**t-statistic**	
Number of Observations	579	577		
Total Assets	4 480 000 000	1 950 000 000	6.633	***
Market Value	350 000 000	495 000 000	-3.317	***
Price Book	0.60x	1.43x	-33.34	***
CAPE	28.21x	14.29x	4.583	***
Return on Equity	9.7%	9.2%	1.602	*
Debt Ratio	0.5	0.48	0.989	
Stock Return(t)	4.9%	23.6%	-11.09	***
Stock Return(t+1)	17.5%	11.8%	3.49	***
(Future) Stock Return Volatility	0.29	0.27		
Beta	1.02	0.91		
Required Rate of Return	15.11%	14.40%		
Abnormal Return	2.39%	-2.60%	3.06	***

The key indicators are based on equally weighted averages. Significance level is denoted as *** on a 2.5 % significance level, ** on 5 % significance level and * on 10 % significance level. *Number of observations* (company years) equals number of companies multiplied with number of years. *Return on Equity* is the 5 year moving average of ROE. *Beta* is calculated based on yearly correlation between portfolio and market. *Required rate of return* is based on CAPM. The risk free rate is set to the 10- year government bond yield.

adjusting for the required rate of return[7], we observe that the low P/B portfolio maintains a significant superior return on a 2.5 % significance level compared to the high P/B portfolio according to the t-statistics (3.06).

According to the t-statistics (3.49) provided in table 6.5, the future stock return is significantly higher for the low P/B portfolio. However, as the normality of the return distribution can be questioned, the results of the Wilcoxon rank-sum and median test is presented below.

In our analysis of the future return[8] of the two equally-weighted portfolios, the rank sum provides a z-value of -3.39 and a corresponding p-value of 0. Thus, we can reject the null hypothesis stating that the two samples have equal distributions. As the descriptive statistics in table 6.5 show a larger future return for the low P/B portfolio, we can conclude, based on the rank sum test, that the low P/B portfolio obtains a significantly higher return compared to the high P/B portfolio. However, the median test fails to reject the null hypothesis (p-value of 0.68), which introduces some uncertainty to the conclusion of the rank sum test.

Value-Weighted Portfolio

The summary statistics for the value-weighted portfolios are presented in table 6.6 (the development in the different features is plotted in figure 9.12, 9.13, 9.14, 9.15 and 9.16 in appendix). We observe that the high P/B portfolio now consists of more profitable stocks in terms of return on equity. The historical stock return is still lower for the low P/B portfolio. However, in contrast to the equally-weighted portfolio, the value-weighted high P/B portfolio obtains the higher future return. The fact that the abnormal return of the low P/B portfolio diminishes, may imply that the abnormal return obtained from the equally-weighted portfolios might emerge from the size effect introduced in subsection 6.1.1. The reversed relationship obtained while looking at the value-weighted portfolios may also be a result of the return predictability of P/B being concentrated in smaller firms. This is emphasized by Banz (1981) showing that the abnormal future return is

[7]CAPM is used to obtain the required rate of return. The risk-free rate is set to the 10 year government bond yield.

[8]Not adjusted for risk

larger for the very small firms.

If the return predictability of P/B is concentrated in smaller firms, the question whether these returns are realizable is relevant. Small-cap company returns are often hard to realize, as the trading activity of these firms are typically lower (higher liquidity premium). By creating the value-weighted portfolios, this weakness is minimized compared to the equally-weighted construction. Through this approach, excess returns provided by smaller companies impact the portfolios less. According to the t-statistic (-1.13) pro-

Table 6.6 – Summary Statistics for the Value-Weighted Low P/B and High P/B Portfolio

	Low P/B Portf	*High P/B Portf*	*LP/B - HP/B*	
	Average	**Average**	**t-statistic**	
Number of Observations	579	577		
Market Value	1 170 000 000	2 050 000 000	-5.08	***
Total Assets	8 790 000 000	5 420 000 000	4.76	***
Price Book	0.64x	1.79x	-28.66	***
CAPE	20.25x	22.63x	0.1	
Return on Equity	9.13%	10.8%	-12.61	***
Stock Return(t)	2.21%	28%	-11.08	***
Stock Return(t+1)	7.8%	9.8%	-1.13	
(Future) Stock Return Volatility	0.23	0.36		
Beta	0.837	0.997		
Required Rate of Return	13.86%	14.98%		
Abnormal Return	-6.06%	-5.18%	-0.503	

The key indicators are based on value weighted averages. Significance level is denoted as *** on a 2.5 % significance level, ** on 5 % significance level and * on 10 % significance level. *Number of observations* (company years) equals number of companies multiplied with number of years. *Return on Equity* is the 5 year moving average of ROE. *Beta* is calculated based on yearly correlation between portfolio and market. *Required rate of return* is based on CAPM. The risk free rate is set to the 10- year government bond yield.

vided in table 6.6, the future stock return is not significantly different between the two value-weighted portfolios. However, as the normality of the return distribution can be

questioned, the results of the Wilcoxon rank-sum and median test is presented below.

For the value-weighted portfolios, we are unable to reject the null hypothesis of both the rank sum (Z-value of -0.152 and a p-value of 0.88) and the median test (p-value of 0.142). Therefore, we can not assume that the two value-weighted portfolios obtain significantly different future returns. Comparing these results to the results obtained from the two equally-weighted portfolios, the return-predictability may seem to be concentrated in smaller firms. This is in line with the findings from hypothesis 1.

6.2.3 Weaknesses and Robustness of the Analysis

Whether the excess return earned by investing in the equally-weighted low P/B portfolio is strictly a small firm effect, can be examined more in debt creating additional portfolios accounting for size or by size-adjusting the portfolio returns by using the same method as Lakonishok et al. (1994). Næs et al. (2008) have also researched the size effect through a similar approach. Their study finds the effect to be significant, where smaller firms have experienced a higher stock return.

An additional weakness lies in the construction of our portfolios. The P/B ratio is based on both market data and accounting information. However, as mentioned in subsection 4.4.3, financial statements of companies are typically not published until March/April the subsequent year. As we only have year-end data available, our portfolios are consequently constructed based on data that is only theoretically accessible at the time of construction.

Lastly, when comparing the risk-adjusted abnormal returns of the two portfolios, we have only controlled for market (beta) risk. However, the future stock return could also be affected by other (systematic) risk factors like size, liquidity and momentum. Controlling for other risk factors that could explain parts of the excess abnormal return, could strengthen the performed analysis and findings.

To check the robustness of our analysis, we have conducted the similar review and analyses after winosorizing the sample, through limiting the outliers to the values of the 10 % percentiles of the stock returns. For both the equally-weighted and value-weighted portfolios, the portfolio features are presented in table 9.7 in appendix. Similar to our original analysis of the equally-weighted portfolios, the low P/B portfolio still obtains

higher future return (14.1 % vs. 11.4 %) compared to the high P/B portfolio. The rank sum test still proves a significant difference between the two returns (Z-value of -3 and p-value of 0), but the median test do not (p-value of 0.68). The high P/B portfolio still consists of larger stocks and obtained the better historical return (22.1 % vs. 1.9 %).

After winsorizing the value-weighted portfolios, there is still no significant difference between the future returns of the two portfolios based on the rank sum ($Z = -0.182$ and $p = 0.86$) and median test ($p = 0.142$). As we obtain the similar results as the original analysis, both for the equally- and value-weighted portfolios, our model is robust to outliers and extreme observations.

In our analysis addressing hypothesis 2, we have only divided the included companies into two portfolios. In contrast to earlier research, where authors have divided their sample into up to 10 portfolios, these results are less nuanced where the two portfolios may have more similar features, making it harder to obtain significant conclusions regarding the future return. Exploiting 10 portfolios, instead of just two, would also able the analysis to pick up non-linear effects.The robustness of our analysis may be somewhat weakened due to this issue.

7. Further Research

Even though our thesis is a valuable contribution to the historical research of the OSE, our study is limited to analyzing approximately 60 % of the companies listed at OSE for the time period 1961-1989. In order to strengthen the findings in this paper, an aim could be to expand the data set by including all listed companies for each year. Also, including the accounting information for companies back to 1881, when the first listings at OSE started, would be of value. As annual market information for this entire time period is already digitalized[1], the supplement of accounting information will create opportunities regarding analyzing different effects over longer time horizons. Also, it would be interesting to expand the data set to also include historical levels of dividend yields.

Furthermore, this thesis has sought to investigate the relationship between the P/B ratio and future realized stock returns. Other research papers have also examined how additional empirically motivated factors like size, liquidity and momentum correlate with future market returns[2]. A similar analysis could also be interesting to perform for OSE prior to 1980, to further investigate whether some of these factors significantly affect variations in future market returns.

Our research is independent of the state of the economy. The analysis could be further expanded by investigating whether macroeconomic variables actually are priced in the Norwegian stock market before 1980. However, it should be emphasized that it is challenging to prove a significant relationship between stock return and macroeconomic variables, as the stock market also can be viewed as a leading indicator for the economy (Næs et al., 2008).

[1] See Buer (2013)

[2] See for instance Næs et al. (2008), Fama and French (1992) and Lakonishok et al. (1994)

8. Conclusion

This thesis has aimed to assemble a representative data set for OSE in the period 1961-1989 in order to explore characteristics and provide deeper insights of the stock exchange for the selected time period. As data concerning the financial statements of listed companies has not been fully digitized[1], little prior research have examined this time interval. The collected accounting data has been supplemented with existing market values and stock returns, and has provided interesting findings regarding the OSE.

Revisiting the characteristics description presented in chapter 5, the debt ratio slightly increased through the 1960s and 1970s. Debt financing was especially attractive due to a low interest rate policy, even though issuance of debt was strictly regulated. When the companies' retained earnings and the trading level at OSE increased in the beginning of the 1980s, one should expect the debt ratio to decrease as equity became more accessible. However, a more liberal credit policy also made debt more available, and the two effects might somewhat have evened each other out.

The key measures ROE, P/B and P/E have also been explored, and as elaborated in section 5.3, the indicators reflect the historical factors and events. Especially the year 1973, when the price of oil increased, is of interest. The ROE drops heavily in the subsequent years, and the P/B and P/E values reach historical highs before they rapidly fall the following year. In 1987, several international stock markets crashed, and the OSE was especially affected as the crash coincided with an economic decline and bank crisis in Norway. The three key indicators also grasp and reflect this period of time.

Furthermore, this thesis has aimed to examine the relationship between the P/B ratio and future realized stock returns for OSE in 1961-1989. The analyses were based on two approaches, defined in the hypotheses; *i) A low (high) P/B ratio is associated with a high (low) future long-term return* and *ii) Portfolios dominated by low P/B firms yield a higher mean return than portfolios dominated by high P/B firms.*

The examination of hypothesis 1 was performed by conducting conducting analyses both

[1]Financial information have been available for a share of our included companies for the time period 1980-89

on market level and firm level. The market level analysis showed an inverse and significant relationship between the market P/B and the 5-year future market return. The effect was still significant after controlling for size (market value), risk (debt ratio), profitability (ROE) and a 5-year lag of the abnormal long-term return. The firm level analysis initially also supported that the contemporary P/B inversely affected the future 5-year stock return. However, the significance of the P/B disappeared when controlling for size (market value). Size has a significant negative effect on future stock returns. By further studying the relationship between P/B and size like Banz (1981), we infer that the P/B is a proxy for size. To investigate hypothesis 2, we constructed two portfolios; one consisting of low P/B-firms and one consisting of high P/B-firms. We analyzed the differences looking at both the equally-weighted and value-weighted construction of the portfolios. For the equally-weighted portfolio, we found that the high P/B portfolio had the highest portfolio return today (23.6 % vs. 4.9 % in the low P/B portfolio), while the low P/B portfolio had a higher next year return (17.5 % in comparison with 11.8 %). A Wilcoxon rank sum test concluded that the low P/B portfolio obtained a significantly higher return compared to the high P/B portfolio. However, the median test failed to prove the same significance, which introduces some uncertainty to the conclusion of the rank sum test. To account for firm size differences in the two portfolios, we also analyzed the value-weighted portfolios. In contrast with the equally-weighted portfolios, there is no longer a significant difference in the future return. The findings may imply that the abnormal return of the low P/B portfolio based on equally-weighted averages emerged from the size effect. As the value-weighed portfolios are more affected by larger firms, the findings may indicate that the stock return-predictability is concentrated in smaller firms. These findings are also in line with what the assessment of hypothesis 1 showed.

