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# Do public and private firms show different reporting behaviour?

A study of financial reporting quality in a Swedish setting

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## Abstract

Managers of companies have considerable influence over financial reports and may engage in earnings management, with lower financial reporting quality (FRQ) as a consequence. We provide a study of FRQ in Swedish public and private firms to identify if there exists differences between these groups' reporting behaviour, and if so, which characteristics that are indicative of such. We study a large sample of Swedish firms and by using established models for discretionary accruals and revenue recognition we measure FRQ. We find no conclusive evidence of there being differences between public and private firms' FRQ, we do however find indications of public firms reporting more opportunistically than private firms. In testing conditions that in international studies have been found to be indicative of lower levels of FRQ, we find some which show similar behaviour also in a Swedish setting, while some differ. Our study contributes to the broader literature by providing findings to help understand FRQ in a Swedish setting.

**Tutor:** Florian Eugster

**Keywords:** *financial reporting quality, earnings management, public versus private companies, opportunism, information demand.*

## Table of Contents

|       |                                                           |    |
|-------|-----------------------------------------------------------|----|
| 1.    | Introduction .....                                        | 4  |
| 1.1   | The study's contribution.....                             | 4  |
| 1.2   | Delimitation.....                                         | 5  |
| 1.3   | Disposition.....                                          | 5  |
| 2.    | Theoretical background.....                               | 6  |
| 2.1   | Financial reporting quality .....                         | 6  |
| 2.2   | Earnings management .....                                 | 6  |
| 2.3   | Measuring earnings management and FRQ .....               | 7  |
| 2.4   | Discretionary and non-discretionary accruals .....        | 8  |
| 2.5   | Methods for calculating financial reporting quality ..... | 9  |
| 2.5.1 | Jones model .....                                         | 9  |
| 2.5.2 | Modified Jones model .....                                | 9  |
| 2.5.3 | McNichols and Stubben method .....                        | 10 |
| 2.5.4 | Kothari et al. method .....                               | 10 |
| 2.5.5 | Dechow and Dichev approach.....                           | 10 |
| 2.5.6 | Burgstahler method .....                                  | 10 |
| 2.6   | Financial reporting in Sweden.....                        | 11 |
| 2.6.1 | Swedish GAAP.....                                         | 11 |
| 2.6.2 | Appropriations.....                                       | 11 |
| 2.7   | Theories on financial reporting quality .....             | 12 |
| 2.8   | Research question and hypothesis.....                     | 14 |
| 3.    | Method.....                                               | 15 |
| 3.1   | Adjustments for appropriations .....                      | 15 |
| 3.2   | Financial reporting quality measures.....                 | 15 |
| 3.2.1 | Kothari et al .....                                       | 16 |
| 3.2.2 | Modified Dechow-Dichev .....                              | 16 |
| 3.2.3 | McNichols and Stubben .....                               | 17 |
| 3.2.4 | Burgstahler et al.....                                    | 17 |

|       |                                                                            |    |
|-------|----------------------------------------------------------------------------|----|
| 3.3   | Cross-sectional or time series analysis .....                              | 17 |
| 3.4   | Research regression model .....                                            | 18 |
| 4.    | Empirical data.....                                                        | 20 |
| 4.1   | Selection and descriptive statistics .....                                 | 20 |
| 5.    | Results .....                                                              | 26 |
| 5.1   | Main hypothesis .....                                                      | 26 |
| 5.2   | Conditional analyses.....                                                  | 28 |
| 6.    | Analysis and discussion.....                                               | 30 |
| 6.1   | Discussion of research method.....                                         | 31 |
| 6.1.1 | Data selection .....                                                       | 31 |
| 6.1.2 | Using the cross-sectional method in measuring discretionary accruals ..... | 31 |
| 6.1.3 | Criticism of accrual-based methods for measuring FRQ .....                 | 31 |
| 6.1.4 | Explanatory value of the study .....                                       | 32 |
| 6.1.5 | Validity, reliability and comparability.....                               | 32 |
| 6.2   | Analysis of results .....                                                  | 33 |
| 6.2.1 | Main hypothesis .....                                                      | 33 |
| 6.2.2 | Conditional analyses.....                                                  | 34 |
| 6.3   | Analysis of control variables.....                                         | 36 |
| 6.3.1 | Control variables used in the study.....                                   | 36 |
| 6.3.2 | Control variables not included.....                                        | 38 |
| 6.3.3 | Multicollinearity.....                                                     | 39 |
| 6.3.4 | Heteroscedasticity.....                                                    | 39 |
| 6.4   | Robustness test .....                                                      | 39 |
| 6.4.1 | Skewed selection .....                                                     | 40 |
| 6.4.2 | Size measures .....                                                        | 40 |
| 7.    | Suggestions for future research .....                                      | 40 |
| 8.    | Summary and conclusions.....                                               | 41 |
|       | References .....                                                           | 42 |
|       | Appendixes.....                                                            | 46 |

## 1. Introduction

Financial reporting quality (FRQ) is a central topic in financial accounting research, and the causes and consequences of variations in FRQ have been studied extensively for public firms (firms with publicly traded debt or equities). The focus on public firms is mainly due to two reasons; (1) data has traditionally been readily available for public firms in contrast to private firms (without publicly traded debt or equity), and (2) researching FRQ in public firms can be motivated on the grounds that efficient capital allocation is essential in a capital markets-based economy, where external investors' capital allocation decisions are based primarily on financial accounting information.

Studying FRQ in private firms can however not be motivated on such grounds. Nonetheless, private firms are vital to the economy and important to consider. Highlighting their importance, according to Statistics Sweden (2014) there are over 1,1 million privately held companies in Sweden of which approximately 300 thousand have paid employees. Even though the vast majority of private firms are small compared to public firms, in aggregate they are important to the economy, and factors that potentially affect the financial reporting effectiveness of these firms should be investigated.

As there is limited research attempting to understand variations in FRQ on the Swedish market, we intend to examine if there are differences in FRQ between Swedish public and private firms and what firm characteristics that can help explain such differences.

The results of our study will be informative to external constituents who rely on public and private firms' financial statements in making decisions. The most obvious constituents are commercial banks, institutional investors and other financial institutions. Other groups potentially affected by firms' FRQ include private investors, insurers, suppliers, customers, employees, and tax authorities.

### 1.1 The study's contribution

Prior U.S. studies (Hope et al. 2013) on differences in FRQ between public and private firms have found evidence of there being higher FRQ amongst public firms. These results are however not consistent with earlier studies (Givoly et al. 2010 and Beatty et al. 2002) and there is no unanimous answer to the question if public firms have higher FRQ than private firms. Our study contributes to the current debate on public versus private firms' financial accounting practices and complements the broader literature in trying to identify determinants of FRQ by providing a large-sample Swedish study. Our study is inspired by Hope et al. (2013), but we

compliment their study by conducting additional analyses on the effects of (1) corporate governance and (2) performance based compensation to management has on FRQ. Additionally, our study provides insights into the Swedish market, its accounting practices and the effect of Swedish GAAP on FRQ, aspects which differ from a U.S. setting.

## 1.2 Delimitation

We have chosen to study the Swedish market and our sample of companies consists of Swedish public and private firms, where public firms are defined as those listed on either Nasdaq OMX Stockholm's Large-, Mid- and Small Cap lists, Aktietorget, Bequoted, First North, NGM Equity or NGM OTC. We have chosen to only look at the Swedish market as there are advantages to studying only one country, since the sample of companies included follow similar accounting and legal standards, which an international sample would not. To limit ourselves from disturbing variables in our selection, we have excluded financial companies (banks, mutual funds, insurance companies) from our sample, as these companies have different financial structures and follow different regulations than other companies.

We have studied annual report data from the period 2005-2013. We have not studied changes in levels of FRQ during this period, nor have we studied changes in FRQ in companies which have gone from being private to being public or vice versa. We have excluded data from 2014, as this may still be undergoing collections and finalisation and may be changed. For private firms, we have excluded those with under 50 MSEK in yearly revenue per 2013, as these companies' characteristics are regarded as being too different from public companies, and that any differences in FRQ found could be attributable to other factors than the scope of this study.

Lastly, the aim of our study is to study if there are differences in FRQ between Swedish public and private firms, and if so, which characteristics that are indicative of such differences. It is not within the scope of this study to explore such characteristics further than identifying them, nor to investigate motives behind variations in FRQ.

## 1.3 Disposition

Section 2 of the study presents prior research and theoretical background in the area of Earnings Management and FRQ. Section 3 describes our method for data collection and analysis. Section 4 describes our data set and section 5 and 6 presents our results and analysis. Lastly, we present our conclusions and provide suggestions for areas of further research, in sections 7 and 8.

## 2. Theoretical background

### 2.1 Financial reporting quality

The reason for companies to report financial information is to provide an accurate and correct picture of the company's performance and financial standing to allow outside stakeholders to make sound decisions in regards to the company (Bokföringslag, 1999). In connection to the reporting of financial information is the term *earnings quality*, which Dechow et al. (2010) explains as: higher quality earnings provides more information about the features of a firm's financial performance that are relevant to a specific decision made by a specific decision-maker. Providing external stakeholders and investors with accurate information in financial reports is thus of high importance to create trust and allow for correct decisions to be made. As such, earnings quality, synonymous with FRQ, is a central theme in financial reporting.

### 2.2 Earnings management

*Earnings management* is a well-known phenomenon in financial reporting and is closely related to a company's FRQ. The term *earnings management* has many definitions. Healy & Wahlen (1999) say that earnings management occurs when management exerts discretion in their financial reports and adjusts these with the intent to mislead external stakeholders, or to meet covenants relating to accounting parameters. Schipper (1989) defined earnings management as deliberate adjustments in a company's external financial reports made for personal gain or to report more desirable results.

Prior research has provided various motives for why companies engage in earnings management (Watts & Zimmerman, 1986; Sweeney, 1994; Han & Wang, 1998), which can broadly be divided into *capital market oriented motives* and *internally oriented motives*.

Examples of *capital market oriented* earnings management are when accruals are made to report higher earnings in cases where the company otherwise would not reach their earnings benchmarks (Kasznik, 1999). Also, earnings management with the intent to encourage investors to buy the company's stocks, or to increase its market value, falls into this category (Kellogg & Kellogg, 1991).

*Internally oriented motives* can arise for example when management's compensation system is tied to the company's economic performance, e.g. having compensation tied to certain financial figures, KPIs or stock performance could incentivise managers to manipulate these to increase their own compensation (Xiong, 2006). Other examples which can be classified as internally oriented motives are practices where companies adjust their financial reporting to the current

political climate or for tax or fee avoidance (Watts & Zimmerman, 1986). In our study however, we make no attempt to classify earnings management based on motive, as we are only interested in the magnitude and overall FRQ and not its motivational origin.

### 2.3 Measuring earnings management and FRQ

An issue in trying to measure earnings management and FRQ is that there is no direct way of doing it. There are however several methods and proxies for it, and the most commonly used methods provide acceptable means of doing so (Dechow et al. 2010). However, there also exists studies which disprove most methods, and in some cases the evidence against a certain method is as strong as the evidence in favour of it (Young 1999, Francis, Nanda & Olsson 2008 and Francis, Olsson & Schipper 2006). This is important to keep in mind when using these models and interpreting their results. Dechow et al. (2010) further highlights that the best method to use varies from case to case, and in choosing which to use it is important to consider what one wants to measure. They have categorised FRQ measures into the following three categories; (1) *Properties of earnings*, (2) *Investor responsiveness to earnings* and, (3) *External indicators of earnings misstatements*.

*Properties of earnings* include models studying earnings persistence and accruals, earnings smoothness, asymmetric timeliness and timely loss recognition, and target beating. *Investor responsiveness to earnings* refers to models studying correlations between financial reporting and market response. If for example investors regard a company's financial reports as adequate to base decisions on, the market's response should be in line with changes presented in its financial reports. This would indicate that the company presents a true picture of its performance, and a clear correlation between the information presented in a company's financial reports and the market's response would indicate high FRQ. The third category, *External indicators of earnings misstatements*, are ways of measuring FRQ by looking at actions taken by accountants and adjustments made to financial reports. FRQ is then measured by the number of actions and adjustments a company must take before their financial reports are approved.

Dechow et al. (2010) highlights that the majority of research made in regards to earnings management and FRQ uses discretionary accruals as a measure of whether companies manipulate their financial reports. For this reason we intend to use discretionary accruals from the category *Properties in reported earnings* to investigate FRQ levels, in line with prior research in the area (Geiger & North, 2006; Hope et al. 2013).

