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Dividend Smoothing in Sweden

-An Empirical Investigation of Determinants of Dividend Smoothing-

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ABSTRACT

- Title:** Dividend Smoothing in Sweden - An Empirical Investigation of Determinants of Dividend Smoothing
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- Course:** Master Thesis in Corporate and Financial Management, Lund University
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- Key words:** dividend smoothing, dividends, dividend policy, information asymmetry, agency theory, partial adjustment model, Sweden, investor clientele.
- Purpose:** The main purpose is to see if dividend smoothing is a pertinent phenomenon among Swedish public firms. The study also aims to identify what firm characteristics that drive dividend smoothing.
- Theoretical Framework:** The theoretical framework covers different explanations of dividend smoothing behavior, such as information asymmetries, agency issues and investor clientele motivations. Also, share repurchases are given as an explanation of dividend smoothing behavior.
- Empirical Foundation:** The study covers firms listed on Nasdaq OMX Stockholm, that have been paying dividends every single year during the period of 2001-2012, or for as long as the company has been listed, for a minimum of 7 years. 85 companies are making the cut.
- Methodology:** Quantitative approach using Lintner's partial adjustment model as well as multiple regression analyses.
- Conclusion:** Dividend smoothing seems to be an occurring phenomena among Swedish public firms. The results of this study mainly support agency theory as being a determining factor of dividend smoothing, while there is no support for information asymmetry and investor clientele motivations. Further, firms that repurchase shares seem to be more likely to smooth their dividends than other firms.

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1. INTRODUCTION

In this chapter, background and problem discussion is presented in order to motivate the purpose and research questions displayed. Thereafter delimitations and a short description of the thesis outline are provided.

1.1 The dividend debate

“Do you know the only thing that gives me pleasure? It’s to see my dividends coming in”

- John D. Rockefeller¹.

There is usually a large buzz and sometimes a bit of controversy whenever a firm initiates, raises, or lowers its dividends. Even though large investments made by a firm have potential to create great value, dividends that are merely a distribution of cash to its shareholders tend to get similar attention in the media. Even though there is a large debate regarding dividends and whether firms even should use dividends, as they have their share of drawbacks, people tend to like and take an interest in them like few other aspects in the business world does.

Dividends have for a long time been a subject that has puzzled researchers in the field of corporate finance. Miller and Modigliani (1961) argued in their dividend irrelevance theory that, in a perfect market, it does not matter whether a firm pays out dividends or not. They argue that as long as paying dividends does not interfere with the investment policy it should not affect firm value. Thus, the firm’s payout policy should be irrelevant. However, in the real world there are no perfect markets and empirical studies show that dividend policy do matter.

In contrast to Miller and Modigliani, other economists have found dividends being useful in many different ways. Jensen (1986) argues that dividends can be used to mitigate agency issues related to the free cash flow of the firm. There are also theories stating that investors and other market participants view dividends as a signaling tool that can convey insider information about the firm’s future performance (Ogden, Jen, and O’Connor, 2002). Therefore it is believed that dividends can mitigate information asymmetry problems as well. Allen, Bernardo and Welch (1999) argue that firms pay dividends to attract certain types of investors.

¹ Quote retrieved from Forbes.com (<http://www.forbes.com/sites/greggfisher/2012/09/13/the-mystery-behind-dividend-yield-investing/>) [2014-05-26].

Empirical studies like Grullon, Michaely, and Swaminathan (2002) show that the market punishes cuts in dividends way more severely than they reward dividend raises. Brav, Graham, Harvey, and Michaely (2005) argue that this is one of the reasons to why dividends are sticky. On the other hand, Ogden et al. (2002) argue that since a firm's financing needs vary over time, so should its dividends. In reality, this seems to be far from the truth.

