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# **FAIR VALUE ACCOUNTING AND PROCYCLICAL BEHAVIOR IN THE SWEDISH BANKING SECTOR**

Master's Thesis in Financial Accounting, Spring 2011.

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# ABSTRACT

<i>Introduction</i>	The recent financial crisis has given rise to a discussion among academics and the general public on how accounting contributed to the calamity. Fair value accounting has been called into question as being procyclical. It is discussed whether this could also be said of the Swedish financial sector which is somewhat dissimilar from the American.
<i>Theory</i>	While many in the research community claims that accounting is a neutral measurement system, some researcher claims that accounting also affects what is being measured, i.e. corporations. Fair value accounting in particular could influence market participants because of its fluent nature. Not least has it been shown that U.S. investment banks act upon fair value changes in their capital bases by increasing leverage, thereby causing a procyclical effect in the economy. The Swedish banking system is however not constructed in the same way as the U.S. leaving room for a study of a similar behavior in Sweden.
<i>Methodological discussion</i>	This study uses a positivistic approach, with a quantitative research design. Secondary data on percentage change in Leverage and Total assets for the big four Swedish banks for the period Q1 2001 to Q4 2010 were plotted and a linear regression was made. Also data on how much Fair value assets contribute to earnings for the banks were collected.
<i>Empirical findings</i>	The plots show a distinct positive pattern, even though scattering is rather profound. Data points in the quadrants indicating positive relationship between Leverage and Total assets changes outnumber the opposite quadrants by almost 3 to 1. It is shown that Fair Value assets represent a sizeable share of the income of the Swedish banking sector.
<i>Analysis</i>	A linear regression was made of the scatterplot containing data from all banks, it showed a positive relationship. The statistical data had a high degree of certainty but a rather low degree of explanatory power, meaning that several other important factors contributed to the banks choice of leverage. An attempt to raise the explanatory power was made through omitting the four quarters when bank had made rights issues. This successfully raised explanatory power somewhat, but still other factors outside of the model exist.
<i>Conclusions</i>	The Swedish banks do actively manage their balance sheets in response to changes in Leverage. They do not target a specific Leverage ratio but increase leverage when Total assets rise, thereby contributing in a procyclical manner to the economy. Omitting four quarters which were ones when banks had made rights issues and thereby distorted the measurement increased explanatory power of the linear relationship slightly.

## GLOSSARY

<i>Accounting system</i>	The system of rules and recommendations that governs how corporations record their financial transactions and value their assets.
<i>Big four</i>	Refers to the four largest banks in Sweden: Nordea, Handelsbanken, SEB and Swedbank.
<i>Commercial bank</i>	A type of bank that engages primarily in savings and transactions type of activities, the bank is primarily funded by deposits from the general public.
<i>Investment bank</i>	A type of bank that engages primarily in capital markets activity, such as market making, brokerage, underwriting, investment research and so on. The distinction and separation between Commercial and Investment banks comes from the U.S. congress Glass–Steagall Act, enacted 1933 and repealed in 1999.
<i>Neoclassical economics</i>	A school of economic thought stemming from rational choice theory, and hypothesizing maximization of utility by income-constrained individuals employing all available information.
<i>Procyclical</i>	An economic quantity or system that is positively correlated with fluctuations in the overall economy.
<i>Transparency</i>	Means, in the accounting sense of the word, supplying financial markets with accounting information that are relevant to investors, and by extension resulting in more accurate valuations of securities. Commonly, using market values for assets are considered more transparent than the use of historical cost value.

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# CHAPTER I

## INTRODUCTION

### 1.1 Background

The latest financial crisis, which began in 2008, has influenced business and society in most countries around the world (Murillo, Graham & Harvey, 2010). This crisis has also had an impact on accounting and accounting research (Hopwood, 2009). An interesting development is a renewed interest in research critical to the current trends in accounting, as well as questioning of the most fundamental assumption on which the leading financial accounting systems are based (Arnold, 2009; Laux & Leuz, 2009). These fundamental assumptions being called into question include, but are not limited to, *transparency*, *fair value accounting* and *neoclassical economic thought*.

The rise of the market economy and the financial liberalization that took place during the last quarter of the 20<sup>th</sup> century was characterized by a belief that the market was the best regulator of economic affairs (Crockett & Cohen, 2001). The government-led financial system of post-world war II provided stability but the resultant misallocations of resources grew bigger over time, and it eventually had to give way to the market-led system due to the inflationary problems of the 70s (ibid). Given this economic paradigm, what has guided the development of new accounting standards is the idea of transparency and information value. What the market needs in order to be an efficient enforcer of discipline is timely and relevant information; accounting, as a component of this system, plays an essential role (Michael, 2004). Fair value accounting – i.e. the practice of valuing assets to current market value – is one example of how accounting standards are constructed to fit into this mould.

While there seem to be a broad acceptance that the developments in accounting has succeeded in its stated purpose, to increase transparency and improve the quality of information given to financial markets, the concern is that it may have created unintended adverse effects in other parts of the economy (Michael, 2004). This is true in particular for fair value accounting; the critics (see for example Arnold, 2009 or Boyer, 2007) argue that fair value accounting, while attempting to increase information to investors, also effects the economy in such a way as making it more procyclical.

Proponents of fair value accounting argue that it provides transparency and relevant information to the market; it enforces market discipline and functions as an early warning system (Taylor & Goodhart, 2004). While they might not totally refute the notion that fair value accounting has a procyclical element to it, their claim is that if it's use were expanded it could actually have a less profound procyclical impact on the economy, since loss recognitions on banks' loan books would be made earlier than under the current approach where provisions would be made during the cyclical trough (Michael, 2004). According to V ernon (2008), it is also a question of what the alternative is. Two cases in point is the Unites States Savings & Loan crisis in the late 80s and Japans poor economic performance during the 90s, after the bursting of its real estate bubble (Plantin et al., 2008a). As they explain the accounting system, in these two cases, hid the true extent of losses and thus prolonged the resolution of dealing with insolvent companies.

As is the case after all types of crises, fundamental questions are now being asked: what got us here, could it have been prevented, and what do we need to change going forward? Regarding our current accounting system the natural prescription – based on accounting standard setters conceptual

frameworks – seems to be to increase transparency and provide the market with better (and more) information.

## **1.2 Problem discussion**

According to Arnold (2009), the research community is now facing an identity crisis. She claims that mainstream accounting research has clung to the neoclassical notion that accounting is a neutral technology whose only function is to reduce information asymmetry. It has as a result failed to develop the theoretical capability to analyze the relationship between accounting and the political and economic environment in which it operates. Thus, it does not have much to offer to the debate regarding the response to the crisis. It can only reiterate the neoclassical position, which holds that what failed us was a lack of visibility in certain areas of the economy (think SIVs, CDOs and SPEs) and that financial markets will function efficiently again when this is corrected.

Transparency is clearly important: a failure to understand exotic financial products and banks exposures to them certainly contributed to the crisis (Barth & Landsman, 2010). But to look for the market as an arbiter of financial stability might be a bit optimistic, as Arnold (2009, p. 805) states:

Acknowledging that capital markets do not always price assets efficiently, what then is the economic impact of fair value accounting? Recognizing that financial markets do not always allocate capital efficiently, what then is the role of financial reporting in the capital markets? What then is accounting's role in restoring financial stability?

To answer these questions about fair value accounting and its impact on the economy one first has to understand that fair value accounting does not by its self cause the procyclical effect. Rather, it's the actions of financial intermediaries that determine what influence the accounting framework has on the economy (Adrian & Shin, 2010). Consider this example, based on their study: rising asset prices increases a bank's net worth, if the bank sits on its hands and does nothing its equity buffer would increase as well, resulting in a lower leverage ratio. Fair value accounting, in this instance, would not serve as a cyclical accelerator, other than perhaps fueling the animal spirits of market participants. Consequently, the full force of fair value accounting only kicks in when financial intermediaries actively manages their balance sheets. To keep its leverage ratio constant, a bank would respond to rising asset prices by taking on new debt and use the funds to extend new credit in to the economy or purchase securities.

Adrian and Shin's (2010) study on U.S investment banks finds that as asset values on the respective company's books rises the response is to increase leverage. Although the focus of their study is on "pure play" investment banks, they also acknowledge that the results for the commercial banks shows that their balance sheets are actively managed, but in a less aggressive fashion.

How this result translates into a European context, however, is unclear. While the accounting standards and rules on when they apply are similar in Europe and the U.S, they also have their differences (see Appendix A). Furthermore, there are also differences in the structure of the financial systems. Historically, banks in continental Europe are much more important funding providers of the corporate sector than in the U.S where companies finance themselves through sales of debt securities to the capital market (Allen & Gale, 2000; Monnet & Quintin, 2007). Although Swedish commercial banks have integrated investment banks (as many European banks have), their activities and impact on the economy are as a result much smaller.

We are thus interested to examine the role of fair value accounting within a European context, and to find out if the same effects between leverage and increases in asset values show up in Swedish commercial banks using IFRS. Furthermore, most of the accounting literature examines fair value accounting in the context of the recent financial crisis with a specific focus on the downturn (for example Laux & Leuz, 2009 or Shaffer, 2009). We would like to provide some new insights to its role during the upswing of the economic cycle. Combining the relationship between total assets and leverage with the earnings contribution from assets valued with fair value accounting will give us some indication of the efficacy of the procyclical effect fair value accounting has on the economy.