## 2.4 Discretionary and non-discretionary accruals

Accruals is a principle in accounting where expenses and revenues are allocated to different financial reporting periods. The intent with accruals is to as accurately as possible depict a company's performance during a certain period in accordance with the realisation and matching principles, two fundamental accounting principles (Dechow, 1994). According to the realisation principle, a company can only count as revenue that which has been realised during the fiscal period (Årsredovisningslag, 1995), whereas the matching principle specifies that revenues should be matched with the expenses required to achieve those revenues (BFNAR 2003:3). Accruals are made to account for timing and matching problems arising from cash flows occurring in periods different from when the revenue or expense is to be accounted for. Through this process, accruals should help to better portray an accurate picture of a company's performance during a certain period, where cash flows corresponding to the period combined with a company's total accruals make up their reported earnings.

Total accruals can be divided into two types, non-discretionary and discretionary. Non-discretionary accruals refer to normal accruals made in a company's regular operations. Discretionary accruals refer to accruals that are made at the discretion of management or due to estimation errors (Dechow et al., 2010).

From a management's perspective, discretionary accruals provide an attractive instrument for earnings management, as they are relatively simple to perform, and hard to discover (Young, 1999). Discretionary accruals are e.g. when a company chooses a specific depreciation or valuation method of an asset to achieve a desired effect on reported earnings, and as such, it conflicts with the fundamental accounting principle of providing stakeholders with a true and accurate picture of a company's financial performance, and makes it harder for investors to take proper decisions. Hence, discretionary accruals are a proxy for earnings management, which in turn lowers FRQ (Dechow et al., 2010). This relation is illustrated in Figure 1.

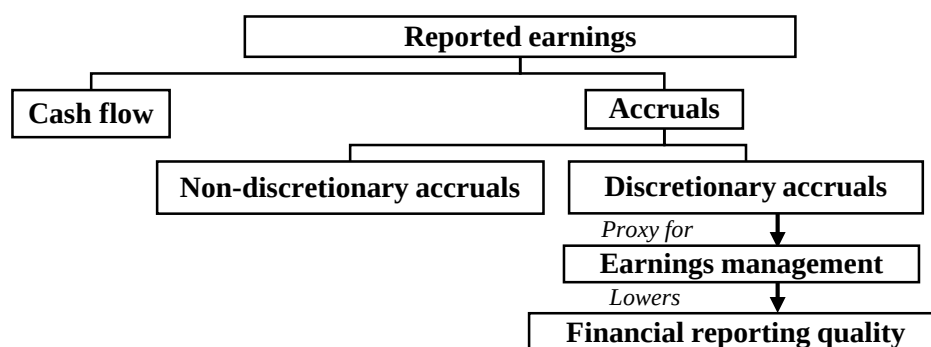


Figure 1 – Visualisation of linking discretionary accruals to FRQ



## 2.5 Methods for calculating financial reporting quality

To measure FRQ we need to be able to distinguish discretionary accruals (DA) from non-discretionary accruals (NDA). NDA are meant to capture accruals that reflect the fundamental performance of a company, while DA are meant to capture distortions induced by application of accounting rules or earnings management. FRQ models attempt to capture problems with the accounting measurement system, and the general interpretation is that if the NDA component of accruals is modelled properly, then the DA component represents a distortion that is of lower quality (Dechow et al., 2010).

Estimating DA is typically made through regression models, estimating how large a company's total accruals should be based on proxies such as revenue and size of certain assets. These are then compared with the actual amount of total accruals, and the difference between them represents DA, found through the residual in the regression models (Dechow et al., 2010).

Next follows presentations of established models used to estimate DA.

### 2.5.1 Jones model

The Jones model (Jones, 1991) estimates the total accruals a company should have as a function of sales growth and PPE. A company's DA is the difference between this estimated amount and their actual total accruals. While sales growth and investment in PPE are natural drivers of firm value, as well as there being an established correlation between these firm characteristics and accruals, the explanatory power of the Jones model is low and explains only about 10% of the variation in accruals. One interpretation of the low explanatory power is that managers have considerable discretion over the accrual process, which they use to mask fundamental performance (Dechow et al. 2010).

### 2.5.2 Modified Jones model

The Jones model has been modified frequently to increase its explanatory value. DeFond and Jambalvo (1994) estimate the regression by industry rather than by firm to lessen firm-year requirements. Dechow et al. (1995) modified the Jones model to adjust for growth in credit sales to improve the model's explanatory power, as credit sales are frequently manipulated. As such, this modification increases the power of the Jones model to yield a residual that is uncorrelated with expected (i.e., normal) revenue accruals and better reflects revenue manipulation. Dechow et al. (2003) estimate the normal relation between credit sales and total sales to control for non-discretionary credit sales. They also add future sales growth to capture accruals made in anticipation of future growth. Even though the Jones model itself and many

of its modifications has been heavily used in research over the years we will not use it. However, we will use the Kothari model which is also founded upon the Jones model.

### 2.5.3 McNichols and Stubben method

In response to criticisms of accrual models (e.g., Dechow et al. 1995; Bernard & Skinner 1996; Guay et al. 1996; McNichols 2000; Thomas & Zhang 2000; Kothari et al. 2005) for providing biased and noisy estimates of earnings discretion, other measures have been developed which focus on discretionary revenues. Stubben focuses on a common form of revenue manipulation, *revenue recognition*, by emphasising the relationship between changes in revenues and changes in accounts receivable. Discretionary revenues are measured as the difference between the actual change in receivables and the predicted change in receivables based on the model, and abnormally high or low receivables indicate revenue manipulation (Stubben, 2010).

### 2.5.4 Kothari et al. method

Prior research argues that there is a correlation between extreme performance and the occurrence of earnings management that causes a concern in measuring earnings management in general and discretionary accruals in particular (Kothari et al. 2005; Healy, 1996; Dechow et al., 1995, 1998). This is something that has not been fully adjusted for in prior models. In response to this concern, Kothari et al. (2005) suggest controlling for the normal level of accruals conditional on return on assets (ROA) to more accurately measure FRQ.

### 2.5.5 Dechow and Dichev approach

Dechow and Dichev (2002) view the matching function of accruals to cash flows as being of primary importance and models accruals as a function of current, past, and future cash flows, as accruals anticipate future cash outflows/inflows. The measure of FRQ is introduced when the cash flows are recognised, as accruals are dependent upon assumptions and estimations. As such, there is a risk of making estimation errors that has to be corrected for when recognising the actual cash flow. These corrections are what Dechow and Dichev try to measure as a proxy for discretionary accruals, and the greater the corrections the lower the level of FRQ.

### 2.5.6 Burgstahler method

Another possible way for firms to engage in earnings management is to temporarily overstate their earnings through accrual choices. Burgstahler et al (2006) argues that this will lead to differences in total accruals while the cash flows from operations will be unaffected. Thus, they introduce a FRQ measure by computing an accruals-to-cash flow ratio, where a higher share of accruals will indicate a lower level of FRQ.

## 2.6 Financial reporting in Sweden

Performing this study in a Swedish setting introduces geographical differences as well as regulatory differences compared to the prior studies (Hope et al 2013, Burgstahler et al. 2006 and Ball & Shivakumar 2005), why we briefly describe Swedish GAAP and some of its differences from international norms.

### 2.6.1 Swedish GAAP

The Swedish GAAP are built on four different regulatory levels called K-regulations. A company must follow a minimum level of regulations but can choose to follow a higher one. K1 is used by smaller organisations and companies that are not corporations (AB), K2 is used by small corporations (AB) (BFNAR 2008:1), K3 is followed by large corporations<sup>1</sup> and company groups (BFNAR 2012:1) and K4 (IFRS) is mandatory for public firms and public company groups (Årsredovisningslag, 1995). Differences in regulations lie mainly in different reporting demands, due to the trade-off for firms between the external need for the reporting and the cost to produce it. The main difference between K1, K2 and K3 lie in how much information the firms have to disclose and the form of that disclosure, whereas the accounting rules themselves are fairly uniform. The differences between K3 and K4 are however larger, as Sweden has implemented IFRS for all public firms and public company groups. Some of the larger differences between IFRS and Swedish GAAP are that IFRS accepts fair value-valuation of certain assets and that it does not allow the Swedish concept of appropriations.

### 2.6.2 Appropriations

A concept which separates Swedish accounting standards from both IFRS and U.S. GAAP is the option for firms that follows K1, K2 or K3 to make appropriations. This allows firms to smooth their earnings or get a tax credit. Management can annually decide to allocate 25% of their earnings before tax to the balance sheet as an untaxed reserve and thereby reduce their reported earnings. This reserve then has to be re-allocated to and recognised through the income statement no later than 6 years later. A firm has to report an ascribed income, effectively an interest, for the time they have appropriations capitalised on their balance sheet (Inkomstskattelag, 1999).

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<sup>1</sup> If a corporation is small or large is decided by the definition in the 1<sup>st</sup> chapter, 3§, 1<sup>st</sup> section, point 4 in the Financial reporting law (Årsredovisningslag, 1995). This states: A company is large if: it has publicly traded equity or debt, or fulfil at least one of the following terms: a) average number of employees in the last two years have exceeded 50, b) total assets has exceeded 40 million SEK for both of the last two years or c) the reported revenue has exceeded 80 million SEK for both of the last two years.

## 2.7 Theories on financial reporting quality

There has been limited existing research in the area of FRQ in public and private firms. Givoly et al. (2010) present opposing sets of arguments that favour either public firms or private firms as having higher FRQ as the *demand hypothesis* and *opportunistic behaviour hypothesis*.

The *demand hypothesis* suggests that the demand for high-quality financial information is greater in public firms, as they have greater ownership dispersion and greater owner-manager separation, as well as less managerial ownership than the average private firm (Hope et al. 2012). These characteristics create information asymmetries, which leads to external stakeholders demanding more reliable information. This leads to managers acting to provide the accurate information demanded in these high agency cost settings.

For private firms, the demand for financial reporting is not as obvious. Capital providers to private firms often have insider access to company information and typically have a more active role in management (Chen et al. 2011). Such close relations reduce the demand for public financial information, and as a result the demand for private firms' financial statements is not as great. Hence, the *demand hypothesis* suggests that public firms have higher FRQ than private firms.

The *opportunistic behaviour hypothesis* in contrast suggests that managers of public firms hide the true performance of their company from external stakeholders by manipulating financial information. As public firms are subject to capital market pressures, their incentives to manipulate earnings to meet targets increases (Graham et al. 2005). Additionally, managers of public firms often have compensation plans and own wealth tied to the firm's stock, giving them incentives to maintain a high stock price. Finally there could be incentives to try to report as smooth earnings as possible over time, since this is in general seen as a symbol of stability, reducing the risk of volatile stock prices. Private firms' managers are not subject to the same capital market pressures to meet earnings targets, and are as such expected to have less incentives to manipulate financial reports. As such, the *opportunistic behaviour hypothesis* suggests that public firms have lower FRQ than private firms.

There has been research made to test these competing hypotheses. Givoly et al. (2010) compare the FRQ of firms with publicly traded equity versus those firms with only publicly held debt. They found that firms with publicly traded equity had lower FRQ and a higher tendency to manage earnings than firms with privately held equity, results supporting the *opportunistic behaviour hypothesis*. Other studies have also found FRQ to be lower in public firms (Beatty

et al., 2002), and studies using U.S. data do in general provide such evidence. However, these studies do not provide direct comparisons of public and private firms for a large sample across multiple industries. Additionally, Givoly et al. (2010) uses a sort of hybrid private firms in their sample, as they define private firms as firms that do not have publicly traded equity, but do have publicly traded debt. Such private firms are potentially quite different from truly private firms, especially in terms of size, a factor which has been shown to be positively correlated with FRQ (Hribar & Nichols 2007).

There have been limited research outside the U.S. on private firms' accounting practices, but there exist two well-cited non-U.S. studies made by Ball and Shivakumar (2005) and Burgstahler et al. (2006). Analysing data from 13 European Union countries, Burgstahler et al. (2006) uses an earnings management index proposed by Leuz et al. (2003) based on four different proxies designed to capture a variety of earnings management practices. The overall conclusion from that study was that private firms exhibited lower FRQ than public firms, in contrast to U.S. studies.

The literature also employs the *earnings conservatism* concept to understand firms' FRQ. Conservative accounting is seen to potentially mitigate agency problems associated with managers' delaying recognition of poor decisions. If managers are aware that poor decisions will result in timely loss recognition, they are less willing to engage in such activities. Creditors can also protect themselves from company default by demanding financial reports that have timelier loss recognition and can as thus impose restrictions on managerial behaviour, increasing the probability of repayment. In this way, understanding the extent to which a company's accounting is conservative or not provides another way for assessing a company's FRQ. For example, Ball and Shivakumar (2005) show that U.K. private firms report less conservatively than public firms by exhibiting less timely loss recognition. In the U.S., early research suggested that private firms reported more conservative (Penno & Simon 1986), while more recent research shows that public firms are more conservative (Givoly et al. 2010).

Given the varying findings in earlier research, more empirical evidence on the FRQ of public versus private firms is needed. However, results across different settings might also be difficult to compare. For example, studies based on specialised industries or hybrid private firms with private equity but public debt, or smaller samples could possibly give varying results, while difficulties with international studies lie in that they may feature differences in legal systems, cultural characteristics, market development, capital market pressures and other factors which

possibly could affect public and private firms' FRQ. For these reasons, the results we obtain should not necessarily be expected to be the same as those in international studies.