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9. Appendix

Appendix to Chapter 5: Characteristics of the Oslo Stock Exchange

Figure 9.1 – Development in Real Adjusted Profits for all sectors

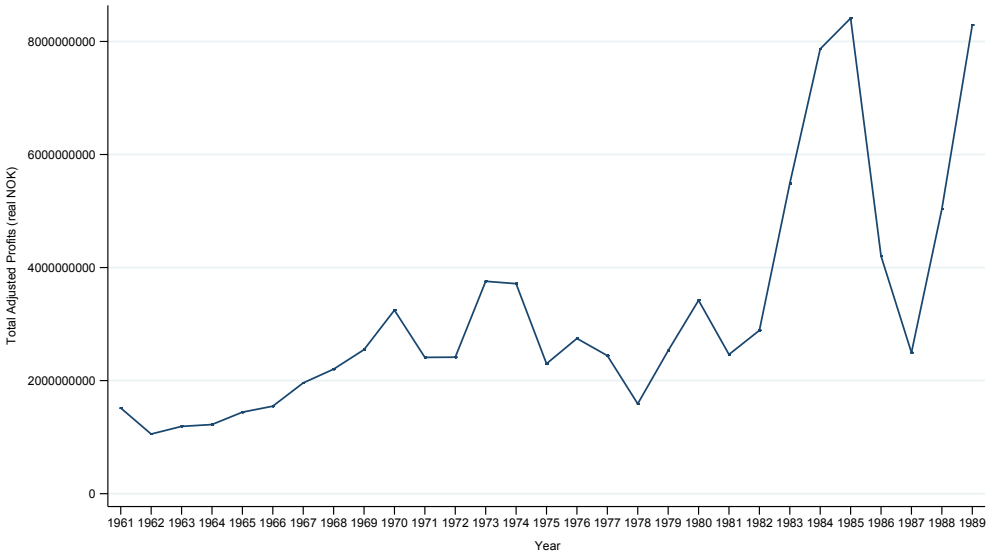


Figure 9.2 – Development in Real Adjusted Profits for the Industrial Sector

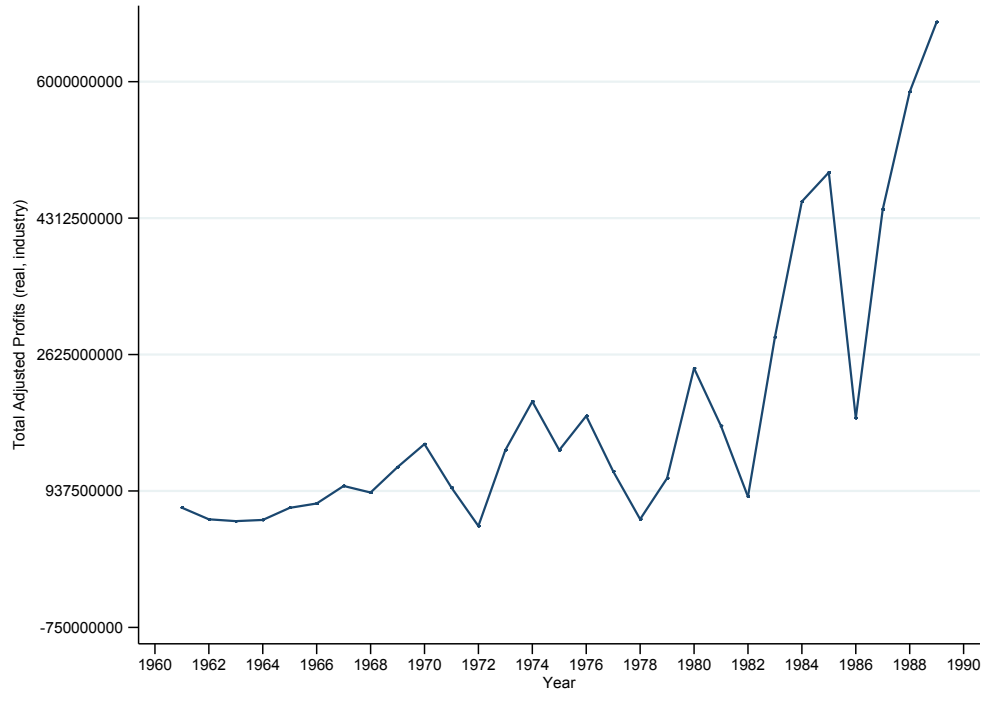


Figure 9.3 – Development in Real Adjusted Profits for the Banking Sector

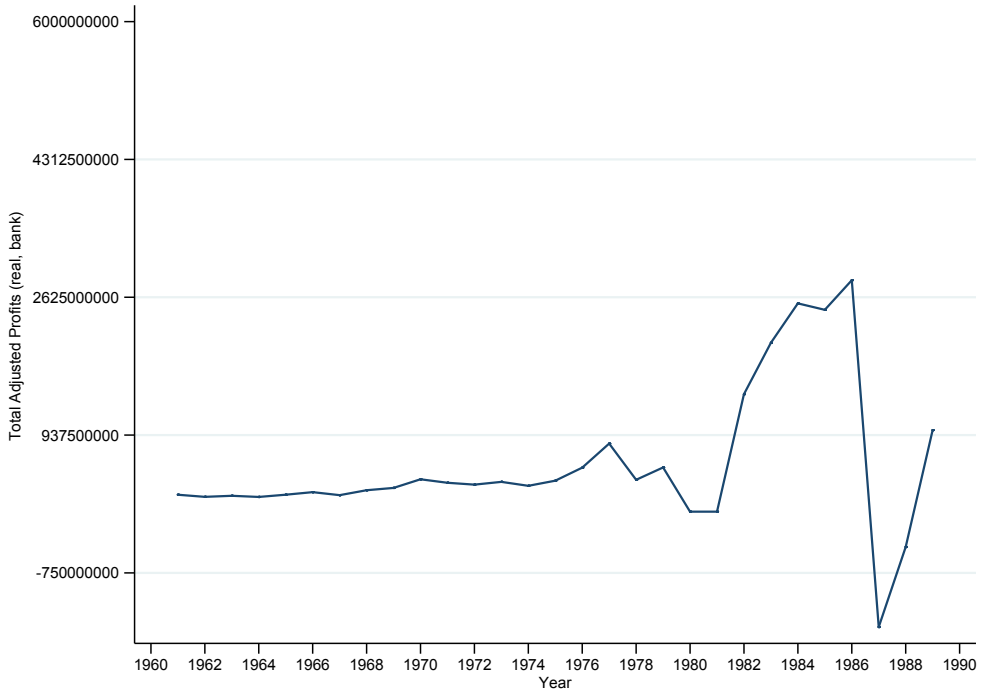


Figure 9.4 – Development in Real Adjusted Profits for the Shipping Sector

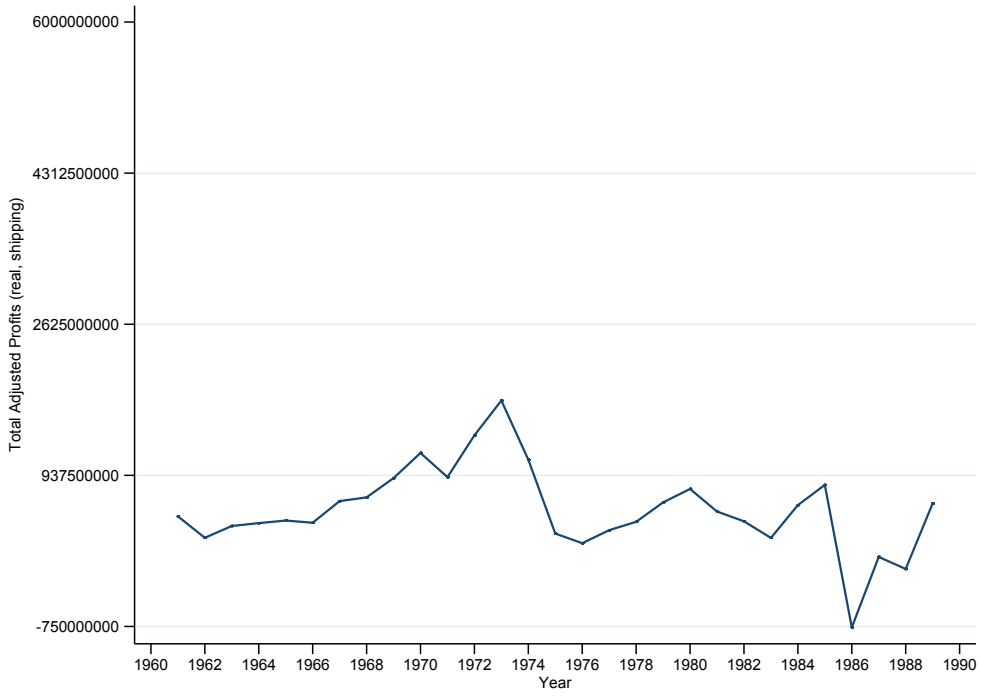


Figure 9.5 – Development in Real Adjusted Profits for the Insurance Sector

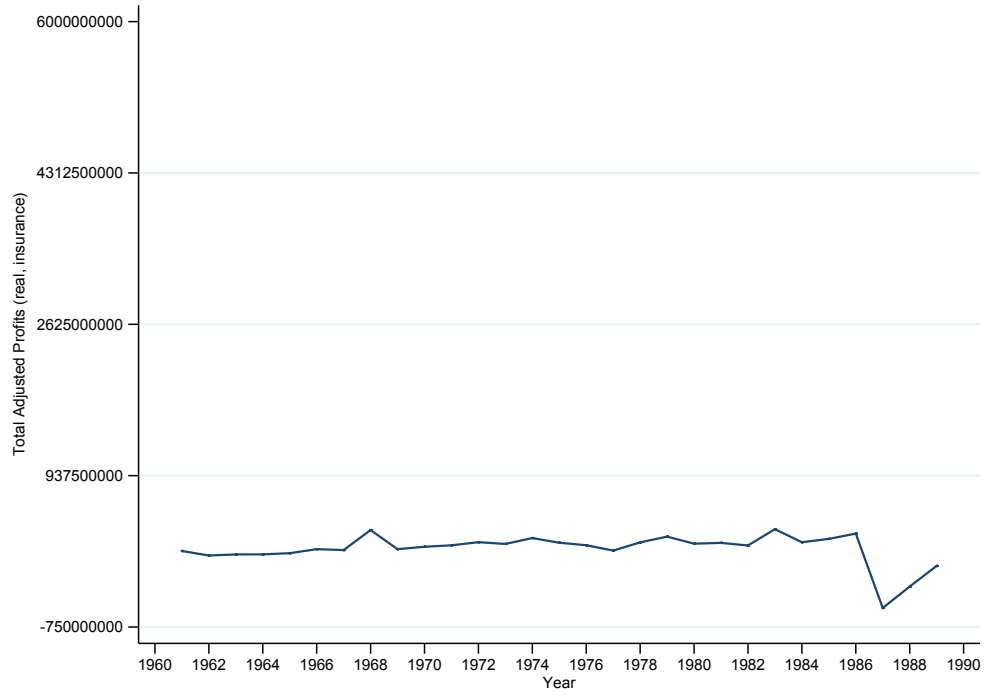
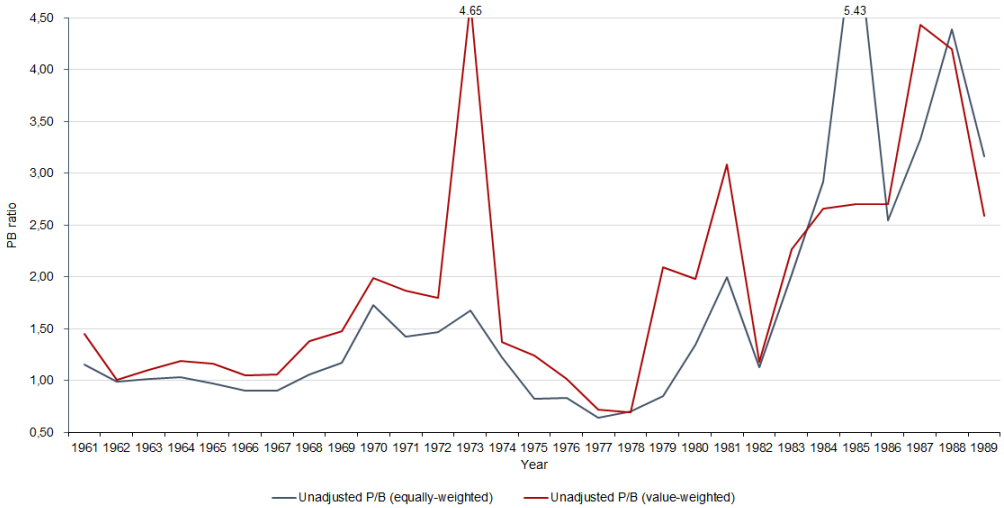


Figure 9.6 – Development in Unadjusted P/B



The P/B ratio is computed based on unadjusted equity, i.e. equity without untaxed equity

Appendix to Section 6.1: Hypothesis 1

Table 9.1 – Correlation Matrix

	5YMR	MPB	5YMRlag5	lnMV	MDR	MROE
5YMR	1.00					
MPB	-0.76	1.00				
5YMRlag5	0.32	-0.28	1.00			
lnMV	-0.28	0.39	0.01	1.00		
MDR	0.02	0.01	0.36	0.38	1.00	
MROE	-0.30	0.36	-0.31	0.29	-0.24	1.00

Correlation matrix for independent variables from the regression analysis presented in table 6.1. 5YMR = Market 5-year future return, MPB = Market P/B, 5YMRlag5 = 5-year lag of average 5-year market return, MV = market value, MDR = Market debt ratio, MROE = Market return on equity.

Table 9.2 – Augmented Dicky Fuller Test

Augmented Dickey-Fuller test for unit root Number of obs = 23

Interpolated Dickey-Fuller				
Test	1% Critical	5% Critical	10% Critical	
Statistic	Value	Value	Value	
Z(t)	-4.625	-3.75	-3	-2.63

MacKinnon approximate p-value for Z(t) = 0.0001

D.cw_5YSR	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
L1.	-1.2887	0.2786447	-4.62	0	-1.87659	-0.70081
LD.	0.528435	0.2367642	2.23	0.039	0.028907	1.027964
L2D.	0.584912	0.2240361	2.61	0.018	0.112238	1.057587
L3D.	0.634432	0.206909	3.07	0.007	0.197892	1.070971
L4D.	0.607272	0.186822	3.25	0.005	0.213112	1.001432
_cons	0.008771	0.0150956	0.58	0.569	-0.02308	0.04062

Augmented Dicky Fuller test ran for the aggregate level time series analysis in equation 6.3 in section 6.1. Four lags are included, decided through analyzing the ACF (autocorrelation function) and PACF (partial autocorrelation function) of the series. A Z-value of -3.74 provides the p-value of 0. Thus, we can dismiss the null hypothesis stating that there is a unit root in our series.

Table 9.3 – Fisher-type Unit Root Test

Fisher-type unit-root test for abn5YSR

Based on Phillips-Perron tests

Ho: All panels contain unit roots		Number of panels = 55
Ha: At least one panel is stationary		Avg. number of periods = 18.15
AR parameter:	Panel-specific	Asymptotics: T -¿ Infinity
Panel means:	Included	
Time trend:	Included	
Newey-West lags:	3 lags	

	Statistic	**p-value**	
Inverse chi-squared(110)	P	176.2202	0.0001
Inverse normal	Z	0.5068	0.6938
Inverse logit t(274)	L*	-0.9328	0.1759
Modified inv. chi-squared Pm	Pm	4.4646	0

P statistic requires number of panels to be finite.

Other statistics are suitable for finite or infinite number of panels.

A Fisher-type unit-root test is ran for the series of abn5YSR. We include a trend-variable. Therefore, the null hypothesis states that we have trend-stationarity in our series. As we obtain a p-value of 0 (using the Z-statistics of 0.507), we can reject the null hypothesis. The panel is trend-stationary and we need to include trend term(s) to be able to correctly make statistical inference.

Table 9.4 – Regression Results: Size Proxy

	(1)	(2)	(3)	(4)
	abn5YSR	abn5YSR	abn5YSR	abn5YSR
abn5YSRlag5	-0.0284	-0.0299	-0.00037	-0.0299
lnMV	-0.114***	-0.113***		-0.113***
PB		0.0016	-0.0786***	0.0016
t	0.0023	0.0019	-0.00069	0.0019
t2	0.0006*	0.0006*	0.0003	0.0006*
_cons	1.953***	1.944***	0.0664*	1.944***
N	667	659	659	659

Significance level denoted as: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

abn5YSR = abnormal 5-year stock return, abn5YSRlag5 = 5-year lag of the abnormal long-term return, MV= market value, t/t2 = trend variables.

Robustness Tests: Hypothesis 1

Table 9.5 – Robustness Test: Market Level Analysis

	(1)	(2)	(3)
	5YMR	5YMR	5YMR
MPB	-0.0643*	-0.0616	-0.0633
5YMRlag5		-0.0311	0.0223
ln(MV)			-0.0018
MDR			-0.173
MROE			-0.478**
Constant	0.122***	0.122***	0.274
Observations	28	28	28
R-squared	0.117	0.119	0.349

Significance level denoted as: *** p<0.01, ** p<0.05, * p<0.1

Market level Analysis based on equally-weighted variables. 5YMR = Market 5-year future return, MPB = Market P/B, 5YMRlag = 5-year lag of average 5-year market return, MV = market value, MDR = Market debt ratio, MROE = Market return on equity.

Table 9.6 – Robustness Test: Winsorized Data Sample: Firm Level Analysis

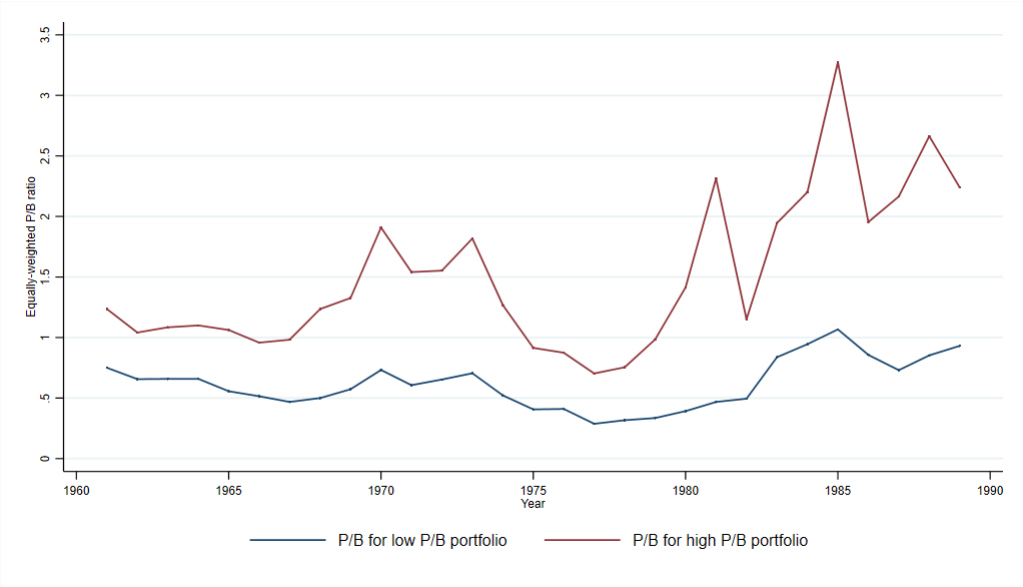
	(1)
	abn5YSR
abn5YSRlag5	-0.042
PB	0.0121
lnMV	-0.120***
ROE	-0.0314
DR	-0.124**
lnMV*PB	-0.0001
t	0.00261
t2	0.000585**
Constant	2.129***
Observations	652
Number of groups	54
Adjusted R-squared	0.297

Significance level denoted as:*** p<0.01, ** p<0.05, * p<0.1

The outliers are set to the 10%-percentiles. abn5YSR = Abnormal 5-year future stock return, abn5YSRlag5 = 5-year lag of abnormal 5-year stock return, MV = Market value, ROE = Retrun on equity, DR= Debt ratio, $t/t^2 = Trendvariables$.