*Research question*                      What is the relationship between leverage and changes in total assets in the Swedish banking sector, and what role does fair value accounting play in this equation?

### **1.3 Purpose**

The purpose of this study is to recognize and quantify the response in leverage by Swedish banks as their assets increase, and to what extent fair value accounting contributes to this.

### **1.4 Limitations**

This study is limited to the Swedish banking sector, and comprises the big four banks. This will be further discussed in chapter 3.2.2.

Whenever one chooses to undertake a study, one must also choose a measurement period. This study spans the period from Q1 2001 to Q4 2010, which represents a whole macro-economic cycle and should therefore enable us to answer our research question.

The issues surrounding fair value accounting are many and cannot possibly be addressed in this one thesis. This study concerns the procyclical implications of fair value accounting, mainly through its contribution in upswings of the business cycle. We do not try to analyze whether the recorded assets values were mispriced during our measurement period; we do not seek to determine the value relevance of fair value accounting for investors; and we do not analyze if fair value accounting caused banks to preemptively sell assets at any time during our measurement period and if this in some way created a self-fulfilling downward spiral of asset prices.

Some of the studies we present are done from an American perspective and deals with the specific situation in which the American banks found themselves at the end of the 00s; including some of the aspects of fair value accounting that we do not directly address in our own study. However, they serve an important role in providing the context to the current fair value accounting debate and the issues that might face the Swedish banking system in the future.

### **1.5 Disposition**

The thesis is further disposed according to the following chapters,

*2. Theory*                      The next chapter is intended at fitting our study in the existing accounting literature in general and literature relating to fair value accounting in particular. This literature review will provide us with the necessary tools to investigate the Swedish banking sector and also give a model to help explain the witnessed actions.



- 3. Method* In order to help the reader understand how our study was designed and thereby better interpret our findings, the third chapter is one that describes our study and explains our methodological choices. Not least which banks that have been chosen to represent the entire sector, which accounting-data the study is based on and how these choices affect the quality of the study.
- 4. Empirical findings* This chapter contains relevant financial information and accounting data from the banks' financial reports, mainly focused on their equity, total assets and leverage. Presented and systemized in order to set it up for a systematical analysis in the next chapter.
- 5. Analysis* In order to interpret the findings in the previous chapter the focal point of chapter five is to analyze the data from the Swedish banks and relating this to the literature that has been presented.
- 6. Conclusions* This chapter is the end result of our thesis. Summarizing the main conclusions of our bank-study and answering the research question. Finally the chapter ends with a critical review of the quality of our study and a discussion about remaining issues about banks and accounting.

# CHAPTER II

## THEORETICAL FRAMEWORK

### 2.1 Real effects and fair value accounting

Accounting, in a state of perfect frictionless markets, would be redundant; its function would be a question of mere measurement, without any impact on economic fundamentals (Plantin, Shapra and Shin, 2008a). However, this is not the case in an imperfect world. Kanodia (2006) mentions two ways in which accounting has real world implications. First on the issue of *contractual efficiency*, i.e. when accounting measures are used to evaluate and determine compensation for company executives, thus having a real world effect on for instance managerial effort. Secondly, accounting comes with *propriety costs*, that is, a company which informs the general public of its performance will face increased competition in areas with the greatest profitability. Kanodia (2006) goes on to study accounting as a link between the real economy and the financial intermediaries, he finds that not only does accounting decrease the information gap between the company and the financial markets as intended, and thereby decrease the company's cost of capital. But also the company that's being evaluated is aware of how it's being evaluated, and acts accordingly in order to maximize its appearance in the current accounting framework. Thus, Kanodia concludes, a particular design of the accounting framework can give rise to quite specific implications for the real economy. According to Plantin et al. (2008a), the nature and consequences of the imperfections are key to the debates in accounting. A contentious issue, in this sense, is fair value accounting.

At heart of the debate is the trade-off between relevant information that reflects the economic reality and financial performance of a firm and the potential negative effects the accounting framework might have in terms of inducing undue volatility and instability into the financial system (Michael, 2004). The question regarding the latter is whether fair value accounting introduces an endogenous source of volatility, one that is only a consequence of the accounting norm rather than a pure reflection of economic fundamentals. Plantin et al. (2008a) illustrates this effect by comparing it to what happened at the opening of the Millennium Bridge, a pedestrian bridge in London: Thousands of people showed up at the opening to walk across the bridge. Once they went on the bridge, however, it acted like a rope bridge and started shaking violently; this was caused by people swaying as they walk. One might think that thousands of people's steps should cancel each other out, but this does not take into account that people react to their environment. As the bridge started to wobble, everyone on it had to adjust their stance to regain balance. This synchronized movement caused the wobble to feed on itself.

The implication for financial markets is that fair value accounting in this sense act as wobbles that show up in banks' balance sheets (Plantin et al. 2008a). The banks, in turn, react to these wobbles and adjust their stance at the same time. Plantin et al. (2008a) claims that this effect tends to be most acute when market sentiment turns negative: If prices start to drop, and there is an expectation of further declines, the response from a particular bank would be to sell its positions. However, the aggregate effect of this preemptive selling would only cause the momentum to increase, and could generate a downward spiral of asset prices (Plantin et al. 2008a).

## 2.2 Fair value accounting and the financial crisis

The creation of a downward spiral, in times of market distress, is what the critics view as fair value accountings most pernicious side-effect (Laux & Leuz, 2009). Indeed, in early 2008, as the financial crisis started to make its real presence felt, fair value accounting was seen as a main culprit (Forbes, 2008; Ross Sorkin, 2008; Wallison, 2008b). The Institute of International Finance, a global interest group for financial institutions, described the problem in a report published in April 2008 (pp. 1-2):

[O]ften-dramatic write-downs of *sound* assets required under the current implementation of fair value accounting adversely affect market sentiment, in turn leading to further write-downs, margin calls and capital impacts in a downward spiral that may lead to large-scale fire-sales of assets, and destabilizing, pro-cyclical feedback effects. These damaging feedback effects worsen liquidity problems and contribute to the conversion of liquidity problems into solvency problems.

Wallison (2008a) argues that the doubts about the stability of the major financial institutions stemmed from the declines in asset values that fair value accounting required them to record. He further claims that the stringent rules on when an asset could be placed in the hold-to-maturity category caused banks in the U.S to carry portfolios of mortgage-backed securities as available-for-sale, and hence hold these assets at market values despite the fact that these investments were made to provide the bank with steady streams of positive cash flows. Wallison finally concludes that the use of fair value accounting forced the institutions to mark down these assets – even though the cash-flows at the time continued to meet expectations – making them appear weaker.

Whalen (2008) also touches upon this point of market values and useful they really are. He argues that fair value accounting, as with the Efficient Market Hypothesis, requires a high degree of liquidity and stability in all markets. There are, however, often times when price and economic value differs. When market activity dries up, as was the case with the structured products at heart of the crisis, the loss banks have to record might be to a large extent artificial, when true economic value are closer to par. Laux and Leuz (2009) explore this criticism – and with a year and a half of hindsight – finds it unlikely that fair value accounting had any noteworthy effect in terms of amplifying the financial crisis. To them, it's true that fair value accounting might not work perfectly in times of crises, but the argument that the information effect, in itself, added to the markets anxiety does not hold. The problems in the housing sector were known in the market and less information, under a different reporting system, could easily have caused even more uncertainty and confusion.

Moving beyond mere information effects, Laux and Leuz (2009) also looks at the issue of whether market prices were distorted during the midst of the crisis (as the critics claimed), and if fair value in that case, through excessive write-downs, sparked contagion in the financial system. It is not an easy question to answer, however, but the ABX indices – benchmarks for securities backed by home equity loans – provides some anecdotal evidence. The Bank of England's Stability Report in April 2008 estimated that the ABX indices overstated losses by over 20 percent. By the time of October 2009, after somewhat of a recovery in the credit and equity markets, the indices were stuck at even lower

levels than at the time of the Bank of England report. This suggests that market prices might not have been wildly off the mark after all.<sup>1</sup>

When assessing the impact of fair value accounting on banks' balance sheet, income statement and regulatory capital, one should remember that the accounting rules and other regulations, in various ways, protects the banks from changes in fair values (Laux & Leuz, 2009). The so called banking book – which includes loans and investments that the bank intend to keep on its books until maturity – is carried at amortized cost, i.e. it is not subject to changes in fair values (ibid). For the larger bank holding company in the U.S, during the years 2004-2006, nearly 50% of its assets were included in this category. (A report from the ECB (2004) estimates that European banks hold 50-80 % of their securities in the banking book.) Moreover, the assets in the available-for-sale category, although held at fair value, do not affect banks' capital requirements as long as the change in value is deemed to be temporary. It is only the bank's trading book that has a direct impact on its earnings and capital position; this category included 12% of assets. Schaffer (2010) has done a more detailed study on this subject and finds that the negative impact on regulatory capital from losses on securities held in the available-for-sale category – i.e. losses deemed to be “other than temporary” – was quite small compared to loss provisions made in the banking book and losses in the trading book.