## 2.8 Research question and hypotheses

Based on the above discussion, we test for differences in FRQ between Swedish public and private firms and whether the *demand hypothesis* or the *opportunistic behaviour hypothesis* plays a larger role in creating any such differences. Thus, our main research question is:

*“Is there a difference in FRQ between Swedish public and private firms?”*

Our first non-directional hypothesis to test our main research question is:

**H1:** FRQ differs between Swedish public and private firms.

Prior studies (Hope et al. 2013) have also shown that FRQ is affected by several other firm characteristics than merely if a firm is public or not, and that these characteristics could help explain differences between public and private firm FRQ. We want to explore which firm characteristics that could be indicative of such differences.

For example, prior research (Graham et al. 1995) has shown that firms have greater incentives to engage in earnings management to reach earnings expectations. Such incentives gives that the subset of firms that just beats an earnings benchmark are more likely to manage their earnings and hence have a lower FRQ.

It has also been shown that FRQ relates positively to employing a Big 4 audit firm (Becker et al. 1998 and Hope et al. 2013), which intuitively have more resources and expertise that could limit managers' manipulative reporting behaviour. As such, firms could signal their higher FRQ by incurring the costs of a Big 4 auditor.

Additionally, following the intuition that firms in need of external capital will be eager to signal low risk, they have incentives to manage their earnings. It has also been shown that firms with a higher than median increase in external capital tend to have lower FRQ (Hope et al. 2013).

Furthermore, another firm characteristic that should affect firms' FRQ is its governance. Xie, Davidson & DaDalt (2003) have studied this and found a positive correlation between number of board members and FRQ. Intuitively more board members is likely to include independent directors as well as directors with prior experience from working on boards, both which should have a positive effect on firm performance and FRQ (Weisbach 1988).

Finally, prior research (Healy & Wahlen 1999) has shown that there are incentives for management to manage earnings to maximise their own compensation. As such, having a higher share of performance-based compensation is likely to negatively affect FRQ.

This discussion can be summarised in our second hypothesis:

**H2:** FRQ will be lower when a firm (1) just meets or slightly beats an earnings benchmark, (2) do not employ a Big 4 auditor, (3) is in need of external financing, (4) has lower levels of corporate governance or (5) has a higher share of performance based compensation (i.e. bonus) for management.

### 3. Method

This section presents the methods and models used to measure FRQ. We also present adjustments and assumptions made. At the end of this section we present our research regression model and control variables used.

#### 3.1 Adjustments for appropriations

To reliably compare FRQ between Swedish private and public firms, we need to harmonise financial data with respect of appropriations, as appropriations can only be used by private firms following either the K2 or K3 regulations. This harmonisation is made by adding back any appropriations made in the current year to net income and allocating the share of capitalised appropriations to deferred tax liabilities and retained earnings.

#### 3.2 Financial reporting quality measures

We use four different models to measure FRQ for two reasons; (1) as we lack a universally accepted measure of FRQ (Dechow et. al 2010), using multiple proxies helps generalise our results, and (2) using multiple proxies mitigates the possibility that results using one particular proxy captures factors other than FRQ, and that those factors are driving our results. For accrual quality, we use two of the most common methods in the literature based on the model in Kothari et al. (2005) and a modification of the model in Dechow and Dichev (2002). In addition to these, we also use revenue-accrual quality and the ratio of the magnitude of accruals to cash flows. These two models are however cruder measures of FRQ in the sense of being less well specified or less powerful to detect abnormal accruals (Hope et al. 2013). All models are run cross-sectionally on industry-year level. Due to having excessive industry groups when using SNI (Swedish industry classification standard) we have grouped all firms into 12 industries according to the Fama French 12 Industry Portfolios classification based on their SNI code.

### 3.2.1 Kothari et al

The Kothari et al. (2005) model estimates discretionary accruals through a regression on total accruals, controlling for variables known to affect non-discretionary accruals (Equation 1). The absolute value of the residuals from the regression ( $\varepsilon_{i,t}$ ) are used as a proxy for discretionary accruals, and is multiplied by -1 (*DisTA*) so that higher values indicate higher levels of FRQ.

$$Accr_{i,t} = \alpha_0 + \alpha_1 \left( \frac{1}{Assets_{i,t-1}} \right) + \alpha_2 \Delta Rev_{i,t} + \alpha_3 PPE_{i,t} + \alpha_4 ROA_{i,t} + \varepsilon_{i,t} \quad (1)$$

where:

*Accr* = Total accruals, measured as change in non-cash current assets minus the change in non-interest-bearing current liabilities, minus depreciation and amortisation expense for firm *i* in year *t*, scaled by lagged total assets

$\Delta Rev$  = Annual change in revenues, scaled by lagged total assets

*PPE* = property, plant and equipment for firm *i* in year *t*, scaled by lagged total assets

*ROA* = net income for firm *i* in year *t*, scaled by average total assets

### 3.2.2 Modified Dechow-Dichev

Our second model is a version of the Dechow-Dichev cross-section model modified by McNichols (2002), Francis et al. (2005), Ball and Shivakumar (2006) and Givoly et al. (2010). This method uses operating cash flows in the past, present and future to create an expected amount of working capital accruals (*WCA*) which is compared to the actual level of *WCA* (Equation 2). The residual represent estimation errors in current accruals not associated with operating cash flows and that cannot be explained by the change in revenue or the level of *PPE*. The absolute value of the residual is a proxy for discretionary working capital accruals and is multiplied with -1 (*DisWCA*) so higher values indicate higher levels of FRQ.

$$WCA_{i,t} = \alpha_0 + \alpha_1 OCF_{i,t-1} + \alpha_2 OCF_{i,t} + \alpha_3 OCF_{i,t+1} + \alpha_4 \Delta Rev_{i,t} + \alpha_5 PPE_{i,t} + \alpha_6 DOCF_{i,t} + \alpha_7 OCF_{i,t} \times DOCF_{i,t} + \varepsilon_{i,t} \quad (2)$$

where:

*WCA* = working capital accruals, measured as the change in non-cash current assets minus the change in current liabilities other than short-term debt and taxes payable, scaled by lagged total assets

*OCF* = cash flow from operations, measured as the sum of net income, depreciation, and amortisation, minus *WCA*, where all amounts are scaled by lagged total assets



$\Delta Rev$  = Annual change in revenues, scaled by lagged total assets

$PPE$  = property, plant and equipment, scaled by lagged total assets

$DOCF$  = an indicator of negative operating cash flows

### 3.2.3 McNichols and Stubben

Our third model, introduced by McNichols and Stubben (2008) and Stubben (2010), measures discretionary revenues through changes in accounts receivable while controlling for changes in revenues (Equation 3). Discretionary revenues are measured by the residual. We multiply the absolute value of the residuals with -1 ( $DisRev$ ) so that higher values indicate higher levels of FRQ.

$$\Delta AR_{i,t} = \alpha_0 + \alpha_1 \Delta Rev_{i,t} + \varepsilon_{i,t} \quad (3)$$

where:

$\Delta AR$  = Annual change in Accounts Receivable, scaled by lagged total assets

$\Delta Rev$  = Annual change in revenues, scaled by lagged total assets

### 3.2.4 Burgstahler et al.

Our final measure of FRQ was introduced by Burgstahler et al. (2006) and is based on the ratio of the absolute value of accruals to cash flows (Equation 4). We transform the ratio with the natural logarithm and then multiply it by -1 ( $AccrCash$ ) so that higher values indicate higher levels of FRQ.

$$AccrCash_{i,t} = \left( \ln \frac{|Accr_{i,t}|}{|OCF_{i,t}|} \right) * (-1) \quad (4)$$

where  $Accr$  and  $OCF$  are as previously defined.

## 3.3 Cross-sectional or time series analysis

In using accrual-based models, one can choose between performing cross-sectional or time series analysis. Both ways are similar in that they estimate total and non-discretionary accruals, and then calculate the level of discretionary accruals by subtracting non-discretionary accruals from total accruals. They are however different in how they normalise total accruals for comparison between companies. A time series analysis measure variations in total accruals over

several time periods, and then normalise the current year's accruals by looking at prior year's (McNichols, 2002). The cross-sectional method instead examines several companies in a specific industry at a specific point in time. Total accruals are then normalised through industry specific parameters to be able to separate discretionary and non-discretionary accruals for each company (Dechow et al., 1995). As mentioned, we use cross-sectional analyses, this has two reasons:

- We do not measure changes happening over time.
- We assume non-discretionary accruals to be industry specific, in line with Dechow et al. (1995), and believe results to be more precise and reliable if non-discretionary accruals are normalised through industry specific parameters.

### 3.4 Research regression model

We test our main research question for differences in FRQ between public and private firms (H1) using Equation (5).

$$\begin{aligned}
 (DisTA, DisWCA, DisRev, \text{ or } AccrCash)_{i,t} &= \alpha_0 + \alpha_1 Public_{i,t} + \alpha_2 Capital\ Need_{i,t} + \alpha_3 Ln\_Assets_{i,t} + \alpha_4 ROE_{i,t} \\
 &+ \alpha_5 Std\_ROA_{i,t} + \alpha_6 Lev_{i,t} + \alpha_7 Growth_{i,t} + \alpha_8 Op\ Cycle_{i,t} + \alpha_9 Inv_{i,t} \\
 &+ \alpha_{10} Loss_{i,t} + \varepsilon_{i,t}
 \end{aligned}
 \tag{5}$$

The  $\alpha_i$  from Equation (5) indicates the effects each control variable has on a firm's FRQ. The coefficient  $\alpha_1$  indicates how FRQ is affected if a company is public. The control variables used have been found to be explanatory for FRQ in prior research (Ashbaugh-Skaife et al. 2008).

*Public* – our research variable, indicating whether a company is listed; 1 if it is, 0 if not.

*Capital Need* – indicates the change in external financing a firm has in the coming year, defined as the percentage change in common stock, preferred stock and long-term debt in the following year. Prior research (Dechow et al. 1996) has shown that a need for external financing creates incentives for management to manage their earnings, and as such, a high need of external financing has been shown to correlate negatively with FRQ.

*Ln\_assets* – indicates a company's size and is defined as the natural logarithm of a company's closing balance assets. Values have, for comparative reasons, been converted from thousand SEK to million USD with a currency conversion of 7,5 SEK/USD. Prior research shows that larger companies are more strictly regulated by external auditors and financial analysts, and as

such this variable should have a positive correlation with a company's FRQ (Hribar & Nichols 2007).

*ROE* – indicates a company's return on equity, defined as net income before extraordinary items divided by average total equity. Prior research has shown that firms with lower profitability generally have lower FRQ, in accordance to the intuition that a company that is already profitable have fewer incentives to manage earnings (Dechow & Dichev 2002).

*Std\_ROA* – standard deviation on return of assets, measured at the firm level over the sample period for firms with at least three observations. Prior research (Hope et al. 2013) has found results indicative of a negative correlation between *Std\_ROA* and FRQ.

*Lev* – indicates a company's financial leverage, measured as total liabilities divided by total assets. Prior research (Becker et al. 1998) shows a negative correlation between leverage and FRQ, with the intuition that higher debt ratios pushes firms closer to debt covenants, and thus incentivize earnings management to fulfill these covenants.

*Growth* – indicates growth in total assets, measured as the percentage change in total assets between the current and the previous year. Prior research (Ashbaugh-Skaife et al. 2008) has indicated that firms that are growing rapidly risk to have lower FRQ as they have more events affecting their reporting.

*Op\_Cycle* –measures a firms operating cycle, calculated as<sup>2</sup>:

$$\left[ \frac{Inventory}{Cost_{of\ Sales}/365} \right] + \left[ \frac{Receivables}{\frac{Sales}{365}} \right] \text{ or } \left[ \frac{Inventory}{Handelsvaror/365} \right] + \left[ \frac{Receivables}{\frac{Sales}{365}} \right]$$

Limited prior research of operating cycle as an indicator of FRQ has been inconclusive, which makes assumptions of the correlation between *Op\_cycle* and FRQ hard to predict.

*Inv* – divides inventories with total assets. Prior studies have shown a negative correlation between inventory and FRQ (Healy & Wahlen, 1999), with the intuition that accounting choices regarding inventory valuation to a larger extent affects reported earnings in firms with large inventories.

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<sup>2</sup> Swedish GAAP accepts two types of income statements (IS), either organized by function or type of cost (Årsredovisningslag 1995). In the cost type-based IS there is no measure of cost of sales why we have replaced it by the line item Handelsvaror to follow the approach in the Retriever database.

*Loss* – measures the cumulative percentage of sample years that the firm has reported a loss. Prior research (Dechow & Dichev 2002) shows a positive correlation between profitability and FRQ which points towards an expected negative correlation between Loss and FRQ.