1.2 Prior studies: Dividend smoothing

The phenomenon of dividend smoothing was first documented in the study of Lintner in the mid-1950s. Lintner (1956) concluded that dividends were quite stable over time and that firms in the US were reluctant to increase their dividends unless they could see permanent increases in earnings. His study also demonstrated that firms are even less likely to cut dividends even when earnings drop. In this sense, dividends tend to increase steadily over time and also tend to be smoothed in relation to earnings, in order to maintain a certain target payout ratio. Even though more than a half-century has passed since Lintner's observations, his partial adjustment model is still very commonly used to measure the smoothing behavior of firms (e.g. Andres, Betzer, Goergen, and Renneboog, 2009; Chemmanur, He, Hu, and Liu, 2010; Leary and Michaely, 2011; Jeong, 2013).

Many studies focus on identifying the existence of dividend smoothing (Allen et al., 1999; Al-Yahyaee, Pham, and Walter, 2010) and make international comparisons (Chemmanur et al. 2010; Jeong, 2013). Only a few articles try to map the determining factors behind it. Chemmanur et al. (2010) argue that dividend smoothing is more common in the US compared to Hong Kong mainly due to tax differences between the two countries. Chemmanur et al. (2010) seem to find support for the signaling motive of dividend smoothing in both countries, however the signaling effects are stronger in the US since signaling is more costly in the US due to higher taxes on dividends. Jeong (2013) on the other hand, finds that in South Korea, it is not agency problems nor information asymmetries that cause firms to smooth dividends, but rather the institutional factors of the financial market, such as the interest rate level and tax rate.

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000) provide support that agency problems are a strong reason for why firms choose to pay dividends. Leary and Michaely (2011) find something similar regarding dividend smoothing. They map the determinants of why US firms smooth their dividends. Their study emanate from different theoretical explanations of dividend policies, namely from asymmetric information, agency problems and dividend clientele motives.

In line with La Porta et al. (2000) they find that agency problems seem to be a reason for why firms employ dividend smoothing, whereas information asymmetry and tax clienteles does not seem to explain dividend smoothing. This goes against what Chemmanur et al. (2010) found; that the signaling element of dividends had an impact on a firm's smoothing behavior.

This paper is going to investigate the determining factors of dividend smoothing behavior in Swedish firms. This is interesting because not too many studies on determinants of dividend smoothing has concerned non-US material. Also, studies have shown that international differences exist in terms of degree of dividend smoothing (e.g. Al-Yahyaee et al., 2010; Chemmanur et al., 2010; and Jeong, 2013) and therefore it is plausible to assume that Swedish firms can showcase a somewhat different dividend smoothing behavior.

La Porta et al. (2000) found that firms based in countries with higher shareholder protection also pay higher dividends. They argue that common law countries such as the US and the UK are more likely to pay higher dividends than civil law countries such as Sweden, Germany, and France. Leary and Michaely (2011) highlight the relationship between the levels in dividend payout and the degree of smoothing. They find that firms that pay higher degrees of dividends also smooth their dividends more. Thus, it can also be expected that Swedish firms are smoothing their dividends to a lesser extent than US firms.

Further, Sweden is one of few developed countries where essentially all of the companies pay yearly dividends (Ferris, Noronha, and Unlu, 2009), whereas US companies are on the other extreme where almost all companies are paying quarterly dividends. One could speculate that the frequency of dividend payments would matter in regards to dividend smoothing, and thus make Sweden an interesting subject of study.

1.3 Purpose and research questions

The main purpose of this paper is to see if the smoothing of dividends is a pertinent phenomenon in Swedish public firms. If so, this study also aims to identify what characteristics of Swedish public firms that drive the dividend smoothing. This is done by trying to answer the following research questions;

1. To what extent do Swedish public firms smooth their dividends?
2. Can any determinants of dividend smoothing behavior in Swedish firms be identified?
3. How do these results compare to similar international studies?

1.4 Delimitations

This study covers Swedish firms listed on Nasdaq OMX Stockholm Stock Exchange, hence cross listed companies having their main office in foreign countries are excluded. Further, in order to capture the dividend smoothing, companies are required to have been paying dividends for all the years covered in the sample period 2001-2012. If a company has not been listed this entire period, then it is required that it has been listed and been paying dividends for at least seven years.