While the trading book is relatively small in relation to a bank's total assets, changes in values are amplified with the amount of leverage the bank employs. A high leverage ratio makes the bank more sensitive to price changes, and it could quickly deplete its capital base if prices started to move in the wrong direction. While leverage is a separate issue in the debate about the crisis, what concerns the accounting system is whether changes in values recorded in the trading book were in some ways artificial. Laux & Leuz (2009) points out that the mortgage-related assets at heart of the crisis, where, however, never valued at market prices to begin with; they were held at level 2 and 3, and increasingly moved to the latter category throughout the crisis. The discretion banks have in valuing assets according to internal models seems to have been used. Lehman Brothers, for example, resisted making any substantial write-downs on its level 3 assets, only to end up filing for bankruptcy protection in September of 2008. Citigroup, in similar fashion, did not recognize that losses on available-for-sale and hold-to-maturity securities were “other than temporary” until the fourth quarter of 2008, and furthermore, the recorded loss was only \$2.8 billion when the unrealized losses were \$19 billion. The evidence, to Laux & Leuz, indicates – contrary to what critics argued at early 2008 – that the banks overstated the values of their assets, particularly where they had the discretion to determine fair value by internal models.

The question of the accuracy of market values is not only important in downturns, it also plays a role during upswings in the business cycle. Boyer (2007), like Whalen (2008), claims that there is an implicit assumption in fair value accounting that markets are efficient. Financial markets deals with expectations about the future, and are to a large extent affected by psychological factors. It therefore comes as no surprise that stock markets exhibit a great deal of volatility. This is illustrated by a chart from Shiller (2003), that shows the movement of the S&P 500 and the present value of future dividends (see Appendix B). The S&P trend line does, for extended periods deviate significantly

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<sup>1</sup>For more on this issue see Coval et al. (2009) and Longstaff and Myers (2009).

from its reconstituted fundamental value. Indicating that market prices do not reflect genuine information at all times.

Fair value accounting might influence risk-taking behavior among market participants and exacerbate this tendency (Boyer, 2007). Boyer describes that risk-taking tends to follow a cyclical pattern – closely correlated with the business cycle – where risk is under-evaluated during booms and over-evaluated during slow-downs. Asset prices are thus likely to get bid up as the economy booms, and might as a consequence actually convey less and less information about the true state of the economy – reinforcing a false sense of stability and optimism in the market place.<sup>2</sup>

Wallison (2008a) explains that this optimism that brings increasing asset values will have another important implication when paired with fair value accounting: it facilitates a credit expansion. Rising market values for houses, stocks, commodities and the like will allow the owners to take out new loans against the assets they hold. Wallison concludes that more credit in the economy means more money chasing profitable investments and thus fuels further increases in asset prices.

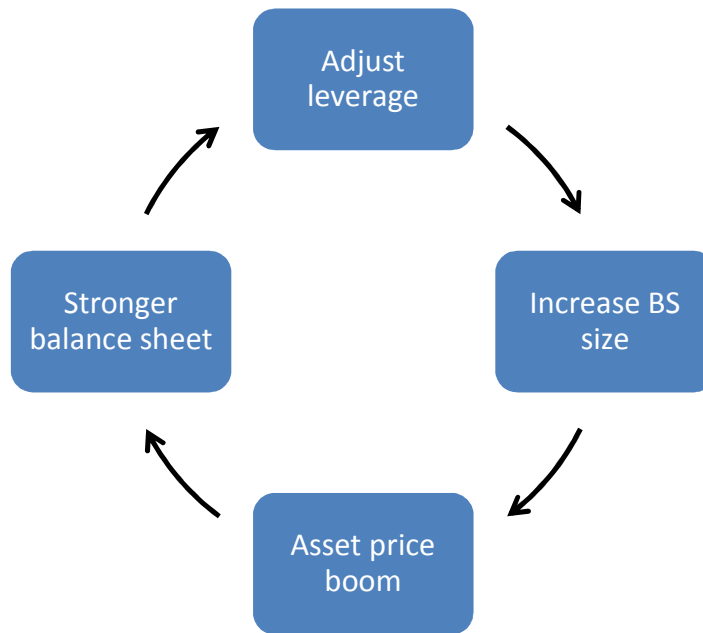
Considering this mix of investor behavior and credit creation, the long run consequences of fair value, according to Boyer (2007) and other critics, is likely to be an increasingly short-term focused market, with more erratic valuation of companies, and excessive volatility in the financial system.

### **2.3 Equity, leverage and active management**

As indicated in the problem discussion above, fair value accounting does not necessarily has to be procyclical; if banks did not respond to rising asset values, its equity buffer would simply increase. The procyclicality comes from the banks' actively managing their leverage, i.e. the size of their total assets in relation to equity (Adrian & Shin, 2010). Plantin, Sapra and Shin (2008b) explains how this affects the economy: the bank's assets are partly made up of assets valued at fair value and as the economy enters a boom these assets will increase in price, leaving the banks with less leverage. The banks will respond by taking on new debt and extend new credit into the economy or purchase securities, which in turn boosts aggregate demand and thus asset prices, giving the economy further strength.

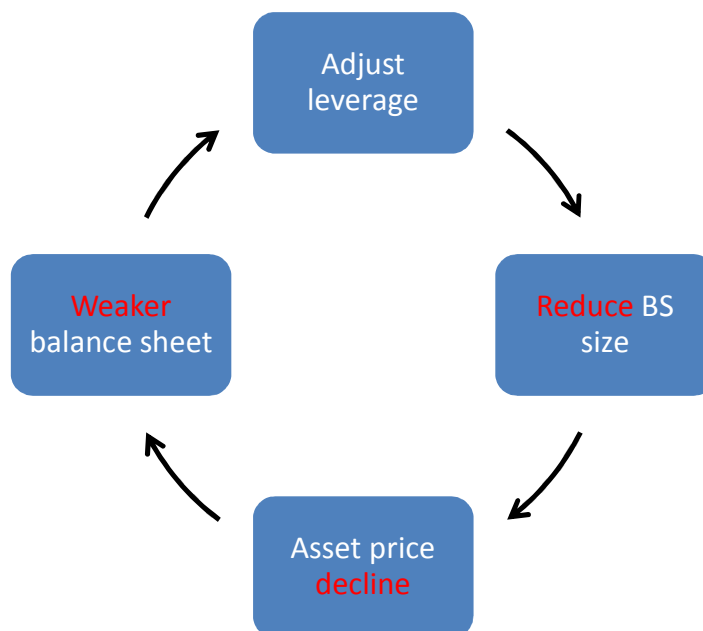
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<sup>2</sup> For more on the value relevance of FVA see for example Barth (2004), Barth and Landsman (1995), Barth, Landsman and Whalen (1995) and Landsman, (2007).



**Fig. 1:** Adjustment of leverage in booms.  
**Source:** Adrian and Shin, 2010.

Adrian and Shin (2010) explains that this process works in reverse once the economy cools off. Declining asset prices weakens the bank's capital position and it has to shrink its balance sheet to keep the leverage ratio constant. The bank has to sell assets to achieve this, and in a general downturn it is likely most banks have to act in the same manner. This selling pressure would force banks to aggressively mark down the assets values on their books, which could spark contagion in the financial system in the form of a liquidity crunch and hence cause a severe downturn in the real economy.



**Fig. 2:** Adjustment of leverage in downturns.

**Source:** Adrian and Shin, 2010.

Adrian and Shin (2010) have examined this question about how banks react to changes in their net worth and what the market-wide implications are. Their study is done from a capital markets perspective and does not include deposit taking institutions; the sample consists of the "pure play" investment banks<sup>3</sup>. The investment banks have a larger share of their assets marked at fair value and are to a larger extent funded by short-term loans than commercial banks. As a result, they provide a clear example of actively managed balance sheets and how leverage changes with its overall size.

The relationship between total assets and leverage for the investment banks are measured on a quarterly basis, with different starting dates depending on the banks but roughly spanning the period from the mid-90s to the first quarter of 2007. The results show that when the total value of assets increases, the leverage ratio are not only kept constant but is increased. Correspondingly, when the size of the balance sheet shrinks, the leverage ratio tends to drop as well.

While commercial banks are not included in the study, for background purposes, a chart is provided in the introduction which shows that they also manage their balance sheets actively. They, on the other and, do not increase leverage as asset prices rises. Instead, they "only" adjust their balance sheets to keep the leverage ratio constant.

The study then examines which items on the balance sheets are adjusted as the overall size shrinks or increases, and the aggregate market-wide consequences of this. These aspects are, however, not integral to our own study and are thus not expanded upon here. Taken together, though, the results provide further evidence that expanding balance sheets of financial intermediaries – and the resulting boost of liquidity, i.e., the increased availability of credit – have a direct impact on asset prices and risk appetite in the financial system.

## **2.4 Alternatives to fair value accounting**

Given the implications of fair value accounting, described above, one naturally has to ask what the alternative is. The answer to this question usually spells historical cost accounting (Laux & Leuz, 2009), where asset value appreciation is not recorded – it is only when the asset is impaired that the stated value is adjusted. This is the traditional method, and it's used for the majority of banks' assets. The crucial test is if this approach can help to remedy the problems of fair value accounting. Laux and Leuz (2009) reaches the conclusion that this is unlikely to be the case.

From an information perspective, it is true that if prices deviate from their fundamental value – as they do from time to time – the information content of fair value accounting will diminish, but this is also the case for historical cost accounting. As a result, it does not naturally follows that markets would be calmer during an economic crisis under a system of historical cost accounting. Investors will not be completely unaware of problems in the economy, and a lack of transparency might actually make matters worse by causing more uncertainty (IMF, 2008).

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<sup>3</sup>The sample includes Bear Stearns, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley and Citi Group Global Markets.

