STOCKHOLM SCHOOL OF ECONOMICS
Department of Accounting
Master thesis in Accounting & Financial management
Fall 2014

On the Relationship between Reported Earnings and Earnings Concepts

A Study on the Relationship between Net Income and the Two Ideal Earnings Concepts; Permanent Earnings & Economic Earnings

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Abstract

Permanent earnings and economic earnings are two conventional concepts often referred to as "properly measured" or "ideal" earnings. These concepts represent two opposing views on what income is and how it relates to value. Economic earnings relate to the change in (cum-dividend) value, whereas permanent earnings relate to the actual value and can thus be used as a valid starting point for valuation. Permanent earnings can be defined in two ways depending on the choice of capitalization rate: i) the risk-free rate or ii) the cost of equity. A recent study on US data conducted by Grambovas, Garcia, Ohlson and Walker (2014) found that net income, measured on a long-term average, tends to approximate permanent or economic earning more or less depending on the accounting in place. This paper replicates the aforementioned study to examine whether similar results can be obtained on Swedish data, and also investigates if the relationship between net income and the earnings concepts has changed over time. The purpose is to gain a better understanding of what the bottom line in the income statement represents and how it relates to value. The question is examined quantitatively by analyzing the difference between net income and the two earnings concepts respectively. In line with the results on US data, the results in this study indicate that net income overall is closer to permanent earnings than to economic earnings. In addition, the short-term risk-free rate seems to be the appropriate choice on a long-term average, while the cost of equity seems to be more appropriate for the later time period studied (2000-2013). In contrast to the study on US data, no significant differences between the two investigated industries were found on Swedish data. The differences over time are therefore considered to be a consequence of the volatile inflation rate rather than the accounting in place.

Keywords: Reported Earnings, Net Income, Permanent Earnings, Economic Earnings, Earnings Concepts
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Acknowledgements

We would like to thank our tutor Kenth Skogsvik for invaluable inputs, guidance and support throughout the thesis project. We would also like to thank Martin Walker and Juan Garcia for their guidance, Per-Olov Edlund for his support regarding statistical issues and Erik Eklund for his help to access and process data. Finally, we would like to express our gratitude to our family and friends for the support and contributing advice.

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1. Introduction

Earnings is one of the most central concepts in accounting. In academia, *permanent earnings* and *economic earnings* are two conventional concepts often stated to represent "properly measured" or "ideal" earnings. The concept of properly measured earnings has a long history in the accounting research (Paton, 1922; Canning, 1929; Edwards & Bell, 1961; Chambers, 1966; Sterling, 1970) and is defined as earnings without any measurement error (Beaver, Lambert & Morse, 1978; Ryan, 1988). These two earnings concepts differ in one important aspect. Economic earnings relate to the change in (cum-dividend) value, whereas permanent earnings (sometimes also referred to as sustainable earnings) relate to the actual value.

In earnings-based valuation, the ideal input is an income figure capturing the part of earnings that is expected to persist into the future (Cornell & Landsman, 2003). Presuming that earnings are associated with stock prices, permanent earnings could thus become a valid starting point for the valuation of equity. In line with the logic in the widely used Gordon growth model (Gordon, 1959), permanent earnings can be related to equity simply by capitalization with an appropriate discounting rate. Economic earnings, on the other hand, are not related to stock prices through a discounting rate, but rather reflect the change in stock price adjusted for the year's dividend. In an ideal setting with perfect fair value accounting, economic earnings and net income would be equal since market and book values would correspond exactly.

The common view that bottom-line earnings are not the optimal input for valuation has led to the presumption of a non-existing link to the ideal earnings figure one seeks. Given that earnings are viewed as only an output of a detailed accounting process, and that it is not explicitly stated in any accounting standards that net income is intended to be a measure of value, one can generally not expect (reported) earnings to be value-sufficient (Ohlson, 1983). As opposed to the views on permanent and economic earnings, reported earnings are considered to contain both the properly measured part and the error. The error is also referred to as "noise", and consists of transitory items that are usually regarded as value-irrelevant (Beaver & Morse, 1978). For valuation, the desired figure is thus one resembling the firm's permanent earnings.

Following from the definitions, the two ideal earnings concepts, permanent earnings and economic earnings, represent two opposing views on what income is and how it relates to value. Although these earnings concepts are well elaborated upon in the literature, going back as far as Graham & Dodd (1934) and Hicks (1939), limited research about their relation to net income has been conducted. However, a recent study (2014) by Grambovas, Garcia, Ohlson and Walker (hereafter referred to as GGOW) investigates the relation between reported earnings and the two

ideal earnings concepts on US data. It is found that net income, measured on a long-term average, tends to approximate permanent or economic earnings more or less depending on the accounting in place. The empirics show that overall, net income is closest to permanent earnings, and that the risk-free rate is the most appropriate discounting rate for the majority of the time period studied. Leaning on this notion, permanent earnings could possibly be substituted by net income in the permanent earnings formula, and thus act as a starting point in the simple valuation of equity suggested above. However, the relation between net income and the ideal earnings concepts is shown to vary a lot over time, and only on a long-term average can net income be seen as an approximation of permanent earnings.

1.1 Purpose

This paper aims to study the relationship between reported earnings (net income) and the two "properly measured" earnings concepts permanent earnings and economic earnings. The purpose is to gain a better understanding of what the bottom line in the income statement represents by investigating if the figure is closer to being a measure of change in value or a measure of actual value that can be used for valuation. A replication of the study conducted by GGOW is performed to examine whether similar results can be obtained on Swedish data. Given the assumption that the relation between reported earnings and the ideal earnings concept depends on the accounting in place, two industries are examined to shed light on the presumed differences between them. The study aims to find an answer to the following research question:

Is net income a better approximation of permanent earnings or of economic earnings, and does the relation between net income and these concepts differ between industries assumed to apply different types of accounting?

In addition, it is interesting to investigate how the relationship has developed over time along with changes in accounting standards and variations in the economic climate. The second part of the analysis therefore addresses the sub question:

Has the relation between net income and the ideal earnings concepts changed over time?

1.1.1 Scope

The study is performed on Swedish companies listed anytime between 1979 and 2013. The time period has been chosen based on the availability of data and the time period studied in GGOW (2014), in order for the results to be comparable. The study is limited to the Swedish market to ensure that all companies have applied the same accounting practices throughout the period. The data used in the study is net income, market capitalization at the end of the financial year, the

total dividends paid, the risk-free rate and an estimation of the cost of capital. These figures are thereafter used to calculate the different earnings concepts.

1.2 The GGOW study

The GGOW (2014) study is performed on US data for the period 1976 to 2013, comparing financial and industrial firms. These two industries are chosen because of their presumed differences in the accounting applied (fair value accounting and historical cost accounting respectively), which are expected to generate different results. Given that the concept of economic earnings explains change in value, it has a natural connection to fair value accounting (GGOW, 2014). Consequently, firms applying fair value accounting (i.e. financial firms) are hypothesized to report earnings more similar to economic earnings than permanent earnings, since market values and book values coincide when all assets and liabilities are reported at fair value. In addition, the cost of equity is expected to be a better capitalization rate for permanent earnings when fair value accounting is used, while the risk-free rate is expected to be more appropriate for firms with conservative accounting practices.

The GGOW (2014) study relies on the assumption that the various earnings concepts are observable. Assuming an efficient market, stock prices are used as inputs for calculating the ideal earnings concepts. Three different concepts of earnings are studied: permanent earnings using the risk-free rate, permanent earnings using the cost of equity, and economic earnings (no discounting rare required). The first two concepts are measures of actual value, while the third concept measures change in value.

1.1.2 Main findings on US data

The main analysis in GGOW (2014) evaluates the sign of the difference between net income (as reported under US GAAP) and the calculated permanent earnings (as defined in equation 2, see section 2.3.1.2). If net income is a good approximation of permanent earnings, a 50/50 distribution between positive and negative differences is expected. In addition, economic earnings are compared to both net income and permanent earnings. The empirical findings indicate that companies' reported earnings in general are closest to permanent earnings capitalized by the risk-free rate. The empirics also show that the difference tends to be positive or negative in cycles, so only the long-term average can be viewed as approximating zero. The relation is dependent on the current size of the discounting rate as well as whether the companies' P/E ratio is high or low. In periods when the interest rate or the average P/E ratio is low, permanent earnings capitalized by the cost of equity are found to be a better approximation of net income.

As expected, the cost of equity is a better capitalization rate for financial firms. The application of fair value accounting results in a lower P/E ratio on average (since the difference between accounting values and book values is smaller), resulting in the cost of equity being more appropriate than the risk-free rate when capitalizing permanent earnings for these firms.

1.3 Main findings on Swedish data

The results obtained in this study on Swedish data differ somewhat from the results on US data. No clear difference is found between the two studied industries when net income is compared to permanent earnings capitalized by the risk-free rate. The distribution for both industries circulates around 50%, indicating that net income is a good approximation of permanent earnings measured on a long-term average. The difference between economic earnings and net income is somewhat higher, and the hypothesis of the distribution of positive differences being 50% is rejected for both industries. It thus seems like net income is closer to permanent earnings for both industrial and financial firms.

In addition, large differences over time are observed. The distributions of firms with a positive difference between net income and permanent earnings for the period 1979-1999 are considerably lower than the distributions for the latter period (2000-2013). This difference is assumed to be due to i) changes in accounting standards over time and ii) changes in the inflation rate, and hence the risk-free rate. However, the analysis indicates that the latter is more likely, since the distribution between net income and economic earnings do not change considerably over time.

In line with the results on US data, this study confirms that the appropriate choice of discounting rate for calculating permanent earnings differs over time. The short-term risk-free rate seems to be the appropriate choice on a long-term average, while the cost of equity seems to be more appropriate for the latter period, i.e. when the risk-free rate (and the inflation) is considerably low. During the first period, when the inflation is high, neither of the discounting rates are appropriate, and neither of the ideal earnings concepts are close to net income.

2. Previous research

2.1 Background

Earnings' central role in accounting has resulted in an abundance of literature on the subject. Two perspectives of net income have emerged, where the bottom-line figure is either viewed as a measure of value creation (Graham & Dodd, 1934; Hicks, 1946; Black, 1980, 1993; Ryan 1988) or a signal of the firm's ability to generate value (Ball & Brown, 1968; Beaver, 1968; Easton & Harris, 1991; Strong & Walker, 1993). However, accounting income has not always had a connection to valuation. Research has mainly been concerned with the methodology of measurement, rather than how the income measure should be interpreted (Willard, 1965). In the beginning, accounting was regarded primarily as a recordkeeping and disclosure function, and only secondly a valuation function (Littleton, 1928, 1929). Before the stock market crash in 1929 the accounting was dominated by the balance sheet, with no legal requirements of preparing an income statement. As a result of the Great Depression, disclosure of an audited income statement became mandatory and the interest for the definition of income increased.

The first clear definition of income from an economic point of view is to many accredited to Hicks, stating that: "*A man's income is defined as the maximum value which he can consume in a week, and still expect to be as well off at the end of the week as he was at the beginning*" (Hicks, 1939, p. 172). This notion is referred to as "the central concept", but has no direct connection to either accounting or valuation. According to Hicks, income is intended to measure change in wealth during a period of time, and the issue of interest is thus whether value has been created or destroyed during the period.

Hicks' definition indicates that income must been regarded from a certain perspective. One must take a stand on whom it is that should be as well off at the end of the period, i.e. for whom the value is created (Artsberg, 2003). Another issue is the usefulness of accounting information, and ultimately the bottom-line earnings. The question about to whom (and for what) the number should be useful affects both how income should be measured and what it should include. May argues that whether the accounting is good or not lies in its usefulness for the whole society, not any specific group (May, 1950). This ideal is difficult to achieve since there are many potential users of accounting information, but only one single bottom-line measure (Runsten, 1998). As denoted in Edwards and Bell (1961), "…*no single [profit] concept serves all purposes best*" (p. 121), and consequently many different suggestions are made in the literature. In a valuation setting, the ideal is an income figure capturing the persistent components of earnings (Cornell & Landsman, 2003), i.e. the firm's permanent earnings (Graham & Dodd, 1934; Black, 1980), whilst operating

income, for example, is preferable when evaluating a firm's operational efficiency. Hence, net income is by many regarded as a compromise of accounting principles, and thus an earnings measure that cannot be optimal to all users' specific needs (Patell, 1989).

Since the measurement of net income is dependent on the definition and recognition of revenue and costs, the underlying accounting standards will affect the outcome and ultimately what kind of value the number possibly reflects (permanent earnings or economic earnings). Swedish accounting practices have historically been conservative, leaning on the precautionary principle, which can partly be explained by the strong German influence (Artsberg, 2003). The precautionary principle has been strong in the US as well, but it has been applied with reasonable precaution[1], with stricter rules regarding income smoothening with hidden reserves and more emphasis on a true and fair view (Ibid.).

In contrast to the US accounting culture, representatives in both academia and business emphasized a smooth income measure by a wide use of untaxed reserves in Sweden during the 1980's. In that way, fluctuations caused by alterations in business cycles could be avoided, resulting in a less volatile net income figure. However, the increased globalization lead to a tax reform in 1990/1991, resulting in restricted rules regarding the use of untaxed reserves. The accounting system with this kind of hidden reserves was argued to be an obstacle for international capital providers because of the difficulties in understanding the financial reports (Artsberg, 2003). Consequently, the income measure became more sensitive to fluctuations in business cycles, but also more comparable with other countries.

2.2 Earnings in a valuation context

2.2.1 Defining value

A company's value is generally defined as the value of its equity. This value is observable in two places, namely the stock market and the balance sheet. These two concepts of value are referred to as market value and accounting value respectively (Runsten, 1998). Market value is the total value of a firm's outstanding shares while accounting value is the book value of owners' equity. The value of a company can also be estimated through different types of valuation models, then referred to as economic value (Ibid.). When estimating a firm's economic value, market value is what one is trying to approximate. These two concepts are therefore often used synonymously as representing the "true" value of a company. The accounting value will be more or less similar to

[1] The authors' own translation of "rimlig försiktighet".
[2] The present value of expected dividends model.

the true value depending on the accounting in place, and the size of the permanent measurement bias.

2.2.2 The permanent measurement bias

The permanent measurement bias (PMB) consists of two parts: business goodwill and the measurement error between the book value and the market value of owners' equity. Over time, business goodwill is reduced due to market forces (Skogsvik, 1993; Runsten, 1998), while the bias caused by the accounting remains. When business goodwill ≈ 0, PMB is defined as V_T/B_T-1, where V_T is the market value of equity and B_T the book value of equity. If all assets and liabilities are "correctly" valued, i.e. if the accounting process generates a value corresponding to the market value, the PMB is zero. Swedish accounting practices have historically emphasized objectivity and reliability, which have resulted in prudent measurement rules based on actual transactions (Ibid.). In the income statement, losses have been recognized early and gains realized late, and in the balance sheet assets have been valued low and liabilities high. The accounting value determined based on Swedish accounting rules can therefore not be regarded as a good estimate of the "true" value (Ibid.). Pharmaceutical companies, for instance, tend to have a very high PMB because of their large R&D expenditures. Had all these expenditures been capitalized, the accounting value would have corresponded better to the market value.

In line with accounting practices' impact on measurement, firms applying fair value accounting will by definition have a smaller difference between market values and book values, i.e. a smaller PMB. Financial assets should according to the International Financial Reporting Standards (IFRS) be measured at either fair value or at amortized cost, depending on the character of the assets. Fixed assets, on the other hand, such as production plants and machinery, are typically valued at historical cost. The recorded value of these assets is therefore likely to be relatively low, resulting in a higher PMB. The way assets and liabilities are accounted for in the balance sheet also affect the income statement and thus the reported earnings; either through depreciation when applying historical cost accounting or through fair value changes when applying fair value accounting.

2.2.3 Valuation models

Decades of research have resulted in numerous valuation models, which are either based on discounted cash flows or accounting information (Lev, 1989; White, Sondhi & Fried, 2003). Given that the clean surplus relation holds and that the appropriate discounting rate is used, all models should (in theory) generate the same result (Cornell & Landsman, 2003). However, most models require the user to make assumptions about the (unknown) future, and therefore the

results often differ (White, Sondhi & Fried, 2003). The basic reasoning in earnings-based valuation is the idea of a permanent earnings stream that the firm can generate in perpetuity. The value of a company is then estimated as the capitalized value of its future value creation. In this setting, the role of earnings is not to measure value changes (as economic earnings do), but rather the actual value of the firm.

2.2.3.1 Cash-based valuation

Discounted cash flow (DCF) models can be applied with alternative measures of cash flows, free cash flows or dividends for instance (White, Sondhi & Fried, 2003). The free cash flow model values the whole firm, not just its equity, and the input used is therefore cash flows available to all investors (both debt and equity holders). In the dividend discount model (also referred to as PVED)[2], the discounted cash flows are future dividends paid to equity holders, resulting in the value of the firm's equity. Earnings are fundamental to the use of PVED, since future dividends depend on the firm's future earnings stream (Ibid.). By assuming a payout ratio, earnings implicitly represent a cash flow. Given a payout ratio of one, all earnings are paid out as dividends and the two concepts coincide. The PVED model also serves as an underlying framework in many other valuation models (the residual income valuation model and the calculation of permanent earnings for example).

2.2.3.2 Accounting-based valuation

Using the residual income valuation (RIV) model (Preinreich, 1938; Peasnell, 1982; Ohlson, 1995), a company's value is derived by adding the book value of equity to the present value of the residual income. Residual income is calculated as the (opening) book value of owners' equity (BV) times the difference between the return on equity (ROE) and the cost of equity (r_E). Since BV times ROE equals net income, the RIV model indirectly values the company based on its earnings. The RIV model also takes the difference between book values and market values (i.e. the PMB) into account in the terminal value. Not adjusting for this difference results in an underestimation of the economic value since book values are usually lower than market values due to conservative accounting.

Another accounting-based model is the abnormal earnings growth (AEG) model; a simple valuation model based on the capitalization of forecasted earnings (Ohlson, 2005; Ohlson & Juettner-Nauroth, 2005). Given that the clean surplus relation holds, the AEG model is closely related to RIV with the distinction that the AEG model relies on future earnings and earnings

[2] The present value of expected dividends model.

growth instead of current book values. If the measurement bias is zero, the model will simply work as a bank account, where interest income (earnings) divided by the interest rate (the cost of equity) equals the value of the savings (the firm). Since the model is based solely on earnings it is sensitive to transitory items. The ideal would thus be to use the firm's permanent earnings stream as input. As presented in GGOW (2014), an augmented version of the AEG model emerges if permanent earnings can be capitalized by the risk-free rate (see equation 2 in section 2.3.1.2).

2.2.3.3 Multiples

One of the simplest techniques to estimate a company's value is multiple analysis. A common earnings multiple is the Price-to-Earnings (P/E) ratio, where (market) price per share is divided by (reported) earnings per share (EPS). Although net income is used in the denominator in the standard version of the P/E ratio, the desirable figure is one resembling the firm's permanent earnings. The most common way to estimate a firm's permanent earnings in practice is to make adjustments to reported net income (Graham & Dodd, 1934; White, Sondhi & Fried, 2003). As the earnings number in the denominator approaches permanent earnings, the value retrieved using the P/E ratio approaches the true value.

Since the accounting applied affects reported earnings, the P/E ratio will also be affected. Firms in different industries will have a more or less "correct" P/E ratio depending on the accounting in place, i.e. whether the earnings number is depressed by conservative accounting or based on fair values. The application of fair value accounting tends to result in a lower P/E ratio since the difference between price and earnings is smaller. For valuation purposes, the ideal scenario would be to have a set of accounting rules making the P/E ratio as constant as possible, the number 10 for example (Black, 1980). If the current earnings figure includes all relevant information about the past and the future, analysts can simply multiply it with the standardized P/E ratio to get an estimate of the company's value. Explicitly stating the objective of a constant P/E ratio will lead to more useful earnings figures, and a closer connection between changes in earnings and changes in stock price (and consequently changes in value) (Ibid.).