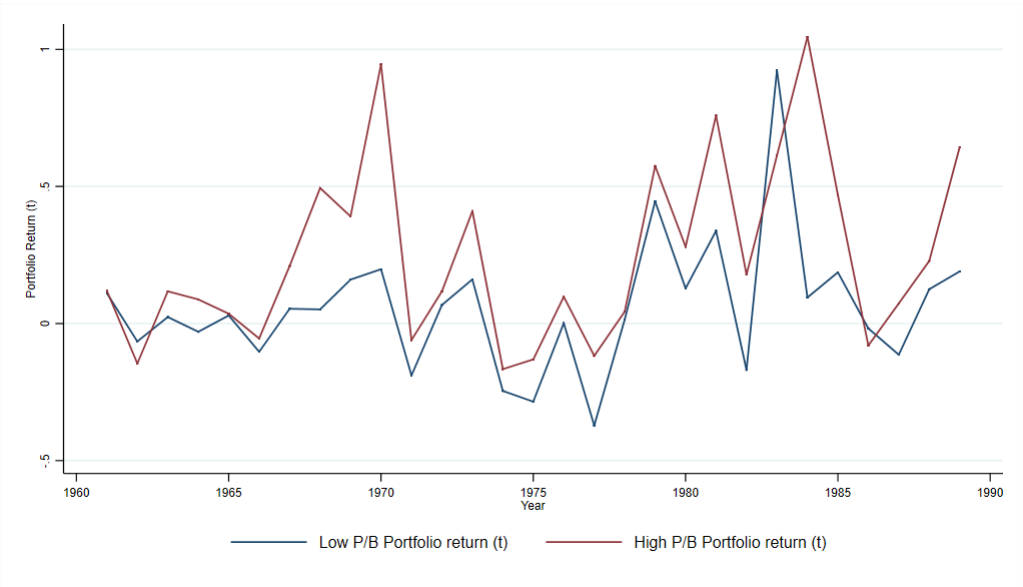
Appendix to Section 6.2: Hypothesis 2 - Equally-Weighted Portfolios

Figure 9.7 – Equally-weighted Portfolio P/B



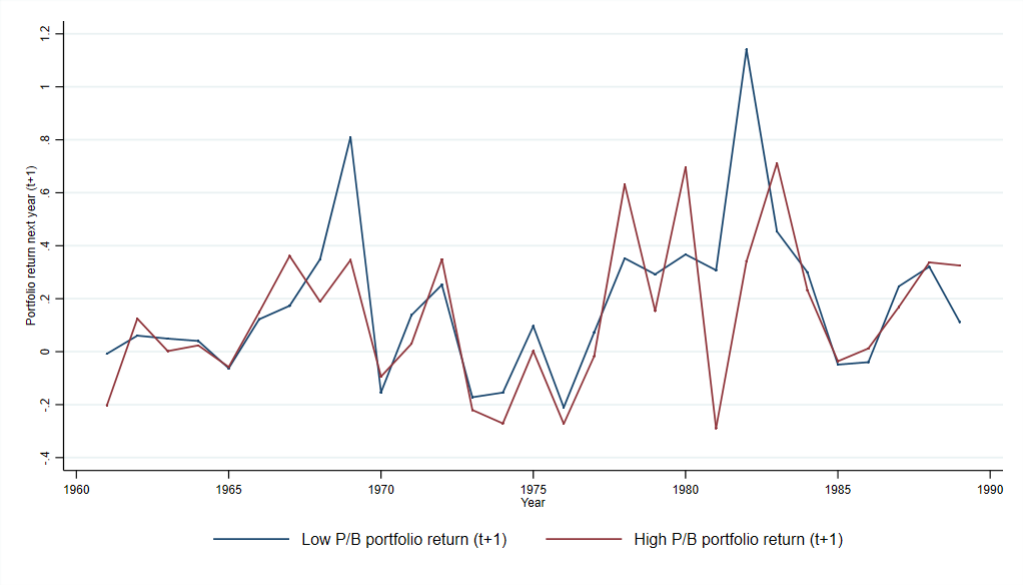
Development in equally-weighted yearly P/B for the low- and high P/B portfolio presented in Table 6.5. The portfolios are rebalanced every year.

Figure 9.8 – Contemporary portfolio return for the low- and high P/B equally-weighted portfolios



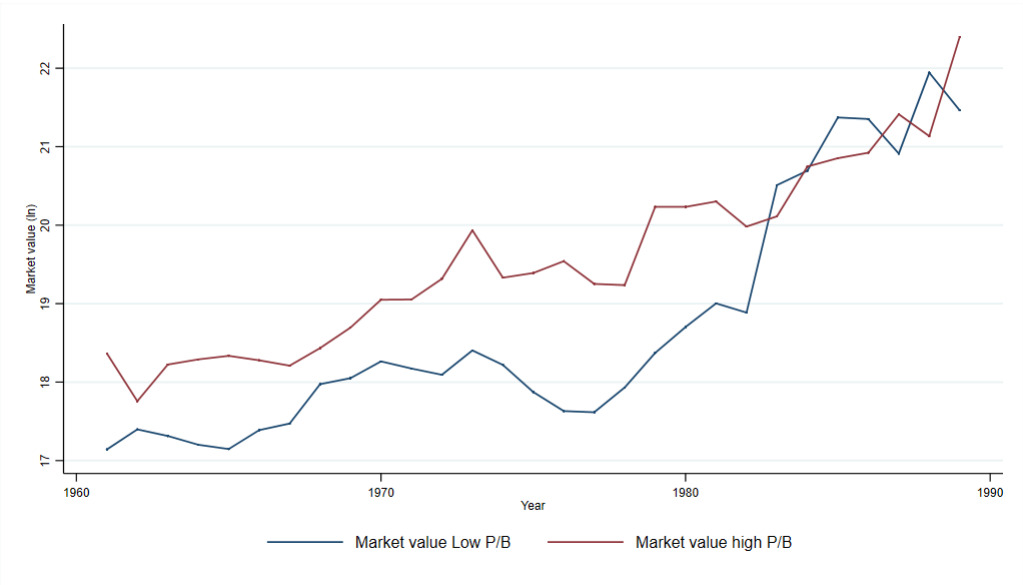
Development in contemporary portfolio return for the low- and high P/B equally-weighted portfolio presented in Table 6.5. The portfolios are rebalanced every year.

Figure 9.9 – Next years portfolio return for the low- and high P/B equally-weighted portfolios



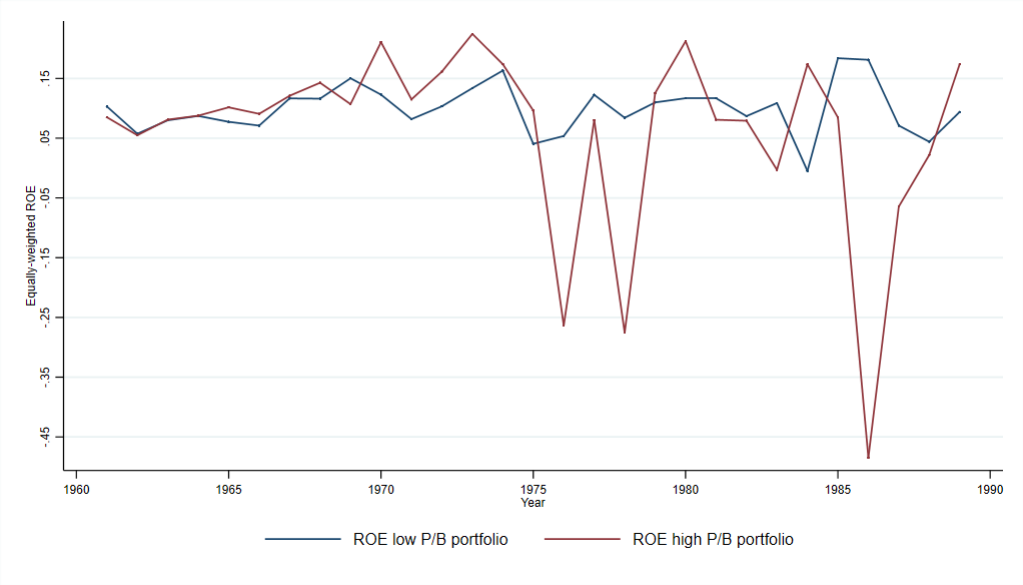
Development in next year portfolio return for the low- and high P/B equally-weighted portfolio presented in Table 6.5. The portfolios are rebalanced every year.

Figure 9.10 – Average market value for the low- and high P/B equally-weighted portfolios



Development in equally-weighted average in market value for the low- and high P/B portfolio presented in Table 6.5. The portfolios are rebalanced every year.

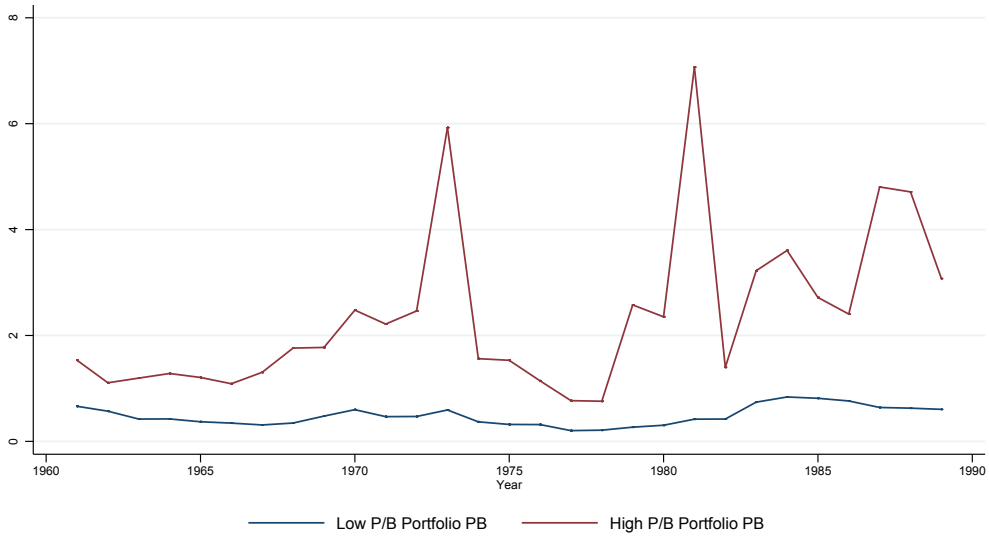
Figure 9.11 – Equally-weighted average ROE of the low- and high P/B portfolios



Development in equally-weighted average ROE of low- and high P/B portfolio presented in Table 6.5. The portfolios are rebalanced every year.

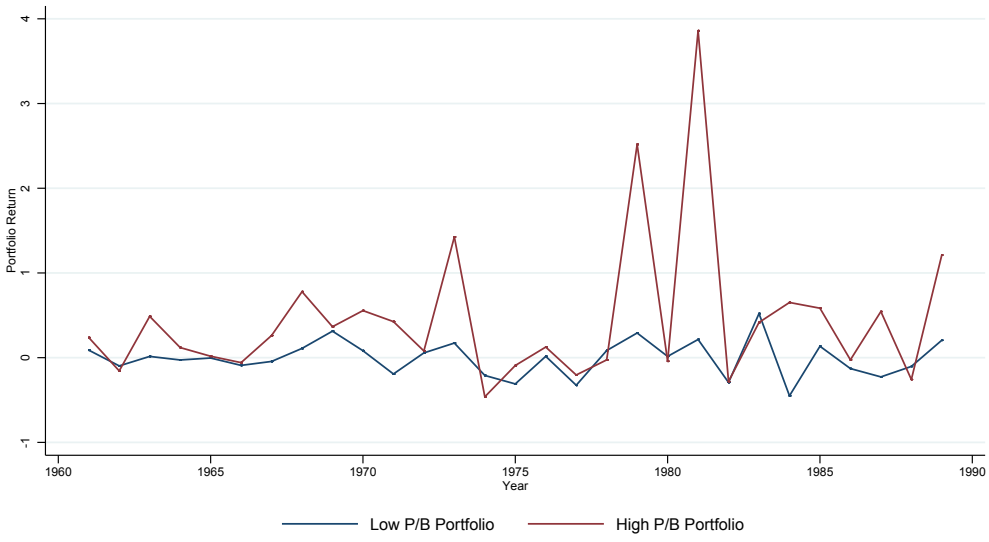
Value-Weighted Portfolios

Figure 9.12 – P/B for the high and low P/B value-weighted portfolios



Development in PB for value-weighted low- and high P/B portfolio presented in table 6.6. The portfolios are rebalanced every year.

Figure 9.13 – Contemporaneous return for the high and low P/B value-weighted portfolios

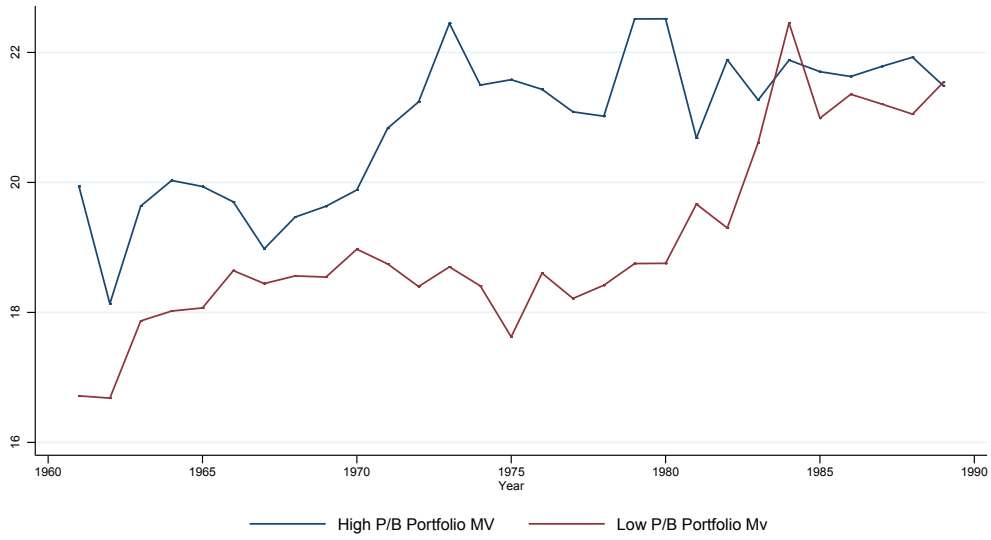


Development in contemporaneous return for the value-weighted low- and high P/B portfolio presented in table 6.6. The portfolios are rebalanced every year.

Figure 9.14 – Next year return for the high and low P/B value-weighted portfolios

Development in next year return for the value-weighted low- and high P/B portfolio presented in table 6.6. The portfolios are rebalanced every year.

Figure 9.15 – Market Value for the high and low P/B value-weighted portfolios



Development in market value for value-weighted low- and high P/B portfolio presented in table 6.6. The portfolios are rebalanced every year.

Figure 9.16 – ROE for the high and low P/B value-weighted portfolios

Development in ROE for value-weighted low- and high P/B portfolio presented in table 6.6. The portfolios are rebalanced every year.

Robustness Test

Table 9.7 – Robustness Test: Winsorized Portfolio Analysis

Equally-weighted portfolios

Low P/B portfolio

Variable	Obs	Mean	Std. Dev.	Min	Max
Portfolio Return (t)	579	0.02	0.15	- 0.25	0.20
Portfolio Return (t+1)	579	0.14	0.20	- 0.15	0.45
Market Value	579	252,000,000.00	399,000,000.00	29,600,000.00	1,210,000,000.00
Total Assets	579	3,210,000,000.00	5,030,000,000.00	236,000,000.00	16,500,000,000.00
PB	579	0.59	0.17	0.34	0.86
CAPE	579	14.64	22.69	- 0.81	79.23
ROE	579	0.10	0.02	0.06	0.14

High P/B portfolio

Variable	Obs	Mean	Std. Dev.	Min	Max
Portfolio Return (t)	577	0.22	0.29	- 0.13	0.76
Portfolio Return (t+1)	577	0.11	0.26	- 0.27	0.63
Market Value	577	385,000,000.00	348,000,000.00	82,200,000.00	1,140,000,000.00
Total Assets	577	1,570,000,000.00	1,210,000,000.00	429,000,000.00	3,750,000,000.00
PB	577	1.40	0.46	0.87	2.20
CAPE	577	10.90	4.90	4.19	19.26
ROE	577	0.10	0.04	0.02	0.16

Value-weighted portfolios

Low P/B portfolio

Variable	Obs	Mean	Std. Dev.	Min	Max
Portfolio Return (t)	579	0.01	0.19	- 0.33	0.32
Portfolio Return (t+1)	579	0.07	0.19	- 0.20	0.37
Market Value	579	902,000,000.00	1,670,000,000.00	66,300,000.00	5,080,000,000.00
PB	579	0.63	0.19	0.40	0.99
CAPE	579	11.10	8.79	1.67	30.52
ROE	579	0.09	0.02	0.06	0.13

High P/B portfolio

Variable	Obs	Mean	Std. Dev.	Min	Max
Portfolio Return (t)	577	0.23	0.33	- 0.19	0.85
Portfolio Return (t+1)	577	0.07	0.25	- 0.33	0.58
Market Value	577	970,000,000.00	1,670,000,000.00	66,300,000.00	5,080,000,000.00
PB	577	1.70	0.65	0.98	2.86
CAPE	577	18.85	8.70	7.79	33.85
ROE	577	0.11	0.01	0.09	0.13

Summary Statistics - Equally-weighted and value-weighted Portfolios

Table 9.8 – Summary Statistics Low P/B Portfolio

Variable	Mean	Std. Dev.	Min	Max
Observations	494			
Stock Return (t)	0.04	0.15	- 0.20	0.43
Stock Return (t+1)	0.08	0.14	- 0.13	0.42
Market Value	363,000,000	715,000,000	19,300,000	3,450,000,000
Total Assets	4,680,000,000	8,440,000,000	118,000,000	30,800,000,000
Price Book	0.61	0.18	0.32	1.02
Price Earnings	17.94	170.71	- 633.29	597.39
Return on Equity	0.07	0.10	- 0.30	0.18

Key indicators based on equally-weighted averages. # of Observations (company years) equals number of companies multiplied with number of years.