In testing our second hypothesis (H2) we modify Equation (5) to include conditional analyses of the firm characteristics we want to study. To test the effect of just beating an earnings benchmark, not employing a Big 4 auditor and having a high need of external capital, we model the research variables *Suspect*, *NoBig4* and *Capital Need dummy*. We test these by including them in Equation (5) both separately and as an interaction variable with *Public*. Additionally, to test for the effect of corporate governance and performance-based compensation to management, we model the variables *Board members* and *Bonus over Salary*. These are tested for the general effect and are included separately in Equation (5).

*Suspect* – indicating if a firm is just beating an earnings benchmark, defined as reporting a small profit or small increase in earnings (1% of total assets); 1 if it is, 0 if not.

*NoBig4* – indicating firms not employing a Big 4 auditor (KPMG, EY, PwC or Deloitte); 1 when not employing, otherwise 0.

*Capital Need dummy* – indicating firms with a *Capital Need* exceeding the median; 1 if it does, 0 if not.

*Board members* – indicates the number of members on the Board of Directors as per 2013, the 2013 value is used for all firm-year observations.

*Bonus over Salary* – indicates the share of variable compensation (Bonus) compared to the fixed compensation (Salary) for management, measured by dividing bonus with salary.

## 4. Empirical data

In this section we provide information on our sample selection and descriptive statistics of FRQ measures and control variables for our samples.

### 4.1 Selection and descriptive statistics

As data for the study we have used annual accounting reports from the Retriever database for the years 2005 to 2013 for Swedish companies. This gave a total of 14 792 companies, of which 14 473 are private and 319 public, and a total of 98 338 firm year observations, of which 96 135 are for private companies and 2 203 for public companies. Table 1 shows our sample selection. First, we excluded the smallest firms, defined as those with less than 50 million SEK in annual revenues per 2013. Secondly, we excluded companies in the financial sector and removed

private firms with a public parent company to not count these twice and as their accounting is likely distorted by the parent company. Furthermore, we removed observations with missing data and with observations in the 1<sup>st</sup> and 99<sup>th</sup> percentile in our control variables to remove outliers and inaccuracies resulting from inconsistencies in the dataset. To calculate FRQ measures based on industry-year regressions, we use the Fama French 12 Industry Portfolio classification. From these twelve industry groups we remove three due to too few public firm year observations, where we set the limit to having at least five public firm-year observations (see Appendix 1 for descriptives on firm year observation splits for industries used in the study). Observations with missing SNI classification are removed from the sample.

**Table 1**  
**Sample selection**

| <b><u>Firm sample</u></b>                                                                                                          | <b><u># of firms</u></b> | <b><u># of firm-years</u></b> |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------|
| Observations with annual accounting reports                                                                                        | 347,086                  | 2,429,602                     |
| Observations – less revenue < 50 million in 2013                                                                                   | 18,282                   | 140,591                       |
| Observations – less private firms with public parent                                                                               | 15,460                   | 123,659                       |
| Observations – less financials; missing data; 1 <sup>st</sup> and 99 <sup>th</sup> percentile; industry 7, 8 or 10 and missing SNI | 14 792                   | 98 338                        |
| Private firm observations with available control variables                                                                         | 14 473                   | 96 135                        |
| Public firm observations with available control variables                                                                          | 319                      | 2 203                         |

As we have a skewed sample of public and private firms, we compare the FRQ between the groups in two different approaches:

- First we use the full sample of observations
- Secondly, we create a subsample of one-to-one matches of public and private firm-year observations, matched on industry, year and size in terms of revenue. Through this second approach we reduce the importance of firm size in the comparison, and further isolate the private versus public status as the explanatory factor to differences in FRQ. The resulting matched sample include 4 406 firm-year observations.

Part A and B of Table 2 provide descriptive statistics for the main variables for private and public firms used in the study. Panel C provides descriptive statistics for the sub-sample of private firms selected for the matched sample.

**Table 2**  
**Descriptive statistics**

**Panel A: Private firms (full sample)**

| <u>Variables</u>           | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Std.</u><br><u>Deviation</u> | <u>Percentiles</u> |            |
|----------------------------|----------|-------------|---------------|---------------------------------|--------------------|------------|
|                            |          |             |               |                                 | <u>25%</u>         | <u>75%</u> |
| <i># of Employees</i>      | 95 461   | 114         | 32            | 788                             | 15                 | 68         |
| <i>Revenue (thousands)</i> | 95 461   | 332 275     | 83 339        | 2 822 619                       | 51 715             | 176 582    |
| <i>DisTA</i>               | 95 461   | -0,106      | -0,072        | 0,106                           | -0,144             | -0,031     |
| <i>DisWCA</i>              | 64 279   | -0,058      | -0,040        | 0,062                           | -0,078             | -0,017     |
| <i>DisRev</i>              | 95 461   | -0,078      | -0,040        | 0,116                           | -0,095             | -0,015     |
| <i>AccrCash</i>            | 95 402   | 0,311       | 0,248         | 1,411                           | -0,271             | 0,931      |
| <i>Capital_Need</i>        | 95 461   | 0,536       | 0,000         | 2,678                           | -0,156             | 0,230      |
| <i>Ln_Assets</i>           | 95 401   | 1,987       | 1,728         | 1,446                           | 1,019              | 2,711      |
| <i>ROE</i>                 | 95 461   | 0,203       | 0,160         | 1,354                           | 0,028              | 0,363      |
| <i>Loss</i>                | 95 461   | 0,160       | 0,000         | 0,224                           | 0,000              | 0,250      |
| <i>StdROA</i>              | 94 221   | 0,072       | 0,058         | 0,059                           | 0,035              | 0,091      |
| <i>Leverage</i>            | 95 385   | 0,624       | 0,644         | 0,220                           | 0,477              | 0,789      |
| <i>Growth</i>              | 95 461   | 0,098       | 0,048         | 0,356                           | -0,050             | 0,181      |
| <i>Op_Cycle</i>            | 95 461   | 59,075      | 7,037         | 125,617                         | 0,000              | 88,561     |
| <i>Inv</i>                 | 95 401   | 0,182       | 0,120         | 0,200                           | 0,002              | 0,302      |

**Panel B: Public firms (full and paired sample)**

| <u>Variable</u>            | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Std.</u><br><u>Deviation</u> | <u>Percentiles</u> |            |
|----------------------------|----------|-------------|---------------|---------------------------------|--------------------|------------|
|                            |          |             |               |                                 | <u>25%</u>         | <u>75%</u> |
| <i># of Employees</i>      | 2 203    | 4 328       | 251           | 18 428                          | 55                 | 1 434      |
| <i>Revenue (thousands)</i> | 2 203    | 7 825 986   | 627 400       | 26 757 712                      | 136 311            | 2 663 000  |
| <i>DisTA</i>               | 2 203    | -0,092      | -0,055        | 0,109                           | -0,116             | -0,023     |
| <i>DisWCA</i>              | 1 541    | -0,059      | -0,036        | 0,071                           | -0,075             | -0,015     |
| <i>DisRev</i>              | 2 203    | -0,048      | -0,023        | 0,076                           | -0,054             | -0,009     |
| <i>AccrCash</i>            | 2 202    | 0,585       | 0,503         | 1,556                           | -0,257             | 1,415      |
| <i>Capital_Need</i>        | 2 203    | 0,629       | 0,000         | 3,031                           | -0,085             | 0,218      |
| <i>Ln_Assets</i>           | 2 200    | 4,842       | 4,603         | 2,274                           | 3,058              | 6,354      |
| <i>ROE</i>                 | 2 203    | 0,051       | 0,107         | 0,445                           | -0,020             | 0,220      |
| <i>Loss</i>                | 1 621    | 0,154       | 0,125         | 0,142                           | 0,125              | 0,125      |
| <i>StdROA</i>              | 2 186    | 0,092       | 0,060         | 0,094                           | 0,033              | 0,113      |
| <i>Leverage</i>            | 2 201    | 0,484       | 0,498         | 0,217                           | 0,326              | 0,639      |
| <i>Growth</i>              | 2 203    | 0,173       | 0,052         | 0,634                           | -0,047             | 0,192      |
| <i>Op_Cycle</i>            | 2 203    | 89,858      | 71,773        | 114,388                         | 0,000              | 145,259    |
| <i>Inv</i>                 | 2 200    | 0,115       | 0,065         | 0,134                           | 0,000              | 0,204      |

(continued on next page)

**Panel C: Private firms (paired sample)**

| <u>Variable</u>            | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Std.</u><br><u>Deviation</u> | <u>Percentiles</u> |            |
|----------------------------|----------|-------------|---------------|---------------------------------|--------------------|------------|
|                            |          |             |               |                                 | <u>25%</u>         | <u>75%</u> |
| <i># of Employees</i>      | 2 203    | 1 415       | 153           | 4 471                           | 35                 | 773        |
| <i>Revenue (thousands)</i> | 2 203    | 5 358 124   | 645 431       | 16 952 899                      | 133 139            | 2 777 898  |
| <i>DisTA</i>               | 2 203    | -0,095      | -0,060        | 0,102                           | -0,129             | -0,025     |
| <i>DisWCA</i>              | 1 479    | -0,052      | -0,032        | 0,062                           | -0,068             | -0,014     |
| <i>DisRev</i>              | 2 203    | -0,059      | -0,027        | 0,099                           | -0,069             | -0,010     |
| <i>AccrCash</i>            | 2 203    | 0,326       | 0,236         | 1,364                           | -0,250             | 0,888      |
| <i>Capital_Need</i>        | 2 203    | 0,571       | 0,000         | 2,758                           | -0,142             | 0,232      |
| <i>Ln_Assets</i>           | 2 202    | 4,113       | 4,091         | 2,321                           | 2,334              | 5,621      |
| <i>ROE</i>                 | 2 203    | 0,156       | 0,123         | 0,510                           | 0,016              | 0,304      |
| <i>Loss</i>                | 2 203    | 0,200       | 0,125         | 0,255                           | 0,000              | 0,333      |
| <i>StdROA</i>              | 2 165    | 0,062       | 0,045         | 0,063                           | 0,023              | 0,079      |
| <i>Leverage</i>            | 2 201    | 0,634       | 0,651         | 0,229                           | 0,492              | 0,796      |
| <i>Growth</i>              | 2 203    | 0,114       | 0,045         | 0,645                           | -0,035             | 0,157      |
| <i>Op_Cycle</i>            | 2 203    | 59,256      | 18,351        | 101,455                         | 0,000              | 90,174     |
| <i>Inv</i>                 | 2 202    | 0,146       | 0,077         | 0,176                           | 0,001              | 0,241      |

See section 3.3 for variable definitions. Revenues are measured in thousands SEK. The FRQ proxies (DisTA, DisWCA, DisRev and AccrCash) can only take negative values, the closer a value is to 0 the better FRQ. Panel A shows the statistics for all the private firms included in our sample, Panel B shows statistics for all public firms included in the sample, which is the same for both the full and matched sample. Panel C shows statistics for the matched sample of private firms. These firms are one-to-one matches to the public firms based on industry, year and revenues.

Table 3 shows the Pearson correlations coefficients for private and public firms respectively in Panel A and B. As found in previous studies (Hope et al. 2013), we see that size correlates positively with all four FRQ measures. We further note that growth correlates negatively in three of four measures for both private and public firms. These correlation results do not however control for differences in firm characteristics, which we control for in our main regression in the next section.