2.3 Earnings concepts

In addition to the definition and measurement of reported earnings, different concepts of "properly measured" or "ideal" earnings are elaborated upon in the literature (Paton, 1922; Canning, 1929; Edwards & Bell, 1961; Chambers, 1966; Sterling, 1970). Properly measured earnings are defined as earnings without any measurement error (Beaver, Lambert & Morse, 1980; Ryan, 1988) and are often represented by permanent or economic earnings. Under certainty, i.e. when future earnings are known, the two concepts are identical (Beaver, 1981).

Introducing uncertainty results in economic earnings being strictly larger than permanent earnings (Beaver, 1981; Ryan, 1988; GGOW, 2014). Permanent earnings can thus be regarded as the portion of economic earnings that is expected to persist into the future, since economic earnings are affected by all value changes, including transitory items, whereas permanent earnings are not (Ryan, 1988). The main difference between these concepts under uncertainty is what they are intended to measure, economic earnings being a measure of change in value and permanent earnings being a measure of actual value.

2.3.1 Permanent earnings

2.3.1.1 Permanent vs. transitory components

A large part of the research regarding earnings have focused on methods for identifying and separating the permanent and transitory components of earnings – either by adjusting the reported income figure by removing separate line items or using statistical models (Beaver & Morse, 1978; Ramesh & Ramu Thiagarajan, 1992; White, Sondhi & Fried, 2003).

Transitory items are associated with almost all line items in the income statement, making it almost impossible to effectively separate them from the permanent part of earnings (Ramesh & Ramu Thiagarajan, 1992). Furthermore, transitory items occasionally do affect share prices, and can therefore not be regarded as value-irrelevant measurement errors (Ou & Penman, 1989; White, Sondhi & Fried, 2003). One approach on how to arrive at a measure of the firm's permanent earnings is to remove transitory items from reported income and then spread them out over a number of years. In this way the items are not ignored, but neither allocated to one specific year, resulting in a smoother earnings measure for long-term analysis. This approach is similar to the idea that the difference between permanent earnings and net income (i.e. the "error") actually approaches zero when measured as a long-term average (GGOW, 2014).

2.3.1.2 A formal definition

The first formal treatment of permanent earnings, and a definition of how to calculate it, is by many accredited to Ryan. Reported earnings are regarded as a combination of properly measured earnings and a measurement error, where permanent earnings reflect the properly measured earnings and the error consists of transitory items (Beaver, Lambert & Morse, 1980; Ryan, 1988). Under the assumption of an efficient market, full payout ratio, and price being equal to the discounted value of expected future dividends (i.e. PVED holds), a company's permanent earnings can be derived from its stock price:

$$x_t = (P_t + Div_t)\frac{r_E}{(1 + r_E)} \quad (1)$$

Where x_t is permanent earnings at time t, (P_t + Div_t) is the cum-dividend value, i.e. the market value including the year's dividend, at time t, and r_E is the required rate of return on owners' equity (i.e. the cost of equity). As the definition implies, the stock price and a discounting rate, preferably the company-specific cost of equity, are required in order to estimate a firm's permanent earnings. Clearly, there is a presumed link between permanent earnings and stock price, indicating that the stock price is based on the expected permanent earnings (Beaver & Morse, 1978).

For firms applying historical costs accounting, the risk-free rate (r_f) is suggested to be a more appropriate discounting rate when calculating permanent earnings (GGOW, 2014). Because of the high degree of conservatism in reported earnings, risk and growth are assumed to cancel out on average (for further explanation, see section 2.4.1), and the following version of the permanent earnings formula can be used:

$$x_t = (P_t + Div_t)\frac{r_f}{(1 + r_f)} \quad (2)$$

The permanent earnings formula can be rewritten in the form of a Price-to-Earnings ratio:

$$\frac{(P_t + Div_t)}{x_t} = c \quad (3)$$

Where c represents the earnings capitalization factor $(1+r_f)/r_f$.

2.3.2 Economic earnings

Economic earnings represent the change in value over a period of time. The concept is sometimes referred to as "Hicksian income", since the definition is based on Hicks' reasoning regarding what income is intended to represent. The concept is discussed in relation to permanent earnings as one of the properly measured earnings variables (Black, 1980; Ryan, 1988; GGOW, 2014). However, economic earnings are easier to calculate than permanent earnings since the calculation does not require any assumption about a discounting rate.

The definition of economic earnings in a valuation setting is dividend plus the change in price and represents the value received by shareholders at the end of the period. The basic idea is the same as the one presented by Hicks, but stock market value is used instead of capital value:

$$y_t = P_t + Div_t - P_{t-1} \quad (4)$$

Where y_t is economic earnings at time t, P_t the ex dividend value, i.e. the market value excluding the year's dividend, at time t, Div_t the expected total dividend, at time t, paid to shareholders, and P_{t-1} the ex dividend value at time t-1.

It has been suggested that all users of financial statements want an earnings figure measuring value and not change in value (Black, 1980). However, the increased use of fair value accounting results in reported earnings becoming more like economic earnings than permanent earnings. Under perfect fair value accounting, book values and market values coincide, and net income corresponds exactly to economic earnings (GGOW, 2014).

2.4 The choice of discounting rate

An important aspect of valuation is that the discounting rate used in the denominator matches the cash flows in the numerator. When valuing bonds, for example, the cost of debt should be used since the cash flows in the numerator belong to debt holders. Dividends, on the other hand, are cash flows going to equity holders, and therefore the cost of equity is the appropriate discounting rate. The cost of equity consists of two parts, namely the risk-free rate and a risk-premium. If the cash flows are considered certain, without any risk, the risk-free rate can be used as a discounting rate.

2.4.1 Risk-growth cancellation

The natural choice of discounting rate when calculating permanent earnings is, as noted in Ryan (1988), the cost of equity, given the formula's origin from the PVED model. Another approach, presented in GGOW (2014), is to use the risk-free rate as a discounting rate. As denoted in Black (1980), the capitalization factor (c) in the permanent earnings formula (see equation 3) does not have to be derived from the cost of equity, but could instead equal a constant (GGOW, 2014). The risk-free rate is more convenient to use than the cost of capital since it is observable and does not have to be calculated. The idea is referred to as *risk-growth cancellation* and based on the assumption that earnings growth and earnings risk on average cancel out. However, this does not imply that the model is risk-neutral.

The classic Gordon growth model is used to develop an intuitive understanding as to why the risk-free rate could be an appropriate discounting rate:

$$P_t = \frac{Div_t(1+g)}{(r_E - g)} \tag{5}$$

Where P_t is the stock price at time t, Div_t the expected dividend at time t, r_E the cost of equity, and g the earnings growth rate. Assuming full dividend payout, Div_t equals earnings (X_t). The

assumption of a full payout ratio implicitly anticipates a case of no growth, since all earnings are paid out as dividends and nothing is reinvested in the company. In the Gordon growth model, g in the numerator is replaced by r_E in the no growth case. The model can hence be rewritten as:

$$P_t = \frac{X_t(1 + r_E)}{(r_E - g)} \tag{6}$$

Rearranging the formula results in:

$$\frac{P_t}{X_t} = \frac{(1 + r_E)}{r_E - g} = \frac{(1 + r_E)}{(r_f + r_{pm}) - g} \tag{7}$$

Where r_{pm} is the equity risk premium and all other variables as previously defined. If one then considers the possibility that the equity risk premium approximately equals the growth rate, the capitalization factor becomes: $(1+r_E)/r_f$, since r_{pm} and g cancel each other out in the denominator. With reasonable values of r_f and r_{pm}, $(1+r_E)/r_f$ roughly corresponds to $(1+r_f)/r_f$. For example, assuming a risk-free rate of 4% and a cost of equity of 8%, $(1+r_E)/r_f = (1+0.08)/0.04 = 27$ whereas $(1+r_f)/r_f = (1+0.04)/0.04 = 26$, and the risk-free rate can thus be used when calculating permanent earnings (GGOW, 2014). Setting aside the role of dividends, the capitalization factor can be approximated by $1/r$[3]. The permanent earnings formula thus suggests that the Earnings-to-Price (E/P) ratio can be approximated by the chosen discounting rate (Ibid.). $E/P \approx r_E$ indicates a case of no cancelling out between risk and growth (as insinuated in Ryan (1988)), while $E/P \approx r_f$ is an indication of full cancelling out[4] (see Appendix 1). The idea about risk-growth cancellation is thus implicitly tested in the GGOW (2014) study by the choice of discounting rate.

The degree of risk-growth cancellation, and thus whether the risk-free rate is appropriate as a capitalization factor, seems to depend on the accounting practices in use and the extent to which risk and growth are reflected in the reported earnings number (GGOW, 2014). Firms applying historical cost accounting tend to have a higher degree of risk-growth cancellation than firms applying fair value accounting (Ibid.), suggesting that the value will be overstated if the risk-free rate is used for companies applying fair value accounting (due to the applied discounting rate being too low).

[3] Assuming a risk-free rate of 4%, $r_f/(1+r_f) = 26$ while $1/r_f = 25$.

[4] A concept developed in GGOW (2014) indicating that risk and growth fully cancel out in reported earnings.

2.4.2 The Fed model

The idea of risk-growth cancellation is inspired by the *Fed model*, a valuation model for comparing the expected earnings yield of the stock market with the 10-year government bond yield (i.e. the long-term risk-free rate)[5]. The Fed model is defined as:

$$\frac{E(X_{t+1})}{P_t} = Y \tag{8}$$

Where P_t is the price in period t, $E(X_{t+1})$ the expected earnings in period t+1 and Y the 10-year government bond yield. In a similar manner as in GGOW (2014), the Fed model does not refer to risk or growth, but instead rely on a risk-free rate when capitalizing earnings. The difference is that GGOW use the short-term risk-free rate (the 1-year treasury bill rate), while the Fed model is based on the 10-year risk-free rate. In addition, GGOW capitalize current earnings instead of expected future earnings.

The Fed model leans upon the assumption that stocks and bonds are competing assets, meaning that investors are indifferent whether to invest in a bond or a stock. The expected earnings yield, E/P, of a stock index tends to move in the same direction as the treasury bond yield, Y, making it possible to predict price movements in the equity market. If E/P is much less than Y, one can expect a decrease in the equity price P (and hence an increase in E/P) since investors will shift funds from equity into bonds. The equilibrium, where stocks and bonds are correctly valued, thus occurs when the one-year forward-looking earnings yield (E/P) equals the 10-year government bond yield, as shown in equation 8.

There are a several empirical studies confirming the logic of the Fed model (Berge & Ziemba, 2003; Koivu, Pennanen & Ziemba, 2005), but the model has also received criticism with researchers questioning both the underlying assumptions and the empirical evidence backing it up (Estrada, 2005, 2009) A major deficiency is that the model compares a real number (E/P) to a nominal number (Y), resulting in an inconsistent treatment of the effect of inflation (Asness, 2003; Campbell & Vuoteenho, 2004). Furthermore, the empirics only confirm a descriptive power of the Fed model, describing how investors actually set current market P/E ratios, making it unsatisfactory as a forecasting tool for long-term stock returns (Asness, 2003).

2.4.3 Certainty equivalent earnings

Another approach is to regard reported earnings (under historical cost accounting) as a form of certainty equivalent earnings (GGOW, 2014). Investors are generally risk-averse and thereby

[5] The relationship was first mentioned in the Humphrey-Hawkins report released the 22nd of July 1997.

willing to accept a lower amount for certain than to take on risk and hope for a realization of higher *expected* cash flows. The appropriate discounting rate for a cash flow without risk is, as mentioned earlier, the risk-free rate. If net income is regarded as an approximation of these certain earnings, no risk is involved and the risk-free rate should thus be used. Assuming that net income can be used as an approximation for a firm's permanent earnings, the expected permanent earnings are certainty equivalent earnings, and can also be discounted by the observable risk-free rate instead of the cost of capital.

3. Hypotheses

Based on previous research and the results from the GGOW (2014) study, seven hypotheses are outlined below. Hypotheses 3.1-3.4 rely on a comparison between industrial and financial firms in order to investigate if the results on Swedish data are similar to the results on US data presented in GGOW (2014). Hypotheses 3.5-3.7 extend the analysis and provide a more comprehensive view of the topic by altering the income measure, investigating the size of the error between net income and the ideal earnings concepts as well as examining an additional industry. A summary of the hypotheses is presented in the table below.

Overview of hypotheses

Hypothesis	Test	One industry		Differences between industries	
3.1	NI-IPE	H_0: $\mu = 0{,}5$	H_1: $\mu \neq 0{,}5$	H_0: $\mu_{INDU} - \mu_{FIN} \geq 0$	H_1: $\mu_{INDU} - \mu_{FIN} < 0$
3.2	EE-NI	H_0: $\mu = 0{,}5$	H_1: $\mu \neq 0{,}5$	H_0: $\mu_{INDU} - \mu_{FIN} \geq 0$	H_1: $\mu_{INDU} - \mu_{FIN} < 0$
3.3	EE-IPE	H_0: $\mu \leq 0{,}5$	H_1: $\mu > 0{,}5$	Not tested	Not tested
3.4	E/P - (1/c)	H_0: $\mu = 0$	H_1: $\mu \neq 0$	Not tested	Not tested
3.5	Avg NI-IPE	H_0: $\mu = 0{,}5$	H_1: $\mu \neq 0{,}5$	H_0: $\mu_{INDU} - \mu_{FIN} \geq 0$	H_1: $\mu_{INDU} - \mu_{FIN} < 0$
3.6	Avg Mean Error/NI	H_0: $\mu = 0$	H_1: $\mu \neq 0$	Not tested	Not tested
3.7	NI-IPE	H_0: $\mu = 0{,}5$	H_1: $\mu \neq 0{,}5$	N/A	N/A

NI is net income as reported in the income statement. IPE are the implied permanent earnings calculated as $(P_t + Div_t) \times (r_{t-1} / (1 + r_{t-1}))$, *where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and r the discounting rate (the risk-free rate or the cost of equity). EE are the economic earnings calculated as* $P_t + Div_t - P_{t-1}$, *where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and* P_{t-1} *market capitalization at the beginning of the fiscal year. The difference between the cum-dividend E/P ratio and the inverse of the capitalization factor (1/c) is calculated as* $NI_t / (P_t + Div_t) - (r/(1+r))$, *where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and r the discounting rate (the risk-free rate or the cost of equity). Mean error is calculated as the average of net income minus implied permanent earnings and economic earnings respectively, divided by total net income for the same year.*

3.1 Permanent earnings vs. net income

The first hypothesis studies the difference between net income and permanent earnings in order to investigate if net income is a good approximation of value, which permanent earnings by definition are intended to represent. When studying net income and permanent earnings for a specific year, it is clear from previous research that the two measures will differ because of the existence of transitory items in the reported earnings number. However, by extending the time span and running the analysis on a long-term average, the effect of the transitory items is smoothed out over the years. It is thus possible that net income actually resembles permanent earnings when measured over a longer time period. Since the companies differ in size, it is deemed appropriate to look at proportions rather than absolute differences. Therefore, the sign of the difference is investigated, i.e. the proportion of firms with a positive difference ("positive-

sign firms") and negative difference ("negative-sign firms") between net income and permanent earnings are compared. If net income is a good approximation of permanent earnings, the proportion of positive firms should be 50%.

This hypothesis is tested with three different discounting rates to investigate which one is the most appropriate. As a starting point, the short-term risk-free rate is used in order for the results to be comparable to the GGOW (2014) study. Secondly, the long-term risk-free rate is tested, as this is the rate expected to move in the same direction as the expected earnings yield (E/P) in the Fed model. Finally, the cost of equity is applied since that is the discounting rate used in the original permanent earnings formula developed in Ryan (1988), and thus the natural choice.

In addition to the hypothesis about net income resembling permanent earnings, differences between the two industries (financials and industrials) are tested. GGOW observed contrasting results depending on the accounting in place, suggesting that the risk-free rate is a better capitalization rate for firms with conservative accounting practices and thus a higher degree of risk-growth cancellation in reported earnings. The cost of equity, on the other hand, is a more appropriate discounting rate for firms with net income closer to economic earnings, i.e. firms applying fair value accounting (GGOW, 2014). The degree of risk-growth cancellation is possibly lower for these companies, and the risk-premium cannot be disregarded. It is thus reasonable to expect that the results will differ depending on industry because of differences in applied accounting practices. Net income is therefore expected to be closer to permanent earnings for industrial firms when using the risk-free rate and for financial firms when using the cost of equity. The proportion of positive-sign firms is always expected to be larger for financials, since reported earnings with fair value accounting tend to resemble economic earnings more (Ibid.).

3.2 Economic earnings vs. net income

The second hypothesis studies the difference between net income and economic earnings in order to investigate if net income is a measure of change in value, which economic earnings by definition are intended to represent. If net income is a good approximation of economic earnings, the proportion of positive-sign firms should be close to 50%, just as in the case of permanent earnings.[6] The natural link between economic earnings and fair value accounting makes it reasonable to expect that net income for firms applying this type of accounting will resemble economic earnings more than permanent earnings. Fair value accounting will result in

[6] Note that the opposite relationship is studied in this case, i.e. economic earnings minus net income, instead of net income minus economic earnings in order for the results to be comparable to the GGOW (2014) study.

an earnings number representing the change in value over the period, rather than a number directly connected to the actual value. In line with the results in the GGOW (2014) study, it is hypothesized that the proportion of positive-sign firms will be higher for financial firms than for industrial firms, because of their greater use of fair value accounting.

3.3 Economic earnings vs. permanent earnings

According to theory, economic earnings should (under uncertainty) exceed permanent earnings in most cases (Ryan, 1988; GGOW, 2014). This is because permanent earnings can be regarded as the part of economic earnings that is expected to persist into the future, and therefore do not include transitory items whereas economic earnings do. The results in the GGOW (2014) study support this notion for both financial and industrial firms in, and it is thus hypothesized that the test on Swedish data will generate the same results, i.e. that economic earnings will exceed permanent earnings in more than 50% of the cases.

3.4 Risk-growth cancellation

To investigate whether or not the chosen discounting rate is appropriate, the difference between the cum-dividend E/P ratio and the inverse of the capitalization factor is tested. If the discounting rate is correct in the sense of estimating permanent earnings, the difference between the two measures should be close to zero.

To determine which discounting rate is most suitable, both the short-term risk-free rate and the cost of equity are applied. It is expected that there will be observed differences both between the two industries and between the time periods investigated. When using the risk-free rate, a difference close to zero indicates full cancelling out between risk and growth. When using the cost of equity as the discounting rate, a difference close to zero indicates that risk and growth do not cancel out (see Appendix 1).

3.5 Average net income

In line with the perception that transitory items cannot be ignored but should instead be smoothed out over a period of time (White, Sondhi & Fried, 2003), average net income is expected to be a better measure of permanent earnings. By using a three-year average, the effect of the transitory items in a specific year is likely reduced, resulting in a smoother and less volatile earnings figure. If average net income is a better measure of permanent earnings, the distribution of positive-sign and negative-sign firms should be closer to 50% than in the first test. Both the short-term risk-free rate and the cost of equity are used as discounting rates.

Average net income will not be compared to economic earnings, since the measure of economic earnings already takes transitory items into account. The change in value for a period incorporates all value changes, including transitory items, and net income should thus include these in order to be comparable to economic earnings.

3.6 Mean error

An additional way to investigate the question of how well net income corresponds to permanent earnings is to look at the mean error. Net income is defined as "properly measured" earnings plus a measurement error, where permanent earnings represent the first term and transitory items are regarded to be the error (Ryan, 1988). By examining the size of the error, one will get an indication of how close net income is to permanent earnings. As mentioned above, the long-term average is considered rather than any specific year. If net income equals permanent earnings, the mean error should be zero. This hypothesis is tested for both the risk-free rate and the cost of equity, as well as on both industries.

The difference between economic earnings and net income also result in a difference, which is tested in the same way. If the two concepts are equal, the difference between them should approach zero over the long-term.