Table 9.9 – Summary Statistics High P/B Portfolio

Variable	Mean	Std. Dev.	Min	Max
Observations	473			
Stock Return (t)	0.13	0.19	- 0.15	0.54
Stock Return (t+1)	0.08	0.15	- 0.15	0.43
Market Value	477,000,000	880,000,000	47,300,000	5,870,000,000
Total Assets	2,060,000,000	2,490,000,000	402,000,000	14,300,000,000
Price Book	1.45	0.67	0.70	3.90
Price Earnings	27.08	65.51	1.41	314.79
Return on Equity	0.26	1.03	- 0.27	6.63

Key indicators based on equally-weighted averages. # of Observations (company years) equals number of companies multiplied with number of years.

Data Construction

The following pages includes an excerpt of our assembled data set. The entire data set is available upon request.

Table 9.10 – P/B, 1961-1970

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Industry Companies										
Actinor/Norgas										
Aker Mek. Verksted	0.84	0.78	0.70	0.81	0.72	0.45	0.47	0.57	1.16	1.65
Borregaard			0.74			0.38	0.33	0.36	0.56	0.52
Christiania Spigerverk	1.60	1.15	1.07	1.17	1.13	1.00	1.15	2.66	1.76	1.75
D.N.L/ SAS								1.20	1.14	0.73
Dyno	0.91	0.73	0.79	0.91	0.60	1.11	1.34	1.78	2.13	1.51
Elektrisk Bureau	0.77	1.16	0.95	0.80	0.53	0.51	0.78	1.41	1.71	1.88
Elektrokemisk	1.35	1.01	1.01	1.14	1.42	1.54	1.72	1.81	2.17	1.96
Follum Fabrikker	1.13	0.83	0.85	0.72	0.74	0.54	0.54	0.46	0.71	0.63
Hafslund	1.24	1.09	1.11	1.13	1.01	0.90	1.13	0.96	1.21	1.04
Investa				1.16	1.13	1.01	0.94	1.10	1.30	1.13
Jonas Øglænd							0.81	0.91	0.84	0.81
Kværner	0.63	0.74	0.84	1.22	1.47	0.87	0.97	1.18	1.36	1.26
Norcem								0.66	0.53	0.44
Norema										
Norsk Data A										
Norsk Hydro	1.69	0.74	1.24	1.35	1.19	0.92	0.76	0.73	0.75	1.50
Norske Skog						0.84	0.46	0.48	1.35	1.11
Orkla	0.91	0.72	0.75	0.78	0.83	0.82	0.82	1.30	1.64	6.11
Saga Petroleum										
Saugbrugsforeningen	1.11	0.93	1.04	1.00	0.69	0.62	0.57	0.42	0.94	0.78

P/B	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Sydvaranger								0.86	1.03	0.90
Viking-Askim	0.28	0.24	0.24	0.52	0.40		0.34	0.77	0.53	0.94
Banking Companies										
Bergen Bank										
Bergen Kredittbank	1.18	1.06	1.06	1.03	0.99	0.84	0.69	0.88	0.85	0.81
Bergen Privatbank	0.96	0.87	0.23	0.26	0.20	0.21	0.20	0.20	0.64	0.65
Christiania Bank og Kreidtt	1.14	0.90	0.92	0.88	0.83	0.73	0.69	0.72	0.79	0.66
Den norske Credtikasse	1.27	1.07	0.95	0.90	0.90	0.77	0.68	0.82	0.88	0.77
Forretningsbanken			0.93	0.93	0.91	0.86	0.84	0.83	0.81	0.81
Shipping Companies										
Atlantica	0.94	0.69	0.55	0.69	0.43	0.60	0.67	0.42	0.49	0.84
Beamont	1.08	0.93	0.90	0.76	0.65	0.68	0.83	0.82	0.80	2.77
Belships	0.78	0.60	0.76	0.93	0.95	1.06	1.10	0.86	1.00	2.04
Bergehus		1.84	1.93	1.84	1.73	1.62	1.57		1.77	3.20
Billabong										
Bruusgaard	1.18	0.95	1.01	0.64	0.71	0.55	0.46	0.49	0.38	1.57
Det Bergenske DS	0.67	0.56	0.62	0.64	0.62	0.54	0.48	0.45	0.45	0.61
Det Nordenfjelske DS	0.77	0.78	0.85	0.85	0.86	0.83	0.71	0.66	0.67	0.70
Den Norske Amerikalinje	1.06	0.94	0.97	0.89	0.86	0.71	0.53	0.55	0.56	0.79
Den Norske Afrika Og Australialinje	1.17	0.78	0.87	0.74	0.67	0.60	0.54	0.49	0.48	1.17
Ganger Rolf	0.70	0.57	0.56	0.54	0.49	0.50	0.43	0.33	0.34	0.51
Hadrian	0.54	0.69	0.63	0.59	0.21	0.22	0.44	0.36	0.35	
Ivarans Rederi	1.02	0.88	0.99	0.95	0.77	0.64	0.52	0.65	0.72	0.72

P/B	**1961**	**1962**	**1963**	**1964**	**1965**	**1966**	**1967**	**1968**	**1969**	**1970**
Kosmos	0.87	0.84	1.17	1.11	0.95	0.85	1.03	1.13	1.40	2.47
Mascot	0.75	0.57	0.49	0.42	0.43	0.43	0.35	0.42	0.44	0.85
Nordheim	0.92	0.76	0.77	0.60	0.56	0.50	0.31	0.33	0.35	1.23
Pelagos	0.93	0.72	0.74	0.67	0.66	0.59	0.54	1.55	0.67	1.50
Sigmalm					1.05	0.82	0.97	1.55	1.38	1.87
Wilhelmsens	1.82	1.23	1.18	1.12	0.93	0.86	0.80	0.80	0.68	1.60
Ørnen	0.80	0.53	0.65	0.70	0.66	0.72	0.71	0.79	0.96	2.07
Insurance Companies										
Storebrand	0.94	0.92	0.94	0.95	0.37	0.32	0.29	0.38	0.48	0.57
Vesta	1.29	1.17	1.45	1.40	1.03	0.88	0.95	1.11	1.25	1.19
Arendals Forsikringsselskap	0.71	0.70	0.85	0.89	1.08	0.99	0.98	2.12	1.28	1.36
Norden, Forsiktrings-Aktieselskapet	0.55	0.57	0.57	0.58	0.56	0.49	0.46	0.61	0.60	0.77
Nordengruppen										
Trondhjems Fr.(Forenedegruppen)										
EqW Average	**0.99**	**0.85**	**0.87**	**0.88**	**0.80**	**0.74**	**0.73**	**0.87**	**0.94**	**1.32**
CapW Average	**1.29**	**0.87**	**0.98**	**1.06**	**0.96**	**0.82**	**0.85**	**1.14**	**1.22**	**1.61**
Median	**0.94**	**0.81**	**0.86**	**0.88**	**0.77**	**0.73**	**0.69**	**0.78**	**0.81**	**1.08**

Table 9.11 – P/B, 1971-1980

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Industry Companies										
Actinor/Norgas	1.06	1.56	1.50	1.73	1.46	0.99	0.46	0.86	0.85	1.89
Aker Mek. Verksted	1.24	1.02	1.96	1.30	0.46	0.33	0.15	0.14	0.16	0.23
Borregaard	0.35	0.37	0.46	0.30	0.41	0.30	0.16	0.20	0.15	0.25
Christiania Spigerverk	1.13									
D.N.L/SAS	0.61	0.71	0.63	0.50	0.40	0.37	0.39	0.16	0.38	0.37
Dyno	1.24	1.60	1.50	0.80	1.09	1.06	0.74	0.74	0.83	0.94
Elektrisk Bureau	1.06	1.02	1.07	0.73	0.75	0.76	0.53	0.53	0.48	0.40
Elektrokemisk	1.26	1.27	1.57	1.06	0.73	0.73	0.30	0.48	0.56	0.49
Follum Fabrikker	0.49	0.57	0.83	0.61	0.60	0.61	0.40	0.43	0.61	0.46
Hafslund	1.10	1.31	1.48	1.05	1.20	0.90	0.61	0.88	0.98	0.76
Investa	0.84	0.82	0.80	0.72	0.57	0.44	0.33	0.23	0.42	0.43
Jonas Øglænd	0.80	0.62	0.51	0.48	0.42	0.23	0.57	0.36	0.34	0.45
Kværner	1.15	1.11	1.19	0.92	0.58	0.40	0.25	0.29	0.37	0.56
Norcem	0.42	0.47	0.62	0.53	0.46	0.68	0.55	0.46	0.38	0.38
Norema	0.59		0.70	0.41	0.32	0.40	0.38	0.40	0.38	0.19
Norsk Data A				2.83	1.60	0.29	0.56	0.77	0.10	5.12
Norsk Hydro	2.66	2.59	6.98	1.69	1.66	1.22	0.77	0.72	2.70	2.07
Norske Skog	1.05	0.22	1.00	0.93	0.74	0.68	0.48	0.46	0.46	0.47
Orkla	1.44	1.20	1.19	1.00	0.76	0.90	0.44	0.48	0.76	0.63
Saga Petroleum									3.48	3.81
Saugbrugsforeningen	0.60	0.61	0.71	0.50	0.55	0.58	0.30	0.42		

P/B	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Sydvaranger	0.78	0.95	1.08	0.57	0.62	0.41	0.14	0.15	0.41	0.61
Viking-Askim	0.61	0.75	0.76	0.44	0.35	0.40	0.10	0.07	0.13	0.18
Banking Companies										
Bergen Bank					0.62	0.68	0.67	0.70	0.61	
Bergen Kredittbank	0.81	0.81	0.79	0.80						
Bergen Privatbank	0.65		0.74							
Christiania Bank og Kreidtt	0.75	0.86	0.85	0.67	0.74	0.68	0.69	0.57	0.57	0.62
Den norske Credtikasse	0.74	0.75	0.83	0.65	0.68	0.72	0.60	0.60	0.62	
Forretningsbanken	0.78	0.86	0.82	0.72	0.73	0.77	0.66	0.63	0.68	
Shipping Companies										
Atlantica	0.51	0.67	0.98	0.36	0.39	0.38	0.42	0.45	0.77	0.77
Beamont	3.04	2.12	1.70	1.01	0.85	1.25	1.92	1.62		
Belships	0.70	1.83	0.97	1.54	0.68	0.39	0.24	1.24		
Bergehus	2.27	2.18	1.46	1.83	1.31	1.73	1.23	0.95		1.10
Billabong	0.78	0.93	0.85	0.81	1.00	0.62	0.65	0.75	0.74	0.87
Bruusgaard	0.85	0.70	0.65							
Det Bergense DS	0.56	0.59	0.57	0.47	0.36	0.56	0.58	0.77	0.43	0.72
Det Nordenfjeldske DS	0.72	0.97	1.52	1.06	1.03	0.57	0.48	0.53	0.83	1.16
Den Norske Amerikalinje	0.49	0.68	0.90	0.78	0.44	0.51	0.73	0.62	1.16	1.12
Den Norske Afrika Og Australialinje	0.75	0.45	0.62	0.37	0.25	0.30	0.26	0.47	0.58	0.48
Ganger Rolf	0.43	0.52	0.46	0.34	0.17	0.28	0.25	0.17	0.28	0.75
Hadrian	3.31	3.95	5.07	1.05	0.62					
Ivarans Rederi	0.50	0.49	0.68	0.35	0.28	0.41	0.37	0.35	0.74	0.36

P/B	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Kosmos	1.49	1.38	1.42	0.95	0.70	1.02	0.58	0.42	0.88	0.70
Mascot	0.49	0.97	0.73	0.32	0.20	0.41	0.28	0.24	0.22	0.18
Nordheim	1.10	0.71	1.76	0.68	0.31	0.65	0.30			
Pelagos	2.72	1.45	1.78	1.52	0.33	0.66	0.12	0.15	0.11	
Sigmalm	1.55	1.57	0.93	0.74	0.81	1.09	0.97	0.96		1.12
Wilhelmsens	1.42	0.76	0.75	0.39	0.27	0.26	0.23	0.39	0.41	0.35
Ørnen	1.70	1.81	2.90	1.32	0.64	0.84	0.35	0.69		1.80
Insurance Companies										
Storebrand	0.43	1.12	1.19	0.89	0.74	0.71	0.46	0.41	0.64	0.73
Vesta	0.96	0.98	0.86	0.80	0.70	0.65	0.51	0.46	0.66	0.84
Arendals Forsikringsselskap	2.07	1.77	2.36	2.77						
Norden, Forsikrings-Aktieselskapet										
Nordengruppen		0.76	0.70	0.70	0.76	0.76	0.64	0.53	0.55	
Trondhjems Fr.(Forenedegruppen)										
EqW Average	**1.08**	**1.09**	**1.27**	**0.90**	**0.67**	**6.64**	**0.50**	**0.53**	**0.66**	**0.90**
CapW Average	**1.56**	**1.54**	**4.26**	**1.17**	**1.09**	**0.91**	**0.64**	**0.61**	**1.94**	**1.82**
Median	**0.81**	**0.93**	**0.90**	**0.76**	**0.62**	**0.64**	**0.46**	**0.47**	**0.56**	**0.63**

Table 9.12 – P/B, 1981-1989

	1981	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
Industry Companies									
Actinor/Norgas	2.22	1.04	1.41	2.28	2.85				
Aker Mek. Verksted	0.20			1.55					
Borregaard	0.52	0.35	0.69	0.84					
Christiania Spigerverk									
D.N.L/SAS	0.26	0.60	3.13	2.12	2.18	2.11	1.03	0.69	1.44
Dyno	0.93	0.62	1.87	1.51	1.43	0.90	1.16	1.41	1.57
Elektrisk Bureau	0.64	0.60	1.37	1.05	1.30	1.15	1.24	1.08	1.39
Elektrokemisk	0.45	0.51		0.80	0.72	0.73	0.47	1.18	0.66
Follum Fabrikker	0.73	0.58	1.47	2.70					
Hafslund	0.92	1.02	1.89	1.82	2.84	2.84	5.99	5.85	2.02
Investa	0.53	0.47	0.62	1.60	0.67	0.91	1.19	1.63	1.71
Jonas Øglænd	0.75	0.79	0.99	1.21	1.78	1.86	2.79	1.75	
Kværner	1.12	0.75	0.73	1.49	1.51	1.37	1.39	1.72	1.43
Norcem	0.55	0.46	0.78	1.44	1.91				
Norema	0.23	0.64	1.16	1.25	1.63	1.96	1.65		
Norsk Data A	15.25	3.96	5.25	4.98	2.95	2.28	0.83	0.84	0.85
Norsk Hydro	1.45	0.96	1.10	0.85	1.13	1.07	1.23	1.40	1.83
Norske Skog	0.29	0.31	0.75	0.84	0.55	0.64	0.56	0.52	1.57
Orkla	0.29	0.41	1.15	1.51	0.67	1.65	1.44	1.73	1.71
Saga Petroleum	2.17	1.57	1.58	1.37	1.06	0.67	0.87	1.12	1.30
Saugbrugsforeningen									

P/B	1981	1982	1983	1984	1985	1986	1987	1988	1989
Sydvaranger						0.23	0.12	0.06	0.05
Viking-Askim	0.11	0.09	0.49	0.54	3.88	2.53			
Banking Companies									
Bergen Bank					1.43	1.15	0.78	0.41	0.54
Bergen Kredittbank									
Bergen Privatbank									
Christiania Bank og Kreidtt	0.63	0.58	0.79	0.78	0.82	0.93	0.67	0.68	0.79
Den norske Credtikasse						0.81	0.69	0.84	0.30
Forretningsbanken									
Shipping Companies									
Atlantica	1.63	0.93	2.14		16.45	1.92			
Beamont									
Belships	1.41	0.88	2.48	0.42		0.51	0.51		
Bergehus		0.93	1.39	1.67	2.03				
Billabong	0.92	0.54	0.83	0.86					
Bruusgaard	1.45	0.74	0.44						
Det Bergense DS	0.81	0.29	0.94	1.44					
Det Nordenfjeldske DS	0.75	0.67	1.47	1.82					
Den Norske Amerikalinje	3.75	0.42	0.81	1.26	2.67	1.56	2.00	1.95	2.04
Den Norske Afrika Og Australialinje									
Ganger Rolf	1.47	0.55	1.36	1.94	1.10	1.00	0.70		3.36
Hadrian									
Ivarans Rederi	0.71	0.80	1.24	1.09	1.60	1.11	1.36	2.15	