The issue that fair value accounting can cause contagion in the financial system – if banks have to sell assets below their fundamental value, and, in turn, force other firms to mark-down their assets – could well be mitigated by historical cost accounting, but it is likely to bring problems of its own. Problems will be swept under the rug, as it were; and it will only result in a postponement of the eventual resolution.

In any event, fair value accounting does have some safeguards that can be used. For instance, assets can be moved, although not without restriction, between level 1, 2 and 3, and reclassified to hold-to-maturity. One also has to bear in mind that losses stated by fair value accounting could be as severe under historical cost accounting (Michael, 2004).

Indeed, historical cost accounting does also have a procyclical element to it. While fair value accounting is forward-looking, provisioning for losses under historical cost accounting is made when they are incurred, not when they are expected. This would mean that all losses are realized at the same time and hit the economy when it's already weak (see, Borio & Lowe, 2001; Borio, Furfine & Lowe, 2001 and Michael, 2004). The losses would not be recognized, however, if the assessment is that the decline in asset values are temporary. This is what makes historical cost accounting less sensitive to price movements than fair value accounting.

Although few people would argue that historical cost accounting should be used for liquid assets such as stocks, held in the banks' trading books, whether its use should be applicable for assets held-for-sale seems to be another question. According to Wallison (2008a), there is no reason for this. Instead, these assets should be valued by discounting future cash flows, since cash flows are less volatile than market prices. Also, the standards of when an asset can be classified as hold-to-maturity, and thus subject to historical cost accounting, should be eased. Wallison acknowledges that the use of cash flow models could create opportunities for manipulation but insist that preventing procyclical effects is a more important goal.

Another method that could be used is to expand the role of fair value accounting. According to the IMF (2008), the current asymmetric application where fair value is used mostly on the asset side of the balance sheet is what causes much of the procyclical effect. The results from the simulations they run – where different economic scenarios are tested on hypothetical balance sheets – shows that fluctuations in equity are larger when a smaller fraction of the liabilities are fair valued. As the economy weakens and the probability of default rises, the price of the banks liabilities will drop in value. The bank can book a profit when this occurs, because it will be able to buy back its own debt at a discount. Using fair value accounting for liabilities could therefore provide a countercyclical effect during the economic downturn. However, they acknowledge that this produces counterintuitive outcome that could give a false sense of improvement in the bank's equity position. Indeed, this is the concern of the ECB (2004), which has run similar tests. To them, this accounting effect is not at all desirable from a supervisory perspective. Their conclusion about an extended use of fair value accounting is that the positive contributions, i.e. more forward-looking credit risk valuations and timelier loss recognition, does not outweigh the negative effects of the increased volatility in the banks' balance sheets that is likely to follow.

Regarding the accounting systems effects during an up-swing in the economy, Laux and Leuz (2009) are not convinced that historical cost accounting necessarily changes much. They refer to Plantin et al. (2008b) who suggests that in order to realize value increases, historical cost accounting is likely to



bring about inefficient asset sales by banks. Also, by selling or securitizing assets, it is possible for the banks to increase leverage and we will thus experience the same effects that fair value accounting has, although through a different mechanism. The author's conclusion is that the accounting framework is unlikely to stop the banks from expanding their balance sheets in boom periods, and it is not clear that accounting rules are the proper tools to mitigate procyclicality. Each system will bring its own deficiencies and one system will not generally be preferable over the other regarding the procyclical problem.

## 2.5 The Swedish banking system

Wetterberg (2009) has written the history on the Swedish banking system, which arose rather early from an international perspective. *Stockholm Banco* was the name of the first Swedish bank, founded in 1656 by Johan Palmstruch. The bank went into default less than ten years later but was soon revived again with a new name, *Riksens Ständers Bank*, the predecessor to the current *Riksbanken*, Sweden's central bank. Wetterberg (2009) further describes the rise of a more modern and sophisticated banking system didn't come about until the 19<sup>th</sup> century, when the business community's demand for credit escalated. Regulation of the financial system grew strong during and after the great depression of the 30s, and Sweden was late to ease these. It wasn't until the late 80s and early 90s that a deregulation took place, and the combination of deregulation and reckless lending caused Sweden to enter a financial crisis in the early 90s. During the last two decades the Swedish banking market has been characterized by internationalization and consolidation (Swedish bankers association, 2010b).

The Swedish banking association (2010b) defines the purpose of the banking system in three activities; *savings and loans*, *maintaining a payment system* and *offering risk reduction measures*. Savings and loans is the part traditionally associated with banking, the banks acts as intermediaries between entities with excess capital and entities with capital needs. Mainly households act as savers with excess capital and businesses acts as borrowers with capital needs (Swedish bankers association, 2010b). The Swedish banking association (2010b) describes the Swedish payment system as developed and efficient, the payment system being defined as transferring of money between households and businesses but also sales and purchases on equity markets. The third activity for banks is to offer household and especially businesses the ability to reduce and diversify risks; this is done through hedging and other related derivative instrument strategies.

There are four main categories of banks in Sweden: Swedish commercial banks, foreign banks, savings banks and co-operative banks (Swedish bankers association, 2010b). Of these categories the Swedish commercial banks dominate in terms of market share, while over the past ten years the foreign banks have increased in number as well as in size while the savings banks have been on the decline and the co-operative banks have remained insignificant (ibid.). Overall, the market is dominated by the big four: Nordea, Swedbank, Handelsbanken and SEB. These commercial banks are dominant in most niches and submarkets as well as in overall size.

The most recent financial crisis can be described from a Swedish perspective as a crisis of confidence, banking is in itself risky. Banking usually involves making long-term commitment of lending capital out and short-term commitments of borrowing funds in. The difference in duration is one of the factors giving rise to a profit margin for the banks, but it also makes the banks dependent on liquid wholesale funding markets. What happened during the crisis was that these crucial interbank

markets froze: banks with excess liquidity choose not to lend to banks with liquidity needs because no one could determine which banks were solvent and which were not (Riksbanken, 2010).

Adrian and Shin's study (2010) shows that the balance sheets of banks are indeed actively managed. A bank that does not act in this way would see its profitability ratios, such as Return on equity, shrink – this would not be accepted by the neither shareholders nor the management. Naturally, we should expect to see the same behavior by the Swedish banks. What is not clear, however, is the relationship between leverage and total assets for the banks in our sample. The sample used by Adrian and Shin (2010) consists of the “pure play” investment banks that use fair value accounting to a much greater extent, and the type of assets the investment banks in the U.S owned throughout their measurement period differs from what the Swedish banks owned throughout ours. The U.S. investments banks were also subject to a different regulatory framework during that time.

# CHAPTER III

## METHODOLOGICAL DISCUSSION

### 3.1 Overall methodological issues

#### 3.1.1 Ontology and epistemology

A decidedly positivistic approach has been made in this study; this means that this study to some degree is a contradiction on itself. It is a contradiction because the study is critical to the use of accounting figures and market data as always representing actual true and intrinsic value of financial instruments and assets, as previously discussed in chapter 2. Accounting figures do not represent the kind of mathematical precision the numbers indicate; rather they are result of judgment and subjectivity. This contradiction reminds of von Hayek's discussion (1974) about the problem for the social sciences to try and mimic the physical sciences. In studying the complex issues of social science the investigator needs to balance the stringency of data collection with the desire to study an interesting question, it is not always that the best data and the most interesting questions coincide.

While in the physical sciences it is generally assumed, probably with good reason, that any important factor which determines the observed events will itself be directly observable and measurable, in the study of such complex phenomena as the market, which depend on the actions of many individuals, all the circumstances which will determine the outcome of a process, for reasons which I shall explain later, will hardly ever be fully known or measurable. (von Hayek, 1974)

Another thought underpinning this study is the opinion that even though social sciences never can, in the same way as the physical sciences can, demonstrate an absolute causality; the social sciences can still show meaningful relations between measures. These relations are objectively measurable even though limited in time and space (Marton, 1998).

#### 3.1.2 A quantitative research approach

This study aims to build on the research and knowledge created in previous studies and research, the study made by Adrian and Shin (2010) has to some degree been used as a starting point. Underpinning this choice is a view that science is cumulative, i.e. that no study is fundamentally new but rather we are "standing on the shoulders of giants"<sup>4</sup>. The contribution made by this study is to use a different sample, a different national culture, accounting system and financial culture to see if the same relation as that was found by Adrian and Shin exists in a broader context.

The research approach chosen is decidedly quantitative, meaning that the reported accounting figures were used as empirical findings. This research approach is well suited to determine if a predefined relation between two variables exists (Saunders, Lewis and Thornhill, 2007). Also as Patel and Davidson (2003) defines it, this study is deductive in so far that it uses empirical finding so test existing theory thereby limiting, refuting or broadening the application of the existing theory.

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<sup>4</sup> The phrase has been attributed to *Bernard of Chartres*.

## 3.2 Empirical studies

### 3.2.1 Sample selection

The study aims to answer questions about the Swedish banking industry, this forces a choice to be made about which companies represent this industry. To use a sample as a representative approximation of a larger population is what Edling and Hedström (2009) calls statistical inference, usually this would be accomplished with random selection in the population whereas we have used size as the factor for selection. The “big four” as they are called, Nordea, Swedbank, SEB and Handelsbanken represent a majority of the Swedish banking industry as measured in assets or revenue (Swedish bankers association, 2010b). These banks also play a leading role in many of the financial submarkets (ibid). Further the big four banks are the only ones to consistently publish quarterly reports during the period of this study. For these reasons these four banks have been chosen to represent the entire market.