1.5 Thesis outline

In chapter 2, the theoretical framework used as a foundation to this study is presented. This will provide an overview of the current knowledge base regarding dividend smoothing and what implications information asymmetry, agency theory, investor clientele and share repurchases might have on dividend policy. Chapter 3 contains a description about the methodology used to complete the study. Discussion regarding sample, different variables, and the reliability and validity of this study are also covered in this chapter. In chapter 4, the results of this study are briefly outlined to be further discussed in detail in chapter 5. A summary of this study is presented in chapter 6, after which potential areas of further research are discussed.

2. THEORETICAL FRAMEWORK

In this chapter, the underlying theories and previous research relevant to this field of study are presented. Hopefully this gives the reader an understanding and knowledge about the background on which this study is based on. The theoretical framework is organized into the chapters “Dividend policy”, “Dividend smoothing”, “Information asymmetry”, “Agency theory”, “Investor clientele”, “The role of share repurchases”, and “Discussion and analysis of empirical studies”.

2.1 Dividend policy

As previously stated, Miller and Modigliani's (1961) irrelevance theorem is based upon the assumptions of perfect capital markets and that the payout of the firm does not interfere with its investment policy. While this may be true, capital markets are not perfect in reality. There are several features or assumptions of a perfect capital market that make it 'perfect' which Miller and Modigliani's theory relies on. These assumptions are described by Ogden et al. (2002); Damodaran (2001); Berk and DeMarzo (2009). One such assumption is that all investors in the market are rational meaning that they will always make decisions that result in the most optimal outcome. This is obviously not the case as most investors behave irrationally frequently. There is also an assumption of no information asymmetries and that information is readily available at no costs in a perfect market. In reality, there will always be degrees of information asymmetries between different stakeholders. In a perfect market, there are also no investors large enough to influence the price of securities. In reality there are many institutions and even individual investors with such strong power positions that their selling, or buying, of shares can affect the share price of a firm. Another assumption is that there are no taxes, flotation or transaction costs in a perfect capital market. In all developed countries and capital markets, these costs do exist. As for dividends for example there is often a double taxation since the dividends are taxed after that firms have paid corporate taxes (Pattenden and Twite, 2008). Further assumptions are that securities are infinitely divisible and finally that all firms' investment policy is known and does not change. In reality, only the firm can choose when and whether a stock split or reverse stock split will occur and also the investment policy of the firm will vary over time.

Since these assumptions are relaxed in reality, a setting is created where the payout policy matters for firm value. Because of this, the firm has to come to the decision of whether to distribute the cash or to retain it. Ogden et al. (2002) argue that dividends have three key effects on a firm's equity, namely that they reduce internal funds available for investments, increase the need of

external funding, and increase the firm's leverage. Central questions regarding the payout policy are thus future financing needs and future investment opportunities.

If the firm has positive net present value (NPV) investment opportunities that have not yet been financed, then no payout to shareholders should occur as value creation is possible with positive NPV projects whereas distribution to shareholders neither creates nor destroys value (Berk and DeMarzo, 2009). This is in line with Miller & Modigliani's reasoning that a firm's payout policy does not matter (in a perfect market) unless it interferes with the firm's investment policies. If paying out cash to owners hinders the firm from investing in positive NPV projects, then value creation is lost and the payout policy of the firm is not optimized from a firm value maximization perspective. One could however argue that if shareholders can make better use of the cash, i.e. create better return on investments than the firm, then logically the firm should pay out dividends anyways.

The main advantage in retaining cash as opposed to distributing it to shareholders, when all positive NPV projects have been financed, is that it serves as a cushion in bad times. The recent financial crisis reminded firms the importance of this. Having excess cash, or financial slack, on hand also enables a firm to much easier invest in positive NPV investment opportunities as they arise (Ogden et al., 2002). This way, the firm will not need to issue new equity or raise new debt. Another positive aspect of having excess cash is that it can reduce the cost of raising debt in the future as their collateral increases with more cash (Berk and DeMarzo, 2009).