P/B	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
Kosmos	0.72	0.76	1.16	2.59	2.09	1.57	1.12	1.85	1.49
Mascot	0.07	0.83	0.47	0.19					
Nordheim									
Pelagos									
Sigmalm		1.39	1.76	1.43	1.79				
Wilhelmsens	1.80	0.84	1.76	0.99	0.95	1.18	2.12	4.66	2.91
Ørnen	2.18	1.52	2.02	3.41					
Insurance Companies									
Storebrand	1.21	0.90	1.06	1.25	2.00	1.65	1.82	2.27	3.30
Vesta	0.96	0.73	0.94	1.82	1.07	1.06	1.91	4.19	
Arendals Forsikringsselskap									
Norden, Forsikrings-Aktieselskapet									
Nordengruppen									
Trondhjems Fr.(Forenedegruppen)		1.29	1.43	4.14	2.07	2.90	4.15	2.19	2.63
EqW Average	**1.39**	**0.82**	**1.38**	**1.59**	**2.17**	**1.39**	**1.47**	**1.76**	**1.59**
CapW Average	**2.56**	**1.08**	**1.61**	**1.87**	**1.63**	**1.36**	**1.68**	**1.80**	**1.71**
Median	**0.78**	**0.74**	**1.16**	**1.44**	**1.62**	**1.15**	**1.19**	**1.52**	**1.53**

Table 9.13 – Stock Returns 1961-1970

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Industry Companies										
Actinor/Norgas										
Akers Mek	-4.8%	-10.0%	-6.9%	19.4%	27.5%	-21.6%		22.5%	73.7%	81.2%
Borregaard							-18.4%	9.6%	35.1%	-3.2%
Christiania Spigerverk	19.1%	-23.5%	0.2%	18.3%	22.5%		30.3%	150.7%	-23.4%	17.8%
D.N.L/SAS										
Dyno	20.0%	-21.6%	10.0%	20.5%	9.4%	-11.2%	45.6%	47.4%	25.6%	-32.4%
Elektrisk Bureau	30.0%	7.9%	13.4%	-3.2%	8.9%	10.2%	88.9%	95.2%	18.7%	19.9%
Elektrokemisk	28.2%	-20.5%	-1.9%	25.2%	29.5%	28.4%	14.2%	49.0%	34.8%	7.1%
Follum Fabrikker	-11.9%	-30.5%	3.7%	-17.6%	-14.3%	-23.3%	-17.4%	2.6%	61.5%	-13.6%
Hafslund	10.6%	-12.3%	1.6%	1.5%	-3.0%	-9.4%	8.4%	-2.7%	40.7%	3.3%
Investa						-7.1%	-3.8%	33.3%	28.0%	31.2%
Jonas Øglænd										
Kværner	7.7%	14.3%	25.0%	76.0%	8.0%	-8.8%	126.5%	24.5%	36.2%	10.1%
Norcem										-6.7%
Norema										
Norsk Data										
Norsk Hydro	27.0%	-52.8%	66.7%	11.8%	-8.7%	-20.4%	-19.4%	-5.2%	3.0%	113.2%
Norske Skog									180.0%	-7.1%
Orkla	12.2%	-18.4%	8.3%	-1.5%	6.2%	4.4%	31.5%	73.2%	26.8%	23.9%
Saga Petroleum										
Saugbrugsforeningen	-4.0%	-18.9%	7.8%	-6.0%	-15.4%	-16.0%	-8.0%	-28.3%	127.9%	-16.2%

Stock Returns	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Sydvaranger										-9.3%
Viking-Askim		-13.0%	-2.5%	12.8%	63.6%	60.0%	-2.8%	-2.9%	34.6%	21.3%
Banking Companies										
Bergens Bank										
Bergens Kreditbank	23.0%	-9.3%	-1.5%		19.4%	-12.5%	1.8%	21.1%	-2.2%	35.6%
Bergens Privatbank	9.2%	-18.0%	-1.2%	-2.3%	-6.8%	-8.7%	-3.5%	2.2%	-2.9%	-1.4%
Christiania Bank og Kreditkasse	33.4%	-1.8%	9.5%	0.9%	-1.9%	-1.6%	-3.5%	7.2%	18.5%	-12.4%
Den norske Creditbank	13.2%	-11.6%	-3.3%	-0.3%	6.3%	-10.6%	-4.2%	15.3%	8.6%	-5.3%
Forretningsbanken	3.4%	89.8%	-70.2%	2.0%	-2.0%	-4.0%	-0.8%	-1.9%		2.6%
Shipping Companies										
Atlantica	3.3%	-19.4%	-5.0%	1.1%	-16.7%	-2.5%	15.4%	-13.3%	2.6%	137.5%
Beamont		-15.5%		-16.7%	-6.0%	-10.6%	23.8%	11.5%	6.9%	383.9%
Belships	3.8%	-25.9%	25.0%	4.0%	-3.8%	4.0%		-12.3%	12.3%	134.4%
Bergehus	21.7%	-7.1%	11.5%		-1.7%	-5.3%	1.9%	25.5%	7.2%	123.0%
Billabong										
Bruusgard	-4.9%	-25.9%	-4.7%	-17.1%	4.4%	-18.3%	-8.6%	-3.8%	2.0%	319.6%
Det Bergenske Ds		-15.2%	3.6%		-1.7%	-12.3%	-18.0%	-2.4%	2.5%	30.7%
Det Nordenfjeldske Ds	17.2%	1.0%	5.2%	-4.9%	-3.4%	-8.9%	-15.7%	-4.7%	35.2%	6.1%
Den Norske Amerikalinje	-5.5%	-21.2%	2.4%	-9.5%	-1.3%	-17.3%	-27.4%	8.9%	26.5%	37.1%
Den Norske Afrika Og Australialinje		-29.4%	5.6%	-2.6%				8.1%	18.0%	103.4%
Ganger Rolf	1.6%	-20.0%	1.9%	-1.9%	-7.7%	-4.2%	-4.3%	-1.1%	-3.4%	78.6%
Hadrian		25.0%	-10.0%	-14.8%	45.5%		200.0%	6.7%	25.0%	
Ivarans Rederi		-21.6%	10.3%	-4.7%	-11.5%	-3.7%	-15.4%	11.4%	3.7%	14.2%

Stock Returns	**1961**	**1962**	**1963**	**1964**	**1965**	**1966**	**1967**	**1968**	**1969**	**1970**
Kosmos				-1.9%		-0.6%	23.6%	26.8%	20.3%	108.1%
Mascot	2.2%	-12.1%	3.1%	3.0%	-1.2%	4.2%	-8.6%	-19.9%	79.4%	56.3%
Nordheim	6.1%	-22.1%	5.3%	-20.0%	-7.5%	-10.8%	9.1%	12.5%	9.9%	259.6%
Pelagos	-15.3%	-28.0%	-4.2%	-5.8%	4.6%	-23.5%	5.8%	216.4%	-45.4%	157.9%
Sigmalm						-14.3%	33.3%	73.3%	174.3%	55.6%
Wilhelmsens		-32.1%	-1.9%	3.8%	-3.7%	-1.9%	2.0%	19.2%	4.4%	118.2%
Ørnen	61.5%	-31.8%	13.8%	9.1%	-8.3%	1.5%		4.5%	14.3%	125.0%
Insurance Companies										
Storebrand	6.4%	0.3%	2.4%	3.5%	0.1%	-13.9%	4.8%	41.5%	37.5%	29.3%
Vesta	26.5%	-0.8%	163.9%	-1.3%	-9.3%	-16.2%	9.8%	17.5%	14.9%	10.6%
Arendals Forsikringsselskap	4.5%	153.6%	-35.2%	6.5%	8.2%	-7.5%	2.0%	126.5%	-37.0%	10.3%
Norden, Forsikrings-Aktieselskapet	12.7%	1.6%	5.6%	5.3%	-8.1%	-14.3%	2.4%	57.0%	-1.9%	32.1%
Nordengruppen										
Trondhjems Fr.(Forenedegruppen)										
EqW Average	11.6%	-7.8%	7.0%	2.6%	3.2%	-6.0%	13.2%	26.7%	27.0%	58.9%
CapW Average	16.0%	-21.6%	21.6%	6.3%	0.7%	-5.4%	6.2%	35.7%	26.7%	49.9%
Median	9.2%	-16.7%	3.1%	0.3%	-1.7%	-8.8%	1.9%	11.5%	18.2%	26.6%

Table 9.14 – Stock Returns, 1971-1980

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Industry Companies										
Actinor/Norgas			16.8%	27.5%	-11.8%	-22.2%	-24.6%	43.4%	28.3%	72.2%
Akers Mek	-11.5%	-9.8%	111.2%	13.9%	-62.1%	-20.0%	-54.5%	25.0%	20.0%	
Borregaard	-33.6%	6.1%	31.4%	-8.7%	-7.2%	-7.3%	-41.2%	18.3%	2.8%	6.2%
Christiania Spigerverk	-25.5%	-4.9%								
D.N.L/SAS	-16.8%	16.7%	-17.0%	-20.0%	-18.8%	-7.7%	15.0%	-13.0%		-16.7%
Dyno	8.2%	25.0%		-36.2%	27.3%	2.8%	-19.2%	-9.1%	18.9%	14.3%
Elektrisk Bureau	-40.0%	2.9%	13.0%	-14.2%	15.7%	10.2%	-19.2%	7.7%	-5.1%	2.4%
Elektrokemisk	-35.9%	-7.7%	25.0%	-22.2%	-18.3%	11.9%	-59.9%	55.1%	35.6%	-18.6%
Follum Fabrikker	-25.5%	11.4%	33.3%	-11.5%	-1.7%	1.8%	-21.7%	8.3%	16.9%	-26.1%
Hafslund	16.2%	18.6%	19.6%	-14.8%	28.6%	-2.1%	-35.1%	37.7%	14.3%	-13.5%
Investa	-23.8%				-27.5%	-8.6%	-26.4%	-23.1%	66.7%	40.0%
Jonas Øglænd	12.5%	27.8%			31.5%	-20.0%	42.9%	-32.7%	11.4%	48.7%
Kværner	-3.2%	-11.7%	34.1%	-14.3%	-14.6%	-15.9%	-9.1%	25.0%	48.6%	19.0%
Norcem	-1.1%	8.5%	12.9%	-16.7%	-12.0%	2.7%	-9.8%	5.7%	-19.2%	-7.8%
Norema		-9.7%	19.0%	-32.6%	-25.0%	33.3%		-6.3%	-33.3%	35.0%
Norsk Data					-38.4%	-20.6%	40.7%	18.4%	111.1%	-66.2%
Norsk Hydro	94.2%	3.9%	167.1%	-58.3%	-13.5%		-25.5%	-9.9%	280.6%	-6.4%
Norske Skog		-11.5%	44.4%	24.0%	-25.8%	4.3%	-16.7%	41.2%		
Orkla	-33.9%	-11.9%	18.9%		-33.6%	2.7%	-48.0%	23.1%	108.3%	-6.0%
Saga Petroleum										
Saugbrugsforeningen	-24.4%	1.7%	19.8%	-19.0%	6.4%	-8.0%	-53.0%	62.0%	8.6%	-26.3%

Stock Returns	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**
Sydvaranger	-15.5%	19.5%	6.1%	-33.6%	2.1%	-30.6%	-64.7%	-8.3%	36.4%	-36.0%
Viking-Askim	-31.9%	-0.8%	72.4%	-47.4%	-26.7%	23.6%	-52.2%	-23.1%	100.0%	55.0%
Banking Companies										
Bergens Bank							-11.3%	7.0%	1.4%	25.0%
Bergens Kreditbank	3.3%	3.2%		-1.5%						
Bergens Privatbank	1.3%	7.0%	6.4%	-18.5%						
Christiania Bank og Kreditkasse	1.4%	10.7%	-1.0%	-21.4%	13.1%	-2.4%	-0.7%	0.4%	5.2%	53.7%
Den norske Creditbank	-2.4%	4.2%	11.5%	-18.5%	7.7%	8.1%	-7.6%	3.5%	5.7%	-3.7%
Forretningsbanken		10.7%	-1.6%	-4.0%	2.7%	4.6%	-8.8%	-2.9%	10.4%	1.8%
Shipping Companies										
Atlantica	-36.8%	33.3%	37.5%	-27.3%	-18.8%	19.2%	-12.9%	18.5%	68.8%	18.5%
Beamont	48.0%	-16.2%	35.5%	-8.3%	-54.5%	40.0%	7.1%	-41.3%	40.9%	-59.7%
Belships	-13.3%	30.8%	-5.9%	-6.3%	-60.0%	-41.7%	-42.9%	-35.0%	150.0%	23.1%
Bergehus	-5.5%	38.5%	-7.4%		-28.0%	33.3%	-27.1%	-14.3%	41.7%	-5.9%
Billabong		16.7%	4.8%	9.1%	4.2%	-24.0%	-15.8%	12.5%	11.1%	15.0%
Bruusgard	-30.0%	-9.5%	-5.3%	2.8%	-32.4%	-10.0%	2.2%	-17.4%	-21.1%	
Det Bergenske Ds	-10.4%	6.2%	-17.6%	-19.0%	-37.6%	22.6%	7.7%		278.6%	126.4%
Det Nordenfjeldske Ds	4.8%	15.5%	49.1%	-17.1%	-15.9%	-44.1%	-12.5%	14.3%	100.0%	87.5%
Den Norske Amerikalinje	-41.2%	34.0%	49.3%	-14.0%	-37.2%	33.3%	-25.0%	-11.1%	91.7%	-2.2%
Den Norske Afrika Og Australialinje	-41.7%	-14.3%	41.7%	-20.6%	-37.0%	35.3%	-21.7%	11.1%	26.0%	
Ganger Rolf	-33.3%	32.0%	51.5%	-45.0%	-45.5%	40.0%	-14.3%	-25.0%	88.9%	233.3%
Hadrian		9.8%	74.3%	-76.4%	-41.2%	32.0%	-54.5%	-6.7%	50.0%	
Ivarans Rederi	-31.0%	-23.0%	63.6%	-4.8%	-16.7%	-20.0%	-12.5%	-28.6%	100.0%	20.0%

Stock Returns	**1971**	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**
Kosmos	-16.9%	23.4%	26.6%	-37.5%	-23.2%	15.6%	-40.5%	-33.3%	127.3%	-15.0%
Mascot	-46.7%	87.5%	10.0%	-56.4%	-44.4%	37.5%	-63.6%	-10.0%		
Nordheim	-37.5%	5.0%	90.5%	-50.0%	-80.0%	25.0%	-68.0%			
Pelagos	-18.4%	-6.2%	53.3%	-13.0%	-77.5%	11.1%	-46.0%	18.5%	-76.6%	
Sigmalm	-16.1%	29.8%	-8.2%	-28.6%		40.0%	-19.6%	-2.2%	22.7%	-18.5%
Wilhelmsens	-33.3%	-20.0%	12.5%	-33.3%	-33.3%	25.0%	-25.0%	13.3%		17.6%
Ørnen	-16.7%	3.3%	67.7%	-48.1%	-55.6%	43.3%	-70.9%	12.0%		
Insurance Companies										
Storebrand	-11.7%	-1.4%	11.5%	-26.4%	-10.6%	-5.6%	-31.9%	-4.9%	40.2%	19.0%
Vesta	-10.3%	11.5%	-5.3%	-4.0%	-11.1%	-4.3%	-25.5%	-5.5%	36.8%	23.5%
Arendals Forsikringsselskap	56.3%	3.5%	54.6%	-25.0%	-50.0%					
Norden, Forsikrings-Aktieselskapet										
Nordengruppen			-4.5%	-7.8%	-1.7%	-13.8%	-17.6%	-17.5%	47.1%	
Trondhjems Fr.(Forenedegruppen)										
EqW Average	-12.0%	8.5%	29.4%	-20.1%	-21.5%	5%	-24.3%	2.2%	49.9%	16.5%
CapW Average	16.5%	6.7%	97.6%	-32.7%	-9.9%	3.3%	-21.7%	4.0%	160.5%	1.7%
Median	-16.7%	6.1%	19.6%	-18.5%	-18.8%	2.8%	-21.7%	-0.9%	36.0%	10.2%