3.7 Other industries applying conservative accounting

Based on the assumption that the accounting practices in place is the reason for differences between industrials and financials, other industries with similar accounting practices should reasonably generate similar results. Apart from financial firms, there is no industry that clearly can be assumed to use fair value accounting to a large extent other than the forestry industry. However, the number of forestry firms in Sweden is few and would result in a sample too small for a study of this kind. Conservative accounting practices, on the other hand, are likely to be applied in several industries, such as consumer goods. As a form of robustness test, the hypothesis outlined in section 3.1 is therefore tested on companies categorized as "consumer goods". If net income can be regarded as an approximation of permanent earnings, the proportion of positive firms should be 50% for this industry as well.

4. Data

4.1 Sample selection

The study is based on data from Swedish firms listed on the Stockholm Stock Exchange anytime between 1979 and 2013. Statistical studies based on Swedish stock price data are, compared to studies on US data, in a sense delimited due to the comparatively small number of quoted firms. In addition, the structure of the financial industry differs between the countries, with Sweden having relatively few banks. During the time period investigated, an approximate total number of 900 firms have been listed on the Stockholm Stock Exchange. The total sample consists of 856 companies after filtering the population based on the following criteria:

i) The company must have been quoted on one of the specified lists (see section 4.2) for the majority of the time it has been listed.

ii) Accounting and stock price information must be available in at least one of the three following databases; Finbas, Serrano or Thomson Reuters Datastream.

iii) The firms must prepare its financial reports in accordance with Swedish GAAP before 2005 and IFRS after 2005. The applied accounting standards may affect the measurement of net income and thus cause inconsistent results if different standards are mixed.

Out of these 856 companies, 210 are categorized as industrial firms and 154 as financial firms (see section 5.2 for industry classification).

4.2 Sample description

The structure of the Stockholm Stock Exchange has changed during the studied time period. Shares were initially categorized into different lists depending on market capitalization and level of demand. In 2006 a new system came into force when Nasdaq OMX Nordic was introduced, separating stocks into different segments based on market capitalization solely (large cap, mid cap and small cap). The sample consists of firms whose shares at any point in time between 1979 and 2013 have been traded on the Stockholm Stock Exchange, including the A-list, the O-list, OTC, Attract 40 and "Most traded shares"[7]. First North can be regarded as the equivalent to OTC, but since this market is unregulated and all companies do not apply IFRS, this market has been excluded. Companies listed on any other Swedish Stock Exchange, such as the Nordic Growth Market (former SBI), Aktietorget and Fondhandlarlistan, have also been excluded from the

[7] The authors' own translation of "40 mest omsatta".

sample. The main reason for excluding these is the lack of regulations and thereby the potentially lower quality of financial reporting. In addition, foreign companies listed on the Stockholm Stock Exchange not applying Swedish accounting standards have been excluded from the sample.

Many companies are present in the sample for several consecutive years, or during the entire time period studied. As a consequence of the changes on the Stockholm Stock Exchange, some companies have therefore moved between different lists. If a company has been present on different lists, including those that have been excluded, the one that the company has been present on the majority of the time period has been used as a reference point. Many companies have started on Fondhandlarlistan for instance, and then proceeded to a regulated list where it has been present for the majority of the time period. In those cases, observations for the first years are included in the sample.

The sample is likely free from any survivorship bias, since the dataset contains both dead and alive companies.

4.3 Data collection

The data required for the study is net income, market capitalization at the end of the financial year, the total dividends paid and the risk-free rate. Yearly data is used for all variables in order to i) be comparable with the GGOW (2014) study and ii) because the formulas for calculating permanent and economic earnings both are based on yearly data.

The main part of the data has been collected from Finbas, a database with accounting and price information from Nasdaq OMX. As Finbas only includes data on net income and dividends between 1979-2009 and market capitalization between 1979-2011, data for the remaining years, and for missing observations, have been collected primarily from Serrano and Thomson Reuters Datastream (hereafter referred to as Datastream) and secondly from annual reports. While the time period 1979-2009 is long enough to calculate a long-term average for the different earnings concepts, the additional years are considered necessary to compare the results before and after the implementation of IFRS in 2005. Another reason for the extended time period is to have a longer comparable times series with the GGOW (2014) study.

There is always a potential risk of obtaining inconsistent and miss-specified data when using several secondary sources. However, considering the fact that net income, dividend and market capitalization are widely used variables, the risk is deemed to be relatively small in this study. The particular risks related to each specific variable are presented below.

4.3.1 Net Income

Net income excluding minority interest has been used in order to be comparable to stock price. Positive as well as negative values of net income are included in the dataset.

4.3.2 Market Capitalization

In total, approximately 500 observations have been added manually from Datastream. The definition of market capitalization is the total number of outstanding shares times share price in both Datastream and Finbas. However, the figures are not always equal, and the data quality in Datastream is deemed to be somewhat lower. Potential sources of differences are:

- *Conversion of shares*

  Some companies continuously convert class A shares into class B shares, an event that is taken into account the same year in Finbas, but probably later, or not at all, in Datastream.

- *The treatment of internal holdings*

  When calculating market capitalization the firm's own holding of shares should be subtracted. If this adjustment is not made, the market value will be overstated.

- *Directed share issues*

  In Finbas, directed share issues are adjusted for the same day they are registered, while updates are not made as frequently in Datastream.

- *Different classes of shares*

  Some companies only have one class of shares registered on the stock exchange. In Finbas, it is assumed that unquoted shares have the same price as the quoted ones, and market capitalization is thus calculated based on all shares. Datastream has no detailed description of how this issue is treated.

4.3.3 Dividends

In Finbas and Serrano total dividend for the year is the one suggested in the annual report, while Datastream reports the actual cash dividends paid. These figures are usually the same, since the suggested amount rarely is changed. However, it is not unusual with convertible bonds being converted into shares between the end of the financial year and the date of the dividend payment, resulting in a higher dividend amount than suggested. This difference is deemed to be very small relative to the total payment and should thus not affect the results significantly.

4.3.4 The risk-free rate

In the GGOW (2014) study the US 1-year treasury bill rate is used as an approximation of the short-term risk-free rate. In order for the results to be comparable, the Swedish equivalent, i.e. the Swedish 1-year treasury bill rate, is used in this study. In addition, the same tests are performed using the long-term risk-free rate since that could possibly be a more reasonable choice of discounting rate. The long-term risk-free rate is, as mentioned, used in the Fed model. As suggested in a report on interest rates and stock returns between 1856 and 2006 published by the Swedish national bank (Riksbanken), the Swedish 10-year government bond yield is used as an approximation for the long-term risk-free rate (Waldenström, 2007).

Data on the long-term risk-free rate between 1978 and 2013 in Sweden has been obtained from the above-mention report (Waldenström, 2007), supplemented by information from the Swedish national bank's database for historical market interest rates for the last years. Data on the Swedish 1-year treasury bill rate is only available from 1984-2008 in the database. In fact, 1-year treasury bills have not been priced at all for the earlier and later years, so naturally no data is available.[8] In order to conduct a study comparable with GGOW (2014) the 1-year risk free rate is required and has therefore been estimated for the missing years (see section 5.4.2).

4.4 Missing data

The availability of historical data on Swedish financial firms, in particular banks, is limited. One alternative would have been to completely exclude these firms (as in Runsten (1998)), but for the purpose of this thesis that was not a feasible option. To get information on financial firms listed between 1979 and 2013, stock exchange lists from Affärsvärlden for every fifth year have been used. For banks listed during the 70's, 80's and 90's no longer present on the stock market, the access to complementary data have been strongly restricted. For financial firms still active, or recently active, data has been collected from Datastream.

[8] In the report, the 1-month treasury bill rate is used as an approximation for the short-term risk-free rate.

5. Method

5.1 Research method

5.1.1 Hypothesis testing

A non-parametric approach is applied in order to investigate how permanent earnings and economic earnings relate to net income. Because of the differences in size between the companies, and between the different earnings measures, this approach is considered to be a good starting point for the analysis. Non-parametric methods are simple to apply and usually work with ranks or with counts of values above or below the mean or median. In GGOW (2014) the sign of the difference between the earnings concepts is evaluated, where the proportion of positive-sign firms is calculated and compared to an expected 50/50-proposition. The results are also examined on a value-weighted basis, where market cap for firms with a positive difference is divided by total market capitalization for all firms. The same method is applied in this study in order for the results to be comparable.

The distributions are calculated on the full sample of 2473 and 1533 firm-year observations for industrial and financial firms respectively. However, since the hypotheses outlined in section 3 are not tested for each specific year, but rather on a long-term average, each year is considered to be one observation when testing the hypotheses. This results in a total of 35 observations (1979 to 2013) for each industry. The industries are viewed as independent samples.

To investigate whether the distributions are significantly different from the expected mean of 50% respectively 0 (depending on the hypothesis, see section 3), and to investigate whether there are any differences between the two industry means, a t-test is used. A double-sided test is performed when testing if the distributions for the respective industries are different from the mean, and a one-sided test is performed when the two industries are compared to each other. A significant level of 5% is used throughout the study. For the double-sided test, a significant result (i.e. a p-value below 0,05) indicates that the null hypothesis of the distributions being equal to the expected mean can be rejected. For the one-sided test, a significant result indicates that the null hypothesis of the distribution for industrials being higher or equal to the distribution for financials can be rejected.

5.1.2 Adjusting for autocorrelation

As noted in section 4.2, many companies are present in the sample for several years and therefore it cannot be assumed that the observations within the same industry are independent. As expected, the degree of autocorrelation is high within the studied industries. In other words, the

distribution of pluses and minuses one year is strongly correlated with the previous year's distribution. This has been taken into account by using an AR(1) (first-order autoregressive) process when testing if the means are significantly different from 50%. For series generated by the AR(1) model, values in one year only depend on the most recent values in the series (i.e. the values from the previous year). In the second-order autoregressive model (AR(2)), autocorrelation with the two previous years' values are tested. The correlation between adjacent observations in time is usually fairly strong, while the correlation between observations two or three time periods apart naturally are weaker (Newbold, Carlson & Thorne, 2013). As expected, no correlation of the second type was found, and hence the AR(1) process is sufficient for handling the autocorrelation.

The variables estimated by the AR(1) process are mean and standard error for the respective time series. These adjusted values are then used in the t-test.

When comparing the two industries to each other, no autocorrelation was found and hence no adjusted values are necessary when studying whether there is a difference between the industry means. Since the two time-series are strongly correlated, the autocorrelation is likely cancelled out when comparing the differences.

5.1.3 Additional tests

In addition to the non-parametric approach described above, some tests have been performed in additional ways in order to enhance the results. These tests are considered helpful in drawing conclusions about which of the ideal earnings concepts net income resembles most. The first test compares the cum-dividend E/P ratio to the inverse of the capitalization factor (see section 5.3.3 for calculation), in order to investigate which discounting rate (the risk-free rate or the cost of capital) that is most appropriate in relating permanent earnings to net income. The second test examines the mean error between net income and the two earnings concepts (see section 5.3.5 for calculation), to see which one of them that is closest to reported earnings. As opposed to the above-mentioned method, these two tests take size into account.

5.2 Industry classification

Several industry classification systems exist, but none of them covers the whole time period studied. Since this thesis aims to study differences between companies assumed to apply different types of accounting, a proper industry classification is essential.

5.2.1 Industry classification systems

Finbas offers a number of classifications based on different systems. The one that is most complete and goes all the way back to 1979 is Affärsvärlden's (AFV) industry classification.[9] This classification system has been used in previous Swedish research papers (Runsten, 1998; Skogsvik, 2002) and is considered appropriate for the purpose of this study.

Three versions of AFV's industry classification have existed during the studied time period. The main differences between these classification systems are i) the level of detail and ii) on which premises the industries are separated – the characteristics of the operating activities or based on the market on which the firm is active. Given the study's setup to compare industries with different accounting practices (historical cost accounting and fair value accounting), the essential part of the industry classification used is thus to separate companies based on the accounting applied. AFV's current industry classification is based on the market approach, separating companies into different industries depending on their active market rather than the features of their operating activities. Based on this reasoning, AFV's current industry classification is regarded inappropriate for the aim of the study. In addition, this classification system is not available in Finbas. The two earlier versions (the first one crude and the second one extended with more detail) are based on the companies' operating activities, and are therefore considered more suitable.

The industry classification used in the study is the early, extended version of AFV's industry classification. However, in order to cover the entire time period, a reclassification from the previous crude version has been made to fit the companies into the extended version. For instance, the crude classification merges real estate companies and construction companies into one industry. These are separated in accordance with the newer classification system, with real estate classified as financials and construction companies classified as industrials (see Appendix 2). For new companies not categorized into any of AFV's industries, the Industry Classification Benchmark (ICB) system (used by Nasdaq OMX today) is used. In line with AFV's early classifications, ICB separates companies depending on their operating activities instead of main market, and is thus deemed to be a more appropriate choice than AFV's current system.

[9] Affärsvärlden is a Swedish weekly business magazine.

5.2.2 Method for classification

5.2.2.1 Missing industry classification

Approximately 200 out of the 856 companies lacked industry classification in Finbas, and have therefore been complemented manually. By going through paper copies of the magazine Affärsvärlden every fifth year from 1980 to 2010, missing companies have been found and allocated to an industry. If the classification was the same for two subsequent observations (1980 and 1985 for example), it has been assumed that no changes have occurred in-between the years. If the classification had changed, the companies were traced in the magazines between these years and allocated to their new industry the year the change occurred.[10]

5.2.2.2 Companies in the category "other"

The cruder classification includes a large number (~150) of companies without a proper industry classification (categorized as "other"), which is uninformative for the purpose of this thesis. In order to classify companies that clearly could be allocated to a certain industry, a research based on organization number was performed. In the latter years, the category "other" is divided into subgroups in AFV, which made it easier to determine the business orientation of the firms. Companies listed as "other" in the earlier, cruder, classification but categorized in the newer, more detailed, classification have been given the same classification as retrieved in the newer version. 88 companies could not be allocated to any of the industries and thus remained classified as other.

5.2.2.3 Changes over time

Companies in Finbas have been assigned a company ID, which generally changes if the company's business orientation changes (as a consequence of a merger for example). In those cases, changed industry classification is not an issue since the new company ID automatically is tied to the new industry in Finbas. As mention above, all companies lacking classification have manually been allocated to the correct industry when a change was identified. Companies that have been assigned a new industry classification by Finbas during the studied time period have naturally been categorized accordingly.

[10] Affärsvärlden's industry classification published in magazine number 52 each year.

5.3 Definition of variables

5.3.1 Permanent earnings

Two different types of permanent earnings are specified depending on the capitalization rate used: the cost of equity or the risk-free rate. The formula used for calculating permanent earnings with the cost of equity is the one developed by Ryan (1988):

$$x_t = (P_t + Div_t)\frac{r_E}{(1 + r_E)} \tag{9}$$

Where x_t is permanent earnings at time t, (P_t + Div_t) is the cum-dividend value, i.e. the market value including the year's dividend, at time t, and r_E is the cost of equity. However, as described in section 2, one can assume that risk and growth on average cancel out (GGOW, 2014), and thereby discount permanent earnings with the risk-free rate instead of the cost of equity. Another possibility is to regard reported earnings as certainty equivalent earnings, which by definition should be discounted by a risk-free rate. When the risk-free rate is used, the permanent earnings formula in GGOW (2014) is applied:

$$x_t = (P_t + Div_t)\frac{r_f}{(1 + r_f)} \tag{10}$$

Where r_f is the risk-free rate, and all other variables are as defined in Ryan's formula. Since the calculation is based on stock prices, the underlying assumption of an efficient market is necessary. In addition, an assumption of a discounting rate is required. The natural choice, as presented in Ryan (1988), is the cost of equity, which is shown to be more appropriate when fair value accounting is applied (GGOW, 2014). Leaning on the idea about risk-growth cancellation (Ibid.), the risk-free rate is suggested to be more appropriate for firms applying conservative accounting.

To be comparable to the GGOW (2014) study, the discounting rate for the previous year (t-1) is used. The measure of permanent earnings is the *implied* permanent earnings, based on the previous year's earnings, and thus the interest rate at the beginning of the period should be used to capitalize subsequent earnings (Gode & Ohlson, 2004). When calculating permanent earnings at time t, it is assumed that the previous period's discounting rate will remain unchanged the next period. Thus, the correct rate to use is the one for period t-1.

5.3.2 Economic earnings

The calculation of economic earnings is also based on stock prices, but requires no assumption about a discounting rate. The formula leans on Hick's idea of earnings being a measure of change in value over a period of time, but is adapted to a valuation perspective:

$$y_t = P_t + Div_t - P_{t-1} \tag{11}$$

Where y_t is economic earnings at time t, P_t the ex-dividend value, i.e. the market value excluding the year's dividend, at time t, Div_t the expected total dividend, at time t, paid to shareholders, and P_{t-1} the ex-dividend value at time t-1. Since the calculation of economic earnings is based on stock price for both the current and previous period, at least two years of consecutive observations are required.

5.3.3 Risk-growth cancellation

The degree of risk-growth cancellation is examined using the following formula:

$$\frac{NI_t}{P_t + Div_t} - \frac{r}{1+r} \rightarrow 0 \tag{12}$$

Where NI_t is net income at time t, (P_t + Div_t) the cum-dividend value, i.e. the market value including the year's dividend, at time t, and r is the discounting rate (the risk-free rate or the cost of equity).

5.3.4 Average net income

Average net income is calculated over three consecutive years. Net income in the permanent earnings formula is thereafter substituted by the calculated average to get a smoother earning measure, possibly more similar to permanent earnings. The formula used is:

$$Avg\ NI_t = \frac{(NI_{t-1} + NI_t + NI_{t+1})}{3} \tag{13}$$

Where NI_t is net income for period t, and NI_{t-1} and NI_{t+1} are net income for one year before and one year after t respectively.

5.3.5 Mean error

The mean error between net income and permanent earnings is calculated as the average difference between the two earnings measures divided by total net income:

$$Mean\ Error = \frac{Avg(NI_t - IPE_t)}{Total\ NI_t} \tag{14}$$

Where NI_t is net income for period t, and IPE_t is implied permanent earnings for period t. The mean error between economic earnings and net income is calculated the opposite way in order to be consistent with the earlier tests:

$$Mean\ Error = \frac{Avg(EE_t - NI_t)}{Total\ NI_t} \tag{15}$$

Where EE_t is economic earnings for period t, and NI_t is net income for period t. As opposed to

the distribution non-parametric tests, this approach takes the size difference of the two measures (i.e. the error) into account and thus provides a more comprehensive view.

5.4 Discounting rates

5.4.1 Fiscal year different from calendar year

For firms with the fiscal year being equal to the calendar year, an average of the risk-free rate between January and December is used in the permanent earnings formula. When the fiscal year differs from the calendar year, the discounting rate used is adjusted accordingly to fit the period (September to August for example). Since the results are calculated on a yearly basis, observations are allocated to the year in which the majority of the fiscal year occurs. In some cases companies switch from broken to "normal" fiscal year (or the other way around) resulting in the fiscal year becoming longer or shorter than twelve months. In those cases the interest rate is calculated as an average over the applicable period to fit the reported earnings. An alternative approach would have been to extrapolate net income for the full year. However, the first approach was considered more reliable and therefore selected.

5.4.2 Estimating the short-term risk-free rate

Since the Swedish national bank has no price records of 1-year treasury bills that cover the entire time period studied, the rate for the missing years has been estimated. This is necessary in order to obtain results comparable to the GGOW (2014) study. The rate for the first period, 1978-1983, has been estimated using the average of the 10-year government bond rate and the 1-month treasury bill rate. This approach is considered appropriate given the fact the 1-year rate usually lies in-between the 10-year rate and the 1-month rate. The rate for the second period, 2009-2013, has been estimated using price data of government bonds close to maturity. In cases where price data on bonds with a time to maturity of one year plus/minus three months was available, these rates have been used without any adjustments. For the remaining cases, the average of the government bonds closest above and below the 1-year bond in terms of time to maturity has been used as a proxy for the 1-year risk-free rate.