As has been previously discussed in chapter 2.3 the main focus of the thesis is to examine whether banks increase their balance sheet size in booms and reduce the same in busts thereby acting in a procyclical manner. In order to examine this it is crucial to study the banks over a complete macroeconomic cycle, the previous ten year period roughly represents such a cycle. Therefore the study begins in Q1 2001 and ends with Q4 2010.

This study uses secondary data as defined by Patel and Davidson (2003) meaning that the data has not been produced by the authors of the thesis or for the purpose of this study, rather it is the work of the accounting department of the respective banks. The data has been gathered from the database DataStream, however some quarterly data, particularly in 2001 were missing, and this data was then supplemented with information from the banks financial reports posted on their respective websites. However the three quarters 2001 Q1, Q2 and Q3 for Swedbank, could not be retrieved since the bank did not have its quarterly reports for year 2001-2004 on its website nor did their Investor Relations function respond in a satisfactory manner. The two financial measures of interest for this study were *Shareholders equity* (Equity) and *Total assets*.

The data used to examine earnings from assets valued with fair value accounting are gathered from the banks' annual reports. We add the contribution from the net gains/losses on financial instruments at fair value, valuation changes in assets held in the available-for sale category and valuation changes in cash flow hedges to get the aggregate contribution. Information on pretax earnings was downloaded from DataStream.

### 3.2.2 Statistical studies

All banks four banks will be graphically displayed individually but the main point of the study is to examine the entire Swedish banking sector; therefore a combined image will be produced, containing all data. This combined image will be the focal point of the analysis. The data will be presented in a chart with quarterly percentage growth of leverage on the x-axis, leverage (L) being defined as the relation of Total assets (TA) to Equity (EQ):

$$L = TA / EQ$$

And quarterly percentage change of leverage as:

$$\Delta L = \Delta TA / \Delta EQ$$

Furthermore the y-axis will present the quarterly percentage growth of total assets ( $\Delta TA$ ). Each quarter will be represented by a point representing the relationship between  $\Delta L$  and  $\Delta TA$ .

As a method for deciding the trend, a tally will be made for all the point in each quadrant. If the number of points in quadrant one and three combined exceeds the number in two and four the trend is upwards sloping. If the opposite is true, the trend is downwards sloping. And lastly if the tallies are equal the trend is vertical.

The relationship between the variables  $\Delta L$  and  $\Delta TA$  will be quantified by linear regression in order to answer the research question, thereby giving a factor ( $m$ ) meaning in so far that a percentage raise in equity will cause a response from the banks on their total assets held with  $m$  describing the size of this response.

### **3.3 Analysis**

#### **3.3.1 Analysis model**

This thesis uses a two-step approach to analyze the research question. Combining these two gives us a good approximation of the procyclical effect attributed to fair value accounting.

It is not possible to isolate how the banks respond to increasing asset values from their fair value assets, and thus determine the procyclicality exclusive to fair value accounting. We go about this by using the same approach as Adrian and Shin (2010), where the response in leverage is compared to changes in total assets. This works as a proxy for how banks treats asset value increases in general.

The main analysis tool of the thesis has been linear regression. The general idea of linear regression is as Edling and Hedström (2009) puts it, that you have a dependent variable  $Y$  and an independent variable  $X$  and want to examine the relation of these variables. As stated above in 3.2.2 our  $Y$ -variable is Total assets and our  $X$ -variable is Leverage. The linear relation found will be presented in the same combined scatterplot that presented our data as discussed in chapter 3.2.2.

The scatter plot discussed in chapter 3.2.2 and the linear relationship will have different characteristics depending on how the banks act, as referring to the main research question. A negative relation between leverage and total assets means that the banks do not actively manage their balance sheets in response to changes in equity. If in fact there is active management going on it could be (a) vertical in the diagram (infinite  $m$ ), or (b) upwards sloping (positive  $m$ ). This would in turn represent that (a) banks target a fixed leverage for all levels of equity or (b) as equity rises, banks also increase their leverage. The possibility that banks show a behavior indicating that  $m = 0$ , meaning that they always have the same amount of total assets, can be disregarded.

With the relationship between leverage and total assets established, the next step is to examine the earnings contribution from the assets valued with fair value accounting. This needs to be done in order to determine its importance as a source of earnings that ultimately increases the equity capital in the bank, against which new debt can be raised and lent out. We do not separate the realized gains from the unrealized ones, as the interest to us is the aggregate effect and since the valuation change would be recorded anyway. The percentage number in the table shows the share of earnings stemming from assets valued at fair value in relation to the total earnings of the bank.

### **3.3.2 Generalizability, reliability, and validity**

While the study has a rather high degree of reliability, meaning that our data and our statistical methods are robust, there are several issues with validity. First and foremost, the banks in sample are heavily regulated regarding capital requirements. The banks might therefore have acted in a particular manner not due to accounting as stated in chapter 2, but rather because the banks were legally forced to do so. Furthermore banks are led by management; these are motivated to some degree by incentive systems created to align management self-interest with that of the owners of the banks. The system for evaluating and rewarding management then affects their decision making, in ways not predicted by our theory. For more on this, we refer to the extensive literature on agency theory.

A further issue to be taken into consideration regarding the validity is what is often referred to as *financial engineering*, meaning that much of the image presented by our accounting data might be created by innovative financial products invented in order to have an effect on accounting numbers presented to the market or to regulators. Also, our data is the product of the accounting standards during the ten year period studied, some of these standards have undergone reviews during this period.

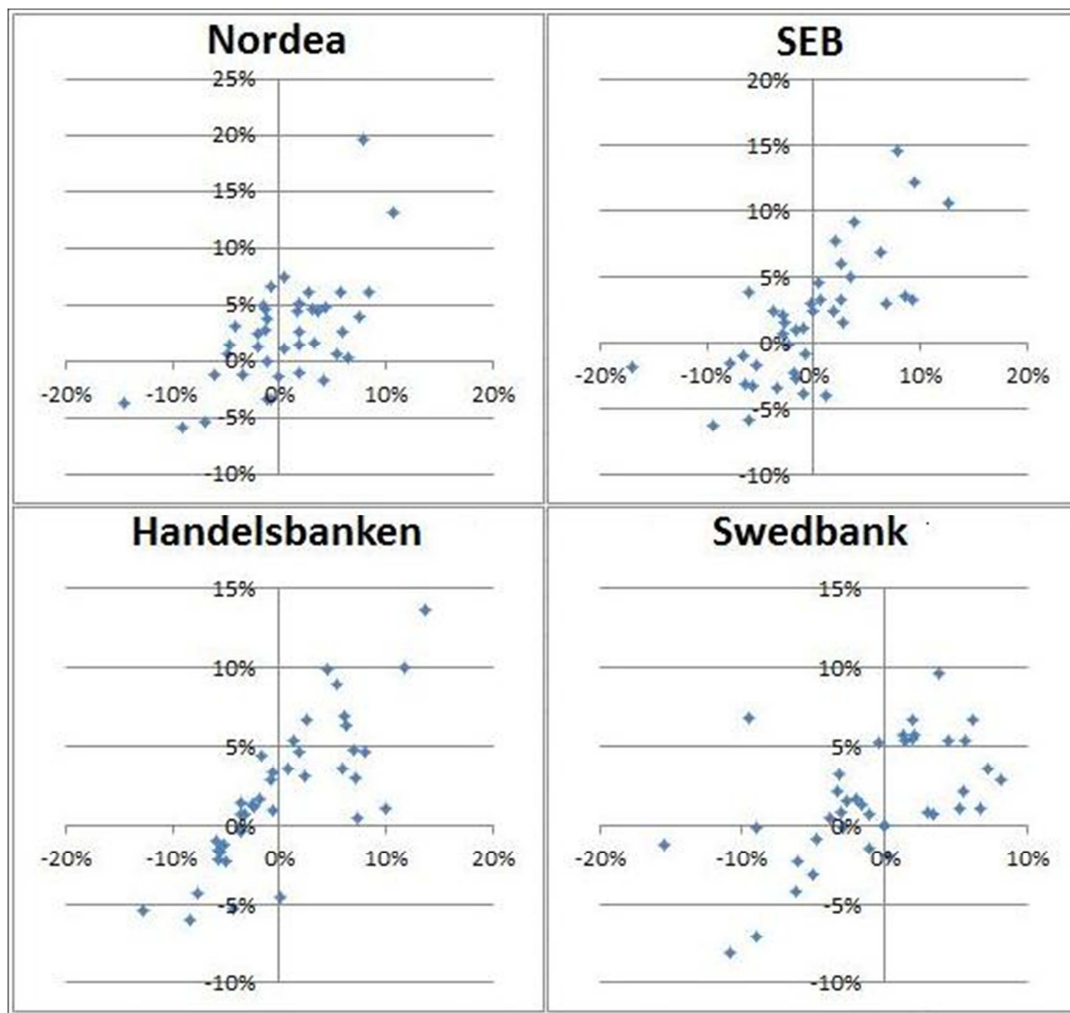
Overall the generalizability of this study is greatly enhanced because it builds on the study of Adrian and Shin (2010). However, as stated in 3.1.1, even though a causal relationship can be found in the social sciences this relationship cannot be stated as an eternal truth, rather it is limited in time and space.