Table 3

## Pearson correlation coefficients

## Panel A: Private firms (full sample)

|                     | <u>DisTA</u> | <u>DisWCA</u> | <u>DisRev</u> | <u>AccrCash</u> | <u>Capital_Need</u> | <u>Ln_Assets</u> | <u>ROE</u> | <u>Loss</u> | <u>StdROA</u> | <u>Leverage</u> | <u>Growth</u> | <u>Op_Cycle</u> |
|---------------------|--------------|---------------|---------------|-----------------|---------------------|------------------|------------|-------------|---------------|-----------------|---------------|-----------------|
| <i>DisWCA</i>       | ,418***      | 1             |               |                 |                     |                  |            |             |               |                 |               |                 |
| <i>DisRev</i>       | ,212***      | ,168***       | 1             |                 |                     |                  |            |             |               |                 |               |                 |
| <i>AccrCash</i>     | ,259***      | ,095***       | ,048***       | 1               |                     |                  |            |             |               |                 |               |                 |
| <i>Capital_Need</i> | -,114***     | -,072***      | -,069***      | -,012***        | 1                   |                  |            |             |               |                 |               |                 |
| <i>Ln_Assets</i>    | ,157***      | ,137***       | ,229***       | ,012***         | -,030***            | 1                |            |             |               |                 |               |                 |
| <i>ROE</i>          | -,023***     | -,009**       | -,039***      | ,051***         | -,006**             | -,033***         | 1          |             |               |                 |               |                 |
| <i>Loss</i>         | -,027***     | -,102***      | ,016***       | -,101***        | -,010***            | ,125***          | -,123***   | 1           |               |                 |               |                 |
| <i>StdROA</i>       | -,176***     | -,365***      | -,114***      | ,019***         | ,051***             | -,208***         | -,007**    | ,275***     | 1             |                 |               |                 |
| <i>Leverage</i>     | -,061***     | ,012***       | -,137***      | -,094***        | ,040***             | -,030***         | ,000       | ,228***     | -,055***      | 1               |               |                 |
| <i>Growth</i>       | -,188***     | -,216***      | -,284***      | ,038***         | ,179***             | ,003             | ,057***    | -,037***    | ,050***       | ,072***         | 1             |                 |
| <i>Op_Cycle</i>     | ,019***      | ,008*         | ,051***       | -,027***        | -,009***            | ,068***          | -,019***   | ,020***     | -,023***      | -,075***        | ,004          | 1               |
| <i>Inv</i>          | ,027***      | ,031***       | ,079***       | -,071***        | -,029***            | -,126***         | -,032***   | ,008**      | -,063***      | -,029***        | -,052***      | ,322***         |

(Continued on next page)



**Panel B: Public firms (full sample)**

|                     | <u>DisTA</u> | <u>DisWCA</u>  | <u>DisRev</u> | <u>AccrCash</u> | <u>Capital_Need</u> | <u>Ln_Assets</u> | <u>ROE</u> | <u>Loss</u> | <u>StdROA</u> | <u>Leverage</u> | <u>Growth</u> | <u>Op_Cycle</u> |
|---------------------|--------------|----------------|---------------|-----------------|---------------------|------------------|------------|-------------|---------------|-----------------|---------------|-----------------|
| <i>DisWCA</i>       | ,390***      | 1              |               |                 |                     |                  |            |             |               |                 |               |                 |
| <i>DisRev</i>       | ,252***      | ,194***        | 1             |                 |                     |                  |            |             |               |                 |               |                 |
| <i>AccrCash</i>     | ,305***      | ,011           | ,099***       | 1               |                     |                  |            |             |               |                 |               |                 |
| <i>Capital_Need</i> | -,078***     | -,116***       | -,070***      | -,019           | 1                   |                  |            |             |               |                 |               |                 |
| <i>Ln_Assets</i>    | ,249***      | ,225***        | ,283***       | ,115***         | -,004               | 1                |            |             |               |                 |               |                 |
| <i>ROE</i>          | ,086***      | ,280***        | -,029         | ,054**          | -,006               | ,180***          | 1          |             |               |                 |               |                 |
| <i>Loss</i>         | -,019        | . <sup>c</sup> | ,001          | -,027           | ,004                | -,133***         | -,160***   | 1           |               |                 |               |                 |
| <i>StdROA</i>       | -,195***     | -,456***       | -,097***      | ,063***         | ,047**              | -,344***         | -,321***   | ,217***     | 1             |                 |               |                 |
| <i>Leverage</i>     | -,017        | ,091***        | -,114***      | -,138***        | ,044**              | ,065***          | -,069***   | -,003       | -,262***      | 1               |               |                 |
| <i>Growth</i>       | -,237***     | -,223***       | -,238***      | -,001           | ,227***             | -,046**          | ,099***    | -,040       | ,071***       | -,015           | 1             |                 |
| <i>Op_Cycle</i>     | -,017        | -,020          | -,042*        | -,032           | -,023               | ,062***          | -,024      | -,031       | -,008         | -,025           | -,015         | 1               |
| <i>Inv</i>          | -,017        | ,045*          | -,018         | -,104***        | -,042**             | ,025             | -,025      | ,008        | -,088***      | ,167***         | -,068***      | ,514***         |

\*\*\*, \*\*, \* Indicates significance at the 0.01, 0.05 and 0.10 level respectively (all 2-tailed). c. Cannot be computed because at least one of the variables is constant. See section 3.3 for variable definitions. Panel A presents the Pearson Correlations between the FRQ proxies and the control variables for the private firms of our sample. Panel B presents the Pearson Correlations between the FRQ proxies and the control variables for the public firms of our sample.

## 5. Results

In this section we present the results from testing our two hypotheses. Analysis and discussion on the results follow in section 6.

### 5.1 Main hypothesis

Table 4 provides results for testing differences in FRQ between public and private firms (H1) using Equation (5). For the full sample tests in Panel A, we find differences in FRQ between public and private firms in three measures. We observe lower FRQ for public firms in two measures (*DisTA* and *DisRev*) and higher in one (*AccrCash*).

In Panel B, where the sample is limited to a set of public and private firms matched on size, industry and year, we find one statistically significant difference (*DisWCA*) between public and private firms, where public firms show higher FRQ than private firms.

The results indicate the possibility of there being differences in FRQ between Swedish public and private firms, but we cannot conclude that there is, as all of our measures are not significant in both approaches. The results also give that we cannot draw a definite conclusion as to which of the *demand hypothesis* or the *opportunistic behaviour hypothesis* that is most relevant on the Swedish market, as the coefficient for *Public* vary in sign.

**Table 4**  
**Financial reporting quality for Private versus Public firms**

**Panel A: Full sample**

|                     | <u><b>DisTA</b></u>    | <u><b>DisWCA</b></u>   | <u><b>DisRev</b></u>   | <u><b>AccrCash</b></u> |
|---------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Public</i>       | -0,007***<br>[-2,741]  | -0,000<br>[-0,076]     | -0,018***<br>[-6,445]  | 0,092**<br>[2,533]     |
| <i>Capital Need</i> | -0,003***<br>[-22,805] | -0,000***<br>[-3,887]  | -0,000**<br>[-2,077]   | -0,009***<br>[-5,059]  |
| <i>Ln_Assets</i>    | 0,008***<br>[33,033]   | 0,003***<br>[16,353]   | 0,016***<br>[62,861]   | 0,028***<br>[8,089]    |
| <i>ROE</i>          | -0,005***<br>[-8,088]  | 0,002***<br>[4,057]    | -0,006***<br>[-10,713] | 0,178***<br>[23,079]   |
| <i>Loss</i>         | -0,004**<br>[-2,330]   | -0,010***<br>[-8,475]  | 0,005***<br>[2,985]    | -0,476***<br>[-20,369] |
| <i>Std_ROA</i>      | -0,239***<br>[-39,998] | -0,366***<br>[-83,925] | -0,108***<br>[-17,685] | 0,903***<br>[10,988]   |
| <i>Lev</i>          | -0,023***<br>[-14,392] | 0,004***<br>[3,736]    | -0,063***<br>[-38,561] | -0,501***<br>[-23,133] |

(continued on next page)

|                         |                        |                        |                        |                        |
|-------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Growth</i>           | -0,048***<br>[-50,075] | -0,041***<br>[-54,519] | -0,085***<br>[-85,367] | 0,122***<br>[9,211]    |
| <i>Op_Cycle</i>         | -0,000<br>[-1,241]     | -0,000<br>[-0,912]     | -0,000<br>[-0,776]     | -0,000***<br>[-3,053]  |
| <i>Inv</i>              | 0,014***<br>[7,485]    | 0,005***<br>[4,207]    | 0,057***<br>[30,037]   | -0,407***<br>[-16,108] |
| <i>Constant</i>         | -0,083***<br>[-52,568] | -0,038***<br>[-35,407] | -0,067***<br>[-41,058] | 0,618***<br>[28,335]   |
| Industry and year FE    | Yes                    | Yes                    | Yes                    | Yes                    |
| # of firm years         | 95 747                 | 65 260                 | 95 747                 | 95 688                 |
| Adjusted R <sup>2</sup> | 0,090                  | 0,181                  | 0,162                  | 0,031                  |

**Panel B: Matched sample**

|                     | <u>DisTA</u>          | <u>DisWCA</u>          | <u>DisRev</u>          | <u>AccrCash</u>       |
|---------------------|-----------------------|------------------------|------------------------|-----------------------|
| <i>Public</i>       | 0,000<br>[0,066]      | 0,006**<br>[2,038]     | -0,003<br>[-0,784]     | 0,065<br>[1,190]      |
| <i>Capital Need</i> | -0,002***<br>[-3,241] | -0,001*<br>[-1,866]    | 0,001<br>[1,283]       | -0,004<br>[0,467]     |
| <i>Ln_Assets</i>    | 0,007***<br>[8,560]   | 0,002***<br>[3,336]    | 0,010***<br>[15,384]   | 0,037***<br>[3,353]   |
| <i>ROE</i>          | -0,007*<br>[-1,917]   | 0,020***<br>[7,121]    | -0,010***<br>[-3,309]  | 0,276***<br>[5,456]   |
| <i>Loss</i>         | -0,011<br>[-1,318]    | -0,011*<br>[-1,673]    | 0,003<br>[0,432]       | -0,440***<br>[-3,699] |
| <i>Std_ROA</i>      | -0,199***<br>[-8,604] | -0,367***<br>[-20,618] | -0,039*<br>[-1,932]    | 1,958***<br>[5,878]   |
| <i>Lev</i>          | -0,024***<br>[-3,256] | -0,009<br>[-1,617]     | -0,051***<br>[-7,888]  | -0,469***<br>[-4,351] |
| <i>Growth</i>       | -0,026***<br>[-9,663] | -0,025***<br>[-8,859]  | -0,026***<br>[-11,448] | ,011<br>[0,296]       |
| <i>Op_Cycle</i>     | 0,000<br>[0,235]      | -0,000<br>[-0,192]     | -0,000<br>[-1,579]     | 0,000<br>[0,790]      |
| <i>Inv</i>          | -0,019*<br>[-1,656]   | 0,007<br>[0,916]       | 0,016<br>[1,555]       | -0,648***<br>[-3,908] |
| <i>Constant</i>     | -0,071***<br>[-8,543] | -0,031***<br>[-5,345]  | -0,066***<br>[-9,052]  | 0,559***<br>[4,662]   |

(continued on next page)

|                         |       |       |       |       |
|-------------------------|-------|-------|-------|-------|
| Industry and year FE    | Yes   | Yes   | Yes   | Yes   |
| # of firm years         | 3 770 | 2 472 | 3 770 | 3 770 |
| Adjusted R <sup>2</sup> | 0,107 | 0,266 | 0,123 | 0,043 |

\*\*\*, \*\*, \*. Indicates significance at the 0.01, 0.05 and 0.10 level respectively (all 2-tailed).

See section 3.3 for variable definitions. Panel A presents coefficients as a result from a regression of four measures of FRQ with Public and the control variables of the study for the full sample of firms (Equation 5). The regressions have been controlled by fixed effects for industries and years. Panel B reports the coefficients from the same regression but only for a sample of matched pairs, where every public firm has a one-to-one private firm match, based on industry, year and revenues. T-statistics are presented in brackets.

## 5.2 Conditional analyses

Prior studies find that levels of FRQ may vary in certain operational settings. To study this we rerun the analyses and include various firm characteristics to test their effect on FRQ (H2). Table 5 reports the results of these tests.