The inflation in Sweden, and thus the risk-free rate, was relatively stable between 1978 and 1979, but increased a lot between 1980 and 1983. The risk-free rate has also been stable during the most recent period (2009-2013). Consequently, the estimation for the initial part of the first period and the estimation for the second period are considered to be relatively close to the actual 1-year risk-free rate. The estimation for the second part of the first period potentially deviates more from the actual rate due to the volatility. However, the potential deviation is deemed to have no major impact on the results. Overall, the estimated 1-year rate is considered reasonable

since the average lays in-between the average of the 10-year rate and the average of the 1-month rate.

5.4.3 The cost of equity

When calculating permanent earnings using the cost of equity, GGOW simply assumed an average risk premium of 4% for both industries. In general, a risk-premium between 4% and 6% is considered reasonable. In this study, it is assumed that the market on average will require a return equal to the risk-free rate plus 5%. In June 2014, the average market risk premium used in Sweden was estimated to 5,3% (median 5,0) (Fernandez, Linares & Fernández Acín, 2014), and consequently the assumption of 4% made in GGOW (2014) is considered too low for the Swedish market.

The size of the risk premium has changed over the time period studied. During the last four years, it has varied between 5,3% and 6,0% (5,9% in 2011 and 2012 and 6,0% in 2013 (Fernandez, Linares & Fernández Acín, 2014). A better estimation of the return on equity would thus be to calculate a firm specific beta for each company, or an average industry beta, and then use this beta in the CAPM formula. Since the risk premium is not observable, it cannot be argued that 5% is the best choice, but it is assumed to be appropriate for this study.

6. Results and analysis

In the following section the findings from the performed tests are presented, analyzed and compared to the results obtained on US data in the GGOW (2014) study. First, the entire time period (1979-2013) is analyzed, followed by an analysis of two shorter phases (1979-1999 and 2000-2013) in order to study changes over time. Finally, as a form of robustness test, the crisis years 1990-1994 and 2008-2009 are removed in order to restrict the effect of economic turmoil. Three economic crises have occurred in Sweden during the studied time period, namely the real estate crisis in 1990-1994, the dot-com bubble in 1999-2001 and the financial crisis in 2008-2009. However, the dot-com bubble was mainly restricted to IT companies, with a limited effect on the rest of the market, and hence these years are not removed.

The results are analyzed from an economic perspective and an accounting perspective. From an economic perspective, the level of inflation and the economic climate are identified as main drivers for the results. From an accounting perspective, the accounting regime in place is identified as the dominant factor. The tables in this section summarize the main results. The column named "Swedish data" summarizes the results of this study and the column "US data" is a comparison using the results from GGOW (2014). Complete results on Swedish data can be found in Appendix 3.

6.1 Permanent earnings vs. net income

6.1.1 The short-term risk-free rate

Table 1.1 summarizes the results when net income is compared to permanent earnings discounted by the short-term risk-free rate. The long-term average of positive-sign firms is close to 50% for both industrial and financial firms (46,3% and 49,5% respectively), indicating that net income is a good approximation of permanent earnings. The null hypothesis of the distribution being 50% cannot be rejected for either of the industries. On US data the hypothesis was rejected for financial firms but not for industrials. In addition, GGOW observed a clear difference between the two industries, with the distribution of positive-sign firms for financials being considerably larger than the distribution for industrials (62% compared to 42%). No such difference is found on Swedish data.

Table 1.1: Percentage of firms with Net Income > Implied Permanent Earnings (short-term risk-free rate)

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	46,3	49,5	42	62
Median	52,1	46,5	39	58
Mean 1979-1999	30,8	33,7	34,6	55,2
Mean 2000-2013	69,5	73,1	43,4*	68,7*
Valid N	2 473	1 533	214 875	44 590
Std. Error	4,65	4,50	2,91	2,48

*Mean 2000-2012

Implied Permanent Earnings are calculated as $(P_t+Div_t)\times(r_{f,t-1}/(1+r_{f,t-1}))$*, where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and* r_f *the risk-free rate (the Swedish 1-year treasury bill rate). Net Income as reported in the income statement. N is the total number of observations.*

Table 1.2 summarizes the results on a value-weighted basis. Comparing the distribution of positive-sign firms on a value-weighted basis with the equally weighted results (Table 1.1) gives an indication of the relative market size of companies with a positive difference between net income and permanent earnings. 54,4% of total market cap belongs to positive-sign firms for industrials and 55,1% for financials. It thus seems like the distribution between small and large firms are about the same. No significant difference is found between the two industries in this case either. The comparable results on US data displayed a higher distribution for financial firms (74% compared to 57% for industrials), implying that the risk-growth cancellation scenario does not apply for the main part of firms belonging to the financial industry in the US.

Table 1.2: Percentage of market capitalization (of total market capitalization) for firms with Net Income > Implied Permanent Earnings (short-term risk-free rate)

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	54,4	55,1	57	74
Median	50,1	63,2	58	78
Valid N	2 473	1 533	214 875	44 590
Std. Error	5,79	5,67	4,60	3,15

Market capitalization for firms with a positive difference between Net Income and Implied Permanent Earnings divided by total market capitalization for all firms. All variables as defined in Table 1.1.

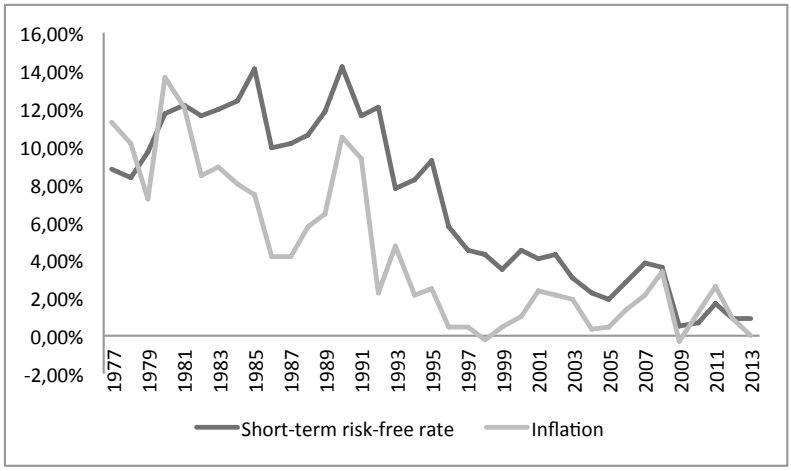
Analysis

It is clear from the results that the distribution (and thus the relationship between net income and permanent earnings) has changed over time. Between 1979 and 1999, the distribution of positive-sign firms is 30,8% for industrial firms and 33,7% for financial firms, indicating a high degree of risk-growth cancellation. A distribution below 50% corresponds with more than full cancelling out in accordance with GGOW (2014) (see Appendix 1 for more details). For the later period

(2000-2013), the corresponding percentages are 69,5 and 73,1 respectively. Thus, the hypothesis of a distribution around 50% is clearly only valid on a long-term average.

Analyzing the results from an economic perspective, the size of the inflation seems to have a large impact. As shown in Graph 1, the inflation rate and the risk-free rate are strongly correlated (0,83) over the time period studied.

Graph 1: The short-term risk-free rate in relation to inflation in Sweden

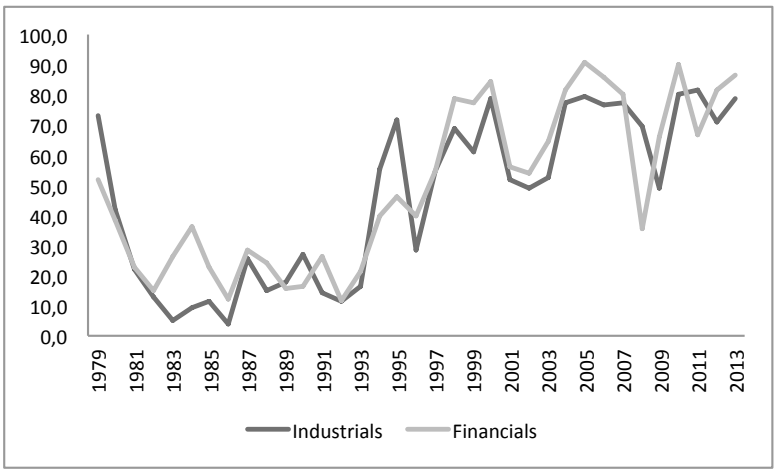


The relation between the two rates is evident when comparing the two phases 1979-1999 and 2000-2013. Between 1979 and 1999 average inflation was 5,7% and the risk-free rate 9,4%, and during the second time period the corresponding values were 1,3% and 3,5% respectively. The size of the discounting rate has a large impact on permanent earnings, where a low (high) discounting rate results in low (high) permanent earnings. Consequently, the distribution of firms with a positive difference between net income and permanent earnings increases when the discounting rate is low, as observed in the results for the second period (Table 1.1).

From an accounting perspective, a potential reason for the differences between the two periods could be changes in accounting practices (as suggested in GGOW (2014)). Swedish accounting has historically been very conservative with the precautionary principle in focus. However, it seems like the degree of conservatism has gradually decreased during the second period (2000-2013) as the proportion of firms with higher net income than permanent earnings has increased. The main reasons could be adaptions to European standards (after 1995) and the implementation of IFRS in 2005, with an increased focus on fair value accounting in Sweden. This reasoning seems to hold for both industries, since no major differences between them were found. As shown in Graph 2, the results for industrials and financials are strongly correlated (0,89) over the time period studied, indicating that the industries are affected by the same factors. However, the

distribution of positive-sign firms is slightly higher for financials during the second period, possibly because of a greater use of fair value accounting.

Graph 2: Percentage of firms with a positive difference between Net Income and Implied Permanent Earnings



Comparing the results to US data, the distribution of positive-sign firms is on average lower during the first period and higher during the second period for both industries (Table 1.1). A potential reason for the differences between the countries is that Swedish inflation on average was higher than US inflation during the first period, while on average lower during the second period (Graph 3). In addition, accounting practices have (as mentioned in section 2.1) generally been more conservative in Sweden than in the US, with different applications of the precautionary principle.

Graph 3: Swedish inflation in relation to US inflation

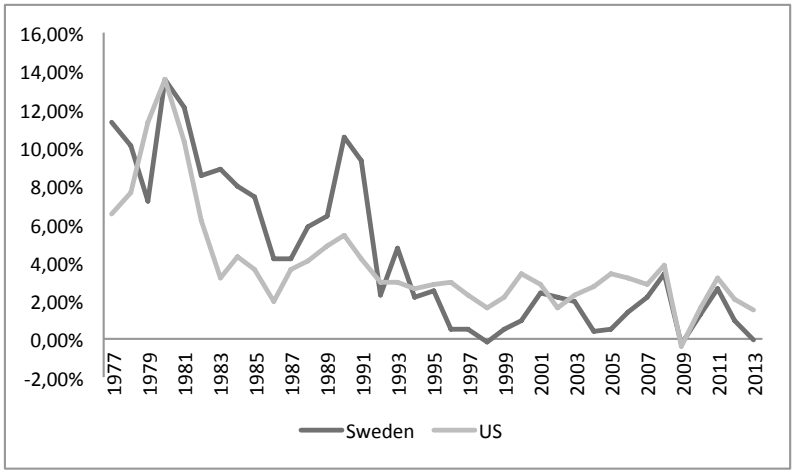


Table 1.3 shows the result when the crisis years (1990-1994 and 2008-2009) have been removed. The long-term average increases slightly for both industries, with a distribution of 49,2% (46,3) for industrials and 54,1% (49,5) for financials. However, removing the crisis years does not change the results considerably. Looking at the respective sub periods, the distributions increase

in both periods for both industries, indicating that both the financial crises had a negative impact on the relation between net income and permanent earnings.

Table 1.3: Percentage of firms with Net Income > Implied Permanent Earnings (short-term risk-free rate), excluding crisis years 1990-1994 and 2008-2009

	Swedish data	
	Industrials	**Financials**
Mean	49,2	54,1
Median	53,7	54,5
Mean 1979-1999	32,6	37,0
Mean 2000-2013	71,2	76,9
Valid N	1 964	1 533
Std. Error	5,32	4,34

All variables as defined in Table 1.1.

6.1.2 The long-term risk-free rate

Table 2.1 summarizes the result for the difference between net income and permanent earnings using the long-term risk-free rate. The distribution of positive signs is lower for both industrial (41,7%) and financial firms (46,2%). However, the null hypothesis cannot be rejected in this case either.

Table 2.1: Percentage of firms with Net Income > Implied Permanent Earnings (long-term risk-free rate)

	Swedish data	
	Industrials	**Financials**
Mean	41,7	46,2
Median	45,9	37,5
Mean 1979-1999	27,1	30,4
Mean 2000-2013	63,5	69,8
Valid N	2 473	1 533
Std. Error	4,26	4,34

Implied Permanent Earnings are calculated as $(P_t + Div_t) \times (r_{f,t-1} / (1 + r_{f,t-1}))$*, where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and* r_f *the risk-free rate (the Swedish 10-year government bond rate). Net Income as reported in the income statement. N is the total number of observations.*

Analysis

Based on the long-term average, it seems like the short-term risk-free rate is a better capitalization rate for permanent earnings. One reason might be that the long-term rate encompasses inflation expectations for a longer period than the short-term rate, causing inaccurate forecasts if the inflation rate is volatile, which it has been in Sweden. Since permanent earnings are calculated on a yearly basis, the expected inflation for the upcoming year is reasonably more appropriate.

The distribution over time is to a large extent the same as when the short-term risk-free rate is used; considerably lower than 50% during the first period and considerably higher during the second period. The same reasoning as presented in the analysis of the short-term risk-free rate is thus valid for the long-term rate regarding the impact of inflation and the changes in accounting practices. The average 10-year risk-free rate is slightly higher in both the first (10,4%) and second (3,9%) period compared to the short-term rate (9,4% and 3,5%), and there is a remotely weaker correlation between the inflation and the risk-free rate (0,79). However, the impact on the results is deemed to be the same.

6.1.3 The cost of equity

Table 3.1 presents the results when the cost of equity is used in the permanent earnings calculation. The distribution of positive-sign firms is substantially lower than when the risk-free rate is used. In addition, the results obtained on Swedish data shows a smaller proportion of positive-sign firms than on US data; 22,3% and 33,6% for industrials and financials respectively, compared to 25% and 40%. The null hypothesis can be rejected for industrials, but not for financials. The 95% confidence interval for financials ranges from 15,8% to 55,8%, indicating a large spread somewhat biased towards a proportion below 50%. The corresponding interval for industrials is 13,2% to 32,5%.

Table 3.1: Percentage of firms with Net Income > Implied Permanent Earnings (cost of equity)

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	22,3	33,6	25	40
Median	17,1	28,0	20	37
Mean 1979-1999	14,9	20,0	16,6	38,2
Mean 2000-2013	33,5	54,0	40,2*	52,6*
Valid N	2 473	1 533	214 875	44 590
Std. Error	2,88	3,89	2,88	2,94

*Mean 2000-2012

Implied Permanent Earnings are calculated as $(P_t + Div_t) \times (r_{E,t-1} / (1 + r_{E,t-1}))$*, where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and* r_E *the cost of equity (the Swedish 1-year treasury bill rate + 5%). Net Income as reported in the income statement. N is the total number of observations.*

When the cost of equity is used there is a significant difference between the two industries, with the distribution of positive-sign firms for financials being larger than the distribution for industrials. On US data the null hypothesis could not be rejected for either of the industries at a 5% level, even though the evidence for no cancelling out was weak (GGOW, 2014). For financial firms it was concluded that the no cancelling out case seemed more likely than full cancelling out.

This conclusion cannot be drawn on Swedish data since the distribution for both industries are closer to 50% when the risk-free rate is used.

Table 3.2 shows that the distributions are somewhat higher when measured on a value-weighted basis; 23,9% and 37,5% for industrial and financial firms respectively. The corresponding percentages on US data are 29% and 47%.

Table 3.2: Percentage of market capitalization (of total market capitalization) for firms with Net Income > Implied Permanent Earnings (cost of equity)

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	23,9	37,5	29	47
Median	18,1	31,4	24	46
Valid N	2 473	1 533	214 875	44 590
Std. Error	3,68	5,44	4,08	4,27

Market capitalization for firms with a positive difference between Net Income and Implied Permanent Earnings divided by total market capitalization for all firms. All variables as defined in Table 3.1.

Analysis

In line with the results using the risk-free rate, the relationship between net income and permanent earnings changes over time. The distribution of positive-sign firms is even lower between 1979 and 1999 (14,9% for industrials and 20,0% for financials), clearly indicating that the cost of equity is an inappropriate choice of discounting rate. However, this rate seems more appropriate than the risk-free rate for the second period. For financial firms, the distribution of positive-sign firms is 54,0%, which is much closer to the hypothesis than the distribution of 73,1% when the short-term risk-free rate is used. The corresponding percentage for industrials is 33,5.

Comparing the two industries, financials have a higher distribution of positive-sign firms 12 years out of 14 during the second period. This might be an indication of financials applying fair value accounting to a greater extent than industrials during this period. In addition, financials firms are not affected by the change of discounting rate as much as industrial firms, which also could be an indication of relatively more companies within the financial industry applying fair value accounting.

GGOW observed that the risk-free rate is less appropriate in times when the P/E ratio is unusually low. In this study, the average P/E ratio is considerably higher for both industries during the first period (87,3 vs. 47.4 for industrials and 95,5 vs. 16,8 for financials). In line with the results on US data, Swedish data indicates that the risk-free rate is more appropriate during the first period (when the P/E ratio is high) and that the cost of equity is more appropriate during the second period (when the P/E ratio is low). A low P/E ratio indicates a smaller

difference between market values and book values, which tends to be the case when fair value accounting is applied. The average P/E ratio for Swedish financial firms is found to be considerably lower than the average for industrials, which is an additional indication of a more extensive use of measurement at fair value.

Table 3.3 presents the result when the crisis years have been removed. The same effect as when the risk-free rate is used is observed. The distribution of positive differences increases slightly for both industries and for both time periods, but the same conclusions are still drawn from the results.

Table 3.3: Percentage of firms with Net Income > Implied Permanent Earnings (cost of equity), excluding crisis years 1990-1994 and 2008-2009

	Swedish data	
	Industrials	**Financials**
Mean	49,2	54,1
Median	53,7	54,5
Mean 1979-1999	32,6	37,0
Mean 2000-2013	71,2	76,9
Valid N	1 964	1 533
Std. Error	5,32	4,34

All variables as defined in Table 3.1.

6.2 Economic earnings vs. net income

Table 4.1 shows a summary of the results when comparing economic earnings to net income. The distribution of positive-sign firms is above 50% for both industrials and financials (62,8% and 62,1% respectively), and the null hypothesis is rejected in both cases. In addition, there is no significant difference between the two samples. However, the median is somewhat higher for industrial firms (71,5%) than for financial firms (65,0%). US data showed lower distributions for both industries, closer to 50%.

Table 4.1: Percentage of firms with Economic Earnings > Net Income

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	62,8	62,1	52	55
Median	71,5	65,0	53	56
Mean 1979-1999	63,7	65,3	50,3	54,1
Mean 2000-2013	61,4	57,5	53,8*	54,7*
Valid N	2 249	1 388	214 875	44 590
Std. Error	4,76	4,60	2,13	2,98

*Mean 2000-2012

Economic Earnings are calculated as $P_t+Div_t-P_{t-1}$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and P_{t-1} market capitalization at the beginning of the fiscal year. Net Income as reported in the income statement. N is the total number of observations.

Table 4.2 summarizes the results on a value-weighted basis. The results are to a large extent the same as when studied on an equally weighted basis, with market cap for firms with economic earnings exceeding net income being 66,3% for industrials and 66,1% for financials. The distribution of positive-sign firms on US data was somewhat higher when measured on a value-weighted basis compared to the results on an equally weighted basis (62% and 60% respectively for industrials and financials). The medians are much higher on a value-weighted basis with respect to both countries and both industries investigated.