There are also negative aspects of having excess cash, like increased agency costs (Ogden et al., 2002). Such costs incur due to the conflicting interests between agents (managers) and their principals (owners). Managers wanting to maximize their own wealth as opposed to maximizing shareholder wealth can result in excess spending by managers. Investments in negative NPV projects, so called empire building, are such costs. Doing this will be beneficial for managers in the form of job protection and higher compensation for example. Another negative aspect of not paying dividends and thus having a larger cushion is that managers can be less inspired to do their best and focus wholeheartedly on the firm's core strategy as the cushion will make up for possible bad results. By having a smaller cushion, managers would feel the need to do their very best all the time which would increase firm value. Also, by keeping excess cash from the shareholders, managers will not as often or as frequently turn to capital markets for external financing. In one way this is a positive aspect of having excess cash as discussed above, but this

also decreases the monitoring from debt holders who are much better and more inclined to monitor than shareholders are (Damodaran, 2001). Due to the conflicting interest between managers and shareholders, monitoring is needed to keep management in check and prevent any non-value-maximizing activity (Ogden et al., 2002). Thus, agency costs can arise with the firm not turning to the capital markets. This is something that Easterbrook (1984) talks about. He states that a possible reason for actually paying out dividends despite the obvious flaws of dividends, is that it can reduce the cost associated with information asymmetry as the firm frequently has to reach out to banks and bondholders for financing, which increases the monitoring of the managers.

2.2 Dividend smoothing

Dividend smoothing can be described as a method managers use to avoid adverse stockholder reactions when setting the dividend level. Lintner's work in the 1950s on dividend smoothing is seen as the pillar and the foundation of later research of this dividend phenomenon. Lintner (1956) interviewed CEOs and other key managers of 28 American companies to draw conclusions on firms' dividend policy behavior and why firms smooth their dividends relative earnings. He found that managers target a long-term payout ratio when deciding upon dividend policy. Further, he found that firms do not decide what level dividends should be set at each new period but rather how much the dividends should change. Managers only raised their dividends partly of the amount that was actually supported by the financials after a strong financial result. If additional increases in dividends were still justified, the managers would continue to raise the dividends in the subsequent years. He referred to this as dividends being "conservative", and argue that strong avoidance of "erratic changes" in dividend policy is very important to firms. This is due to management's strong belief in the market preferring stable dividends over more volatile payments. Lintner's (1956) study implied that management thought that in the eyes of investors a change in current net earnings was the solely valid factor in changing the dividend rate. That is why management targets net earnings in the payout ratio.

Consistent with his findings, Lintner (1956) developed the partial adjustment model, which is a model specification of how managers smooth their dividends. In his model he presumed that the change in dividends from one year to another corresponded to the earnings, the target payout ratio and the speed of adjustment. This model can be specified in a regression where speed of adjustment is a coefficient. The speed of adjustment is particularly important and is a common measure of dividend smoothing. The speed of adjustment estimates how fast the target payout

ratio is adjusted in relation to changes in a firm's earnings. The slower the target payout ratio is adjusted, the higher the degree of smoothing. Lintner (1956) argues that the constant in this model will be positive for the most firms because of the reluctance of managers to cut dividends. The partial adjustment model will be more closely described in the methodological section, namely section 3.4.1.

Lately, researchers have started to question how well Lintner's model actually describes the dividend smoothing phenomenon. Brav et al. (2005) find that this apparent link between dividends and earnings has deteriorated since Lintner's study some 50 years ago. One reason is that nowadays, CFOs in the US are less prone to target the payout ratio when deciding the dividend level. They find that dividend per share is a more commonly used target. This can have certain implications on when deciding to what target the dividends actually revert to if smoothing occur. However, the actual target is seldom (never) known and a good approximation of a target is to analyze the previous dividends to try to see a pattern. Also Lambrecht and Myers (2012) have some concerns as they mathematically derive Lintner's dividend smoothing model. They argue that the fit of the model has degraded as share repurchases have become more common. Even though they do not believe that the model is redundant, they are providing evidence for that the model rather should be explaining the total payout instead of only cash dividends.