**Table 5**  
**Conditional Analyses of Financial Reporting Quality**

### Panel A: Earnings Benchmarks

|                         | <u>DisTA</u>         | <u>DisWCA</u>        | <u>DisRev</u>         | <u>AccrCash</u>        |
|-------------------------|----------------------|----------------------|-----------------------|------------------------|
| <i>Public</i>           | -0,006**<br>[-2,336] | -0,001<br>[-0,639]   | -0,019***<br>[-6,740] | 0,102***<br>[2,668]    |
| <i>Suspect</i>          | 0,009***<br>[8,598]  | 0,010***<br>[13,520] | 0,007***<br>[6,264]   | -0,211***<br>[-14,271] |
| <i>Public x Suspect</i> | -0,006<br>[-0,665]   | 0,012**<br>[2,034]   | 0,020**<br>[2,174]    | -0,153<br>[-1,286]     |
| # of firm years         | 95 747               | 65 260               | 95 747                | 95 688                 |

### Panel B: Auditor Choice

|                        | <u>DisTA</u>        | <u>DisWCA</u>       | <u>DisRev</u>         | <u>AccrCash</u>      |
|------------------------|---------------------|---------------------|-----------------------|----------------------|
| <i>Public</i>          | -0,004<br>[-0,896]  | -0,001<br>[-0,370]  | -0,024***<br>[-5,471] | 0,182***<br>[3,178]  |
| <i>NoBig4</i>          | 0,004***<br>[5,188] | 0,003***<br>[5,375] | -0,003***<br>[-4,067] | 0,027***<br>[2,804]  |
| <i>Public x NoBig4</i> | -0,009<br>[-1,636]  | -0,001<br>[-0,130]  | 0,012**<br>[2,170]    | -0,166**<br>[-2,302] |
| # of firm years        | 95 747              | 65 260              | 95 747                | 95 688               |

### Panel C: External capital need

|                           | <u>DisTA</u>          | <u>DisWCA</u>       | <u>DisRev</u>         | <u>AccrCash</u>        |
|---------------------------|-----------------------|---------------------|-----------------------|------------------------|
| <i>Public</i>             | -0,014***<br>[-3,822] | 0,001<br>[0,203]    | -0,024***<br>[-6,394] | -0,003<br>[-0,061]     |
| <i>Capital Need dummy</i> | -0,003***<br>[-4,388] | 0,003***<br>[5,443] | 0,007***<br>[8,476]   | -0,147***<br>[-14,393] |

(continued on next page)

|                                    |                     |                    |                    |                     |
|------------------------------------|---------------------|--------------------|--------------------|---------------------|
| <i>Public x Capital Need dummy</i> | 0,013***<br>[2,605] | -0,001<br>[-0,308] | 0,013**<br>[2,513] | 0,190***<br>[2,718] |
| # of firm years                    | 95 747              | 65 260             | 95 747             | 95 688              |

**Panel D: Corporate governance**

|                      | <u>DisTA</u>          | <u>DisWCA</u>     | <u>DisRev</u>         | <u>AccrCash</u>    |
|----------------------|-----------------------|-------------------|-----------------------|--------------------|
| <i>Public</i>        | -0,009***<br>[-3,322] | 0,000<br>[-0,087] | -0,017***<br>[-6,312] | 0,092**<br>[2,498] |
| <i>Board Members</i> | 0,001***<br>[5,480]   | 0,000<br>[0,108]  | -0,000<br>[-0,872]    | 0,000<br>[0,181]   |
| # of firm years      | 95 747                | 65 260            | 95 747                | 95 688             |

**Panel E: Management's performance based compensation**

|                        | <u>DisTA</u>          | <u>DisWCA</u>      | <u>DisRev</u>         | <u>AccrCash</u>     |
|------------------------|-----------------------|--------------------|-----------------------|---------------------|
| <i>Public</i>          | -0,008***<br>[-2,792] | -0,001<br>[-0,387] | -0,015***<br>[-5,230] | 0,101***<br>[2,703] |
| <i>Bonus of Salary</i> | -0,019***<br>[-4,298] | -0,001<br>[-0,193] | -0,026***<br>[-5,622] | 0,160**<br>[2,557]  |
| # of firm years        | 74 355                | 52 501             | 74 355                | 74 351              |

\*\*\*, \*\*, \* Indicates significance at the 0.01, 0.05 and 0.10 level respectively (all 2-tailed).

See section 3.3 for variable definitions. Panel A presents the effect of *Suspect* firms, for private and public firms respectively, on FRQ. *Suspects* are defined as firms with small profits or small earnings increases (1% of total assets). Panel B shows the effects of not employing a Big4 auditor, for private and public firms respectively. Panel C presents the effect of the need of external financing on FRQ, for private and public firms respectively, where the *Capital Need dummy* indicates firms with a *Capital Need* value above the median.

Panel D presents the impact of board size on FRQ, defined as the number of members on the board of directors. Panel E shows how FRQ is affected by the size of the share of performance based compensation to management. *Bonus of Salary* is defined as *Bonus* divided by *Salary*.

Regressions are made using modified versions of equation 5, control variables and fixed effects for year and industry are included in all regressions. T-statistics are presented in brackets.

Panel A in Table 5 presents results on whether just beating an earnings benchmark affects the differential FRQ for public and private firms. We modified Equation (5) to include an interaction effect variable for *Public* and *Suspect* firms and a variable for only *Suspects*. The interaction variable *Public x Suspect* indicates the differential FRQ for firms that are public and just meets an earnings benchmarks, while the variable *Suspect* indicates the differential FRQ for such firms that are private. We see that private suspect firms show higher FRQ in three measures (*DisTA*, *DisWCA* and *DisRev*), while public suspect firms show higher FRQ in two (*DisWCA* and *DisRev*).

Panel B presents the effects employing a Big 4 auditor has on FRQ. We have included an indicator variable for firms not employing a Big 4 auditor (*NoBig4*) in Equation (5), both as an interaction variable between *Public* and *NoBig4* and as a separate *NoBig4* variable to study the

effects on both public and private firms. The interaction variable *Public x NoBig4* indicates the differential FRQ for firms that are public and do not employ a Big 4 auditor, while the variable *NoBig4* indicates the differential FRQ for firms that are private and do not employ a Big 4 auditor. We see that private firms not employing a Big 4 auditor report higher FRQ in three measures (*DisTA*, *DisWCA* and *AccrCash*) and lower in one (*DisRev*) compared to private firms that do employ a Big 4 auditor. For public firms, our results are inconclusive, as one measure indicates higher (*DisRev*) and one lower (*AccrCash*) FRQ.

Panel C presents results for firms in need of external financing. We include an indicator variable for firms in need of external financing (*Capital Need dummy*) in Equation (5), both as an interaction variable with *Public* and as a separate variable to study the effects on both public and private firms. We see that public firms in higher need of external capital show higher FRQ in three measures (*DisTA*, *DisRev* and *AccrCash*) while such private firms show higher FRQ in two measures (*DisWCA* and *DisRev*) and lower in two (*DisTA* and *AccrCash*).

Panel D reports the results of what effect corporate governance has on FRQ. We include a variable for board size (*Board Members*) in Equation (5) which indicates the effects of board size on FRQ. Here we see a positive effect of board size on FRQ in one measure (*DisTA*).

Panel E reports the results of management's performance based compensation (bonus) on FRQ. We include a variable that controls for the effect of bonuses, measured as share of management's salary, on FRQ (*Bonus of salary*) in Equation (5). Here, two measures (*DisTA* and *DisRev*) show a negative correlation between bonus and FRQ while one (*AccrCash*) shows a positive.

Summarising our results of testing H2, we cannot conclude that (1) just beating an earnings benchmark has a negative effect on FRQ, (2) not employing a Big 4 auditor reduces FRQ, or (3) being in need of external financing will lower FRQ. In testing the effects of (4) lower levels of corporate governance, and (5) higher levels of performance based compensation to management, we do however get results indicating that these have a negative effect on FRQ.

## 6. Analysis and discussion

In this section we provide a discussion of our research method, followed by analysis of our results, and lastly analysis and discussion on control variables and robustness tests performed.

## 6.1 Discussion of research method

### 6.1.1 Data selection

In our sample selection, a number of filters have been used to arrive at our final data sample. From the Retriever data we filtered out financial companies, and later the Fama French industries *Telephone & Television Transmission*, *Utilities* and *Health Care* to arrive at statistically better results, as these industries had too few public firm observations. Additionally, observations with missing data and those with data in the 1<sup>st</sup> and 99<sup>th</sup> percentile of our control variables were removed for the same reasons. In this process we might unintentionally have filtered out observations containing relevant data for our study potentially affecting our results.

### 6.1.2 Using the cross-sectional method in measuring discretionary accruals

In measuring FRQ and choosing to normalise non-discretionary accruals based on cross-sectional analysis, certain non-desired effects appear as a company's discretionary accruals are adjusted to other companies in the same industry-year regression. This has been shown to be able to both over- as well as under-estimate the actual amount of non-discretionary accruals, as there within an industry might be natural variations in certain accruals which should not be interpreted or classified as discretionary (McNichols 2002). As we have used the cross-sectional method, this might have affected our results.

Additionally, through this method, all firms within an industry are assumed to conduct non-discretionary accruals in a similar way. This assumption can be seen as somewhat oversimplified. The more industries our sample is divided into, the better our assumption on industry specific accrual treatment gets. At the same time, there is a trade-off between having a sufficient sample size and a tight industry definition. In our study, there might be statistical advantages to having a large sample size in an industry, but at the same time that industry might contain firms with different types of business models which might not make non-discretionary accruals in the same way, and hence the assumption of industry specific non-discretionary accruals might not be fulfilled.

### 6.1.3 Criticism of accrual-based methods for measuring FRQ

Important to keep in mind is also that accruals-based methods of measuring FRQ have received criticism from several authors. A problem with these methods is the unobservable nature of the non-discretionary and discretionary accruals that it attempts to quantify. Unable to directly measure either, the estimation of an expected level of non-discretionary accruals might lead to errors and bias, if discretionary accruals are not properly isolated. (Young 1999)

Furthermore, although the models attempts to control for factors that affect the level of non-discretionary accruals, there might be factors that are omitted. Young (1999) criticizes FRQ models in general and finds that several of them, including the Jones model, induce measurement errors because of cash flow performance, sales growth and asset structure. Additionally, Francis, Nanda and Olsson (2008) report several other factors which can explain part of the discretionary accruals estimated by accruals-based approaches. Their criticism highlights the importance of including appropriate control variables, such as return-on-assets, when estimating the level of non-discretionary accruals. In consideration of this critique, we believe that by using four different FRQ models gives us a more nuanced picture of our results rather than if we would base conclusions on only one FRQ measure.

#### 6.1.4 Explanatory value of the study

In our research regressions on the full sample we get adjR<sup>2</sup>-values of 9,0% (Kothari), 18,1% (Dechow-Dichev), 16,1% (McNichols and Stubben) and 3,1% (Burgstahler). These values are somewhat below but in line with the values measured by Hope et al (2013) (16,1%, 18,8%, 26,3% and 6,7% respectively). If excluding private firms from the analyses, the adjR<sup>2</sup>-values are seen to increase to be closer to earlier studies, an effect that can partially be seen in our matched sample results.

Our research regression uses nine control variables, which have been shown to be both relevant and intuitive. However, ending up at the adjR<sup>2</sup>-values we do, while using these nine control variables, we get an indication that FRQ depends on several additional factors, and that there are aspects that we do not control for which affects the level of FRQ.

#### 6.1.5 Validity, reliability and comparability

We see the validity of our study as high, as we have used several models which are amongst the most commonly used to measure FRQ. However, as has been discussed, there are weaknesses with all known measures of FRQ, as there is no direct way of measuring it, which should be kept in mind when interpreting our results. Also, adding additional measures, such as studying *earnings conservatism*, could increase the validity further. Still, in using four different measures of FRQ, we believe our results present a nuanced picture.

As all data comes from audited financial reports, collected from official databases, we see the risk of having reliability issues in our study as negligible.



As we use common measures of FRQ, we see the comparability of our study as high in this sense. However, variations in regulations, legal systems and accounting practices in different international settings could reduce this comparability and should be kept in mind.

## 6.2 Analysis of results

### 6.2.1 Main hypothesis

The intuition behind our main hypothesis (H1) is that there are differences in financial reporting quality between public and private firms. Such differences could either lead to public firms displaying higher FRQ than private firms, in accordance with the *demand hypothesis*, or lower, in accordance with the *opportunistic behaviour hypothesis*. Prior studies have found evidence supporting both hypotheses, giving that there is inconclusive evidence to generalise whether public or private firms displays the highest level of FRQ.

Our results on testing H1 on the full sample indicates differences in FRQ between Swedish public and private firms in three out of four measures. However, regarding which hypothesis that is dominant, our results are inconclusive, with two of our measures (*DisTA* and *DisRev*) favouring the *opportunistic behaviour hypothesis* and one measure (*AccrCash*) favouring the *demand hypothesis*. Given that *DisRev* and *AccrCash* are cruder measures, we interpret our results on the full sample as favouring the *opportunistic behaviour hypothesis*. In testing H1 on the matched sample however, we only see differences in FRQ between Swedish public and private firms in one measure (*DisWCA*), making it hard to conclude if there are differences in FRQ, and additionally, the result in this measure favours the *demand hypothesis* where public firms report higher FRQ.

These two approaches render inconclusive results and make it hard to draw a general conclusion to if there are differences in FRQ between Swedish public and private firms. Our interpretation is that we have a fairly uniform reporting behaviour overall. This consequently makes it hard to conclude which hypothesis that is dominant amongst Swedish firms. We do however interpret our results as pointing towards the *opportunistic behaviour hypothesis*, as found in the full sample approach, as this on a more general level explains differences between Swedish public and private firms. This is also intuitive in the sense that public firms face greater capital market pressures to meet benchmarks, and that manager's compensation and personal wealth often are tied to publicly traded equity securities, giving managers of public firms incentives to report opportunistically.

However, in trying to draw conclusions about which hypothesis that is dominant on the Swedish market, one also have to consider that our results could be attributable to other factors. One explanation to our results could lie in firms following different accounting standards, where public firms must follow K4 (IFRS) regulations while private firms shall as a minimum follow K2 or K3. Between these regulations, K4 allows more accounting choices, which could show up as higher levels of accounting discretion and hence lower levels of FRQ. As such, public firms could be seen to have lower FRQ than private firms, giving results favouring the *opportunistic behaviour hypothesis*. This theory could also help explain the reversed sign of the coefficient of *Public* we see in testing H1 on our matched sample. As we then match private firms to public ones based on size, we limit our sample of private companies to the larger ones. These larger private firms might to a larger extent have chosen to report in accordance with K4 regulations, and that we in these circumstances see public firms displaying higher levels of FRQ than private firms. These results then favours the *demand hypothesis*, in that investors and other stakeholders of public firms demand higher quality financial information.