Table 4.2: Percentage of market capitalization (of total market capitalization) for firms with Economic Earnings > Net Income

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	66,3	66,1	62	60
Median	78,2	78,1	67	66
Valid N	2 249	1 388	214 875	44 590
Std. Error	4,73	5,04	2,25	3,03

*Mean 2000-2012

Market capitalization for firms with a positive difference between Economic Earnings and Net Income divided by total market capitalization for all firms. All variables as defined in Table 4.1.

Analysis

The results presented above indicate that the relationship between economic earnings and net income is very similar for the two industries. In addition, no considerable differences are found when dividing the results into the two shorter time periods. For both industrials and financials, the averages are still hovering around 60%. If accounting standards were a main driver for differences over time, the relation between economic earnings and net income would reasonably have changed as well. It thus seems like the reason for the differences between net income and permanent earnings over time (analyzed in section 6.1) is more likely to be due to changes in the discounting rate than changes in accounting practices.

Table 4.3 shows the results excluding the financial crises. Extreme results are observed in 1990 and 2008, with very low percentages. The effect is more evident on a value-weighted basis. Many companies had negative economic earnings in 2008 since stock prices (and thus total market capitalization) fell drastically. Total market capitalization for Swedish firms dropped by 46% for financials and 49% for industrials in this year. Excluding the crisis years result in higher distributions for both industries, with 67,4% positive observations for financials and 66,7% for industrials. Looking at the two sub periods, the results increase slightly there too. However, the results seem to hold even when extreme observations are excluded.

Table 4.3:Percentage of firms with Economic Earnings > Net Income, excluding crisis years 1990-1994 and 2008-2009

	Swedish data	
	Industrials	**Financials**
Mean	66,7	67,4
Median	74,3	69,2
Mean 1979-1999	68,9	69,2
Mean 2000-2013	63,9	58,7
Valid N	1 767	1 093
Std. Error	4,56	4,39

All variables as defined in Table 4.1.

6.3 Economic earnings vs. permanent earnings

Table 5.1 summarizes the results when economic earnings are compared to permanent earnings discounted by the short-term risk-free rate. In line with theory, the results on Swedish data show that economic earnings exceed permanent earnings in more than 50% of the cases for both industries. US data shows a larger difference between the samples, but the distribution is above 50% for both industries. However, the cross-year median is much higher for Swedish firms. The results with the long-term risk-free rate do not differ much from the results with the short-term rate (see Appendix 3, Table A.5.1).

Table 5.1: Percentage of firms with Economic Earnings > Implied Permanent Earnings discounted (short-term risk-free rate)

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	61,3	62,6	55	62
Median	70,3	72,0	57	64
Mean 1979-1999	60,9	62,6	54,9	61,1
Mean 2000-2013	61,9	62,6	53,5*	60,2*
Valid N	2 258	1 457	214 875	44 590
Std. Error	4,73	5,04	2,25	3,03

*Mean 2000-2012

Economic Earnings are calculated as $P_t + Div_t - P_{t-1}$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and P_{t-1} market capitalization at the beginning of the fiscal year. Implied Permanent Earnings are calculated as $(P_t + Div_t) \times (r_{f,t-1} / (1 + r_{f,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 1-year treasury bill rate). N is the total number of observations.

As illustrated in Table 5.2, the results are even stronger when analyzed on a value-weighted basis. Both Swedish and US data show distributions well above 50%, both in terms of mean and median values.

Table 5.2: Percentage of market capitalization (of total market capitalization) for firms with Economic Earnings > Implied Permanent Earnings (short-term risk-free rate)

	Swedish data		US data	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	67,4	69,5	67	69
Median	84,1	85,8	75	76
Valid N	2 258	1 457	214 875	44 590
Std. Error	5,70	5,51	2,99	3,85

Market capitalization for firms with a positive difference between Economic Earnings and Implied Permanent Earnings divided by total market capitalization for all firms. All variables as defined in Table 5.1.

Analysis

No clear differences are observed between the first and second time period. The distributions are around 60% for both industries regardless of the interest rate used (the short-term risk-free rate or the long-term risk-free rate). The results are as expected and in line with both theory and the results on US data.

6.4 Risk-growth cancellation

Table 6.1 presents the results of the difference between the cum-dividend E/P ratio ($NI_t/(P_t+Div_t)$) and the inverse of the capitalization factor ($r/(1+r)$), where r is the discounting rate (the risk-free rate or the cost of equity). These results give an indication of the degree of risk-growth cancellation, and thus whether full cancelling or no cancelling out occurs. A mean value of zero is expected if the hypothesis holds. For the risk-free rate, the null hypothesis for industrials is rejected at a 5% level, implying that the mean is not around zero. We cannot reject the null hypothesis for financials. When the cost of equity is used, the mean is not as close to zero and the null hypothesis is rejected for both industries. However, the median is closer to zero for industrials when this rate is used.

Table 6.1: Risk-growth cancellation (Swedish data)

	Risk-free Rate		Cost of Equity	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	-0,079	-0,080	-0,123	-0,124
Median	-0,170	-0,021	-0,031	-0,050
Valid N	2 473	1 533	2 473	1 533
Std. Error	0,017	0,020	0,017	0,020

Difference between the cum-dividend E/P ratio and the inverse of the capitalization factor. Calculated as $NI_t/(P_t+Div_t)-(r/(1+r))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r is the risk-free rate (the Swedish 1-year treasury bill rate) or the cost of equity (the Swedish 1-year treasury bill rate + 5%). Net Income as reported in the income statement. N is the total number of observations.

Analysis

Due to the large spread in mean values, median values are considered more appropriate as the base for analysis in this case. From the mid 90's, the median value is positive for both industrials and financial for almost all years (all except one) when the risk-free rate is used, indicating less than full cancelling out. The preceding period shows almost exclusively negative values, indicating more than full cancelling out. The results thus seem to be divided into clear periods based on the median values. GGOW obtained somewhat different results, with financial firms having a negative median in only one year. The median for industrial firms was negative the majority of the time, with positive values only in the beginning and at the end. As in previous results, US data shows more distinct differences between the two industries.

The distribution of positive and negative median values is different when the cost of equity is used. For industrials, the median value is positive in only 3 years out of the 35. Financial firms on the other hand have positive median values in 10 years, with 8 of them occurring during the second period.

6.5 Average net income

Table 7.1 summarizes the result when average net income is compared to permanent earnings discounted by the short-term risk-free rate and the cost of equity respectively. Average net income was hypothesized to be a better measure of permanent earnings since the effect of transitory items is reduced. As opposed to what was expected, the long-term averages do not change considerably compared to the results when reported net income is used. The percentages when using reported net income and permanent earnings discounted by the risk-free rate (Table 1.1) are 46,3 and 49,5 for industrials and financials respectively, while the corresponding percentages for average net income are 44,5 and 51,9. The null hypothesis about the distributions being 50% cannot be rejected, and there is no significant difference between the two industries. When net income is compared to permanent earnings capitalized by the cost of equity, the distributions of positive differences decrease slightly, from 22,3% and 33,6% for industrials and financials respectively when reported net income is used, to 20,2% and 34,1% when average net income is used.

Table 7.1: Percentage of firms with Average Net Income > Implied Permanent Earnings (short-term risk-free rate vs. cost of equity)

	Risk-free Rate		Cost of Equity	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	44,5	51,9	20,2	34,1
Median	52,1	54,8	17,1	26,5
Mean 1979-1999	27,7	34,8	10,7	18,8
Mean 2000-2013	70,2	78,3	34,7	57,7
Valid N	2 149	1 293	2 149	1 293
Std. Error	4,99	5,02	2,91	4,32

Net Income calculated as an average over three consecutive years. Implied Permanent Earnings are calculated as $(P_t + Div_t) \times (r_{,t-1} / (1+r_{,t-1}))$*, where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and r the risk-free rate (the Swedish 1-year treasury bill rate) or the cost of equity (the Swedish 1-year treasury bill rate + 5%). N is the total number of observations .*

Analysis

The differences over time are similar to those observed when reported net income is used. When the risk-free rate is used for calculating permanent earnings, the distributions of positive-sign firms are relatively low between 1979 and 1999, 27,7% and 34,8% for industrials and financials respectively, while the distributions are much higher between 2000 and 2013, 70,2% and 78,3% respectively. Using the cost of equity for permanent earnings combined with average net income lowers the results for the first period even more (10,7% and 18,8% respectively). The results for the second period are well above the long-term average (34,7% and 57,7%), indicating that the cost of equity is a more appropriate choice for this period.

6.6 Mean error

6.6.1 Permanent earnings vs. net income

Table 8.1 presents the results for the test of the mean error between net income and permanent earnings capitalized by the short-term risk-free rate and the cost of equity respectively. If net income equals permanent earnings, the long-term mean error should be zero. We cannot reject the null hypothesis for either of the industries or discounting rates, indicating that permanent earnings and net income are relatively close to each other measured as a long-term average. For the short-term risk-free rate, this is in line with the results in Table 1.1, showing that the distribution of firms with a positive difference between net income and permanent earnings is close to 50%. For the cost of equity, this contradicts the results presented in Table 3.1, where the hypothesis of net income being close to permanent earnings was rejected for industrials.

Table 8.1: Average mean error (%) between Net Income and Implied Permanent Earnings (short-term risk-free rate vs. cost of equity) divided by total Net Income

	Risk-free Rate		Cost of Equity	
	Industrials	**Financials**	**Industrials**	**Financials**
Mean	2,3	0,2	2,0	-1,0
Median	0,3	0,7	-0,4	-0,7
Valid N	2 473	1 533	2 473	1 533
Std. Error	1,94	0,41	2,66	0,52

Mean Error is calculated as the average of NI_t-IPE_t divided by total net income for the same year. Implied Permanent Earnings are calculated as $(P_t+Div_t)\times(r_{,t-1}/(1+r_{,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r the risk-free rate (the Swedish 1-year treasury bill rate) or the cost of equity (the Swedish 1-year treasury bill rate + 5%). N is the total number of observations.

6.6.2 Economic earnings vs. net income

Table 9.1 summarizes the results for the test of the mean error between economic earnings and net income. The same relationship as above is expected for the difference between economic earnings and net income. If the two concepts are equal, the difference should be zero. The null hypothesis cannot be rejected in this case either for any of the industries, which contradicts the results presented in Table 4.1 where it was shown that none of the industries had economic earnings close to net income.

Table 9.1: Average mean error (%) between Economic Earnings and Net Income divided by total Net Income

	Swedish data	
	Industrials	**Financials**
Mean	-0,1	3,0
Median	2,6	3,6
Valid N	2 473	1 093
Std. Error	4,13	4,39

Mean Error is calculated as the average of NI_t-EE_t divided by total net income for the same year. Economic Earnings are calculated as $P_t+Div_t-P_{t-1}$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and P_{t-1} market capitalization at the beginning of the fiscal year. N is the total number of observations.

Analysis

Dividing the results into the two sub periods shows that the mean error has decreased over time for both industries, and for both ideal earnings measures. This indicates that net income is a better approximation for both permanent earnings and economic earnings for the latter time period (2000-2013). However, due to the large spread it is difficult to draw any robust conclusions based on these tests.

6.7 Consumer goods

Table 10.1 summarizes the results when net income is compared to permanent earnings discounted by the short-term risk-free rate for the consumer goods industry. The results for industrials presented in Table 1.1 are shown again to enable an easy comparison. Since the consumer goods industry is assumed to apply the same type of accounting as the industrial firms (historical cost accounting), the long-term average of the distribution was hypothesized to be close to 50%. As expected, the average of 44,4% is close to the results for industrial firms (46,3), and the null hypothesis cannot be rejected at a 5% significance level.

Table 10.1: Percentage of firms with Net Income > Implied Permanent Earnings (short-term risk-free rate)

	Swedish data	
	Consumer Goods	**Industrials**
Mean	44,4	46,3
Median	52,9	52,1
Mean 1979-1999	27,2	30,8
Mean 2000-2013	70,2	69,5
Valid N	813	2 473
Std. Error	4,79	4,65

Implied Permanent Earnings are calculated as $(P_t + Div_t) \times (r_{f,\,t-1} / (1 + r_{f,\,t-1}))$*, where* P_t *is market capitalization at the end of the fiscal year,* Div_t *total dividends, and* r_f *the risk-free rate (the Swedish 1-year treasury bill rate). Net Income as reported in the income statement. N is the total number of observations.*

Analysis

In line with the previous results, considerable changes over time are observed for consumer goods, with an average of 27,2% between 1979 and 1999 (lower than for industrials) and an average of 70,2% between 2000 and 2013 (higher than for industrials). It thus seems like these results are in line with the ones presented in section 6.1, and the same analysis regarding the inflation rate applies here.

7. Concluding remarks

7.1 Conclusions and discussion

7.7.1 Long-term analysis

This thesis has aimed to study the relationship between net income and the two properly measured earnings concepts permanent earnings and economic earnings in order to get a better understanding of what net income represents, and how it relates to value. This has been done by trying to find an answer to the following question:

Is net income a better approximation of permanent earnings or of economic earnings, and does the relation between net income and these concepts differ between industries assumed to apply different types of accounting?

The long-term analysis of the relationship between net income and the two ideal earnings concepts provides a relatively clear-cut answer to which of the earnings concepts reported earnings resemble most. The distribution of firms with a positive difference between net income and permanent earnings (discounted by the risk-free rate) is remarkably close to 50% for both industrial and financial firms. The same result is obtained for companies belonging to the consumer goods industry, which strengthens the 50/50 hypothesis.

GGOW observed different results on US data. The distribution of positive-sign firms was consistently higher for financials than for industrials. No clear difference between the two industries is found on Swedish data. The reason is, as discussed in section 6, believed to be a mix of differences in accounting practices (and hence the measurement of net income) and economic factors (such as the inflation rate). US accounting has generally been more focused on fair values, with less extensive use of hidden reserves during the earlier period. The use of hidden reserves in Sweden may have resulted in net income in the beginning of the period studied being somewhat misleading, with too low results reported in good years and thus a lower distribution of positive-sign firms. An additional explanation for the differences between the two countries could be the structure of the investigated industries, which likely has an impact on the results.

Swedish data shows a higher distribution of firms with a positive difference between economic earnings and net income, around 60%. On US data the percentages are lower, closer to 50%. These results are in one sense reasonable since Swedish accounting historically has been very conservative, resulting in a higher difference between book values and market values (i.e. lower net income compared to economic earnings). If all assets and liabilities are "correctly" valued, net income corresponds exactly to economic earnings since book values and market values coincide (i.e. the Market-to-Book ratio equals one).

Measured on a long-term average over 35 years, it is thus clear from the results that net income seems to be a better approximation of permanent earnings than of economic earnings for both industries. However, the large spread in the results and the study's design makes it is difficult to draw any robust conclusion regarding *how* close reported earnings are to the ideal earnings measures. The 50/50 hypothesis between positive and negative differences is apparently a simplification of reality. Although, the analysis of the mean error (see section 6.6) indicates that the difference between net income and both the ideal earnings concepts on a long-term average is relatively small.

7.1.2 Shorter time periods

In addition to the question above, the following sub question was asked:

Has the relation between net income and the ideal earnings concepts changed over time?

As presented in the results, considerable differences between net income and permanent earnings have been distinguished over time. Dividing the time period into two shorter phases, the distribution of positive-sign firms deviates considerably from 50% for both industries and for both time periods. No clear difference is observed for the relationship between economic earnings and net income, still hovering at a higher level around 60% during both periods. One would assume that the increased use of fair value accounting after the implementation of IFRS would have resulted in net income becoming more similar to economic earnings, but no such tendency is observed. An explanation for this might be the inclusion of business goodwill in the permanent measurement bias (see section 2.2.2). If investors expect firms to generate profits above normal in the future, the Market-to-Book ratio exceeds one even if all assets and liabilities are recorded at market value.

During the first period, the number of positive differences between net income and permanent earnings is slightly above 30% when the short-term risk-free rate is used. This is deemed to be a result of very conservative accounting in combination with an extremely high risk-free rate causing low reported earnings and high permanent earnings. Other accounting-related explanations for the low percentages could be the wide use of hidden reserves, potentially resulting in a depressed earnings figure, or the proportion of reported losses during the first period being higher compared to the second period, which reduces the value-relevance in the earnings measure for the earlier period (Collins et al, 1997). Capitalizing permanent earnings with the cost of equity leads to extremely low results, below 20%. It is thus evident that this rate is inappropriate for the first period.

During the second period, the distributions increase heavily to levels around 70%, probably due

to an extremely low risk-free rate. It is thus evident that the risk-free rate no longer is appropriate for capitalizing permanent earnings since the full cancelling out scenario (see Appendix 1) for the reported earnings no longer apply. In line with the results on US data, the cost of equity is shown to be more appropriate for the second period. Replacing the risk-free rate by the cost of equity in the permanent earnings formula results in a distribution fairly close to 50% for financial firms. In this case, a clear difference is observed between the two industries, with the distribution for industrials being much lower (33,5% compared to 54,0%).

The results above could be an indication that firms within the financials are applying fair value accounting to a greater extent than industrial firms during this period. This is in line with the implementation of IFRS and thus increased allowance to recognize assets and liabilities at fair values. However, the effects of the implementation of IFRS are difficult to isolate. The percentage of firms with net income exceeding permanent earnings is high after 2005, but the trend seems to have started much earlier, somewhere in the mid 90's. One potential reason is Sweden's entrance into the European Union and thus the adaptions to European accounting standards (more focused on fair values).

However, it is considered more likely that the change is an effect from the low inflation level, and thereby low risk-free rate. This conclusion is drawn based on the fact that the relation between economic earnings and net income do not change considerably over time. Economic earnings are not dependent on any discounting rate, and thereby not affected by changes caused by the inflation. This indicates that the last-mentioned factors are more likely to be the main drivers behind the difference between permanent earnings and net income. In addition, the differences between the two industries are small with highly correlated results that follow each other throughout the entire period. The results on the consumer goods industry show a similar pattern, strengthening the reasoning that economic factors have a larger impact on the result than accounting practices.

To conclude, the results on Swedish data indicate that net income in general is closer to permanent earnings than economic earnings. However, these results are only valid on a long-term average. Separating the results into two shorter phases, the difference between net income and permanent earnings is more dispersed, while the difference between economic earnings and net income remain constant at a level around 60%, relatively closer to 50%. On a long-term average, the risk-free rate is deemed to be the best choice when capitalizing permanent earnings, while the cost of equity is more appropriate the latter period (2000-2013). For the first period, neither of the discounting rates are appropriate, and neither of the ideal earnings concepts are close to net income. However, the results might not hold for all industries since only two (industrials and

financials) have been entirely investigated in this thesis. In addition, the volatile inflation rate makes it difficult to draw reliable conclusions.

7.2 Limitations and extensions

The reliability and the internal validity in this study are considered to be relatively high. The study's design is simple and the method applied is described in such a manner that the same results should be observed if repeated by others. In addition, the method used to investigate the relationship between net income and the ideal earnings concepts is deemed to capture what was intended to be measured.

Depending on how the sample is viewed, the issue of whether the results are generalizable or not can be discussed. Since the sample used consists of almost all Swedish industrial and financial companies listed on the Stockholm Stock Exchange anytime between 1979 and 2013, this study can be seen as including the whole population. However, it could also be viewed as a sample in time. If the study is considered as including the whole population, the results should reasonably be generalizable to industries on markets with the same conditions as those investigated in this study. If the study on the other hand is viewed as a sample in time, the results will most likely differ since the relation between net income and the earnings concepts (particularly permanent earnings) is shown to differ a lot over time due to economic and accounting-related factors.

It is difficult to draw any explicit conclusion regarding the relative influence of the different factors affecting the relationship between net income and the ideal earnings measures. In this study, these variables are not controlled for, and therefore it is only possible to speculate regarding which of them actually has the greatest impact. In addition, other variables than those suggested in this study might have influenced the results. It would thus be interesting to perform a study where this aspect is taken into account.

One way to investigate whether the accounting practices or the rate of inflation is most influential on the relationship between net income and permanent earnings would be to study an industry that is not affected by fluctuations in business cycles to a great extent, the food industry for example. However, the number of food industry companies in Sweden is too low to run any reliable tests based on this hypothesis.