With regards to dividend smoothing, the prevalent literature does mainly handle three different possible sources of dividend smoothing, as mentioned earlier. These are motivations based on information asymmetry, agency problems and smoothing motivated by investor clientele. These will be discussed in the next few sections.

2.3 Information asymmetry

In regard to dividend smoothing, Leary and Michaely (2011) divide the information asymmetry problems into four different categories; coarse signaling models, principal-agent models, information asymmetry contributing to external financial constraints, and information asymmetry among investors based on their relative information situation. The different information asymmetry models all imply that firms with greater information asymmetry are more likely to enact in dividend smoothing than firms with lower information asymmetry (Jeong, 2013). Below follows a closer explanation to each of these models:

2.3.1 Coarse signaling models

As discussed before, a common view is that dividends send signals about the prospects of the firm, this is the essence of the dividends signaling hypothesis (Berk and DeMarzo, 2009).

Regarding the signaling of dividends, Berk and DeMarzo (2009) also make the comparison with a firm's leverage. That is, similar signals are sent to the market if a firm issues new debt; it shows that managers feel confident that they will be able to meet the interest payments on the debt which in turn signals financial strength. The same goes for dividends; by raising the dividends, it shows that management is confident in that future earnings will be able to support this higher dividend level.

The signaling model emanates from the view that well-informed managers use dividends to signal future performance of the company. By increasing dividends, managers will signal that they believe in a positive development in future performance, and by cutting dividends they signal that the outlook for the future is not as prosperous as before. Guttman, Kadan, and Kandel (2010) suggest that firms use sticky dividends that are partially pooled since the stock market penalize companies that cut dividends and reward companies that have stable and increasing dividends. According the assumption of partially pooled dividends, it will require large deviations from the expected cash flows before firms diverge from the intended payout. Similar observations are made in a study by Grullon et al. (2002). They noted that during 1967-1993, firms that increased their dividends by 10% or more experienced an increase in stock price of 1.34% on average after the dividend announcement. Similarly, a firm that decreased their dividends by 10% or more during this same time period experienced a decrease in their stock price of 3.71% after the announcement. This indicates that the market punishes cuts in dividends more strongly than they reward similar increases in dividends. This is one of several common explanations to why firms choose to engage in dividend smoothing; by keeping dividends stable despite a higher volatility in earnings, they can avoid certain negative market reactions causing their stock to suffer.

Repurchases can signal similar information as dividends, but there are differences between repurchases and dividends when it comes to signaling. The first one is that, in general, repurchases are used much less frequently than dividends (e.g. Jagannathan, Stephens, and Weisbach, 1999). Dividends are often paid out on a regular basis, such as quarterly, biannually, or yearly, whereas repurchases on a larger scale often occur irregularly, less frequently and are less sticky than dividends. Therefore, Skinner (2008) argue, there is smaller likelihood of smoothing of repurchases than dividend smoothing. From this point of view, the argument is that signaling by buying back the firm's own shares is not as strong as committing to a dividend level and

sticking to it. On the other hand, as many studies and theories have argued, managers, who have better information about the firm than investors and other market participants, will often have this information in mind when deciding to repurchase shares (or issue new stock) (Baker, Ruback, and Wurgler, 2007). If the firm's stock price is perceived as being overpriced by the management, based on their better information, they tend to issue more stock. Similarly if the stock is undervalued, management will be more inclined to buy back shares. Berk and DeMarzo (2009) liken this with the firm investing in positive NPV projects. So due to managers having this insider information and taking it into consideration when repurchasing, they implicitly signal that the firm is undervalued and thus should result in similar market reactions that dividend increases creates.