Table 9.15 – Stock Returns, 1981-1989

	1981	1982	1983	1984	1985	1986	1987	1988	1989
Industry Companies									
Actinor/Norgas	196.0%	-73.9%	50.0%	67.6%	61.3%				
Akers Mek									
Borregaard	72.8%	-36.3%	106.4%	69.6%					
Christiania Spigerverk									
D.N.L/SAS	-5.0%	209.5%	-32.0%	23.0%	12.2%	19.6%	-20.9%	18.8%	75.8%
Dyno	1.4%	-32.9%	140.8%	28.8%	-77.8%	-37.3%	34.0%	26.8%	24.4%
Elektrisk Bureau	73.5%	-9.3%	-52.9%	-2.4%	5.7%	22.7%	15.4%	-8.2%	18.3%
Elektrokemisk	-32.1%	-20.0%	250.0%	-15.0%	-2.7%	-20.0%	-39.2%	215.9%	11.8%
Follum Fabrikker	64.7%	-39.1%	181.8%	59.1%	-5.4%				
Hafslund	3.6%	84.9%	-59.1%	27.1%	62.5%	-25.9%	74.0%	-63.0%	-34.6%
Investa	12.0%	-56.1%	148.3%	125.0%	8.0%	46.3%	-77.3%	5.5%	56.2%
Jonas Øglænd	86.2%	7.0%	52.2%	29.8%	55.9%	12.3%	57.1%	-29.4%	20.0%
Kværner	88.9%	-32.9%	-52.3%	25.0%	12.9%	-11.7%	18.6%	24.6%	-26.1%
Norcem	51.4%	-21.9%	91.7%	77.6%	-42.0%	-28.6%			
Norema	18.5%	46.9%	85.1%	36.8%	-66.1%	19.8%	-42.1%		
Norsk Data	517.3%			34.8%	35.4%	-1.2%	-59.0%	-42.7%	-29.8%
Norsk Hydro	-24.3%	-32.8%	84.2%	-80.5%	50.8%	-2.7%	-1.7%	-16.7%	42.7%
Norske Skog	40.0%	-29.7%	282.4%	38.5%	-27.2%	38.7%	30.2%	7.1%	38.3%
Orkla	34.0%	-19.2%	123.0%	88.4%	46.4%	-18.9%	-2.3%	76.1%	79.4%
Saga Petroleum		-49.1%	83.2%	-13.1%	-1.3%	-30.5%	43.9%	29.9%	158.0%
Saugbrugsforeningen	28.6%	-38.9%	236.4%	110.8%					

Stock Returns	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
Sydvaranger	-68.8%	-46.7%	187.5%	-13.0%	-35.0%	-7.7%	8.3%	-23.1%	-20.0%
Viking-Askim	-39.4%	-23.4%	300.0%	-33.3%	118.8%	28.6%			
Banking Companies									
Bergens Bank	59.3%	-20.9%	27.1%	-13.2%	109.4%	-6.5%	-30.0%	-49.3%	
Bergens Kreditbank									
Bergens Privatbank									
Christiania Bank og Kreditkasse	10.4%	-14.7%	34.5%	2.6%	14.1%	12.0%	-29.0%	-1.4%	45.3%
Den norske Creditbank	14.9%	-11.9%	30.3%	6.5%	15.7%	-3.2%	-28.3%	-6.8%	-12.1%
Forretningsbanken	18.9%	-7.4%	16.0%	1.7%	4.4%	3.2%			
Shipping Companies									
Atlantica	40.6%	38.8%	15.6%	-50.0%	30.8%	-67.6%			
Beamont									
Belships	56.3%	-36.0%	75.0%	57.1%	13.6%	-40.0%	-3.3%	327.6%	77.4%
Bergehus	37.5%	-27.3%	50.0%	16.7%	42.9%				
Billabong	13.0%	-11.5%	21.7%	-7.1%					
Bruusgard	23.3%	-2.7%	5.6%						
Det Bergenske Ds	40.0%	-51.0%	200.0%	171.9%					
Det Nordenfjeldske Ds		-60.0%	165.3%	282.1%					
Den Norske Amerikalinje	-22.2%	-60.0%	157.1%	33.3%	178.2%	-0.6%	65.6%	56.2%	42.8%
Den Norske Afrika Og Australialinje									
Ganger Rolf	117.6%	-70.8%	166.7%	189.0%	68.6%	-9.9%	-31.7%	93.9%	228.1%
Hadrian									
Ivarans Rederi	116.7%	-34.6%	52.9%	23.1%	50.0%	16.7%	78.6%	66.0%	

Stock Returns	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
Kosmos	3.5%	-45.5%	60.3%	116.6%	101.3%	-14.1%	-22.7%	29.8%	-31.1%
Mascot		669.4%	-41.5%	4.4%					
Nordheim									
Pelagos									
Sigmalm	70.5%	-21.3%	39.0%	-12.2%	52.8%				
Wilhelmsens		-58.8%	112.1%	21.4%	33.3%	-66.9%	-22.5%	161.2%	89.7%
Ørnen		-40.0%	33.3%	100.0%					
Insurance Companies									
Storebrand	66.7%	-41.3%	33.3%	18.1%	27.8%	5.0%	-80.7%	-19.1%	110.1%
Vesta	20.1%	-21.3%	62.4%	100.5%	-9.9%	-4.9%	-29.0%	-1.4%	
Arendals Forsikringsselskap									
Norden, Forsikrings-Aktieselskapet									
Nordengruppen									
Trondhjems Fr.(Forenedegruppen)			21.1%	349.0%	31.3%	9.8%	49.4%	-32.5%	30.9%
EqW Average	48.8%	-3.5%	84.4%	49.9%	27.9%	-5.3%	-1.7%	32.5%	43.3%
CapW Average	60.8%	-19.1%	66.0%	20.8%	35.7%	-3.9%	-0.4%	6.7%	47.7%
Median	34.0%	-29.7%	61.3%	27.9%	27.8%	-3.2%	-3.3%	6.3%	38.3%

Table 9.16 – Invested Capital, 1961-1965

	1961	1962	1963	1964	1965
Industry Companies					
Actinor/Norgas					
Akers Mek	466,483,200.00	474,064,400.00	574,926,300.00	806,795,500.00	1,086,177,900.00
Borregaard	303,145,401.00	359,275,454.50	315,920,186.00	436,894,834.50	1,102,469,491.00
Christiania Spigerverk	107,850,347.50	129,018,473.00	156,709,039.50	167,286,228.50	250,667,000.00
D.N.L/SAS					
Dyno	25,979,562.00	24,790,324.00	25,042,231.00	29,218,865.00	73,195,148.50
Elektrisk Bureau	15,198,250.00	18,682,177.00	23,595,330.00	29,891,892.00	49,549,097.00
Elektrokemisk	178,981,661.00	178,420,783.00	174,039,015.50	182,773,691.50	299,783,995.50
Follum Fabrikker	86,565,083.50	116,365,670.50	141,019,266.00	141,768,887.00	173,490,173.00
Hafslund	78,562,572.00	85,691,588.00	82,028,164.00	89,530,825.00	163,405,585.00
Investa				396,582,518.00	444,186,769.00
Jonas Øglænd					
Kværner	13,601,737.00	19,393,314.50	18,059,098.00	30,797,760.00	128,569,684.00
Norcem					
Norema					
Norsk Data					
Norsk Hydro	751,102,816.00	798,245,357.00	842,006,031.00	962,640,693.00	1,041,341,990.00
Norske Skog					115,214,109.00
Orkla	97,983,448.50	102,608,528.50	112,790,822.00	111,958,907.00	111,958,907.00
Saga Petroleum					
Saugbrugsforeningen	156,894,849.00	163,786,304.00	185,318,745.00	191,185,886.00	207,761,094.50

Invested Capital	1961	1962	1963	1964	1965
Sydvaranger					171,501,717.50
Viking-Askim	55,822,760.00	55,035,423.00	57,942,433.00	60,939,009.00	99,382,021.00
Banking Companies					
Bergens Bank					
Bergens Kreditbank	102,766,700.00	102,744,681.00	117,389,070.00	138,156,949.00	147,455,793.00
Bergens Privatbank	782,977,345.00	849,375,755.00	1,234,748,917.00	1,312,057,616.00	1,487,777,664.00
Christiania Bank og Kreditkasse	500,414,643.00	517,712,483.00	532,669,065.00	500,189,721.00	667,365,183.00
Den norske Creditbank	906,248,930.00	763,777,574.00	872,919,721.00	1,060,215,090.00	1,144,828,413.00
Forretningsbanken	69,634,109.00	67,354,054.00	135,239,603.00	153,811,399.00	176,775,041.00
Shipping Companies					
Atlantica	34,126,553.00	43,045,558.00	40,273,378.00	54,398,047.00	48,176,930.00
Beamont	71,402,036.00	63,581,143.00	70,390,469.00	70,587,219.00	55,439,403.00
Belships	58,208,334.00	55,644,817.00	102,884,318.00	89,596,375.00	87,089,183.00
Bergehus		40,650,663.50	74,909,399.00	71,471,380.00	89,265,355.00
Billabong					
Bruusgard	65,729,304.00	59,662,462.00	54,434,156.00	46,438,529.50	74,903,115.00
Det Bergenske Ds	266,986,265.00	271,830,873.00	261,654,852.00	235,982,316.00	218,331,199.00
Det Nordenfjeldske Ds	127,255,541.00	118,959,750.00	109,883,273.00	127,830,649.00	165,570,517.00
Den Norske Amerikalinje	113,809,628.50	123,672,516.50	137,748,308.00	158,973,308.00	166,607,749.50
Den Norske Afrika Og Australialinje	205,662,308.00	184,725,281.50	203,574,378.50	223,060,162.50	265,516,126.00
Ganger Rolf	119,111,050.00	96,866,500.00	116,707,850.00	115,051,300.00	176,935,900.00
Hadrian	5,566,050.00	5,332,762.00	4,997,161.00	4,463,677.00	69,141,070.00
Ivarans Rederi	53,513,070.50	51,536,859.00	54,734,039.00	47,437,733.50	48,863,289.50

Invested Capital	**1961**	**1962**	**1963**	**1964**	**1965**
Kosmos	429,212,776.00	353,569,242.00	288,085,589.00	285,509,654.00	330,232,243.50
Mascot	58,420,033.50	64,765,791.50	82,728,731.00	122,618,615.00	149,733,391.00
Nordheim	67,866,797.50	79,188,419.50	90,826,503.00	115,713,632.00	144,554,893.50
Pelagos	28,506,205.00	22,626,529.00	28,591,303.00	31,049,677.00	28,747,780.00
Sigmalm					69,394,585.00
Wilhelmsens	48,293,896.50	41,331,209.00	46,622,492.00	36,528,476.50	46,710,833.50
Ørnen	110,830,156.50	92,539,791.00	124,794,932.00	142,488,053.00	127,694,084.00
Insurance Companies					
Storebrand	148,984,603.00	176,458,860.00	190,003,266.00	209,042,711.00	332,142,000.00
Vesta	35,869,560.00	49,819,086.00	74,582,452.00	77,403,068.00	142,794,710.00
Arendals Forsikringsselskap	11,219,090.00	11,591,351.00	14,616,798.00	14,909,309.00	16,012,088.00
Norden, Forsikrings-Aktieselskapet	50,044,954.00	50,729,225.00	57,138,571.00	61,008,168.00	72,983,977.50
Nordengruppen					
Trondhjems Fr.(Forenedegruppen)					
SUM	6,810,831,626.50	6,884,471,033.50	7,832,545,255.50	9,144,258,331.50	12,069,697,199.00

Table 9.17 – Invested Capital, 1966-1970

	1966	1967	1968	1969	1970
Industry Companies					
Actinor/Norgas					110,757,710.00
Akers Mek	969,811,600.00	1,147,369,850.00	1,406,844,450.00	1,123,687,000.00	1,138,000,000.00
Borregaard	1,101,435,343.50	975,849,121.50	997,155,778.50	937,454,122.00	1,188,976,000.00
Christiania Spigerverk	208,320,000.00	324,834,500.00	328,557,000.00	267,119,000.00	333,961,500.00
D.N.L/SAS	184,307,559.00	194,846,796.00	203,596,504.00	235,189,349.00	252,397,763.00
Dyno	74,351,471.00	88,236,918.50	131,266,200.00	154,227,500.00	187,194,500.00
Elektrisk Bureau	51,490,807.25	58,362,834.25	70,291,703.25	82,099,348.25	111,165,101.00
Elektrokemisk	380,836,622.50	322,033,000.00	424,844,500.00	488,680,500.00	625,256,500.00
Follum Fabrikker	176,848,076.50	183,785,032.50	190,653,757.50	197,950,905.00	190,990,006.00
Hafslund	158,479,195.50	152,326,509.00	160,855,014.50	179,597,242.00	215,451,466.00
Investa	425,597,554.00	466,911,303.00	572,736,116.00	619,988,488.00	1,144,348,299.00
Jonas Øglænd	88,173,270.00	84,552,084.00	89,557,902.50	94,185,314.00	94,317,534.50
Kværner	137,991,422.50	236,366,342.50	267,486,311.50	336,405,450.00	456,783,645.00
Norcem		42,317,267.00	510,040,000.00	568,601,500.00	559,202,000.00
Norema					113,490,000.00
Norsk Data					
Norsk Hydro	1,062,508,341.00	1,289,072,654.50	1,337,247,000.00	1,421,034,500.00	1,412,345,000.00
Norske Skog	216,449,928.50	246,877,413.50	254,440,704.50	268,728,628.00	309,832,812.00
Orkla	109,914,002.50	135,433,180.00	154,611,799.00	154,114,677.00	90,778,117.50
Saga Petroleum					
Saugbrugsforeningen	260,888,679.00	241,180,723.00	312,142,186.00	308,608,479.00	323,497,980.00

Invested Capital	**1966**	**1967**	**1968**	**1969**	**1970**
Sydvaranger	161,932,894.00	162,481,971.50	212,484,441.50	231,940,052.00	236,457,175.50
Viking-Askim	101,454,250.50	113,184,994.50	134,254,293.00	143,398,842.50	166,794,699.00
Banking Companies					
Bergens Bank					
Bergens Kreditbank	143,273,821.00	142,448,150.00	149,044,855.00	181,077,403.00	198,623,545.00
Bergens Privatbank	1,746,479,873.00	1,638,856,049.00	1,557,974,464.50	1,372,641,967.00	1,292,065,504.00
Christiania Bank og Kreditkasse	661,910,068.00	832,622,780.00	1,048,157,347.00	1,172,207,961.00	1,093,872,764.00
Den norske Creditbank	1,212,385,261.00	1,303,817,190.00	1,417,466,312.00	1,795,649,856.00	1,529,084,778.00
Forretningsbanken	185,919,504.00	245,551,366.00	239,456,079.00	305,826,196.00	348,696,319.00
Shipping Companies					
Atlantica	58,372,654.00	69,370,360.00	68,516,778.00	90,610,139.00	100,927,460.00
Beamont	61,288,233.00	59,871,673.00	76,219,653.00	69,980,102.00	193,497,948.00
Belships	83,978,269.00	92,233,658.00	80,976,505.00	98,693,761.00	207,113,773.00
Bergehus	103,630,202.50	141,722,919.50		124,326,030.50	155,483,335.50
Billabong					
Bruusgard	84,003,619.00	73,792,538.00	62,832,430.00	46,786,194.50	46,829,545.50
Det Bergenske Ds	222,008,000.00	171,133,000.00	236,566,000.00	396,094,000.00	367,145,500.00
Det Nordenfjeldske Ds	153,535,735.00	124,152,649.00	113,926,105.00	247,955,081.00	223,743,756.00
Den Norske Amerikalinje	152,396,721.00	152,733,486.00	152,725,277.50	150,693,715.00	104,531,657.50
Den Norske Afrika Og Australialinje	423,512,168.50	403,287,084.00	499,264,121.50	593,777,090.00	806,401,399.50
Ganger Rolf	190,409,450.00	176,055,200.00	154,725,650.00	137,880,650.00	147,602,850.00
Hadrian	121,377,458.00	104,701,280.00	323,788,173.00	369,353,433.00	437,009,039.00
Ivarans Rederi	73,729,977.00	65,363,156.50	64,491,191.00	57,619,308.00	101,826,260.50

Invested Capital	**1966**	**1967**	**1968**	**1969**	**1970**
Kosmos	312,858,890.00	423,575,580.50	471,491,636.50	475,769,985.00	616,962,173.50
Mascot	138,950,593.00	161,129,980.50	110,173,001.50	317,069,342.50	295,310,968.00
Nordheim	170,536,045.00	221,470,142.50	208,352,119.50	215,766,931.00	266,547,006.00
Pelagos	41,074,424.00	37,716,832.00	36,558,935.00	53,140,356.50	74,485,566.50
Sigmalm	68,204,713.50	95,951,523.50	85,189,321.50	324,630,328.00	626,886,570.50
Wilhelmsens	65,191,970.50	60,845,762.50	82,913,257.50	95,059,537.00	153,113,690.50
Ørnen	177,959,523.00	187,295,860.00	182,792,042.00	156,323,067.00	216,509,579.00
Insurance Companies					
Storebrand	325,240,000.00	363,472,000.00	454,814,000.00	479,213,000.00	570,407,500.00
Vesta	122,018,771.00	144,415,113.00	153,062,245.00	170,277,000.00	212,752,000.00
Arendals Forsikringsselskap	16,271,500.00	17,672,217.00	18,709,747.00	24,753,623.00	42,910,164.00
Norden, Forsikrings-Aktieselskapet	74,111,977.00	82,998,801.00	95,636,854.50	99,925,891.00	85,608,591.00
Nordengruppen					
Trondhjems Fr.(Forenedegruppen)					
SUM	13,061,420,438.25	14,060,278,846.75	15,904,889,763.25	17,436,112,844.75	19,777,947,052.00