In addition, it would be interesting to perform the study in other countries to see if the observed results are more similar to the ones obtained on Swedish data, or to the ones obtained on US data.

8. References

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9. Appendix

Appendix 1

Five scenarios of risk-growth cancellation

The formal model presented in Ryan (1988) suggests that the benchmark for an E/P ratio should approximate the cost of equity. However, GGOW suggest that the risk-free rate might be more appropriate for companies applying conservative accounting. The logic behind this is that earnings risk and earnings growth on average cancel each other out. Five logically possible scenarios are presented with respect to the level of risk-growth cancellation:

1. $E/P >> r_E$	Risk over-dominates growth. The E/P ratio is considerably larger than the cost of equity.
2. $E/P \approx r_E$	Neutral (as presented in Ryan (1988)). No cancelling out between risk and growth. The E/P ratio equals the cost of equity.
3. $r_E >> E/P >> r_f$	Less than full cancelling out. The E/P ratio is smaller than the cost of equity, but larger than the risk-free rate.
4. $E/P \approx r_f$	Full cancelling out. Risk and growth cancel out. The E/P ratio equals the risk-free rate.
5. $E/P << r_f$	More than full cancelling out. Growth over-dominates risk. The E/P ratio is considerably lower than the risk-free rate.

Scenario 1 and 5 are extreme cases that are not likely to occur. In GGOW (2014), the full cancelling out scenario is shown to be stronger for industrial firms than for financial firms, while the no cancelling out scenario is stronger for financial firms. In other words, the risk-free rate is appropriate for firms applying historical cost accounting while the cost of equity is appropriate for firms applying fair value accounting.

Appendix 2

Table A.1.1: An illustration of Affärsvärlden's cruder industry classification re-classified into Affärsvärlden's extended industry classification used in this study.

Affärsvärlden's old crude industry classification		Affärsvärlden's extended industry classification
Industrials	→	Industrials
Shipping		
Construction & Real Estate	→	Financials
Mixed Investment Companies		
Pure Investment Companies		
Pulp & Paper	→	Basic Materials
Trading & Retail	→	Consumer Goods
Computer Industry	→	IT & Telecommunication
Other	→	Industrials
		Financials
		Consumer Goods
		Basic Materials
		IT & Telecommunication
		Services
		Media
		Helth Care
		Other

Table A.1.2: An illustration of the Industry Classification Benchmark re-classified into Affärsvärlden's extended industry classification used in this study.

International Industry Classification		Affärsvärlden's extended industry classification
Oil & Gas	→	Basic Materials
Chemicals		
Basic Resources		
Construction & Materials	→	Industrials
Industrial Goods & Services		
Automobiles & Parts	→	Consumer Goods
Food & Beverage		
Personal & Household Goods		
Health Care	→	Health Care
Retail	→	Services
Media		
Travel & Leisure		
Telecommunications	→	IT & Telecommunication
Utilities		Basic Materials
Banks	→	Financials
Insurance		
Real Estate		
Financial Services		
Equity/Nonequity Investment Instruments		
Technology	→	IT & Telecommunication

Table A.1.3: Number of companies in each industry.

Industry	Number of companies
Industrials	210
Financials	154
IT & Telecommunication	149
Other	88
Consumer Goods	83
Basic Materials	74
Health Care	54
Services	27
Media	17
Total	**856**

Appendix 3

Table A.1.1: Percentage of firms with Net Income > Implied Permanent Earnings (IPE) discounted by the short-term risk-free rate

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total	46	2473	49	1533
1979	73,0	37	51,5	33
1980	42,1	38	38,2	34
1981	22,0	41	22,5	40
1982	13,0	46	15,0	40
1983	5,2	58	26,7	45
1984	9,1	77	36,2	47
1985	11,1	81	22,9	48
1986	3,9	77	12,5	48
1987	25,3	79	28,6	49
1988	15,2	79	24,0	50
1989	17,6	85	15,4	52
1990	27,2	81	16,7	48
1991	14,3	70	26,7	45
1992	11,8	68	11,6	43
1993	16,2	68	21,4	42
1994	55,6	72	40,0	45
1995	71,4	77	46,5	43
1996	28,8	80	40,0	40
1997	54,8	84	55,0	40
1998	69,0	87	79,1	43
1999	61,0	82	77,6	49
2000	78,7	75	84,1	44
2001	52,1	73	56,3	48
2002	48,7	76	54,0	50
2003	52,7	74	64,6	48
2004	77,3	75	81,8	44
2005	79,5	78	91,1	45
2006	76,9	78	86,0	50
2007	77,3	75	80,0	45
2008	69,3	75	35,6	45
2009	48,7	75	65,9	44
2010	80,0	70	89,7	39
2011	81,8	66	66,7	39
2012	71,2	59	81,6	38
2013	78,6	57	86,7	30
Mean	**46,3**		**49,5**	
Median	52,1		46,5	
Std. Error	4,65		4,50	
P-value	0,8935		0,7919	
P-value diff between means			0,3116	

Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{f,\,t-1}/(1+r_{f,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 1-year treasury bill rate). Net Income as reported in the income statement. N is the total number of observations each year (both positives and negatives).

Table A.1.2: Percentage of market capitalization (of total market capitalization) for firms with Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate

	Industrials		Financials	
	% Market cap	Valid N	% Market cap	Valid N
Total	76	2473	79	1533
1979	20,4	37	53,9	33
1980	58,7	38	33,1	34
1981	44,3	41	18,7	40
1982	19,6	46	6,2	40
1983	2,3	58	23,0	45
1984	14,3	77	27,0	47
1985	40,1	81	19,5	48
1986	2,9	77	5,7	48
1987	43,9	79	32,1	49
1988	38,7	79	24,5	50
1989	28,4	85	6,4	52
1990	24,1	81	6,3	48
1991	2,7	70	46,5	45
1992	8,5	68	5,1	43
1993	4,5	68	4,8	42
1994	50,2	72	63,2	45
1995	61,9	77	78,5	43
1996	35,3	80	79,6	40
1997	47,9	84	46,9	40
1998	90,8	87	67,7	43
1999	87,9	82	84,3	49
2000	81,3	75	79,5	44
2001	46,5	73	72,5	48
2002	50,4	76	74,6	50
2003	65,8	74	82,4	48
2004	97,0	75	99,3	44
2005	95,3	78	96,3	45
2006	98,7	78	95,8	50
2007	98,8	75	83,8	45
2008	95,5	75	62,0	45
2009	50,1	75	73,3	44
2010	98,6	70	99,9	39
2011	99,4	66	82,5	39
2012	99,3	59	94,4	38
2013	99,3	57	99,9	30
Mean	**54,4**		**55,1**	
Median	50,1		63,2	
Std. Error	5,79		5,67	
P-value	0,7354		0,5631	

Market capitalization for firms with a positive difference between Net Income and Implied Permanent Earnings divided by total market capitalization for all firms. All variables as defined in Table A.1.1.

Table A.1.3: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate for the period 1979-1999

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total		1467		924
1979	73,0	37	51,5	33
1980	42,1	38	38,2	34
1981	22,0	41	22,5	40
1982	13,0	46	15,0	40
1983	5,2	58	26,7	45
1984	9,1	77	36,2	47
1985	11,1	81	22,9	48
1986	3,9	77	12,5	48
1987	25,3	79	28,6	49
1988	15,2	79	24,0	50
1989	17,6	85	15,4	52
1990	27,2	81	16,7	48
1991	14,3	70	26,7	45
1992	11,8	68	11,6	43
1993	16,2	68	21,4	42
1994	55,6	72	40,0	45
1995	71,4	77	46,5	43
1996	28,8	80	40,0	40
1997	54,8	84	55,0	40
1998	69,0	87	79,1	43
1999	61,0	82	77,6	49
Mean	**30,8**		**33,7**	
Median	22,0		26,7	
Std. Error	5,13		4,24	

Table A.1.4: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate for the period 2000-2013

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total		1006		609
2000	78,7	75	84,1	44
2001	52,1	73	56,3	48
2002	48,7	76	54,0	50
2003	52,7	74	64,6	48
2004	77,3	75	81,8	44
2005	79,5	78	91,1	45
2006	76,9	78	86,0	50
2007	77,3	75	80,0	45
2008	69,3	75	35,6	45
2009	48,7	75	65,9	44
2010	80,0	70	89,7	39
2011	81,8	66	66,7	39
2012	71,2	59	81,6	38
2013	78,6	57	86,7	30
Mean	**69,5**		**73,1**	
Median	77,1		80,8	
Std. Error	3,45		4,38	

Table A.2.1: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the long-term risk-free rate

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total	42	2473	46	1533
1979	59,5	37	42,4	33
1980	39,5	38	35,3	34
1981	22,0	41	22,5	40
1982	6,5	46	12,5	40
1983	5,2	58	24,4	45
1984	7,8	77	34,0	47
1985	8,6	81	20,8	48
1986	5,2	77	12,5	48
1987	21,5	79	26,5	49
1988	7,6	79	14,0	50
1989	15,3	85	13,5	52
1990	34,6	81	16,7	48
1991	15,7	70	26,7	45
1992	13,2	68	11,6	43
1993	20,6	68	33,3	42
1994	52,8	72	40,0	45
1995	67,5	77	37,2	43
1996	18,8	80	35,0	40
1997	32,1	84	37,5	40
1998	59,8	87	65,1	43
1999	56,1	82	77,6	49
2000	73,3	75	81,8	44
2001	49,3	73	54,2	48
2002	44,7	76	48,0	50
2003	45,9	74	56,3	48
2004	61,3	75	70,5	44
2005	67,9	78	86,7	45
2006	67,9	78	82,0	50
2007	76,0	75	80,0	45
2008	69,3	75	35,6	45
2009	47,4	75	65,9	44
2010	64,3	70	87,2	39
2011	80,3	66	61,5	39
2012	67,8	59	81,6	38
2013	73,2	57	86,7	30
Mean	**41,7**		**46,2**	
Median	45,9		37,5	
Std. Error	4,26		4,34	
P-value	0,7127		0,9808	

Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{f,\,t-1}/(1+r_{f,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 10-year government bond rate). Net Income as reported in the income statement. N is the total number of observations each year (both positives and negatives).

Table A.2.2: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the long-term risk-free rate for the period 1979-1999

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total		1467		924
1979	59,5	37	42,4	33
1980	39,5	38	35,3	34
1981	22,0	41	22,5	40
1982	6,5	46	12,5	40
1983	5,2	58	24,4	45
1984	7,8	77	34,0	47
1985	8,6	81	20,8	48
1986	5,2	77	12,5	48
1987	21,5	79	26,5	49
1988	7,6	79	14,0	50
1989	15,3	85	13,5	52
1990	34,6	81	16,7	48
1991	15,7	70	26,7	45
1992	13,2	68	11,6	43
1993	20,6	68	33,3	42
1994	52,8	72	40,0	45
1995	67,5	77	37,2	43
1996	18,8	80	35,0	40
1997	32,1	84	37,5	40
1998	59,8	87	65,1	43
1999	56,1	82	77,6	49
Mean	**27,1**		**30,4**	
Median	20,6		26,7	
Std. Error	4,52		3,71	

Table A.2.3: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the long-term risk-free rate for the period 2000-2013

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total		1006		609
2000	73,3	75	81,8	44
2001	49,3	73	54,2	48
2002	44,7	76	48,0	50
2003	45,9	74	56,3	48
2004	61,3	75	70,5	44
2005	67,9	78	86,7	45
2006	67,9	78	82,0	50
2007	76,0	75	80,0	45
2008	69,3	75	35,6	45
2009	47,4	75	65,9	44
2010	64,3	70	87,2	39
2011	80,3	66	61,5	39
2012	67,8	59	81,6	38
2013	73,2	57	86,7	30
Mean	**63,5**		**69,8**	
Median	67,9		75,2	
Std. Error	3,19		4,43	

Table A.3.1: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the cost of equity

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total	22	2473	33	1533
1979	37,8	37	33,3	33
1980	28,9	38	17,6	34
1981	7,3	41	5,0	40
1982	6,5	46	10,0	40
1983	1,7	58	20,0	45
1984	5,2	77	23,4	47
1985	3,7	81	10,4	48
1986	1,3	77	6,3	48
1987	7,6	79	18,4	49
1988	5,1	79	4,0	50
1989	11,8	85	9,6	52
1990	16,0	81	10,4	48
1991	10,0	70	20,0	45
1992	7,4	68	11,6	43
1993	7,4	68	19,0	42
1994	30,6	72	24,4	45
1995	44,2	77	32,6	43
1996	8,8	80	15,0	40
1997	14,3	84	30,0	40
1998	31,0	87	44,2	43
1999	25,6	82	55,1	49
2000	52,0	75	65,9	44
2001	23,3	73	33,3	48
2002	17,1	76	28,0	50
2003	9,5	74	27,1	48
2004	24,0	75	47,7	44
2005	37,2	78	77,8	45
2006	32,1	78	76,0	50
2007	38,7	75	64,4	45
2008	56,0	75	33,3	45
2009	11,8	75	34,1	44
2010	35,7	70	76,9	39
2011	68,2	66	56,4	39
2012	37,3	59	71,1	38
2013	26,8	57	63,3	30
Mean	**22,3**		**33,6**	
Median	17,1		28,0	
Std. Error	2,88		3,89	
P-value	<0,0001		0,1583	
P-value diff between means			0,0115	

Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{E,\,t-1}/(1+r_{E,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_E the cost of equity (the Swedish 1-year treasury bill rate + 5%). Net Income as reported in the income statement. N is the total number of observations each year (both positives and negatives).

Table A.3.2: Percentage of market capitalization (of total market capitalization) for firms with Net Income > Implied Permanent Earnings discounted by the cost of equity

	Industrials		Financials	
	% Market cap	Valid N	% Market cap	Valid N
Total	30	2473	61	1533
1979	12,1	37	35,1	33
1980	37,2	38	15,4	34
1981	18,8	41	3,9	40
1982	10,4	46	5,5	40
1983	2,0	58	17,8	45
1984	9,5	77	16,5	47
1985	0,7	81	10,0	48
1986	1,4	77	2,8	48
1987	26,3	79	18,8	49
1988	2,9	79	2,5	50
1989	24,8	85	1,3	52
1990	18,1	81	2,5	48
1991	1,1	70	34,7	45
1992	8,1	68	5,1	43
1993	0,8	68	3,4	42
1994	38,4	72	11,7	45
1995	34,7	77	49,6	43
1996	16,7	80	34,4	40
1997	29,2	84	22,2	40
1998	38,1	87	15,3	43
1999	34,6	82	59,5	49
2000	28,8	75	53,3	44
2001	13,8	73	17,4	48
2002	13,8	76	33,3	50
2003	6,6	74	31,4	48
2004	41,2	75	81,3	44
2005	61,9	78	94,7	45
2006	46,5	78	94,4	50
2007	21,6	75	80,0	45
2008	85,5	75	60,8	45
2009	3,9	75	51,9	44
2010	34,3	70	97,3	39
2011	87,0	66	77,4	39
2012	9,3	59	91,6	38
2013	17,5	57	78,0	30
Mean	**23,9**		**37,5**	
Median	18,1		31,4	
Std. Error	3,68		5,44	
P-value	<0,0001		0,5218	

Market capitalization for firms with a positive difference between Net Income and Implied Permanent Earnings divided by total market capitalization for all firms. All variables as defined in Table A.3.1.

Table A.3.3: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the cost of equity for the period 1979-1999

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total		1467		924
1979	37,8	37	33,3	33
1980	28,9	38	17,6	34
1981	7,3	41	5,0	40
1982	6,5	46	10,0	40
1983	1,7	58	20,0	45
1984	5,2	77	23,4	47
1985	3,7	81	10,4	48
1986	1,3	77	6,3	48
1987	7,6	79	18,4	49
1988	5,1	79	4,0	50
1989	11,8	85	9,6	52
1990	16,0	81	10,4	48
1991	10,0	70	20,0	45
1992	7,4	68	11,6	43
1993	7,4	68	19,0	42
1994	30,6	72	24,4	45
1995	44,2	77	32,6	43
1996	8,8	80	15,0	40
1997	14,3	84	30,0	40
1998	31,0	87	44,2	43
1999	25,6	82	55,1	49
Mean	**14,9**		**20,0**	
Median	8,8		18,4	
Std. Error	2,78		2,87	

Table A.3.4: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the cost of equity for the period 2000-2013

	Industrials		Financials	
	% NI>IPE	Valid N	% NI>IPE	Valid N
Total		1006		609
2000	52,0	75	65,9	44
2001	23,3	73	33,3	48
2002	17,1	76	28,0	50
2003	9,5	74	27,1	48
2004	24,0	75	47,7	44
2005	37,2	78	77,8	45
2006	32,1	78	76,0	50
2007	38,7	75	64,4	45
2008	56,0	75	33,3	45
2009	11,8	75	34,1	44
2010	35,7	70	76,9	39
2011	68,2	66	56,4	39
2012	37,3	59	71,1	38
2013	26,8	57	63,3	30
Mean	**33,5**		**54,0**	
Median	33,9		59,9	
Std. Error	4,49		5,19	

Table A.4.1: Percentage of firms with Economic Earnings > Net Income

	Industrials		Financials	
	% EE>NI	Valid N	% EE>NI	Valid N
Total	62	2249	61	1388
1979	N/A	N/A	N/A	N/A
1980	75,0	36	90,3	31
1981	86,5	37	84,8	33
1982	77,5	40	80,6	36
1983	97,7	44	92,3	39
1984	41,8	55	37,2	43
1985	60,3	73	63,0	46
1986	90,4	73	97,5	40
1987	54,1	74	61,4	44
1988	92,9	70	95,7	47
1989	74,3	74	80,0	45
1990	9,3	75	6,7	45
1991	23,5	68	23,3	43
1992	43,1	65	25,6	43
1993	98,5	65	92,5	40
1994	67,7	65	44,4	36
1995	34,3	70	60,0	40
1996	84,0	75	97,3	37
1997	70,8	72	62,9	35
1998	21,5	79	39,5	38
1999	71,8	78	71,4	42
2000	50,0	70	63,4	41
2001	50,0	66	40,5	42
2002	24,3	70	31,9	47
2003	80,6	72	83,3	48
2004	88,9	72	95,3	43
2005	93,2	74	72,1	43
2006	86,1	72	77,3	44
2007	38,0	71	18,6	43
2008	2,8	71	18,2	44
2009	89,0	73	81,8	44
2010	80,0	69	69,2	39
2011	21,2	66	25,6	39
2012	71,2	59	60,5	38
2013	83,6	56	66,7	30
Mean	**62,8**		**62,1**	
Median	71,5		65,0	
Std. Error	4,76		4,60	
P-value	0,0113		0,0130	
P-value diff between means			0,4594	

Economic Earnings are calculated as $P_t+Div_t-P_{t-1}$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and P_{t-1} market capitalization at the beginning of the fiscal year. Net Income as reported in the income statement. N is the total number of observations each year (both positives and negatives).

Table A.4.2: Percentage of market capitalization (of total market capitalization) for firms with Economic Earnings > Net Income

	Industrials		Financials	
	% Market cap	Valid N	% Market cap	Valid N
Total	67	2249	63	1388
1979	N/A	N/A	N/A	N/A
1980	76,1	36	63,2	31
1981	95,5	37	96,6	33
1982	82,5	40	91,8	36
1983	99,8	44	83,2	39
1984	29,8	55	98,7	43
1985	89,7	73	32,5	46
1986	95,4	73	72,0	40
1987	43,6	74	99,7	44
1988	99,4	70	51,4	47
1989	86,9	74	98,8	45
1990	2,4	75	86,1	45
1991	58,4	68	13,3	43
1992	77,5	65	19,2	43
1993	99,5	65	55,4	40
1994	51,7	65	95,6	36
1995	42,5	70	43,2	40
1996	79,0	75	82,3	37
1997	83,6	72	96,7	35
1998	9,7	79	89,8	38
1999	76,4	78	68,9	42
2000	36,5	70	55,4	41
2001	47,1	66	92,8	42
2002	13,6	70	24,3	47
2003	88,3	72	8,2	48
2004	93,6	72	94,5	43
2005	99,4	74	99,5	43
2006	96,9	72	88,5	44
2007	58,2	71	74,6	43
2008	0,0	71	6,2	44
2009	99,4	73	24,6	44
2010	97,3	70	81,6	39
2011	6,3	66	54,5	39
2012	89,7	59	19,4	38
2013	49,7	55	85,1	30
Mean	**66,3**		**66,1**	
Median	78,2		78,1	
Std. Error	5,60		5,33	
P-value	0,0064		0,0048	

Market capitalization for firms with a positive difference between Economic Earnings and Net Income divided by total market capitalization for all firms. All variables as defined in Table A.4.1.