# CHAPTER IV

## EMPIRICAL FINDINGS

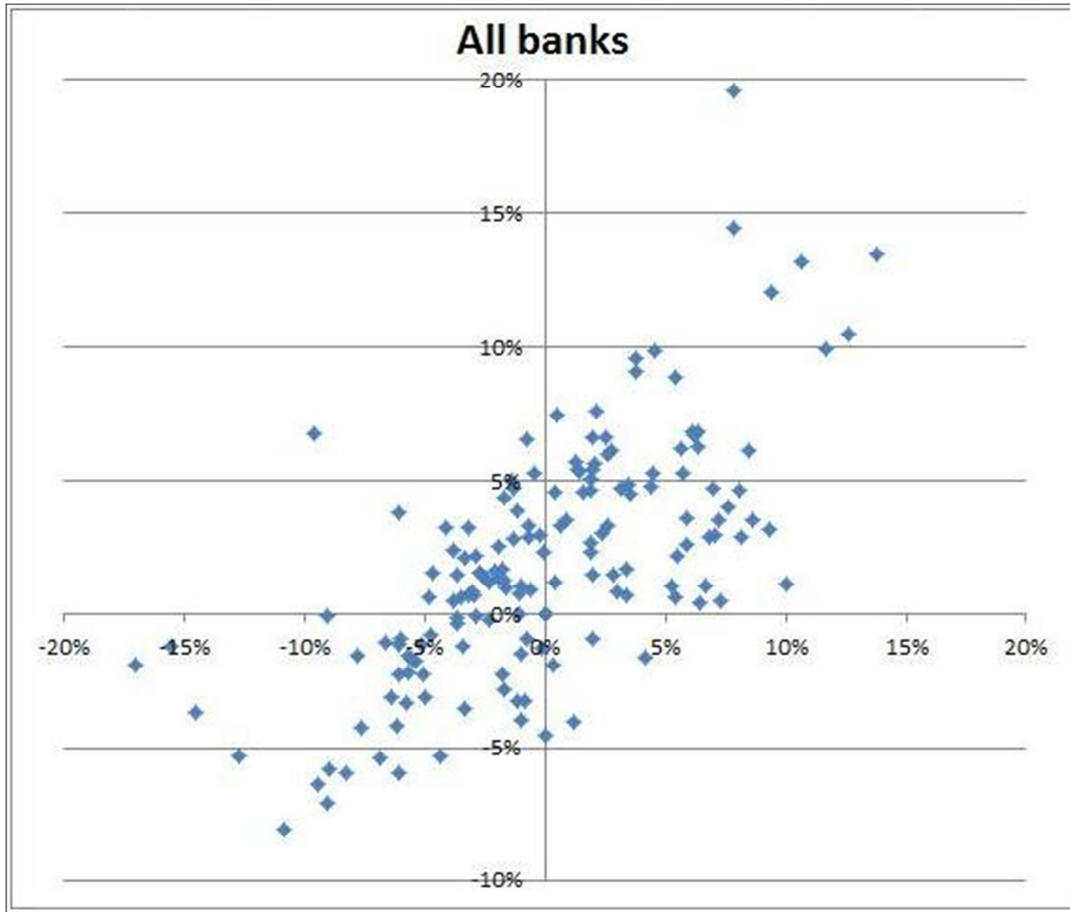
### 4.1 Scatterplot of quarterly data

The chapter of the empirical findings starts by presenting the data from the individual banks that comprises the study. Each point in the plot represents a pair of data, the total assets of the bank and the leverage from the same quarter. Total assets represent the Y-axis and Leverage the X-axis. All the quarters from Q1 2001 to Q4 2010 can be found below, except three missing quarters from Swedbank, as explained above:



**Fig. 3:** Scatterplot of the relation between leverage and total assets for the “big four” banks.

The scatter plots of all four banks seems to have the same overall shape; a slight concentration of the data in a positive line. The pattern is most striking for Handelsbanken and SEB, while the Nordea chart seem slightly more lumped up around zero and the Swedbank chart is more dispersed than the other four. Let’s see what the total pattern looks like by adding all plots into one:



**Fig. 4:** Scatterplot of the relation between leverage and total assets for all four banks combined.

The aggregation of observations for all four banks representing a dominant share of the Swedish banking market makes the pattern even clearer. The bottom-left to upper-right line is quite apparently a decent approximation of the outcome, the individual differences in figure 3 seems to have evened out in this combined plot. Let us proceed by calculating the number of entries in the individual quadrants.

**4.2 Tallies of data in quadrants**

The first frequency table contains the data from all four quadrants; considerable care has gone into determining which quadrant the close call points belongs to, a few times this was accomplished by going back to the original data.

**Table 1**

Quadrant	Tally of points	Percent of total
Quadrant 1	69	43.9%
Quadrant 2	38	24.2%
Quadrant 3	45	28.7%
Quadrant 4	5	3.2%
Total sum	157	100%

Quite obviously the upper-right, or Quadrant 1, was the dominant, meaning that when banks expanded their balance sheets they also increased leverage. The third quadrant barely outnumbered



the second, while very few entries at all was found in the fourth. Continuing the presentation of the empirical findings we now look at what the frequency table would look if we added together the two quadrants representing a positive relationship between Total assets and Leverage, namely quadrants one and three. We also look at the quadrants representing the opposite relationship between our variables, the second and fourth.

**Table 2**

Quadrants	Tally of points	Percent of total
Quadrants 1 + 3	114	72.6%
Quadrants 2 + 4	43	27.4%
Total sum	157	100%

Quite obviously the quadrants representing a positive relationship outnumbers the quadrants signifying an opposite relationship. Quadrants one and three contains almost three quarters of all data entries.

### 4.3 Fair value earnings in relation to total earnings

The following data is a summary of the data from Appendix B below. It shows how large the yearly income from assets valued at fair value is in relation to total earnings for all “big four” but also for the aggregate.

**Table 3**

Year	Nordea	Handelsbanken	SEB	Swedbank	All banks
2001	18,36%	13,70%	41,44%	12,84%	19,9%
2002	16,08%	9,28%	32,50%	16,49%	17,5%
2003	21,54%	15,94%	26,17%	8,11%	18,1%
2004	19,49%	0,25%	23,47%	8,65%	13,7%
2005	20,30%	23,55%	32,32%	19,70%	22,9%
2006	27,34%	26,49%	23,01%	22,51%	25,5%
2007	30,59%	17,74%	13,71%	10,62%	21,2%
2008	30,00%	-8,20%	17,05%	-11,46%	13,9%
2009	63,36%	30,05%	125,50%	-21,88%	77,0%
2010	50,60%	16,91%	14,27%	25,23%	34,4%
Average	29,77%	14,57%	34,94%	9,08%	26,4%

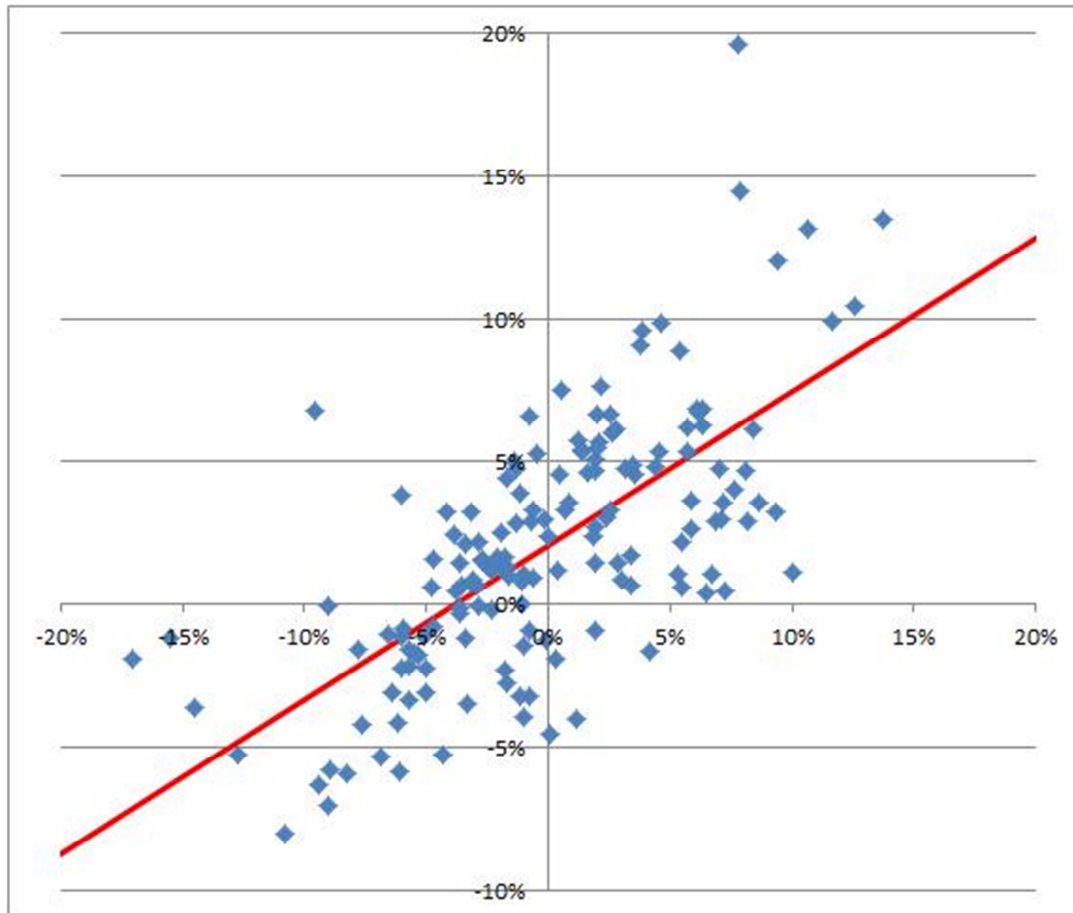
As we can see, the fair value assets compromise quite a substantial piece of the overall earnings from the banks. The average for all banks is that over a quarter of the banks total earnings comes from assets valued at fair value, but also evident is a quite a large dispersion of the results, some year the contribution from fair value assets are negative (Handelsbanken 2008; Swedbank 2008 & 2009). Once, the results from assets at fair value are larger than the overall pretax earnings indicating that the fair value assets are the reason the bank didn't make a loss (SEB 2009).