Table 9.18 – Invested Capital, 1971-1975

	1971	1972	1973	1974	1975
Industry Companies					
Actinor/Norgas	96,631,171.00	96,631,171.00	150,107,000.00	194,996,000.00	220,907,000.00
Akers Mek	1,182,800,000.00	1,241,550,000.00	1,333,700,000.00	1,698,750,000.00	1,638,350,000.00
Borregaard	1,308,919,500.00	1,442,031,500.00	1,502,901,500.00	1,223,394,500.00	1,454,009,500.00
Christiania Spigerverk	464,642,500.00				
D.N.L/SAS	283,138,361.00	283,739,568.00	297,972,617.00	298,137,507.00	300,222,385.00
Dyno	204,295,500.00	261,044,500.00	296,633,000.00	337,844,500.00	399,764,000.00
Elektrisk Bureau	155,482,561.25	168,080,048.25	152,278,721.00	188,016,750.00	234,629,750.00
Elektrokemisk	792,993,500.00	1,454,106,000.00	1,509,279,500.00	1,710,577,000.00	1,929,089,500.00
Follum Fabrikker	199,362,987.00	182,470,799.50	172,889,671.50	168,680,904.50	251,074,022.00
Hafslund	227,706,096.00	229,214,055.50	225,756,456.50	269,962,015.00	306,778,525.50
Investa	1,203,871,500.00	1,251,259,500.00	1,502,930,500.00	1,588,596,000.00	1,768,596,000.00
Jonas Øglænd	111,997,448.00	148,633,078.50	171,041,332.00	215,486,129.50	203,942,191.00
Kværner	577,591,200.00	568,019,000.00	780,044,000.00	987,736,500.00	1,604,016,000.00
Norcem	620,757,500.00	668,603,000.00	729,431,500.00	710,950,000.00	684,446,500.00
Norema	132,003,500.00		173,698,500.00	207,405,500.00	160,292,500.00
Norsk Data				9,501,000.00	11,814,000.00
Norsk Hydro	1,518,590,500.00	1,657,780,500.00	1,953,527,500.00	3,204,179,000.00	4,634,147,500.00
Norske Skog	382,800,000.00	509,347,500.00	501,259,000.00	547,859,000.00	644,247,500.00
Orkla	145,347,000.00	152,638,500.00	176,405,000.00	227,154,500.00	256,987,000.00
Saga Petroleum			20,671,965.50	- 76,860,354.50	- 199,007,267.50
Saugbrugsforeningen	328,901,456.00	303,579,396.00	290,923,286.00	326,105,906.00	419,257,320.00

Invested Capital	**1971**	**1972**	**1973**	**1974**	**1975**
Sydvaranger	250,871,500.00	238,969,500.00	362,851,000.00	560,578,500.00	668,179,500.00
Viking-Askim	185,787,326.00	225,958,494.50	196,434,038.00	284,822,707.50	278,021,713.00
Banking Companies					
Bergens Bank					2,182,121,902.00
Bergens Kreditbank	230,011,472.00	289,885,299.00	324,528,528.00	289,885,299.00	
Bergens Privatbank	1,295,808,559.50		1,718,515,095.50		
Christiania Bank og Kreditkasse	1,051,526,634.00	1,417,686,318.00	1,621,128,354.50	1,658,006,847.50	1,272,366,813.00
Den norske Creditbank	1,554,008,268.00	1,976,756,103.00	1,948,978,976.00	1,922,870,295.00	2,106,050,994.00
Forretningsbanken	418,042,283.00	453,260,966.00	471,628,201.00	652,607,116.00	704,822,962.00
Shipping Companies					
Atlantica	95,041,588.00	72,157,771.00	129,037,786.00	317,011,356.50	398,442,371.50
Beamont	187,512,859.00	278,887,316.00	374,500,532.00	382,822,081.50	145,402,890.00
Belships	230,200,257.00	289,048,804.00	500,552,349.00	504,653,256.00	310,993,153.00
Bergehus	152,616,753.00	161,695,466.00	217,083,300.00	179,187,571.00	193,598,938.00
Billabong	132,728,072.50	126,054,918.50	114,025,725.00	194,303,443.00	394,690,447.00
Bruusgard	162,675,468.00	116,397,084.50	144,309,130.50	115,570,999.00	89,435,075.00
Det Bergenske Ds	347,699,500.00	329,534,000.00	331,636,000.00	309,954,000.00	285,093,000.00
Det Nordenfjeldske Ds	259,243,640.00	299,938,965.00	358,762,872.00	388,165,021.00	362,922,673.00
Den Norske Amerikalinje	210,470,631.50	254,633,946.50	302,133,547.00	278,861,500.00	402,113,500.00
Den Norske Afrika Og Australialinje	709,908,441.00	695,639,213.00	949,187,307.00	1,152,086,913.00	1,083,814,265.00
Ganger Rolf	147,133,350.00	139,959,950.00	141,171,850.00	151,598,700.00	244,072,350.00
Hadrian	393,282,873.00	681,677,560.00	634,217,378.00	596,176,074.00	591,344,088.00
Ivarans Rederi	94,207,185.00	87,236,219.50	98,602,119.00	91,064,476.00	80,282,298.00

Invested Capital	**1971**	**1972**	**1973**	**1974**	**1975**
Kosmos	717,509,365.00	710,541,826.00	870,394,273.00	778,132,151.00	736,762,890.00
Mascot	276,486,496.00	367,794,825.50	626,247,758.50	533,289,727.00	483,985,108.00
Nordheim	247,718,046.00	296,298,061.50	602,864,622.00	532,449,032.00	456,061,284.50
Pelagos	62,086,460.50	38,820,502.50	112,651,450.50	106,206,165.50	99,679,711.50
Sigmalm	605,958,683.00	587,893,954.50	462,029,485.50	388,950,849.00	405,993,405.00
Wilhelmsens	131,289,505.00	131,882,607.50	206,272,832.50	259,280,781.00	234,279,941.00
Ørnen	251,022,673.00	198,092,833.00	308,638,846.00	282,281,076.00	204,456,317.00
Insurance Companies					
Storebrand	665,556,000.00	559,047,000.00	518,723,000.00	501,383,000.00	559,676,000.00
Vesta	244,095,000.00	264,885,000.00	288,325,000.00	329,981,000.00	347,615,000.00
Arendals Forsikringsselskap	75,866,825.00	120,093,000.00	188,204,000.00	236,193,000.00	
Norden, Forsikrings-Aktieselskapet					
Nordengruppen	212,985,055.00	254,848,620.00	275,373,000.00	309,007,000.00	412,445,000.00
Trondhjems Fr.(Forenedegruppen)					
SUM	21,537,183,049.25	22,284,304,241.75	27,340,459,406.00	27,629,727,271.00	32,658,287,515.50

Table 9.19 – Invested Capital, 1976-1980

	1976	1977	1978	1979	1980
Industry Companies					
Actinor/Norgas	258,827,500.00	351,855,000.00	401,319,000.00	499,414,000.00	404,327,500.00
Akers Mek	1,367,650,000.00	1,189,650,000.00	1,278,450,000.00	1,327,400,000.00	613,600,000.00
Borregaard	2,209,666,500.00	2,456,760,500.00	2,518,849,000.00	1,614,534,000.00	1,474,291,500.00
Christiania Spigerverk					
D.N.L/SAS	293,749,993.00	308,794,500.00	558,564,000.00	843,754,000.00	936,513,000.00
Dyno	531,974,000.00	626,215,500.00	753,938,500.00	726,423,500.00	755,532,500.00
Elektrisk Bureau	307,406,750.00	431,055,500.00	480,821,750.00	503,776,000.00	608,875,000.00
Elektrokemisk	2,329,433,500.00	2,251,550,000.00	2,288,100,000.00	2,748,750,000.00	2,454,700,000.00
Follum Fabrikker	258,388,948.50	275,955,500.00	298,822,500.00	323,047,000.00	411,958,500.00
Hafslund	421,698,000.00	487,564,000.00	522,447,500.00	522,090,500.00	532,485,500.00
Investa	1,826,222,000.00	1,977,664,500.00	2,155,009,000.00	2,294,312,000.00	820,547,000.00
Jonas Øglænd	151,397,500.00	171,109,500.00	173,265,000.00	198,840,500.00	231,383,000.00
Kværner	1,506,786,500.00	1,650,062,000.00	2,033,457,500.00	1,497,778,000.00	1,793,117,000.00
Norcem	914,524,000.00	1,027,119,000.00	1,415,391,500.00	1,571,610,500.00	1,571,600,000.00
Norema	161,874,000.00	149,610,500.00	155,463,000.00	174,435,000.00	183,407,500.00
Norsk Data	27,708,500.00	34,198,500.00	74,988,500.00	188,360,500.00	145,071,000.00
Norsk Hydro	7,898,501,500.00	10,056,000,000.00	11,947,500,000.00	13,537,000,000.00	13,389,500,000.00
Norske Skog	659,184,000.00	753,415,500.00	653,489,000.00	796,458,500.00	834,677,000.00
Orkla	291,218,500.00	216,699,500.00	235,651,500.00	302,755,000.00	443,446,500.00
Saga Petroleum	- 305,776,238.00	- 235,379,000.00	- 163,805,000.00	582,837,000.00	804,098,000.00
Saugbrugsforeningen	460,099,448.00	368,967,000.00	499,350,500.00		

Invested Capital	**1976**	**1977**	**1978**	**1979**	**1980**
Sydvaranger	601,237,000.00	688,989,500.00	909,379,000.00	1,107,796,000.00	1,542,791,000.00
Viking-Askim	225,588,171.00	238,857,500.00	220,158,500.00	266,307,500.00	257,902,500.00
Banking Companies					
Bergens Bank	2,294,762,595.50	3,052,300,000.00	2,088,926,000.00	3,655,878,000.00	4,685,730,000.00
Bergens Kreditbank					
Bergens Privatbank					
Christiania Bank og Kreditkasse	1,417,162,316.00	2,730,410,000.00	1,944,015,500.00	1,748,124,500.00	4,115,624,000.00
Den norske Creditbank	2,277,824,932.00	2,729,733,000.00	2,308,880,000.00	2,810,033,500.00	
Forretningsbanken	542,334,865.00	717,225,000.00	760,946,500.00	550,893,000.00	
Shipping Companies					
Atlantica	399,770,252.50	400,947,500.00	382,910,000.00	345,009,500.00	503,062,000.00
Beamont	141,698,765.00	127,042,500.00	118,973,500.00	96,621,500.00	79,737,000.00
Belships	241,360,371.00	206,414,000.00	160,050,000.00	117,978,000.00	103,407,000.00
Bergehus	197,253,561.50	185,824,500.00	190,560,500.00		263,894,500.00
Billabong	355,100,143.50	346,610,000.00	292,032,000.00	231,719,000.00	410,207,000.00
Bruusgard	77,115,025.00	81,250,000.00	84,092,500.00	81,998,000.00	133,260,000.00
Det Bergenske Ds	269,386,000.00	272,393,500.00	257,401,000.00	615,242,500.00	994,502,000.00
Det Nordenfjeldske Ds	362,502,366.00	463,348,000.00	428,864,000.00	473,840,500.00	488,806,000.00
Den Norske Amerikalinje	346,745,500.00	335,555,500.00	281,857,500.00	283,409,500.00	191,268,500.00
Den Norske Afrika Og Australialinje	1,070,480,647.00	1,246,635,500.00	1,048,941,000.00	918,891,000.00	1,033,611,500.00
Ganger Rolf	237,901,000.00	180,916,000.00	145,740,500.00	145,782,000.00	203,306,500.00
Hadrian	611,100,164.00	490,719,500.00	311,368,000.00	284,915,000.00	
Ivarans Rederi	171,120,452.00	147,339,500.00	158,007,000.00	140,593,500.00	146,999,500.00

Invested Capital	**1976**	**1977**	**1978**	**1979**	**1980**
Kosmos	644,591,638.00	679,544,000.00	667,960,000.00	1,553,856,000.00	2,183,025,000.00
Mascot	449,630,222.00	319,300,500.00	169,360,000.00	141,970,000.00	312,933,000.00
Nordheim	353,854,514.50	203,619,000.00			
Pelagos	27,293,191.00	391,474,500.00	488,800,000.00	444,515,500.00	
Sigmalm	410,539,159.00	372,302,500.00	364,250,000.00		442,567,500.00
Wilhelmsens	233,558,834.00	262,531,000.00	221,695,000.00	194,337,000.00	217,276,000.00
Ørnen	181,922,695.00	160,233,000.00	142,022,000.00		116,406,000.00
Insurance Companies					
Storebrand	1,515,958,500.00	1,815,826,000.00	1,740,951,500.00	1,594,601,000.00	1,759,761,000.00
Vesta	368,267,415.00	362,318,000.00	602,825,000.00	561,225,000.00	624,831,000.00
Arendals Forsikringsselskap					
Norden, Forsikrings-Aktieselskapet					
Nordengruppen	441,511,000.00	533,057,000.00	517,870,000.00	596,204,000.00	
Trondhjems Fr.(Forenedegruppen)					
SUM	38,038,106,197.00	44,291,584,000.00	45,289,909,250.00	49,215,317,000.00	49,220,039,000.00

Table 9.20 – Invested Capital, 1981-1985

	1981	1982	1983	1984	1985
Industry Companies					
Actinor/Norgas	687,496,500.00	1,002,853,500.00	1,044,320,500.00	1,072,769,000.00	1,179,069,000.00
Akers Mek	578,650,000.00	878,600,000.00	623,800,000.00	808,600,000.00	1,055,450,000.00
Borregaard	1,800,448,000.00	1,891,421,000.00	1,963,590,000.00	2,095,527,000.00	2,024,350,000.00
Christiania Spigerverk					
D.N.L/SAS	1,099,075,500.00	1,102,963,000.00	992,268,000.00	1,407,800,000.00	1,608,200,000.00
Dyno	890,228,000.00	874,106,000.00	911,018,000.00	1,463,053,500.00	2,231,550,000.00
Elektrisk Bureau	683,718,500.00	893,408,000.00	1,100,344,500.00	1,236,733,000.00	1,275,646,000.00
Elektrokemisk	3,323,600,000.00	3,084,550,000.00	1,779,970,000.00	5,141,500,000.00	4,804,500,000.00
Follum Fabrikker	530,912,000.00	537,295,000.00	611,672,000.00	592,456,000.00	577,325,000.00
Hafslund	546,762,500.00	810,439,000.00	1,030,140,500.00	1,245,526,500.00	2,847,561,500.00
Investa	1,219,304,000.00	1,048,890,500.00	1,042,572,500.00	1,039,729,000.00	2,086,922,500.00
Jonas Øglænd	237,950,500.00	229,006,500.00	248,172,000.00	247,183,000.00	242,756,500.00
Kværner	2,044,313,500.00	2,543,689,000.00	3,402,550,500.00	2,943,091,500.00	2,758,340,500.00
Norcem	1,714,500,500.00	1,321,037,500.00	1,748,145,000.00	2,351,619,500.00	3,034,500,000.00
Norema	202,790,800.00	191,292,000.00	224,610,500.00	275,707,500.00	276,739,500.00
Norsk Data	221,031,500.00	352,015,000.00	703,328,500.00	1,474,050,000.00	1,684,700,000.00
Norsk Hydro	9,640,000,000.00	13,138,000,000.00	16,480,500,000.00	17,863,000,000.00	20,565,500,000.00
Norske Skog	959,935,000.00	1,020,246,500.00	1,113,551,000.00	1,215,729,500.00	1,422,592,500.00
Orkla	569,246,000.00	732,893,500.00	815,957,000.00	1,284,409,000.00	5,908,350,000.00
Saga Petroleum	1,069,561,000.00	2,398,598,000.00	3,626,819,000.00	4,056,050,000.00	6,079,400,000.00
Saugbrugsforeningen					