Table A.4.3: Percentage of firms with Economic Earnings > Net Income for the period 1979-1999

	Industrials		Financials	
	% EE>NI	Valid N	% EE>NI	Valid N
Total		1288		803
1979	N/A	N/A	N/A	N/A
1980	75,0	36	90,3	31
1981	86,5	37	84,8	33
1982	77,5	40	80,6	36
1983	97,7	44	92,3	39
1984	41,8	55	37,2	43
1985	60,3	73	63,0	46
1986	90,4	73	97,5	40
1987	54,1	74	61,4	44
1988	92,9	70	95,7	47
1989	74,3	74	80,0	45
1990	9,3	75	6,7	45
1991	23,5	68	23,3	43
1992	43,1	65	25,6	43
1993	98,5	65	92,5	40
1994	67,7	65	44,4	36
1995	34,3	70	60,0	40
1996	84,0	75	97,3	37
1997	70,8	72	62,9	35
1998	21,5	79	39,5	38
1999	71,8	78	71,4	42
Mean	**63,7**		**65,3**	
Median	71,3		67,2	
Std. Error	5,99		6,22	

Table A.4.4: Percentage of firms with Economic Earnings > Net Income for the period 2000-2013

	Industrials		Financials	
	% EE>NI	Valid N	% EE>NI	Valid N
Total		961		585
2000	50,0	70	63,4	41
2001	50,0	66	40,5	42
2002	24,3	70	31,9	47
2003	80,6	72	83,3	48
2004	88,9	72	95,3	43
2005	93,2	74	72,1	43
2006	86,1	72	77,3	44
2007	38,0	71	18,6	43
2008	2,8	71	18,2	44
2009	89,0	73	81,8	44
2010	80,0	69	69,2	39
2011	21,2	66	25,6	39
2012	71,2	59	60,5	38
2013	83,6	56	66,7	30
Mean	**61,4**		**57,5**	
Median	75,6		65,0	
Std. Error	8,01		6,87	

Table A.5.1: Percentage of firms with Economic Earnings > Implied Permanent Earnings discounted by the short-term risk-free rate

	Industrials		Financials	
	% EE>IPE	Valid N	% EE>IPE	Valid N
Total	60	2258	62	1457
1979	N/A	N/A	N/A	N/A
1980	80,6	36	90,9	33
1981	83,8	37	85,7	35
1982	70,0	40	69,2	39
1983	97,7	44	92,9	42
1984	34,5	55	31,9	47
1985	46,6	73	52,0	50
1986	83,6	73	97,8	45
1987	45,9	74	48,9	47
1988	92,9	70	87,8	49
1989	71,6	74	63,8	47
1990	6,7	75	4,3	46
1991	19,1	68	25,0	44
1992	24,6	65	13,6	44
1993	95,4	65	92,7	41
1994	69,7	66	42,1	38
1995	47,1	70	56,1	41
1996	84,0	75	92,1	38
1997	70,8	72	72,2	36
1998	22,5	80	53,8	39
1999	70,5	78	78,6	42
2000	50,0	70	73,2	41
2001	57,6	66	33,3	42
2002	21,4	70	33,3	48
2003	70,8	72	79,2	48
2004	87,5	72	95,3	43
2005	93,2	74	95,5	44
2006	87,5	72	86,7	45
2007	47,9	71	31,3	48
2008	0,0	73	2,0	49
2009	85,3	75	87,5	48
2010	78,9	71	85,0	40
2011	34,3	67	17,5	40
2012	69,5	59	71,8	39
2013	82,1	56	84,6	39
Mean	**61,3**		**62,6**	
Median	70,3		72,0	
Std. Error	4,73		5,04	
P-value	0,0114		0,0045	

Economic Earnings are calculated as $P_t+Div_t-P_{t-1}$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and P_{t-1} market capitalization at the beginning of the fiscal year. Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{f,\,t-1}/(1+r_{f,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 1-year treasury bill rate).

Table A.5.2: Percentage of market capitalization (of total market capitalization) for firms with Economic Earnings > Implied Permanent Earnings discounted by the short-term risk-free rate

	Industrials		Financials	
	% Market cap	Valid N	% Market cap	Valid N
Total	70	2258	74	1457
1979	N/A	N/A	N/A	N/A
1980	83,7	36	94,5	33
1981	94,8	37	91,9	35
1982	84,6	40	75,4	39
1983	99,8	44	91,3	42
1984	25,2	55	29,0	47
1985	83,5	73	68,6	50
1986	86,5	73	96,4	45
1987	37,6	74	42,7	47
1988	99,4	70	91,3	49
1989	86,1	74	65,5	47
1990	1,7	75	13,2	46
1991	53,0	68	48,5	44
1992	56,5	65	44,2	44
1993	99,4	65	94,3	41
1994	51,1	66	41,9	38
1995	51,0	70	80,3	41
1996	96,3	75	97,8	38
1997	89,3	72	94,5	36
1998	10,0	80	70,1	39
1999	96,6	78	57,4	42
2000	35,1	70	93,8	41
2001	51,1	66	25,4	42
2002	15,8	70	10,0	48
2003	88,0	72	94,4	48
2004	93,5	72	99,5	43
2005	99,4	74	99,9	44
2006	99,0	72	99,7	45
2007	60,4	71	50,6	48
2008	0,0	73	0,0	49
2009	99,4	75	99,0	48
2010	97,2	71	99,4	40
2011	7,5	67	9,1	40
2012	91,3	59	95,7	39
2013	67,7	56	98,4	39
Mean	**67,4**		**69,5**	
Median	84,1		85,8	
Std. Error	5,70		5,51	
P-value	0,0023		0,0006	

Market capitalization for firms with a positive difference between Economic Earnings and Implied Permanent Earnings divided by total market capitalization for all firms. All variables as defined in Table A.5.1.

Table A.5.3: Percentage of firms with Economic Earnings > Implied Permanent Earnings discounted by the long-term risk-free rate

	Industrials		Financials	
	% EE>IPE	Valid N	% EE>IPE	Valid N
Total	59	2258	61	1457
1979	N/A	N/A	N/A	N/A
1980	80,6	36	90,9	33
1981	83,8	37	85,7	35
1982	70,0	40	69,2	39
1983	97,7	44	92,9	42
1984	34,5	55	31,9	47
1985	46,6	73	52,0	50
1986	83,6	73	97,8	45
1987	44,6	74	48,9	47
1988	91,4	70	87,8	49
1989	70,3	74	63,8	47
1990	6,7	75	4,3	46
1991	19,1	68	27,3	44
1992	24,6	65	15,9	44
1993	95,4	65	97,6	41
1994	69,7	66	42,1	38
1995	44,3	70	56,1	41
1996	80,0	75	92,1	38
1997	68,1	72	72,2	36
1998	20,0	80	51,3	39
1999	67,9	78	78,6	42
2000	48,6	70	73,2	41
2001	53,0	66	33,3	42
2002	20,0	70	31,3	48
2003	69,4	72	79,2	48
2004	87,5	72	95,3	43
2005	93,2	74	93,2	44
2006	87,5	72	86,7	45
2007	45,1	71	31,3	48
2008	0,0	73	2,0	49
2009	85,3	75	87,5	48
2010	77,5	71	85,0	40
2011	29,9	67	12,5	40
2012	69,5	59	71,8	39
2013	82,1	56	82,1	39
Mean	**60,2**		**62,4**	
Median	69,5		72,0	
Std. Error	4,76		5,07	
P-value	0,0197		0,0098	

Economic Earnings are calculated as $P_t+Div_t-P_{t-1}$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and P_{t-1} market capitalization at the beginning of the fiscal year. Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{f,\,t-1}/(1+r_{f,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 10-year government bond rate).

Table A.6.1: Risk-Growth Cancellation (risk-free rate)

	Industrials				Financials			
	Mean	Median	Std Error	Valid N	Mean	Median	Std Error	Valid N
1979	-0,003	0,011	0,024	37	0,028	-0,007	0,019	33
1980	-0,018	-0,026	0,014	38	-0,023	-0,032	0,009	34
1981	-0,043	-0,048	0,010	41	-0,037	-0,052	0,008	40
1982	-0,083	-0,055	0,026	46	-0,043	-0,037	0,014	40
1983	-0,100	-0,085	0,027	58	-0,029	-0,042	0,012	45
1984	-0,059	-0,075	0,009	77	-0,015	-0,032	0,011	47
1985	-0,067	-0,073	0,011	81	-0,055	-0,065	0,007	48
1986	-0,054	-0,053	0,006	77	-0,036	-0,048	0,009	48
1987	-0,028	-0,033	0,006	79	-0,029	-0,043	0,010	49
1988	-0,042	-0,051	0,007	79	-0,040	-0,060	0,008	50
1989	-0,047	-0,054	0,006	85	-0,056	-0,075	0,008	52
1990	-0,055	-0,059	0,021	81	-0,183	-0,087	0,096	48
1991	-0,184	-0,072	0,056	70	-0,145	-0,071	0,209	45
1992	-0,428	-0,175	0,096	68	-1,512	-0,230	0,476	43
1993	-0,089	-0,032	0,026	68	-0,097	-0,011	0,085	42
1994	0,003	0,010	0,010	72	-0,010	-0,029	0,034	45
1995	0,011	0,020	0,009	77	-0,051	-0,020	0,029	43
1996	-0,003	0,015	0,011	80	0,002	0,002	0,018	40
1997	0,007	0,013	0,009	84	0,025	0,013	0,012	40
1998	-0,026	0,028	0,024	87	0,053	0,032	0,014	43
1999	-0,049	0,017	0,032	82	0,063	0,058	0,014	49
2000	-0,028	0,043	0,049	75	0,072	0,044	0,030	44
2001	-0,171	0,011	0,108	73	-0,096	0,031	0,049	48
2002	-0,331	-0,005	0,202	76	-0,249	0,006	0,114	50
2003	-0,087	0,013	0,038	74	-0,010	0,031	0,029	48
2004	0,005	0,037	0,015	75	0,032	0,043	0,018	44
2005	0,029	0,038	0,007	78	0,117	0,104	0,022	45
2006	0,009	0,025	0,015	78	0,078	0,084	0,019	50
2007	-0,009	0,029	0,018	75	0,087	0,071	0,020	45
2008	-0,114	0,059	0,072	75	-0,282	-0,099	0,111	45
2009	-0,073	0,024	0,026	76	-0,182	0,054	0,254	44
2010	-0,486	0,039	0,512	70	-0,149	0,090	0,249	39
2011	-0,117	0,057	0,150	66	-0,079	0,050	0,057	39
2012	-0,040	0,050	0,029	59	0,064	0,083	0,081	38
2013	-0,004	0,032	0,020	56	0,001	0,069	0,122	30
Total	**-0,079**	**-0,170**	**0,017**	**2473**	**-0,080**	**-0,021**	**0,020**	**1533**
P-value	**0,0003**				**0,0857**			

Difference between the cum-dividend E/P ratio and the inverse of the capitalization factor. Calculated as NIt/(Pt+Divt)-(rf/(1+rf)), where Pt is market capitalization at the end of the fiscal year, Divt total dividends, and rf the risk-free rate (the Swedish 1-year treasury bill rate). Net Income as reported in the income statement

Table A.6.2: Risk-Growth Cancellation (cost of equity)

	Industrials				Financials			
	Mean	Median	Std Error	Valid N	Mean	Median	Std Error	Valid N
1979	-0,043	-0,028	0,024	37	-0,012	-0,047	0,019	33
1980	-0,057	-0,065	0,014	38	-0,061	-0,070	0,010	34
1981	-0,081	-0,086	0,010	41	-0,075	-0,090	0,008	40
1982	-0,121	-0,093	0,026	46	-0,081	-0,075	0,015	40
1983	-0,138	-0,123	0,027	58	-0,067	-0,081	0,013	45
1984	-0,096	-0,113	0,009	77	-0,053	-0,070	0,011	47
1985	-0,104	-0,110	0,011	81	-0,092	-0,102	0,007	48
1986	-0,093	-0,093	0,006	77	-0,075	-0,087	0,009	48
1987	-0,068	-0,073	0,006	79	-0,069	-0,083	0,010	49
1988	-0,081	-0,090	0,007	79	-0,079	-0,099	0,008	50
1989	-0,085	-0,093	0,006	85	-0,095	-0,113	0,008	52
1990	-0,092	-0,096	0,021	81	-0,220	-0,123	0,097	48
1991	-0,223	-0,110	0,056	70	-0,184	-0,110	0,211	45
1992	-0,466	-0,213	0,097	68	-1,550	-0,269	0,482	43
1993	-0,130	-0,072	0,026	68	-0,138	-0,052	0,086	42
1994	-0,038	-0,031	0,010	72	-0,051	-0,070	0,034	45
1995	-0,029	-0,020	0,009	77	-0,091	-0,056	0,029	43
1996	-0,046	-0,028	0,011	80	-0,040	-0,040	0,019	40
1997	-0,036	-0,031	0,009	84	-0,018	-0,030	0,012	40
1998	-0,070	-0,015	0,024	87	0,009	-0,012	0,014	43
1999	-0,093	-0,027	0,032	82	0,018	0,014	0,014	49
2000	-0,072	-0,001	0,050	75	0,028	0,000	0,030	44
2001	-0,215	-0,033	0,109	73	-0,140	-0,013	0,049	48
2002	-0,375	-0,048	0,203	76	-0,293	-0,038	0,115	50
2003	-0,132	-0,032	0,038	74	-0,055	-0,014	0,030	48
2004	-0,040	-0,008	0,015	75	-0,013	-0,003	0,018	44
2005	-0,017	-0,008	0,007	78	0,072	0,058	0,023	45
2006	-0,036	-0,020	0,015	78	0,033	0,039	0,019	50
2007	-0,054	-0,016	0,018	75	0,043	0,026	0,020	45
2008	-0,158	0,015	0,073	75	-0,327	-0,144	0,112	45
2009	-0,120	-0,023	0,026	76	-0,229	0,007	0,257	44
2010	-0,533	-0,008	0,516	70	-0,196	0,043	0,253	39
2011	-0,163	0,011	0,151	66	-0,125	0,004	0,058	39
2012	-0,087	0,003	0,029	59	0,018	0,036	0,082	38
2013	-0,050	-0,015	0,020	56	-0,045	0,022	0,124	30
Total	**-0,123**	**-0,031**	**0,017**	**2473**	**-0,124**	**-0,050**	**0,020**	**1533**
P-value	**<0,001**				**0,0092**			

Difference between the cum-dividend E/P ratio and the inverse of the capitalization factor. Calculated as NIt/(Pt+Divt)-(rE/(1+rE)), where Pt is market capitalization at the end of the fiscal year, Divt total dividends, and rE the cost of equity (the Swedish 1-year treasury bill rate + 5%). Net Income as reported in the income statement

Table A.7.1: Percentage of firms with Average Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate

	Industrials		Financials	
	% Avg NI>IPE	Valid N	% Avg NI>IPE	Valid N
Total	45	2149	51	1293
1979	N/A	N/A	N/A	N/A
1980	48,6	37	54,8	31
1981	17,9	39	23,5	34
1982	13,6	44	31,6	38
1983	5,8	52	23,8	42
1984	7,0	71	32,6	43
1985	8,2	73	32,5	40
1986	1,4	73	7,7	39
1987	25,7	70	28,9	45
1988	11,1	72	22,7	44
1989	9,5	74	9,3	43
1990	21,5	65	23,3	43
1991	10,9	64	14,0	43
1992	13,8	65	25,0	40
1993	14,1	64	11,1	36
1994	58,6	70	36,8	38
1995	69,0	71	41,7	36
1996	31,0	71	34,3	35
1997	50,7	69	70,6	34
1998	67,1	70	83,8	37
1999	68,7	67	88,6	35
2000	70,3	64	76,3	38
2001	56,3	64	65,9	41
2002	52,1	71	64,4	45
2003	53,5	71	69,8	43
2004	73,6	72	88,1	42
2005	82,6	69	90,5	42
2006	84,8	66	97,4	38
2007	75,0	68	73,2	41
2008	71,4	70	70,0	40
2009	59,4	69	61,5	39
2010	72,7	66	89,7	39
2011	79,0	62	87,2	39
2012	82,1	56	83,3	30
2013	N/A	N/A	N/A	N/A
Mean	**44,5**		**51,9**	
Median	52,1		54,8	
Std. Error	4,99		5,02	
P-value	0,9910		0,6824	
P-value diff between means			0,1496	

Net Income calculated as an average over three consecutive years. Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{f,\,t-1}/(1+r_{f,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 1-year treasury bill rate).

Table A.7.2: Percentage of firms with Average Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate for the period 1979-1999

	Industrials		Financials	
	% Avg NI>IPE	Valid N	% Avg NI>IPE	Valid N
Total		1281		776
1979	N/A	N/A	N/A	N/A
1980	48,6	37	54,8	31
1981	17,9	39	23,5	34
1982	13,6	44	31,6	38
1983	5,8	52	23,8	42
1984	7,0	71	32,6	43
1985	8,2	73	32,5	40
1986	1,4	73	7,7	39
1987	25,7	70	28,9	45
1988	11,1	72	22,7	44
1989	9,5	74	9,3	43
1990	21,5	65	23,3	43
1991	10,9	64	14,0	43
1992	13,8	65	25,0	40
1993	14,1	64	11,1	36
1994	58,6	70	36,8	38
1995	69,0	71	41,7	36
1996	31,0	71	34,3	35
1997	50,7	69	70,6	34
1998	67,1	70	83,8	37
1999	68,7	67	88,6	35
Mean	**27,7**		**34,8**	
Median	16,0		30,2	
Std. Error	5,25		5,15	

Table A.7.3: Percentage of firms with Average Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate for the period 2000-2013

	Industrials		Financials	
	% Avg NI>IPE	Valid N	% Avg NI>IPE	Valid N
Total		868		517
2000	70,3	64	76,3	38
2001	56,3	64	65,9	41
2002	52,1	71	64,4	45
2003	53,5	71	69,8	43
2004	73,6	72	88,1	42
2005	82,6	69	90,5	42
2006	84,8	66	97,4	38
2007	75,0	68	73,2	41
2008	71,4	70	70,0	40
2009	59,4	69	61,5	39
2010	72,7	66	89,7	39
2011	79,0	62	87,2	39
2012	82,1	56	83,3	30
2013	N/A	N/A	N/A	N/A
Mean	**70,2**		**78,3**	
Median	72,7		76,3	
Std. Error	3,15		3,25	

Table A.7.4: Percentage of firms with Average Net Income > Implied Permanent Earnings discounted by the cost of equity

	Industrials		Financials	
	% Avg NI>IPE	Valid N	% Avg NI>IPE	Valid N
Total	20	2149	34	1293
1979	N/A	N/A	N/A	N/A
1980	24,3	37	22,6	31
1981	12,8	39	8,8	34
1982	4,5	44	13,2	38
1983	1,9	52	19,0	42
1984	2,8	71	18,6	43
1985	4,1	73	15,0	40
1986	1,4	73	5,1	39
1987	8,6	70	15,6	45
1988	2,8	72	4,5	44
1989	1,4	74	4,7	43
1990	6,2	65	18,6	43
1991	1,6	64	7,0	43
1992	12,3	65	22,5	40
1993	3,1	64	8,3	36
1994	17,1	70	21,1	38
1995	25,4	71	30,6	36
1996	8,5	71	11,4	35
1997	8,7	69	26,5	34
1998	27,1	70	40,5	37
1999	40,3	67	62,9	35
2000	40,6	64	47,4	38
2001	25,0	64	36,6	41
2002	18,3	71	40,0	45
2003	14,1	71	30,2	43
2004	26,4	72	73,8	42
2005	36,2	69	78,6	42
2006	34,8	66	81,6	38
2007	33,8	68	58,5	41
2008	57,1	70	50,0	40
2009	24,6	69	28,2	39
2010	34,8	66	71,8	39
2011	64,5	62	79,5	39
2012	41,1	56	73,3	30
2013	N/A	N/A	N/A	N/A
Mean	**20,2**		**34,1**	
Median	17,1		26,5	
St. Error	2,91		4,32	
P-value	<0,0001		0,002	
P-value diff between means			0,0117	

Net Income calculated as an average over three consecutive years. Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{E,\,t-1}/(1+r_{E,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_E the cost of equity (the Swedish 1-year treasury bill rate + 5%).