### 6.2.2 Conditional analyses

In performing conditional analyses on variations of FRQ in public and private firms, we test for various scenarios which intuitively could affect a firm's FRQ (H2). In testing how (1) firms that just beat an earnings benchmark, we find results showing that such conditions do not lower the FRQ. Rather, we find the opposite effect for public firms in two measures (*DisWCA* and *DisRev*). This is contrary to prior U.S. studies, where an adverse effect on FRQ for public firms has been found under these conditions. One explanation to these contrary findings could lie in that Swedish public firms face lower capital market pressures than U.S. public firms, and as such have fewer incentives to manage earnings. Another explanation could be an increased relevance of the *demand hypothesis* for Swedish firms being close to an earnings benchmark, in that the demand for high-quality financial information increases during such conditions. Our findings for private firms are in line with prior studies, in that these were found to have higher FRQ during these conditions, indicating that these conditions do not introduce incentives to manage earnings.

In testing whether FRQ is affected by firms' decision to (2) not employ a Big 4 auditor, we find that private firms not employing a Big 4 auditor show higher FRQ in three measures (*DisTA*, *DisWCA* and *AccrCash*) and lower in one (*DisRev*) than those that do employ a Big 4 auditor. For public firms we find no conclusive evidence for variations in FRQ based on auditor choice. Our interpretation of these results is that variations in FRQ for public firms are not at a general

level determined by auditor choice. For private firms, our results are in contrast to what has been found in prior studies. This could be explained by the high requirements to become an authorised auditor in Sweden, leading to smaller differences in quality between Big 4 and non-big 4 auditing firms. Another explanation for these findings could lie in that Big 4 auditors typically audit larger private firms (a correlation which can be seen in Appendix 2). As larger private firms follow K3 and possibly K4 regulations, these regulations allow more accounting choices, and this could be interpreted as these firms having lower FRQ. Smaller private firms on the other hand, reporting under K2 or K3 regulations, have less accounting choices, and as such would display higher FRQ. Due to this we could see the effect that private firms audited by non-Big 4 auditors show higher FRQ than those audited by a Big 4 auditor.

In testing for variations in FRQ in firms seeking additional capital in the succeeding year, we find for private firms two measures (*DisWCA* and *DisRev*) indicating higher FRQ and two indicating lower (*DisTA* and *AccrCash*). These inconclusive results could be interpreted as private firms not having a strong need for adjusting external financial reports in raising additional capital. For public firm, we find three measures (*DisTA*, *DisWCA* and *AccrCash*) indicating higher FRQ. These results are contrary to prior studies, where U.S. firms in need of external financing was seen to have lower FRQ, possibly indicating a need to manage earnings to be able to raise capital. As we do not find these effects for Swedish firms, this indicates the *demand hypothesis* to be more prevalent amongst Swedish public firms seeking additional capital, rather than the need to act opportunistically.

In studying the effects of corporate governance on FRQ, we find a positive effect from having a larger board size in one of our four measures (*DisTA*). This follows prior research, and the intuition that a larger board has higher probability of including external directors and more experienced board members, exerting a monitoring function over stakeholders' interests. However, only finding this correlation in one of our four measures could be due to our crude measure of corporate governance. Intuitively, manager's ability to alter financial reports should be limited with increased measures of corporate governance, and adding additional measures of this could render more conclusive results.

Lastly, in testing the effects of performance based compensation to management on FRQ, we find results in two measures (*DisTA* and *DisRev*) that the larger the proportion of management's compensation paid out in the form of a bonus relative to base salary, the lower the firm's FRQ. One measure (*AccrCash*) do however show a reverse relationship in this aspect, but as *AccrCash* is a cruder measure of FRQ, we interpret our results as there being an overall negative

effect on FRQ from increasing the size of manager's bonuses in relation to their salary, which is both intuitive and in line with prior studies.

Summarising, in testing H2 we find results that differ from the expected in three tests, while two are in line with our expectations. We find no conclusive results in that a firms' FRQ is adversely affected by (1) just beating an earnings benchmark, (2) not employing a Big 4 auditor or, (3) being in need of external financing. We interpret these results as attributable to lower capital market pressures and a more uniform financial reporting behaviour in Sweden compared to e.g. the U.S. market. Nonetheless, we find results supporting the notion that a firms' FRQ is negatively affected by (4) lower levels of corporate governance and, (5) a higher share of performance based compensation to management, in line with intuition and prior research.

### 6.3 Analysis of control variables

This section analyses the control variables used in the study and how they are relevant to measuring FRQ in general and to this study in particular. Additionally, a discussion of excluded control variables which potentially could be useful in measuring FRQ follows.

#### 6.3.1 Control variables used in the study

*Capital Need*<sup>3</sup> measures if a company is in need of external financing during the succeeding year, and this variable has a significant negative relation to all FRQ proxies. This result is intuitive and follows prior research saying that firms manage their earnings more when they are depending on external financing. Its significance and agreement with prior research indicates that a need of external financing in general provides incentives to manage earnings, and thus, is a good indicator of lower FRQ.

*Ln\_Assets* controls for the size of companies and is measured as the natural logarithm of total assets. *Ln\_Assets* has a positive and highly significant correlation with all FRQ proxies. Its high significance indicates that it provides explanatory value of FRQ, making it an important variable to control for. Its positive correlation with FRQ is in line with prior research and it is intuitive that larger firms meet higher demands on providing quality financial information to stakeholders. Thus, size is a good indicator of FRQ.

*ROE* measure the effect of a firm's financial performance and profitability on FRQ. In our study, its correlation to FRQ is significant for all four FRQ proxies, but its sign varies. For

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<sup>3</sup> Note the difference between *Capital Need* and *Capital Need dummy*, used in conditional analyses, where the dummy separates all companies into two groups depending on if they have a higher or lower than median need of external financing.

*DisTA* and *DisRev* the sign is negative, while it for *DisWCA* and *AccrCash* is positive. Though we expect profitability to be a good indicator of FRQ, in line with prior research and intuition, we cannot conclude this from our results.

*Loss* measures the effect on FRQ of a firm's historical performance by calculating the cumulative percentage of years in the sample time that a company has reported a loss. *Loss* has significant correlation to FRQ for all of four proxies, but its sign varies as it for three measures (*DisTA*, *DisWCA* and *AccrCash*) has a positive correlation and for one (*DisRev*) a negative. Intuitively, there should be incentives for management in struggling firms to manage earnings in hope to turn the trend around, thereby reducing FRQ. Even though the results are not unanimous, we interpret them as historical losses being a negative indicator of FRQ.

*Std\_ROA* controls for how FRQ is affected by a firm's fluctuating or smooth historic performance, measured on firm-level as the standard deviation of return on assets. *Std\_ROA* has a significant correlation with all FRQ proxies, but as with *Loss* the results are not unanimous as three of the proxies (*DisTA*, *DisWCA* and *DisRev*) indicate a negative correlation while the fourth (*AccrCash*) indicates a positive. These results are in accordance with prior studies and intuitively, a highly fluctuating record in terms of profitability should not be the expected, and as thus create opportunities for earnings management. As such, *Std\_ROA* appears to be a negative indicator of FRQ.

*Leverage* measures the debt-to-assets ratio of a firm and shows a significant correlation to all four FRQ proxies but with a varying relation. For three of the measures (*DisTA*, *DisRev* and *AccrCash*) the correlation is negative while it is positive in one (*DisWCA*). Our results are not unanimous, however they do point in the direction of prior research and intuition suggests that companies with a higher debt ratio have higher incentives to manage their earnings. Hence, our results points toward a negative correlation between leverage and FRQ.

*Growth* control for a firms change in total assets compared with the year before. We find a negative significant correlation between *Growth* and FRQ for three measures (*DisTA*, *DisWCA* and *DisRev*) while the results from the fourth (*AccrCash*) is significant and positive. As growth is measured in total assets, there is the intuition that high values could incentivize firms to make discretionary decisions regarding their valuation and depreciation policies with the effect of a decrease in FRQ. This is also in line with prior research and corresponds with our results, showing that growth is a negative indicator of FRQ.

*Inventory* measures how much of a firm's total assets that consists of inventory and has significant correlation to all FRQ proxies, with three (*DisTA*, *DisWCA* and *DisRev*) indicating a positive correlation and the fourth (*AccrCash*) a negative. This contradicts results found in prior studies and the intuition that firms with large inventories have greater possibilities to affect their costs for goods sold through different valuation principles of their inventories. One reason for our different results could however lie in differences in GAAP-regulations between the U.S. and Sweden, where Swedish GAAP and IFRS have stricter regulations and fewer options regarding inventory valuation.

*Op\_cycle* control for the effect the operating cycle of a firm have on the FRQ. This variable only shows a significant correlation with one FRQ proxy (*AccrCash*), with the sign being negative. These results makes it difficult to draw conclusions about *Op\_cycle* as an indicator of FRQ, but the control variable is kept in the study since it increases the explanatory value of the models, and for comparability reasons.

### 6.3.2 Control variables not included

This section contains a description of control variables that could be of relevance to this study.

*Shareholder Dispersion* – it is probable that shareholder dispersion can affect FRQ. Burgstahler, Hail and Leuz (2006) claims that dispersed ownership of a company could indicate the presence of a multitude of small investors, which are more likely to rely on “simple heuristics” than more sophisticated investors, i.e. using simple rules in analysing financial information rather than going in depth into the financial information. This could lead to firms with dispersed ownership to engage in earnings management and as such display lower levels of FRQ. For this reason it could be desirable to control for shareholder dispersion, but no such data has been obtained.

*Family Control* – another factor which could affect the level of FRQ was discovered by Prencipe et al. (2011) and Wang (2006) in that earnings management behaviour differed between family-controlled and non-family-controlled firms. Their results might be applicable to Swedish firms as well, why controlling for family ownership could be of interest. No data has however been obtained to control for family ownership so the control has not been added.

*K-regulations* – differences in FRQ levels found through the models could to a certain extent be explained by firms following different accounting standards in Swedish GAAP, i.e. K-regulations. For this reason it would be of interest to control for such differences in our study. However, no such data has been obtained, so the control has not been added.

### 6.3.3 Multicollinearity

Multicollinearity is an issue where two or more variables in a multivariate regression show high correlation with each other. While multicollinearity in a regression does invalidate the model as a whole, it could adversely affect and possibly invalidate coefficients and significance levels for individual control variables in it (Farrar & Glauber 1967). By analysing variance inflation factors (VIF) and tolerance levels we evaluate the risk of the study's regression being affected by multicollinearity.

Tolerance levels assumes a value between 0 and 1 and the VIF is the inverse of the tolerance and takes a value of 1 or more. Different cut-off values indicate if a regression is affected by multicollinearity or not. The closer towards 1 the two values get, the lower the risk of multicollinearity. Often VIF values of 4 or 10 are used as cut-off points. From the results presented in Appendix 3 Panel A we see that all control variables get values close to 1, why we conclude that multicollinearity does not have to be considered an issue in our regression.

However, there have been some critique against defining cut-off values for when multicollinearity is “too high” and how one should approach them (O'Brien 2007). For this reason we also measure the Pearson correlation between the *Public* variable and each control variable to get an indication if multicollinearity affects the *Public* variable. The results from this test, presented in Appendix 3 Panel B, shows that there is no substantial correlation between the *Public* variable and the control variables, and the highest is with *Ln\_assets* (0,227). This correlation is however expected as public companies tend to be larger in size than private ones. As the correlation is weak it only indicates low levels of multicollinearity without significant effects on the study's regression.

### 6.3.4 Heteroscedasticity

Heteroscedasticity is said to exist when a model's residuals do not have the same variance, and this reduces the effectiveness of least square regression models. The use of assets as deflator in our FRQ models is intended to mitigate heteroscedasticity in our residuals. Prior research have with White (1980) statistics shown that for annual, cross-sectional regression models, such deflation reduces, but does not completely eliminate heteroscedasticity.

## 6.4 Robustness test

To test the study's sensitivity to methodology and assumptions we perform robustness tests to study the effect variations of these have on our results.

#### 6.4.1 Skewed selection

In Appendix 1 one can see that the number of observations for public and private firms are tilted towards the industry category *Others*, where approximately two thirds of our observations have been included. As we assume industry specific accrual treatment, this could create an issue in that we in this industry group have firms with different types of business models which do not make non-discretionary accruals in the same way, and that this could distort our results. For this reason it is of relevance to test our regressions excluding the industry group *Others* to study how our results are affected. These results are presented in Appendix 4 Panel A, where we observe that the significance level of the *Public* variable changes, but our inferences do not.

#### 6.4.2 Size measures

Given the importance of size as a control variable, we also include the number of employees as an additional size control in Equation (5). Through this addition, none of our inferences on H1 change (see Appendix 4 Panel B).