2.3.2 Principal-agent models

The principal-agent model refers to the information asymmetry between managers and stockholders. According to this model, managers can be worried about keeping their jobs, therefore they understate good outcomes so they can manage eventual future adverse shocks (Leary and Michaely, 2011). According to Fudenberg and Tirole (1995) it is important to distinguish this from an agency issue. It is about smoothing its earnings and in the end this will also influence dividends. This means that the excess cash will act as a cushion for liquidation if a bad event would occur. While enforcing this cushion, managers will keep the dividends stable, and thus, smooth their dividends. Thus, information asymmetry issues are expected to be more severe in companies that lacks transparency. Therefore, dividend smoothing is expected to be higher in firms with low transparency.

2.3.3 External financial constraints

This view is similar to the pecking order theory which states that a firm will pick the financing that is the cheapest, going from retained earnings being cheapest to external debt and finally external equity being the most expensive form of financing (Majluf and Myers, 1984). According to Bates, Kahle and Stulz (2009) so can external financial constraints be a determining factor when it comes to dividends. Those firms that have a relatively high cost of external financing is expected to be less likely to pay dividends. Since external financing is more costly than internally generated capital, there is an incentive to maintain any internally generated cash within the company. In case of a cash flow stream that is larger than expected, firms with financial constraints are expected to maintain the extra cash within the company. Therefore, firms with higher external financing costs are more likely to smooth their dividends since this would make sure that there is internally generated capital left after dividends are paid.

2.3.4 Information asymmetry among investors

Information asymmetry among investors might be another reason to why companies smooth their dividends. Michaely and Leary (2011) argue that dividends can protect relatively uninformed investors from being expropriated by relatively more well-informed investors. Individual investors are expected to be less informed than institutional investors. Individual investors are therefore expected to prefer dividends since it can reduce their informational disadvantage. Therefore firms that have many individual investors are expected to smooth their dividends more, and potential excess cash are expected to be distributed through share repurchases.

2.4 Agency based models

Agency theory is a fundamental framework behind many assumptions in corporate finance. It is a theory that describes the complex situation where managers are handling the assets of the shareholders. Agency costs can arise through both information asymmetries and conflicts of interest. When information asymmetries exist, agency problems can include the investors' suspicion that the managers do not act in the best interest of the shareholders. Easterbrook (1984) argues that since the managers do not receive any residual claim on the firm's earnings, there is a great risk of deviation between the interest of managers and that of the investors. The risk that the managers will act in their own interest instead of maximizing the wealth of shareholders are often incurring agency costs (Bebchuk and Fried, 2005). Agency costs refer to all costs that occur as followed by these conflicting interests such as monitoring costs or opportunity costs of the management operating sub-optimally.

It is said that a company bearing a lot of cash assets can be subject of agency issues. Jensen (1986) describes the agency issues of free cash flow and argue that managers have incentives to let their firms to grow beyond their optimal size. He also argues that dividends, as well as increased leverage, could decrease the power of managers and constrain the managers to strive for these objectives as it increases the managers' need to reach for external financing. When reaching for external financing the company will most likely be scrutinized by the new lender, and this will decrease managers' opportunities to act in self-interest. In addition to this, high dividends can also reduce the agency risk that the management will engage in wasteful activities, since there is simply less cash available.

An agency-based explanation to why firms smooth their dividends is also arising from these implications. Allen et al. (1999) argue that institutional investors can decrease agency costs due to

their monitoring, which in turn can lower the company's cost of equity. Leary and Michaely (2011) argue that managers can attract institutional investors if they decide to pay high dividends. This is related to their tax benefits in the US; that institutions pay a lower tax on dividends than retail investors, and due to their strong position, institutional investors, who are desired because of their monitoring skills, have the power to impose penalties on dividend cuts. However, Brav et al. (2005) find that when interviewing numerous CEOs, CFOs, and other key managers at US firms, firms do not really intend to use dividends as a way to attract institutional ownership.