# CHAPTER V

## ANALYSIS

### 5.1 Statistical analysis

The first step of our analysis is to look at what linear relationship can be found from our scatterplot above.



**Fig 5.** Linear regression of scatter plot data.

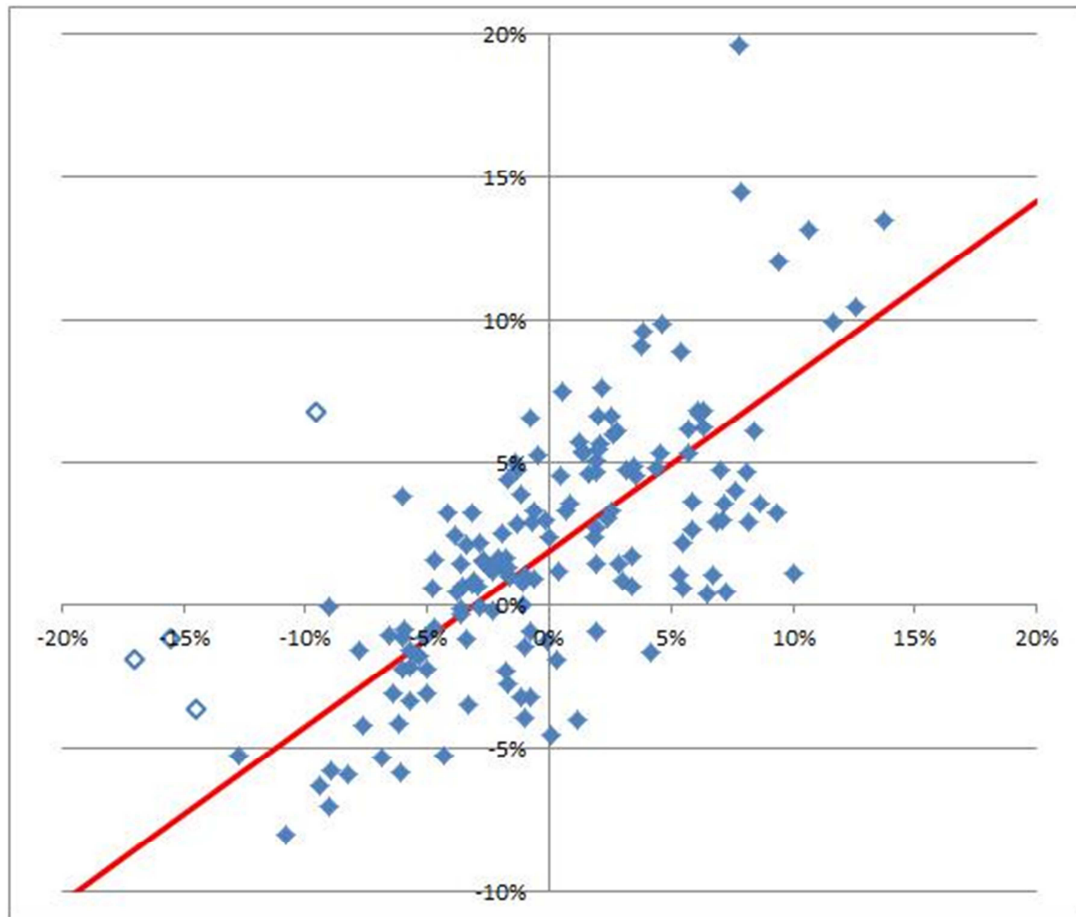
As we can clearly see there is a positive relationship in the plot, clearly an increase in leverage means that banks increase the size of their total assets. Looking at the statistical information below we can determine the strength of this relationship.

**Table 4**

Slope (m)	0,54
$R^2$	0,47
F	136,79
df	155
Probability	4,74E-23

The slope ( $m$ ) of the relationship is 0,54 meaning that a 1% increase in leverage results in a 0,54% increase in total assets. The  $R^2$  is 0,47 meaning that our relationship explains 47% of the scattering of the data, this is quite a low explanatory power, several other significant factors besides leverage affects the banks total assets. The F-statistic and the degree of freedom ( $df$ ) explains how high a probability there is to randomly get a plot which data better fits the linear relationship, this is extremely low as shown on the probability row of the table.

Aiming to improve on the explanatory power of the linear regression it was decided to omit four points of data, these were quarters when the banks increased their equity (thus lowering leverage) by taking in money from owners. These omitted points are hollow (white center) in the graph blow, making the linear relationship slightly different on the remaining points of data.



**Fig 6.** Linear regression of scatter plot data, except for four omitted quarters.

The positive relationship remains, of course; we can also see the omitted points on the left part of the graph. Otherwise the linear relationship did not significantly change from the omittance, now a look at the statistical data.

**Table 5**

Slope ( $m$ )	0,61
$R^2$	0,52
F	160,88

df	151
Probability	1,48E-25

The slope (m) of the relationship is slightly increased in this new sample to 0,61 meaning that a 1% increase in leverage results in a 0,61% increase in total assets. The  $R^2$  is also higher at 0,52 meaning that explanatory power is higher for this sample, but several other significant factors besides leverage still exists. The F-statistic and the degree of freedom (df) explains how high a probability there is to randomly get a plot which data better fits the linear relationship, this is even lower in our second regression as shown in the table.

## 5.2 Comparing this to the literature

It is not surprising that the scatterplots (fig 3-6) did not show a negative relationship between assets and leverage. As we described in the theory chapter, this would have meant that the banks did not actively manage their balance sheets; with the implication that increasing asset values would only result in rising equity buffers and not cause any procyclical effect. What is striking, however, is the clear pattern prevalent in all of the plots: when assets increase, leverage increases. The banks do not appear to target a specific leverage ratio, they actually increase it as the assets on their books increase in value – a clear procyclical management of the balance sheets.

Based on Adrian and Shin's study (2010), one would not expect such a distinct positive relationship between assets and leverage as the one we find among the Swedish banks. The observations from the commercial banks in their study tend to cluster around the vertical line in the scatter plot, indicating zero change in leverage. Since their study focuses exclusively on investment banks and all we get on the commercial banks is a scatter plot, there is not much information which we can use to analyze the differences between our own study and theirs. However, there are a number of potential factors that could explain the divergent results.

First of all, the measurement period used by Adrian and Shin for the commercial banks runs from 1963 to 2006. The banking system of the 60s, 70s, 80s, 90s and 00s were obviously very different in character. For example, the use of fair value accounting has gradually expanded along with the creation of new financial instruments, not least during the last twenty years. Another important factor is the fact that commercial banks in the U.S were not allowed to fully engage in investment bank activities until the Banking Act of 1933, known Glass-Steagall Act, was repealed in 1999. If one were to exclude the observations predating the mid-90s, it is quite possible that we would see a result more similar to ours.

As we can see, the results for the investment banks in Adrian and Sin's study are much closer to what we get in our sample. This could be attributed to the fact that the measurement period is of a more recent nature, starting at the mid-90s and ending with the first quarter of 2007, and the fact that Swedish banks have integrated investment banking in their operations.

When we look at what drives the increase in the banks' equity capital – against which new debt can be raised and lent out – it is clear that earnings attributed to assets valued with fair value accounting provides a large chunk in relation to earnings generated by the banks other operations. We do not separate realized and unrealized gains and it is true that the realized profits would be recognized under any accounting system. The interest to us is the aggregate effect of the assets that are valued

with fair value accounting, whether they are realized or not; as we described in chapter 3.3.1, the gains or losses in the trading book are recognized in any event.

We also note an increasing contribution since 2005; the explanation for this includes two important components: some of it stems from an expanded use of fair value accounting, but more important is large gyrations in asset prices seen at the end of the decade. The volatility of financial markets is particularly clear in the case of SEB, where the profit from fair value assets in 2009 dwarfs the bank's other earnings, only to drop to less than 15% of the earnings during 2010.

The concern that fair value accounting is procyclical element to it is certainly correct, but the critique seems to be narrowly focused. From what we can see, the whole bank is managed in a procyclical fashion – leverage is increased as total assets increase. It is also clear that the majority consistently comes from the trading book (see appendix C) which is realized in the profit and loss statement. Only on rare occasions do the two categories available-for-sale and cash flow hedges reach amounts that are notable, marginalizing the accelerator effect caused by the accounting system. This is also the conclusions drawn by Laux and Leuz (2010) and Schaffer (2010) regarding the losses in the U.S banks.