Invested Capital	**1981**	**1982**	**1983**	**1984**	**1985**
Sydvaranger	600,913,500.00	725,220,000.00	533,683,000.00	392,988,500.00	398,119,500.00
Viking-Askim	303,914,000.00	307,172,500.00	271,541,500.00	140,986,000.00	106,558,500.00
Banking Companies					
Bergens Bank	4,711,765,000.00	5,558,092,000.00	5,993,586,000.00	14,895,050,000.00	20,614,050,000.00
Bergens Kreditbank					
Bergens Privatbank					
Christiania Bank og Kreditkasse	8,079,872,000.00	9,222,627,000.00	16,149,650,000.00	21,782,608,000.00	34,557,431,000.00
Den norske Creditbank					
Forretningsbanken					
Shipping Companies					
Atlantica	891,648,000.00	1,629,882,500.00	1,510,435,500.00	1,380,781,500.00	1,262,994,000.00
Beamont					
Belships	105,164,000.00	96,116,000.00	120,789,000.00	194,576,000.00	78,161,500.00
Bergehus		538,177,500.00	579,731,500.00	551,911,000.00	460,677,000.00
Billabong	361,470,000.00	368,945,500.00	347,464,500.00	314,973,000.00	
Bruusgard	180,865,000.00	167,459,000.00	99,648,500.00		
Det Bergenske Ds	1,392,359,500.00	900,151,000.00	869,771,000.00	564,600,000.00	
Det Nordenfjeldske Ds	990,974,000.00	862,217,500.00	889,391,000.00	711,398,000.00	
Den Norske Amerikalinje	112,497,000.00	30,174,000.00	31,550,000.00	23,078,000.00	137,613,000.00
Den Norske Afrika Og Australialinje					
Ganger Rolf	225,406,000.00	187,619,000.00	165,412,500.00	240,230,500.00	743,839,500.00
Hadrian					
Ivarans Rederi	201,343,500.00	247,699,500.00	239,195,500.00	265,208,000.00	279,096,000.00

Invested Capital	**1981**	**1982**	**1983**	**1984**	**1985**
Kosmos	2,371,268,000.00	2,025,042,000.00	2,644,791,000.00	2,926,243,000.00	4,583,602,500.00
Mascot	331,890,500.00	349,885,000.00	331,127,000.00	483,261,500.00	
Nordheim					
Pelagos					
Sigmalm		911,210,500.00	1,008,384,500.00	1,129,505,500.00	1,085,593,500.00
Wilhelmsens	2,960,413,500.00	4,255,826,000.00	4,406,644,500.00	5,330,622,000.00	6,305,861,000.00
Ørnen	114,897,000.00	97,903,000.00	90,792,000.00	100,859,000.00	
Insurance Companies					
Storebrand	1,978,736,000.00	2,528,616,000.00	2,774,113,000.00	3,107,641,000.00	1,734,200,000.00
Vesta	624,017,000.00	661,097,000.00	1,199,472,000.00	2,000,958,500.00	3,834,064,000.00
Arendals Forsikringsselskap					
Norden, Forsikrings-Aktieselskapet					
Nordengruppen					
Trondhjems Fr.(Forenedegruppen)		30,124,000.00	34,138,000.00	39,188,000.00	236,156,000.00
SUM	54,558,937,300.00	65,752,560,500.00	79,754,641,000.00	104,391,201,000.00	138,081,470,000.00

Table 9.21 – Invested Capital, 1986-1989

	1986	1987	1988	1989
Industry Companies				
Actinor/Norgas				
Akers Mek	1,498,050,000.00	4,817,800,000.00	7,803,800,000.00	
Borregaard				
Christiania Spigerverk				
D.N.L/SAS	2,361,650,000.00	2,929,350,000.00	4,474,000,000.00	5,833,000,000.00
Dyno	2,895,200,000.00	3,410,350,000.00	3,939,700,000.00	3,962,300,000.00
Elektrisk Bureau	2,002,172,500.00	2,935,453,000.00	3,917,379,000.00	3,807,792,500.00
Elektrokemisk	5,250,500,000.00	5,194,500,000.00	6,302,500,000.00	6,706,000,000.00
Follum Fabrikker	619,912,000.00	880,000,000.00	944,000,000.00	
Hafslund	2,558,500,000.00	2,855,850,000.00	3,746,950,000.00	3,817,500,000.00
Investa	2,189,939,500.00	1,871,144,000.00	3,424,010,000.00	5,140,206,500.00
Jonas Øglænd	326,418,000.00	416,573,000.00	394,912,500.00	
Kværner	3,273,975,500.00	3,771,484,000.00	3,568,000,000.00	4,874,500,000.00
Norcem	4,698,500,000.00			
Norema	390,333,500.00	389,463,500.00		
Norsk Data	2,627,250,000.00	4,263,500,000.00	3,717,500,000.00	2,147,500,000.00
Norsk Hydro	28,660,500,000.00	28,606,000,000.00	45,025,000,000.00	46,483,500,000.00
Norske Skog	1,787,566,000.00	2,650,950,000.00	3,082,400,000.00	6,827,000,000.00
Orkla	5,125,350,000.00	5,911,100,000.00	5,817,200,000.00	7,176,000,000.00
Saga Petroleum	7,624,600,000.00	8,330,750,000.00	9,531,300,000.00	10,041,100,000.00
Saugbrugsforeningen				

Invested Capital	**1986**	**1987**	**1988**	**1989**
Sydvaranger	412,238,000.00	573,693,000.00	572,353,500.00	534,779,500.00
Viking-Askim	127,447,000.00	143,024,000.00	106,531,500.00	
Banking Companies				
Bergens Bank	17,457,500,000.00	18,191,250,000.00	22,545,866,500.00	27,647,950,000.00
Bergens Kreditbank				
Bergens Privatbank				
Christiania Bank og Kreditkasse	57,728,049,000.00	61,764,540,000.00	22,661,550,000.00	24,971,450,000.00
Den norske Creditbank	24,559,640,000.00	23,303,204,000.00	24,924,290,000.00	98,087,000,000.00
Forretningsbanken				
Shipping Companies				
Atlantica	610,563,500.00			
Beamont				
Belships	83,595,500.00	59,226,500.00	131,472,000.00	282,890,500.00
Bergehus				
Billabong				
Bruusgard				
Det Bergenske Ds				
Det Nordenfjeldske Ds				
Den Norske Amerikalinje	43,461,000.00	781,788,500.00	850,591,000.00	1,067,411,500.00
Den Norske Afrika Og Australialinje				
Ganger Rolf	675,275,500.00	622,981,000.00		729,757,500.00
Hadrian				
Ivarans Rederi	248,467,500.00	525,309,500.00	376,235,000.00	

Invested Capital	**1986**	**1987**	**1988**	**1989**
Kosmos	4,220,766,500.00	5,098,000,000.00	4,455,000,000.00	1,871,500,000.00
Mascot				
Nordheim				
Pelagos				
Sigmalm				
Wilhelmsens	3,686,646,500.00	3,203,482,500.00	2,971,986,500.00	3,435,163,000.00
Ørnen				
Insurance Companies				
Storebrand	2,117,400,000.00	4,719,450,000.00	5,862,200,000.00	4,920,500,000.00
Vesta	4,531,985,500.00	3,964,408,000.00	418,383,000.00	
Arendals Forsikringsselskap				
Norden, Forsikrings-Aktieselskapet				
Nordengruppen				
Trondhjems Fr.(Forenedegruppen)	176,988,000.00	233,062,000.00	402,260,000.00	423,848,000.00
SUM	190,570,440,500.00	202,417,686,500.00	191,997,870,500.00	270,788,649,000.00

Table 9.22 – Return on Equity, 1961-1970.

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Industry	11.5%	9.0%	7.7%	8.2%	9.9%	8.6%	10.0%	9.9%	11.5%	13.5%
Banking	10.4%	8.3%	5.7%	5.4%	5.6%	5.9%	5.0%	6.6%	7.6%	9.9%
Shipping	12.4%	6.3%	11.4%	11.7%	12.8%	12.0%	15.7%	17.1%	17.7%	26.0%
Insurance	10.5%	5.4%	5.8%	6.3%	4.7%	8.6%	5.6%	14.3%	5.2%	5.7%
TOTAL	**11.5%**	**7.9%**	**8.0%**	**8.3%**	**9.3%**	**8.7%**	**9.9%**	**10.8%**	**11.6%**	**15.6%**

Table 9.23 – Return on Equity, 1971-1980. 1) No observations available

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Industry	6.7%	3.2%	7.9%	10.5%	8.6%	11.9%	6.5%	4.2%	4.1%	14.2%
Banking	8.3%	6.1%	8.0%	7.7%	8.4%	11.2%	15.5%	7.2%	9.6%	0.0%[1]
Shipping	21.7%	25.9%	31.6%	15.7%	2.5%	8.1%	8.8%	8.9%	16.9%	25.0%
Insurance	5.9%	11.3%	11.1%	14.3%	14.0%	12.0%	9.6%	16.6%	16.2%	12.6%
TOTAL	**10.0%**	**8.7%**	**11.6%**	**11.3%**	**8.1%**	**11.3%**	**8.8%**	**5.8%**	**6.0%**	**13.8%**

Table 9.24 – Return on Equity, 1981-1989. 2) No observations available

	1981	1982	1983	1984	1985	1986	1987	1988	1989
Industry	13.9%	8.2%	11.6%	14.0%	13.0%	4.2%	13.4%	21.2%	16.2%
Banking	0.0%[2]	21.7%	30.8%	36.3%	28.3%	27.3%	-12.7%	-8.4%	11.0%
Shipping	11.9%	16.8%	11.9%	19.8%	9.7%	-25.9%	-6.7%	-10.4%	26.3%
Insurance	13.3%	9.4%	17.5%	7.9%	9.5%	13.8%	-28.6%	-24.7%	-6.7%
TOTAL	**12.3%**	**9.9%**	**12.8%**	**15.2%**	**14.0%**	**7.1%**	**5.4%**	**14.4%**	**15.5%**

Table 9.25 – Debt Ratio, 1961-1970. Based on equally-weighted averages.

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Industry	41%	45%	45%	53%	62%	61%	62%	61%	60%	62%
Banking	84%	83%	74%	76%	76%	75%	76%	75%	82%	79%
Shipping	67%	67%	71%	71%	74%	78%	77%	74%	76%	79%
Insurance	43%	45%	41%	43%	43%	41%	41%	41%	46%	47%
TOTAL	**58%**	**60%**	**60%**	**63%**	**67%**	**68%**	**68%**	**66%**	**68%**	**69%**

Table 9.26 – Debt Ratio, 1971-1980. Based on equally-weighted averages.

	1971	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**
Industry	62%	63%	63%	60%	65%	65%	62%	63%	63%	63%
Banking	78%	80%	81%	81%	77%	73%	77%	70%	70%	82%
Shipping	80%	77%	78%	78%	80%	79%	82%	82%	82%	82%
Insurance	56%	69%	69%	71%	66%	74%	76%	81%	75%	68%
TOTAL	**71%**	**71%**	**71%**	**70%**	**72%**	**72%**	**72%**	**72%**	**70%**	**71%**

Table 9.27 – Debt Ratio, 1981-1989. Based on equally-weighted averages.

	1981	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
Industry	61%	66%	60%	56%	55%	59%	62%	61%	60%
Banking	86%	85%	85%	90%	92%	89%	88%	88%	57%
Shipping	85%	82%	79%	64%	72%	60%	65%	66%	57%
Insurancee	67%	44%	45%	44%	46%	48%	64%	56%	48%
TOTAL	**71%**	**71%**	**67%**	**60%**	**61%**	**61%**	**65%**	**64%**	**58%**

Table 9.28 – Market Value, 1961-1965

Market Cap	1961	1962	1963	1964	1965
Industry	1,291,784,932.50	801,091,800.00	1,275,517,100.00	1,312,794,675.50	1,324,253,678.80
Banking	317,550,000.00	310,350,000.00	400,325,000.00	414,770,000.00	454,725,000.00
Shipping	516,704,750.00	431,233,250.00	464,435,150.00	451,403,375.00	462,841,850.00
Insurance	107,462,500.00	120,112,750.00	164,823,750.00	168,274,625.00	182,061,625.00
TOTAL	**2,233,502,182.50**	**1,662,787,800.00**	**2,305,101,000.00**	**2,347,242,675.50**	**2,423,882,153.80**

Table 9.29 – Market Value, 1966-1970

Market Cap	1966	1967	1968	1969	1970
Industry	1,499,359,974.00	1,533,810,826.00	2,449,052,447.50	3,005,565,905.00	3,724,454,152.50
Banking	471,920,000.00	451,020,000.00	534,025,000.00	621,290,000.00	646,030,000.00
Shipping	442,978,050.00	475,290,200.00	575,833,675.00	739,892,550.00	1,475,413,750.00
Insurance	156,106,625.00	174,570,000.00	266,111,750.00	320,784,750.00	438,717,000.00
TOTAL	**2,570,364,649.00**	**2,634,691,026.00**	**3,825,022,872.50**	**4,687,533,205.00**	**6,284,614,902.50**

Table 9.30 – Market Value, 1971-1975

Market Cap	1971	1972	1973	1974	1975
Industry	4,090,681,240.00	4,901,536,024.00	10,146,751,123.00	5,593,952,405.00	5,382,442,140.00
Banking	738,590,000.00	855,735,000.00	996,625,000.00	667,540,000.00	1,029,350,000.00
Shipping	1,385,265,000.00	1,640,009,450.00	2,105,752,100.00	1,332,862,000.00	932,926,000.00
Insurance	364,919,000.00	443,856,500.00	479,571,000.00	400,819,500.00	336,107,100.00
TOTAL	**6,579,455,240.00**	**7,841,136,974.00**	**13,728,699,223.00**	**7,995,173,905.00**	**7,680,825,240.00**

Table 9.31 – Market Value, 1976-1980

Market Cap	1976	1977	1978	1979	1980
Industry	5,489,078,240.00	3,969,971,555.00	4,122,047,145.00	11,535,599,364.00	12,060,854,226.00
Banking	1,236,520,000.00	1,372,120,000.00	1,406,880,000.00	1,549,470,000.00	558,000,000.00
Shipping	1,089,390,000.00	755,869,400.00	649,333,500.00	1,038,550,000.00	1,082,744,500.00
Insurance	354,022,000.00	255,422,400.00	242,505,000.00	422,164,000.00	535,500,000.00
TOTAL	**8,169,010,240.00**	**6,353,383,355.00**	**6,420,765,645.00**	**14,545,783,364.00**	**14,237,098,726.00**

Table 9.32 – Market Value, 1981-1985

Market Cap	1981	1982	1983	1984	1985
Industry	11,992,080,896.00	9,488,963,643.00	22,201,733,753.50	28,597,026,040.50	33,474,720,589.50
Banking	642,625,000.00	685,062,500.00	1,231,200,000.00	1,544,584,080.00	4,669,477,166.00
Shipping	1,894,156,000.00	1,081,185,050.00	2,085,307,500.00	4,388,422,191.00	4,608,442,934.50
Insurance	918,750,000.00	915,450,000.00	1,362,421,940.00	2,704,478,280.00	3,138,281,616.00
TOTAL	**15,447,611,896.00**	**12,170,661,193.00**	**26,880,663,193.50**	**37,234,510,591.50**	**45,890,922,306.00**

Table 9.33 – Market Value, 1986-1989

Market Cap	1986	1987	1988	1989
Industry	31,035,264,843.00	31,649,191,596.00	47,694,891,240.00	66,119,337,695.00
Banking	8,136,028,935.00	6,464,345,916.00	5,225,855,852.00	6,699,643,183.00
Shipping	2,878,515,556.25	2,386,550,281.00	3,860,300,519.50	6,058,768,181.40
Insurance	3,216,643,670.00	3,128,772,345.00	2,713,203,350.00	3,654,628,200.00
TOTAL	**45,266,453,004.25**	**43,628,860,138.00**	**59,494,250,961.50**	**82,532,377,259.40**

Table 9.34 – Number of Sorted Companies, 1961-1970

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Industry	12	12	13	13	13	14	16	19	19	19
Shipping	17	18	18	18	19	19	19	19	19	18
Insurance	4	4	4	4	4	4	4	4	4	4
Banking	4	4	5	5	5	5	5	5	5	5
Total	37	38	40	40	41	42	44	47	47	46

Table 9.35 – Number of Sorted Companies, 1971-1980

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Industry	21	21	20	21	21	21	21	21	22	22
Shipping	20	20	20	20	20	20	20	19	18	16
Insurance	3	4	4	4	4	3	3	3	3	2
Banking	5	5	5	5	4	4	4	4	4	1
Total	49	50	49	50	49	48	48	47	47	41

Table 9.36 – Number of Sorted Companies, 1981-1989

	1981	1982	1983	1984	1985	1986	1987	1988	1989
Industry	22	22	22	22	18	16	15	14	14
Shipping	14	14	14	13	9	7	6	6	5
Insurance	2	3	3	3	3	3	3	3	2
Banking	1	1	1	1	2	3	3	3	3
Total	39	40	40	39	32	29	27	26	24