Table A.7.5: Percentage of firms with Average Net Income > Implied Permanent Earnings discounted by the cost of equity for the period 1979-1999

	Industrials		Financials	
	% Avg NI>IPE	Valid N	% Avg NI>IPE	Valid N
Total		1281		776
1979	N/A	N/A	N/A	N/A
1980	24,3	37	22,6	31
1981	12,8	39	8,8	34
1982	4,5	44	13,2	38
1983	1,9	52	19,0	42
1984	2,8	71	18,6	43
1985	4,1	73	15,0	40
1986	1,4	73	5,1	39
1987	8,6	70	15,6	45
1988	2,8	72	4,5	44
1989	1,4	74	4,7	43
1990	6,2	65	18,6	43
1991	1,6	64	7,0	43
1992	12,3	65	22,5	40
1993	3,1	64	8,3	36
1994	17,1	70	21,1	38
1995	25,4	71	30,6	36
1996	8,5	71	11,4	35
1997	8,7	69	26,5	34
1998	27,1	70	40,5	37
1999	40,3	67	62,9	35
Mean	**10,7**		**18,8**	
Median	7,3		17,1	
Std. Error	2,42		3,12	

Table A.7.6: Percentage of firms with Average Net Income > Implied Permanent Earnings discounted by the cost of equity for the period 2000-2013

	Industrials		Financials	
	% Avg NI>IPE	Valid N	% Avg NI>IPE	Valid N
Total		868		517
2000	40,6	64	47,4	38
2001	25,0	64	36,6	41
2002	18,3	71	40,0	45
2003	14,1	71	30,2	43
2004	26,4	72	73,8	42
2005	36,2	69	78,6	42
2006	34,8	66	81,6	38
2007	33,8	68	58,5	41
2008	57,1	70	50,0	40
2009	24,6	69	28,2	39
2010	34,8	66	71,8	39
2011	64,5	62	79,5	39
2012	41,1	56	73,3	30
2013	N/A	N/A	N/A	N/A
Mean	**34,7**		**57,7**	
Median	34,8		58,5	
Std. Error	3,95		5,51	

Table A.8.1: Average mean error between Net Income and Implied Permanent Earnings (discounted by the short-term risk-free rate) divided by total Net Income

	Industrials		Financials	
	Avg Mean Error/NI	Valid N	Avg Mean Error/NI	Valid N
Total	0,01	2473	0,04	1533
1979	-4,38	37	1,00	33
1980	0,56	38	-0,59	34
1981	-0,51	41	-1,42	40
1982	-1,04	46	-1,89	40
1983	-4,17	58	-0,83	45
1984	-0,60	77	-0,39	47
1985	-0,57	81	-1,05	48
1986	-1,28	77	-2,52	48
1987	-0,06	79	-0,47	49
1988	-0,33	79	-1,31	50
1989	-0,35	85	-2,84	52
1990	-0,28	81	-8,09	48
1991	19,41	70	0,91	45
1992	4,20	68	4,23	43
1993	64,83	68	-5,65	42
1994	0,44	72	-0,81	45
1995	0,33	77	0,66	43
1996	-0,04	80	0,64	40
1997	0,30	84	0,41	40
1998	0,43	87	0,83	43
1999	0,75	82	0,99	49
2000	0,71	75	1,36	44
2001	-0,64	73	0,71	48
2002	-0,45	76	0,56	50
2003	-0,16	74	0,69	48
2004	0,74	75	1,50	44
2005	0,85	78	1,88	45
2006	0,95	78	1,70	50
2007	0,81	75	1,65	45
2008	0,85	75	3,24	45
2009	-4,33	75	1,57	44
2010	1,28	70	2,46	39
2011	1,39	66	2,24	39
2012	1,22	59	2,29	38
2013	1,39	57	3,08	30
Mean	2,35		0,19	
Median	0,3		0,7	
Std. Error	1,94		0,41	
P-value	0,2341		0,6392	

Mean Error is calculated as the average of NI_t-IPE_t divided by total net income for the same year. Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{f,\,t-1}/(1+r_{f,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 1-year treasury bill rate).

Table A.8.2: Average mean error between Net Income and Implied Permanent Earnings (discounted by the cost of equity) divided by total Net Income

	Industrials		Financials	
	Avg Mean Error/NI	Valid N	Avg Mean Error/NI	Valid N
Total	-0,01	2473	0,01	1533
1979	-8,11	37	-0,06	33
1980	-0,38	38	-2,18	34
1981	-1,60	41	-2,85	40
1982	-2,17	46	-3,43	40
1983	-6,34	58	-1,96	45
1984	-1,28	77	-1,30	47
1985	-1,19	81	-2,12	48
1986	-2,05	77	-3,91	48
1987	-0,64	79	-1,57	49
1988	-1,01	79	-2,72	50
1989	-0,97	85	-4,79	52
1990	-0,83	81	-11,79	48
1991	24,73	70	0,52	45
1992	5,21	68	4,93	43
1993	87,32	68	-8,50	42
1994	-0,10	72	-2,53	45
1995	-0,20	77	-0,24	43
1996	-0,65	80	-0,24	40
1997	-0,41	84	-1,25	40
1998	-0,29	87	-0,67	43
1999	0,26	82	-0,14	49
2000	-0,11	75	0,18	44
2001	-2,67	73	-0,67	48
2002	-2,42	76	-1,05	50
2003	-1,77	74	-0,78	48
2004	-0,16	75	0,32	44
2005	-0,01	78	1,19	45
2006	0,12	78	0,96	50
2007	-0,07	75	0,70	45
2008	0,27	75	4,47	45
2009	-11,45	75	0,69	44
2010	-0,09	70	1,46	39
2011	0,56	66	0,16	39
2012	-0,09	59	1,34	38
2013	-0,62	57	1,79	30
Mean	2,02		-1,03	
Median	-0,4		-0,7	
Std. Error	2,66		0,52	
P-value	0,4515		0,0562	

Mean Error is calculated as the average of NI_t-IPE_t divided by total net income for the same year. Implied Permanent Earnings are calculated as $(P_t+Div_t)\times(r_{E,\,t-1}/(1+r_{E,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_E the cost of equity (the Swedish 1-year treasury bill rate + 5%).

Table A.9.1: Average mean error between Economic Earnings and Net Income divided by total Net Income

	Industrials		Financials	
	Avg Mean Error/NI	Valid N	Avg Mean Error/NI	Valid N
Total	0,04	2436	0,02	1500
1979	N/A	N/A	N/A	N/A
1980	3,27	38	7,91	34
1981	10,21	41	12,69	40
1982	7,65	46	9,00	40
1983	30,53	58	11,05	45
1984	-1,46	77	-1,81	47
1985	3,02	81	2,30	48
1986	5,38	77	15,35	48
1987	-1,44	79	1,23	49
1988	5,82	79	11,12	50
1989	3,83	85	8,69	52
1990	-11,34	81	-53,45	48
1991	-9,26	70	-2,53	45
1992	-2,85	68	3,62	43
1993	-115,78	68	43,09	42
1994	0,55	72	-0,54	45
1995	-0,03	77	3,37	43
1996	2,68	80	5,12	40
1997	2,43	84	9,30	40
1998	-4,59	87	8,47	43
1999	2,73	82	-0,69	49
2000	-2,95	75	4,13	44
2001	-0,79	73	-5,00	48
2002	-9,36	76	-18,96	50
2003	7,69	74	4,44	48
2004	2,58	75	3,52	44
2005	5,46	78	1,39	45
2006	3,97	78	2,05	50
2007	-0,73	75	-3,76	45
2008	-13,35	75	18,49	45
2009	61,22	75	6,37	44
2010	9,01	70	0,91	39
2011	-6,18	66	-11,10	39
2012	4,04	59	-0,37	38
2013	3,20	57	5,40	30
Mean	-0,14		2,97	
Median	2,6		3,6	
Std. Error	4,13		2,41	
P-value	0,9729		0,2264	

Mean Error is calculated as the average of NI_t-EE_t divided by total net income for the same year. Economic Earnings are calculated as P_t+Div_t-P_{t-1}, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and P_{t-1} market capitalization at the beginning of the fiscal year.

Table A.10.1: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate

Consumer goods		
	% NI>IPE	Valid N
Total	42	813
1979	37,5	8
1980	37,5	8
1981	28,6	7
1982	12,5	8
1983	18,8	16
1984	15,0	20
1985	7,7	26
1986	8,7	23
1987	13,0	23
1988	0,0	20
1989	14,3	21
1990	11,1	18
1991	0,0	17
1992	25,0	16
1993	13,3	15
1994	52,9	17
1995	58,8	17
1996	16,7	18
1997	43,5	23
1998	73,1	26
1999	84,0	25
2000	68,0	25
2001	61,5	26
2002	64,3	28
2003	62,1	29
2004	76,7	30
2005	73,3	30
2006	67,6	37
2007	73,7	38
2008	61,5	39
2009	60,5	38
2010	82,4	34
2011	80,6	31
2012	67,9	28
2013	82,1	28
Mean	**44,4**	
Median	52,9	
St. Error	4,79	
P-value	0,8918	

Implied Permanent Earnings are calculated as $(P_t+Div_t) \times (r_{f,\,t-1}/(1+r_{f,\,t-1}))$, where P_t is market capitalization at the end of the fiscal year, Div_t total dividends, and r_f the risk-free rate (the Swedish 1-year treasury bill rate). Net Income as reported in the income statement. N is the total number of observations each year (both positives and negatives).

Table A.10.2: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate for the period 1979-1999

Consumer goods		
	% NI>IPE	Valid N
Total		372
1979	37,5	8
1980	37,5	8
1981	28,6	7
1982	12,5	8
1983	18,8	16
1984	15,0	20
1985	7,7	26
1986	8,7	23
1987	13,0	23
1988	0,0	20
1989	14,3	21
1990	11,1	18
1991	0,0	17
1992	25,0	16
1993	13,3	15
1994	52,9	17
1995	58,8	17
1996	16,7	18
1997	43,5	23
1998	73,1	26
1999	84,0	25
Mean	**27,2**	
Median	16,7	
Std. Error	5,13	

Table A.10.3: Percentage of firms with Net Income > Implied Permanent Earnings discounted by the short-term risk-free rate for the period 2000-2013

Consumer goods		
	% NI>IPE	Valid N
Total		441
2000	68,0	25
2001	61,5	26
2002	64,3	28
2003	62,1	29
2004	76,7	30
2005	73,3	30
2006	67,6	37
2007	73,7	38
2008	61,5	39
2009	60,5	38
2010	82,4	34
2011	80,6	31
2012	67,9	28
2013	82,1	28
Mean	**70,2**	
Median	67,9	
Std. Error	2,13	

Table 11.1: Risk-free rates in Sweden

Year	Rf1Y	Rf10Y
1978	8,37%*	10,09%
1979	9,72%*	10,18%
1980	11,74%*	11,74%
1981	12,15%*	13,49%
1982	11,65%*	13,04%
1983	11,94%*	12,36%
1984	12,42%	12,59%
1985	14,03%	13,13%
1986	9,87%	10,29%
1987	10,19%	11,72%
1988	10,60%	11,38%
1989	11,79%	11,21%
1990	14,20%	13,18%
1991	11,62%	10,73%
1992	12,04%	10,03%
1993	7,78%	8,54%
1994	8,21%	9,74%
1995	9,28%	10,27%
1996	5,72%	8,06%
1997	4,56%	6,65%
1998	4,29%	5,02%
1999	3,53%	5,00%
2000	4,52%	5,37%
2001	4,12%	5,10%
2002	4,31%	5,30%
2003	3,03%	4,64%
2004	2,30%	4,42%
2005	1,89%	3,38%
2006	2,79%	3,70%
2007	3,80%	4,19%
2008	3,64%	3,82%
2009	0,51%*	3,27%
2010	0,73%*	2,88%
2011	1,72%*	2,56%
2012	0,94%*	1,59%
2013	0,86%*	2,13%

The short-term risk-free rate approximated by the Swedish 1-year treasury bill rate. The long-term risk-free rate approximated by the Swedish 10-year government bond yield. * Indicates estimated values.

Table 11.2: Yearly inflation in Sweden and the US

Year	Sweden	US
1978	10,10%	7,60%
1979	7,20%	11,30%
1980	13,60%	13,50%
1981	12,10%	10,30%
1982	8,50%	6,20%
1983	8,90%	3,20%
1984	8,00%	4,30%
1985	7,40%	3,60%
1986	4,20%	1,90%
1987	4,20%	3,60%
1988	5,80%	4,10%
1989	6,40%	4,80%
1990	10,50%	5,40%
1991	9,30%	4,20%
1992	2,30%	3,00%
1993	4,70%	3,00%
1994	2,20%	2,60%
1995	2,50%	2,80%
1996	0,50%	3,00%
1997	0,50%	2,30%
1998	-0,20%	1,60%
1999	0,50%	2,20%
2000	1,00%	3,40%
2001	2,40%	2,80%
2002	2,20%	1,60%
2003	1,90%	2,30%
2004	0,40%	2,70%
2005	0,50%	3,40%
2006	1,40%	3,20%
2007	2,20%	2,80%
2008	3,40%	3,80%
2009	-0,30%	-0,40%
2010	1,30%	1,60%
2011	2,60%	3,20%
2012	0,90%	2,10%
2013	0,00%	1,50%

Yearly inflation rates for Sweden and the US, retrieved from The Swedish Central Bank and US Bureau of Labor Statistics.

Table 12.1: 10-year rolling windows for Table A.1.1 and Table A.1.2

Period		% Firms with NI>PE				% Market Cap with NI>PE			
		Industrials		Financials		Industrials		Financials	
Start	End	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1979	1988	22,0	14,1	27,8	25,3	28,5	29,5	24,4	23,8
1980	1989	16,5	14,1	24,2	23,5	29,3	33,5	19,6	21,3
1981	1990	15,0	14,1	22,0	22,7	25,9	26,2	16,9	19,1
1982	1991	14,2	13,7	22,5	23,5	21,7	21,8	19,7	21,3
1983	1992	14,1	13,0	22,1	23,5	20,6	19,2	19,6	21,3
1984	1993	15,2	14,7	21,6	22,2	20,8	19,2	17,8	13,0
1985	1994	19,8	15,7	22,0	22,2	24,4	26,2	21,4	13,0
1986	1995	25,8	16,9	24,3	22,7	26,6	26,2	27,3	15,5
1987	1996	28,3	21,5	27,1	25,3	29,8	31,9	34,7	28,3
1988	1997	31,3	22,4	29,7	25,3	30,2	31,9	36,2	35,5
1989	1998	36,6	28,0	35,2	33,3	35,4	31,9	40,5	46,7
1990	1999	41,0	41,8	41,5	40,0	41,4	41,6	48,3	55,1
1991	2000	46,1	55,2	48,2	43,3	47,1	49,0	55,6	65,5
1992	2001	49,9	55,2	51,2	50,8	51,5	49,0	58,2	70,1
1993	2002	53,6	55,2	55,4	54,5	55,7	50,3	65,2	73,6
1994	2003	57,3	55,2	59,7	55,6	61,8	56,2	72,9	76,5
1995	2004	59,4	57,9	63,9	60,4	66,5	63,9	76,5	79,0
1996	2005	60,2	57,9	68,3	71,1	69,8	73,6	78,3	79,6
1997	2006	65,1	65,0	72,9	78,3	76,2	84,6	79,9	80,9
1998	2007	67,3	72,9	75,4	79,5	81,3	89,3	83,6	83,1
1999	2008	67,3	73,1	71,1	78,8	81,7	91,6	83,0	83,1
2000	2009	66,1	73,1	69,9	73,0	77,9	88,3	81,9	80,9
2001	2010	66,3	73,1	70,5	73,0	79,7	95,4	84,0	83,1
2002	2011	69,2	77,1	71,5	73,3	85,0	96,2	85,0	83,1
2003	2012	71,5	77,1	74,3	80,8	89,9	97,8	87,0	89,1
2004	2013	74,1	77,3	76,5	81,7	93,2	98,6	88,7	95,1

Table 12.2: 5-year rolling windows for Table A.1.1 and Table A.1.2

Period		% Firms with NI>PE				% Market Cap with NI>PE			
		Industrials		Financials		Industrials		Financials	
Start	End	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1979	1983	31,0	22,0	30,8	26,7	29,1	20,4	27,0	23,0
1980	1984	18,3	13,0	27,7	26,7	27,9	19,6	21,6	23,0
1981	1985	12,1	11,1	24,7	22,9	24,1	19,6	18,9	19,5
1982	1986	8,5	9,1	22,7	22,9	15,9	14,3	16,3	19,5
1983	1987	10,9	9,1	25,4	26,7	20,7	14,3	21,5	23,0
1984	1988	12,9	11,1	24,8	24,0	28,0	38,7	21,8	24,5
1985	1989	14,6	15,2	20,7	22,9	30,8	38,7	17,6	19,5
1986	1990	17,8	17,6	19,4	16,7	27,6	28,4	15,0	6,4
1987	1991	19,9	17,6	22,3	24,0	27,6	28,4	23,2	24,5
1988	1992	17,2	15,2	18,9	16,7	20,5	24,1	17,8	6,4
1989	1993	17,4	16,2	18,4	16,7	13,6	8,5	13,8	6,3
1990	1994	25,0	16,2	23,3	21,4	18,0	8,5	25,2	6,3
1991	1995	33,8	16,2	29,2	26,7	25,6	8,5	39,6	46,5
1992	1996	36,7	28,8	31,9	40,0	32,1	35,3	46,2	63,2
1993	1997	45,3	54,8	40,6	40,0	40,0	47,9	54,6	63,2
1994	1998	55,9	55,6	52,1	46,5	57,2	50,2	67,2	67,7
1995	1999	57,0	61,0	59,6	55,0	64,8	61,9	71,4	78,5
1996	2000	58,4	61,0	67,1	77,6	68,6	81,3	71,6	79,5
1997	2001	63,1	61,0	70,4	77,6	70,9	81,3	70,2	72,5
1998	2002	61,9	61,0	70,2	77,6	71,4	81,3	75,7	74,6
1999	2003	58,6	52,7	67,3	64,6	66,4	65,8	78,7	79,5
2000	2004	61,9	52,7	68,1	64,6	68,2	65,8	81,7	79,5
2001	2005	62,1	52,7	69,6	64,6	71,0	65,8	85,0	82,4
2002	2006	67,0	76,9	75,5	81,8	81,4	95,3	89,7	95,8
2003	2007	72,8	77,3	80,7	81,8	91,1	97,0	91,5	95,8
2004	2008	76,1	77,3	74,9	81,8	97,1	97,0	87,4	95,8
2005	2009	70,4	76,9	71,7	80,0	87,7	95,5	82,2	83,8
2006	2010	70,5	76,9	71,4	80,0	88,3	98,6	82,9	83,8
2007	2011	71,4	77,3	67,6	66,7	88,5	98,6	80,3	82,5
2008	2012	70,2	71,2	67,9	66,7	88,6	98,6	82,4	82,5
2009	2013	72,1	78,6	78,1	81,6	89,3	99,3	90,0	94,4