Based on history it seems certain that the banks would find ways to work around the accounting system in order to realize profits or in other ways release capital reserves to be able to make new investments. As noted by Laux and Leuz (2009) and Plantin et al. (2008b) among others, historical cost accounting could simply create a form of "gains trading" by the banks. It is also worth to point out that the loss provision method for assets accounted for by historical cost has received criticism for also having a procyclical element to it. Whether an expanded use to full fair value accounting, i.e. to mark all assets and liabilities on the banks' balance sheets at market prices would be a good idea is beyond the reach of this thesis and its authors. Studies from the ECB (2004) and the IMF (2008) suggest that it could bring both positive and negative outcomes; but since the tests they run do not take into account how banks would adjust to the rules, the real world implication is hard to judge. Our only opinion on this is that the magic bullet is likely to remain elusive: bank will act procyclically during the bursting of any asset bubble, regardless of the accounting system that is used at the time (and the bubble will be created regardless of the accounting system).

Since there seems to be a consensus in the fair value debate that the trading book should be valued with market values, the findings in our study appear to be uncontroversial regarding the debate that fair value accounting is applied on a too wide basis. Rather than being an accounting problem, the implications of our findings seems to be more of a risk a management issue: how large should the trading activities of a bank be? Of course, it is also a question of net exposure – price-swings in a large trading book that is properly hedged will only marginally impact the banks' earnings. Nevertheless, when one looks at the portion of earnings from fair value assets at Nordea during the last couple of years it certainly raises some questions. Although the earnings from fair value assets are collected on an aggregate basis and not from the banks respective divisions, it seems probable that the investment bank activities are responsible for most of it. Also, what regards the increases in risk-taking that we find, it is not clear where this stems from; but a comparison with Adrian and Shin's study (2010) suggests that the investment bank division probably plays a large role here as well. Combining commercial bank and investment bank activities has of yet not been a contentious issue in Sweden compared to the debate about the "Volcker Rule" in the U.S and the recent Vickers Report in the U.K, but this might only be a matter of time?

It appears unlikely that a scale down of the use of fair value accounting would stop the procyclicality of the banking sector. There are a large number of factors that would keep this tendency intact regardless of accounting policy: asymmetric monetary policy, moral hazard creating bail-outs and incentive schemes, only to mention a few. While it is not within the scope of this thesis to determine which one of them is the largest contributor, it certainly seems that there is, if not bigger, than at least many more fishes to fry than the present accounting system.

## CHAPTER VI

### CONCLUSIONS

This study clearly shows that there is a positive relationship between leverage and the size of the balance sheet in the Swedish banking sector. But what is also evident is that the linear relationship between leverage and total assets for the banks has quite low explanatory power, apparently several other significant factors besides leverage affects the size of the banks' balance sheets. However with the power of the large sample there is extremely low probability to randomly get a plot of data which better fits a linear relationship, making the existence of the relation beyond question.

Aiming to improve on the explanatory power of the linear regression explained above it was decided to omit four points of data; these were quarters when the banks increased their equity (thus lowering leverage) by taking in money from owners in a rights issue. The previously seen linear relationship did not significantly change from the omittance of those four quarters; however the statistical data improved some. The explanatory power was higher for this sample, even though several other significant factors besides leverage still existed. The probability to randomly get a plot which data better fits the linear relationship was even lower in our second regression.

Taken together, the results shows that fair value accounting do have a procyclical effect. It provides a large part of the banks' earnings, although the contribution varies between the banks and the general mood of financial markets. What is crucial, however, is how the banks decide to treat value increases from their assets. As we present, there is a clear tendency by the banks to increase their leverage ratios as total asset values increases during the upswing in the business cycle. If fair value accounting can be called an accounting accelerator, its speed is in turn determined by a management risk-taking accelerator. Although, one important point has to be made: what we measure is the response by the banks on the aggregate changes in value, not from fair value in particular. This means that any profits will procyclical. Moreover, from what we can see, most of the profit contributions from the fair valued assets comes from the trading book. Thus, fair value accounting appears to be less of a contributor of procyclicality during the up-swing of the businesses cycle than it appears at first glance.

Lastly a few suggestions for further research, any study that could in a credible way compare the outcomes of using fair value accounting as opposed to any alternative, such as for example historical cost accounting, would be a very interesting read. Also, the authors would like to encourage a furthering of this study where more factors besides rights issues are taken into account and the procyclical effect stemming from fair value accounting could be further distinguished.

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## APPENDIX A

### Definition

In the U.S, the definition of what constitutes "fair value" was unclear well into the 00's. It was first established with the release of SFAS 157 in 2006, which came into effect at the beginning of 2008 (SEC, 2008, p. 22). It was then defined as: "Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". (not, SFAS 157 paragraph 5). Likewise, the IASB has also lacked an established definition, although it has generally been defined as: "the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction" (DP FVM 06, paragraph 10). These two definitions differ in three ways:

- The definition in SFAS No. 157 is explicitly an exit price, whereas the definition in IFRS is neither explicitly an exit price nor an entry price.
- SFAS No. 157 explicitly refers to market participants, which is defined by the standard, whereas IFRS simply refers to knowledgeable, willing parties in an arm's length transaction.
- For liabilities, the definition of fair value in SFAS No. 157 rests on the notion that the liability is transferred (the liability to the counterparty continues), whereas the definition in IFRS refers to the amount at which a liability could be settled.

Note: Recent developments indicates that The IASB is moving towards the American definition (ED FVM 08, p. 5)

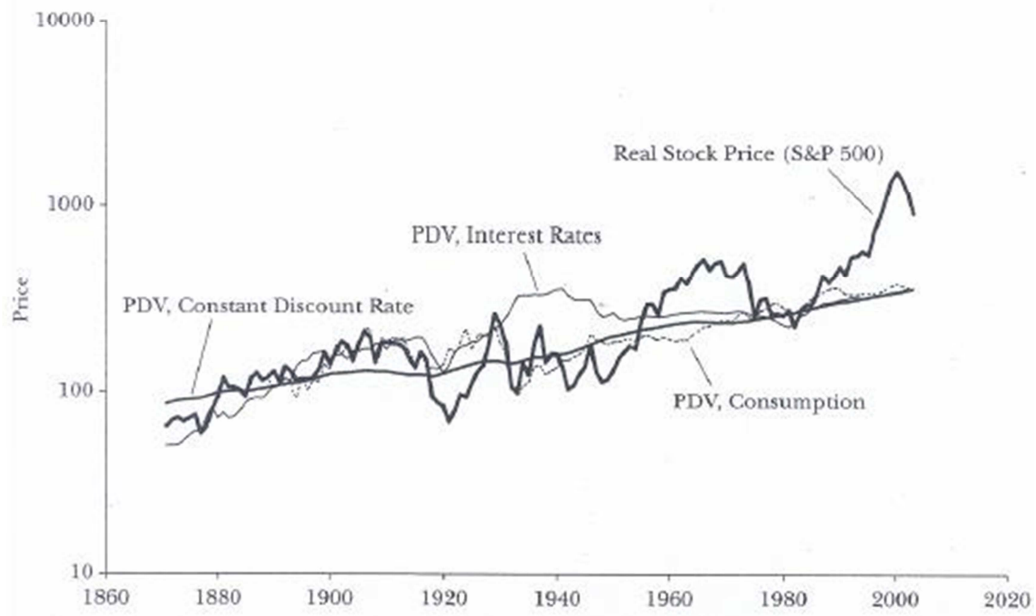
### Application

- IFRS does not distinguish between investments that are in the form of debt securities and those that are investments in loans. Under IFRS, regardless of the form, investments in obligations with fixed or determinable payments generally can be accounted for as loans, if the investments do not trade in an active market and the holder does not intend to sell the investment in the near term.<sup>80</sup> Similar to U.S. GAAP, accounting for investments not classified as loans is based on whether the investment is classified as trading, AFS, or HTM.
- Prior to recent IASB amendments in October 2008, IFRS had more restrictive requirements than U.S. GAAP about transferring certain financial assets. Subsequent to these amendments, which are retroactively effective to July 1, 2008, non-derivative financial assets held for trading and AFS financial assets may be reclassified under IFRS in particular situations.
- Under IFRS, the trigger for recognizing impairment differs from U.S. GAAP, resulting in the potential for differences in the timing of when an impairment charge is recorded.
- Measurement of impairment losses differs under IFRS for HTM securities, which are written down through income under both U.S. GAAP and IFRS. However, under U.S. GAAP, these securities are written down to fair value; under IFRS, they are written down only for incurred credit losses.
- IFRS has greater restrictions on the use of the option to elect fair value accounting.

Source: SEC.

## APPENDIX B

(annual data)



Source: Shiller, 2003.

## APPENDIX C

Table of trading book earnings contribution in relation to total Fair value earnings.

<b>Year</b>	<b>Nordea</b>	<b>Handelsbanken</b>	<b>SEB</b>	<b>Swedbank</b>
2001	100,00%	100,00%	100,00%	100,00%
2002	100,00%	100,00%	100,00%	100,00%
2003	100,00%	100,00%	100,00%	100,00%
2004	100,00%	100,00%	100,00%	100,00%
2005	99,68%	90,70%	91,99%	100,00%
2006	99,71%	117,16%	91,63%	100,00%
2007	100,00%	147,97%	121,24%	104,00%
2008	101,28%	152,07%	-344,08%*	161,25%
2009	99,79%	81,89%	50,74%	93,17%
2010	99,84%	239,49%	50,53%	77,15%

\* The negative number means that the trading book contributed negatively to the overall loss in fair value assets, i.e. the trading book made a profit.