### 7. Suggestions for future research

We are aware that our study has limitations and that it only presents an overview of financial reporting practices in a Swedish setting, and that there are several openings for further researching this subject. We see several areas which could be of interest to look into further. For example, differences found in terms of FRQ could lie in firms following different K-regulations. Controlling for these differences could exclude the effects regulatory variations might have on FRQ and provide more conclusive results ours. It could also be of interest looking at how FRQ varies for companies going from private to public or vice versa, to see if there is a significant change in their reporting behaviour in such transitions. We have in our study used four models of FRQ and focused on accrual measures, but to get a deeper insight into Swedish financial reporting practices one could follow the approach in prior studies and include *earnings conservatism* as a measure of FRQ. Additionally, as there are a multitude of FRQ measures, future research can consider if other methods would affect our conclusions.

Moreover, looking further into differences found in our study compared to international ones could be of interest. Studying differences in accounting standards, capital market pressures and regulatory environments between different markets could provide interesting findings and deeper insights into what affects firms' FRQ.

Finally, it would be of interest to perform qualitative studies on differences in FRQ. While our study provides an overview of Swedish companies' FRQ and explores factors explaining



variations in these, we do not investigate the reasons or motives behind such variations. Future qualitative studies could help explain such differences.

## 8. Summary and conclusions

FRQ is an important aspect in financial reporting and decision making, and the drivers and indicators of it is of importance to understand. Prior research has mainly studied FRQ in international or U.S. settings and has been focused on public firms. As such, there has been limited research in the Swedish setting, and especially its private firms. Through this study, we shed light on FRQ and reporting behaviour of Swedish public as well as private firms.

We first compare FRQ between public and private firms, where we find inconclusive evidence of there being significant differences. Given these results it is hard to draw a conclusion on whether the *opportunistic behaviour hypothesis* or the *demand hypothesis* is dominant in the Swedish setting. However, we interpret our results as pointing towards the *opportunistic behaviour hypothesis* being more widespread amongst Swedish firms, suggesting that managers of public firms hide the true performance of their firm from external stakeholder by manipulating financial information. This finding is intuitive, as public firms face greater pressure to meet earnings benchmarks, as well as often having management's compensation plans tied to publically traded securities.

Furthermore, we perform tests of various settings which could adversely affect FRQ by studying firms that (1) just beat an earnings benchmark, (2) do not employ a Big 4 auditor, (3) are in higher need of external financing, (4) have lower levels of corporate governance or, (5) have a higher share of performance based compensation to management. The results of these tests show that FRQ is not adversely affected by just beating an earnings benchmark, not employing a Big 4 auditor or being in higher need of external financing. However, we see adverse effects on FRQ for firms with lower levels of corporate governance or higher shares of performance based compensation to management.

With our study we intend to contribute to the current debate on public versus private firms' accounting practices and complement the broader literature in trying to identify the determinants of FRQ. By comparing public and private firm's reporting behaviour, and how these vary under certain circumstances, we provide findings to help understand FRQ in a Swedish setting and provide information that could be relevant to external stakeholders, who rely on public and private firms' financial statements in making decisions.

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## Appendixes

### Appendix 1

#### Sample structure - Industry-year based

|                      | <u>Industry</u>                   | <u>2006</u> | <u>2007</u> | <u>2008</u> | <u>2009</u> | <u>2010</u> | <u>2011</u> | <u>2012</u> | <u>2013</u> |
|----------------------|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Private firms</b> | <i>Consumer Non Durables</i>      | 592         | 608         | 618         | 638         | 641         | 667         | 667         | 682         |
|                      | <i>Consumer Durables</i>          | 412         | 420         | 432         | 443         | 455         | 459         | 463         | 453         |
|                      | <i>Manufacturing</i>              | 523         | 519         | 533         | 551         | 594         | 600         | 623         | 623         |
|                      | <i>Energy (Oil, gas and Coal)</i> | 259         | 274         | 281         | 283         | 294         | 303         | 307         | 305         |
|                      | <i>Chemicals</i>                  | 311         | 315         | 329         | 328         | 329         | 340         | 343         | 347         |
|                      | <i>Business Equipment</i>         | 61          | 60          | 64          | 70          | 73          | 74          | 74          | 77          |
|                      | <i>Wholesale and Retail</i>       | 731         | 733         | 787         | 820         | 864         | 883         | 880         | 910         |
|                      | <i>Financials</i>                 | 1079        | 1114        | 1187        | 1223        | 1281        | 1332        | 1337        | 1373        |
|                      | <i>Others</i>                     | 6646        | 6940        | 7236        | 7385        | 7665        | 7999        | 8114        | 8225        |
| <b>Public firms</b>  | <i>Consumer Non Durables</i>      | 11          | 13          | 15          | 17          | 15          | 15          | 16          | 15          |
|                      | <i>Consumer Durables</i>          | 7           | 8           | 8           | 8           | 8           | 8           | 8           | 8           |
|                      | <i>Manufacturing</i>              | 22          | 24          | 24          | 24          | 24          | 23          | 24          | 25          |
|                      | <i>Energy (Oil, gas and Coal)</i> | 22          | 27          | 26          | 23          | 26          | 28          | 27          | 28          |
|                      | <i>Chemicals</i>                  | 5           | 7           | 6           | 7           | 7           | 7           | 8           | 9           |
|                      | <i>Business Equipment</i>         | 8           | 8           | 8           | 7           | 7           | 8           | 7           | 8           |
|                      | <i>Wholesale and Retail</i>       | 31          | 30          | 33          | 35          | 36          | 39          | 33          | 37          |
|                      | <i>Financials</i>                 | 49          | 56          | 58          | 61          | 62          | 64          | 64          | 65          |
|                      | <i>Others</i>                     | 73          | 81          | 95          | 98          | 102         | 103         | 100         | 104         |

Shows how our firm-year observations are divided into industries following the Fama French 12 Industry classification based on their reported SNI industry code. Banks and financial institutions have been excluded from Financials.

### Appendix 2

#### Additional descriptive statistics

##### Panel A: Private firms without Big 4 auditor

| <u>Variables</u>                   | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Std. Deviation</u> | <u>Percentiles</u> |            |
|------------------------------------|----------|-------------|---------------|-----------------------|--------------------|------------|
|                                    |          |             |               |                       | <u>25%</u>         | <u>75%</u> |
| <i># of Employees</i>              | 38 374   | 50          | 25            | 116,8                 | 13                 | 49         |
| <i>Ln_Assets</i>                   | 38 339   | 1,490       | 1,373         | 1,098                 | 0,784              | 2,067      |
| <i>Total Assets (thousand SEK)</i> | 38 374   | 83 510      | 29 574        | 439 763               | 16 396             | 59 199     |
| <i>Revenues (thousand SEK)</i>     | 38 374   | 129 325     | 67 524        | 326 103               | 47 114             | 117 685    |

(continued on next page)

### Panel B: Private firms with Big 4 auditor

| <u>Variables</u>            | <u>N</u> | <u>Mean</u> | <u>Median</u> | <u>Std. Deviation</u> | <u>Percentiles</u> |            |
|-----------------------------|----------|-------------|---------------|-----------------------|--------------------|------------|
|                             |          |             |               |                       | <u>25%</u>         | <u>75%</u> |
| # of Employees              | 57 087   | 157         | 38            | 1 012                 | 18                 | 86         |
| Ln_Assets                   | 57 062   | 2,321       | 2,046         | 1,552                 | 1,236              | 3,192      |
| Total Assets (thousand SEK) | 57 087   | 530 501     | 57 999        | 6 383 689             | 25 780             | 182 386    |
| Revenues (thousand SEK)     | 57 087   | 470 371     | 101 064       | 3 633 812             | 56 297             | 233 684    |

### Appendix 3 Multicollinearity test

#### Panel A: Tolerance and VIF test

|              | <u>DisTA</u>     |            | <u>DisWCA</u>    |            | <u>DisRev</u>    |            | <u>AccrCash</u>  |            |
|--------------|------------------|------------|------------------|------------|------------------|------------|------------------|------------|
|              | <u>Tolerance</u> | <u>VIF</u> | <u>Tolerance</u> | <u>VIF</u> | <u>Tolerance</u> | <u>VIF</u> | <u>Tolerance</u> | <u>VIF</u> |
| Public       | 0,915            | 1,093      | 0,914            | 1,094      | 0,915            | 1,093      | 0,915            | 1,093      |
| Capital_Need | 0,963            | 1,038      | 0,96             | 1,042      | 0,963            | 1,038      | 0,963            | 1,038      |
| Ln_Assets    | 0,742            | 1,347      | 0,739            | 1,353      | 0,742            | 1,347      | 0,742            | 1,348      |
| ROE          | 0,902            | 1,108      | 0,9              | 1,111      | 0,902            | 1,108      | 0,902            | 1,108      |
| Loss         | 0,765            | 1,307      | 0,761            | 1,313      | 0,765            | 1,307      | 0,764            | 1,308      |
| Std_ROA      | 0,823            | 1,215      | 0,82             | 1,22       | 0,823            | 1,215      | 0,823            | 1,216      |
| Lev          | 0,89             | 1,123      | 0,889            | 1,125      | 0,89             | 1,123      | 0,889            | 1,125      |
| Growth       | 0,925            | 1,081      | 0,917            | 1,09       | 0,925            | 1,081      | 0,925            | 1,081      |
| Op_cycle     | 0,875            | 1,143      | 0,882            | 1,134      | 0,875            | 1,143      | 0,875            | 1,143      |
| Inv          | 0,794            | 1,259      | 0,793            | 1,261      | 0,794            | 1,259      | 0,794            | 1,259      |

#### Panel B: Pearson correlation coefficients between *Public* and control variables

|   | <i>Capital_Need</i> | <i>Ln_Assets</i> | <i>ROE</i> | <i>StdROA</i> | <i>Leverage</i> | <i>Growth</i> | <i>Op_Cycle</i> | <i>Inv</i> | <i>Loss</i> |       |
|---|---------------------|------------------|------------|---------------|-----------------|---------------|-----------------|------------|-------------|-------|
| 1 |                     | ,005             | ,277***    | -,017***      | ,049***         | -,094***      | ,031***         | ,036***    | -,050***    | -,004 |

\*\*\*, \*\*, \* Indicates significance at the 0.01, 0.05 and 0.10 level respectively (all 2-tailed).

Panel A presents the results from a tolerance and variance inflation factor test that tests our main regressions for multicollinearity. Tolerance can take values between 0 and 1, where 1 is the least affected by multicollinearity. The VIF-values are (1/Tolerance) and can thereby take values larger than 1, the closer to 1 the better. It is usually said that values above either 4 or 10 indicates multicollinearity. Panel B shows the correlation between *Public* and our control variables to see if there is any intercorrelation that could lead to multicollinearity problems. "1" indicates the variable *Public* against which the correlation coefficients are measured.

## Appendix 4

### Robustness tests

#### Panel A: Main regression without industry *Others*

|                         | <u>DisTA</u>          | <u>DisWCA</u>       | <u>DisRev</u>         | <u>AccrCash</u>     |
|-------------------------|-----------------------|---------------------|-----------------------|---------------------|
| <i>Public</i>           | -0,011***<br>[-3,483] | -0,004*<br>[-1,934] | -0,019***<br>[-6,337] | 0,121***<br>[2,665] |
| Industry and year FE    | Yes                   | Yes                 | Yes                   | Yes                 |
| # of firm years         | 35 833                | 24 731              | 35 833                | 35 813              |
| Adjusted R <sup>2</sup> | 0,100                 | 0,192               | 0,160                 | 0,035               |

#### Panel B: Inclusion of # of employees as additional size measure

|                         | <u>DisTA</u>          | <u>DisWCA</u>        | <u>DisRev</u>         | <u>AccrCash</u>     |
|-------------------------|-----------------------|----------------------|-----------------------|---------------------|
| <i>Public</i>           | -0,006***<br>[-2,185] | 0,001<br>[0,285]     | -0,014***<br>[-5,104] | 0,100***<br>[2,687] |
| <i># of employees</i>   | -0,000***<br>[-3,008] | -0,000**<br>[-2,037] | -0,000***<br>[-7,285] | -0,000<br>[-1,116]  |
| Industry and year FE    | Yes                   | Yes                  | Yes                   | Yes                 |
| # of firm years         | 95 747                | 65 260               | 95 747                | 95 688              |
| Adjusted R <sup>2</sup> | 0,090                 | 0,181                | 0,163                 | 0,031               |

\*\*\*, \*\*, \* Indicates significance at the 0.01, 0.05 and 0.10 level respectively (all 2-tailed).

Panel A presents results from testing if our regression results changes when we try to exclude the effect our skewed sample might have by running the regression without including industry 12 – *Others*. Panel B presents results from testing if our main regression results changes when we include the number of employees as an additional size measure. Variables are added into Equation (5). Control variables and fixed effects for year and industry are included in all regressions. T-statistics are presented in brackets.