Leary and Michaely (2011) predict that companies that are dealing with large agency issues are expected to pay higher levels of dividends. They also describe that a tradeoff exist between low leverage (in order to access cheap external financing) and paying high levels of dividends (in order to deal with agency issues). This leads to an assumption that a company exposed to agency problems is engaging in dividend smoothing in order to regularly pay high dividends while maintaining a rather low leverage. Leary and Michaely are arguing that this is contradicting the financial constraints assumption that predicts smoothers to have low dividends and high-cost of capital.

2.5 Investor clientele

A commonly described motive behind dividends is the clientele effect, which is about different types of investors having different preferences regarding dividends (Denis and Osobov, 2008). First of all, there are many types of investors, but for simplicity sake, these will be divided into individual investors in one group and institutional investors in another. The motivations behind how the company serves the investor clientele is quite ambiguous as one could argue that institutions desire dividends due to their tax advantage of dividends, and one could also argue that individual investors prefer dividends due to their loss aversion (Baker and Wurgler, 2011).

From a tax advantage point of view, institutions are taxed less on dividends relative to individual investors and thus prefer ownership in firms that pay higher dividends. Individual investors on the other hand should according to this reasoning then prefer to invest in firms with low or no dividends as they are relatively higher taxed on dividends (Allen et al., 1999). Brav et al., (2005) argue that firms with a high presence of institutional ownership will be very reluctant to cut dividends and that dividends are 'sticky' and 'smooth'. Since these firms will want to keep their institutional owners year after year due to their monitoring abilities as discussed in section 2.4, they will smooth their dividends to keep this valuable clientele ownership (Allen et al., 1999).

The other argument with regards to clientele effects says that individual investors are more loss averse than institutions (Baker and Wurgler, 2011) and thus prefer dividend-paying firms over non-dividend firms more than institutions. The reasoning is that certain dividends are considered safer than uncertain future capital gains. They are more loss averse than institutions in part due to their information disadvantage relative institutions. Further, Leary and Michaely (2011) argue that individual investors can reduce their dividend taxation by long term tax planning. Thus, firms with more individual investors are expected to smooth more as the tax planning by individuals requires certainty of dividends over a longer period of time. The incentive for these investors to utilize tax planning increases as their taxation on dividends is higher.

These two ways of looking at the clientele effects regarding dividends are contradictory as one states that individuals should prefer dividends and dividend smoothing more while the other one states that institutions should desire it more. This have to be taken into consideration when making the analysis.

2.6 The role of share repurchases

Recently, many studies have focused on the decreasing importance of dividends. Fama and French (2001) are in fact talking about 'disappearing dividends' as the firms that pay dividends have decreased in numbers during the past decades. Fama and French largely credit this evolution to the changing characteristics of the firms listed on the public stock exchanges, but also to the increased portion of firms that have never paid dividends. What on the other hand has increased over the past decades (at least for US firms) is the use of share repurchases as an alternative mean to distribute excess cash. The increasing importance of share repurchases can also be seen in Europe. Von Eije and Megginson (2008) conducted a study of European firms from 15 different countries and found that share repurchases of firms increased over the sample period of 1989 to 2005.

A study conducted by Brav et al. (2005) indicates that managers are more hesitant to cut dividends than to cut share repurchases, mainly due to the perception that the market will respond more strongly to a cut in dividends. According to their study, some managers are willing to sell off assets, borrow money, or forgo profitable projects, before they decide to cut dividends. This does not hold for share repurchases since they are normally conducted on an irregular basis (Bebchuk and Fried, 2005).

In Sweden, public companies were initially allowed to repurchase shares in the open market beginning in March 2000. Swedish public companies are only allowed to repurchase 10 percent of the total outstanding stock (ABL 19:15). However, if the company is about to repurchase more than the allowed amount of shares, the company would need to sell them within 6 months or the share capital is going to be reduced with the disallowed stocks proportion of the outstanding stock (ABL 19:16).

2.7 Discussion and analysis of empirical studies

The literature and previous research on dividend smoothing is divided in some aspects and more concurring in other aspects. Most, if not all, studies investigating dividend smoothing uses one, several, or all of the dividend and smoothing determinants, namely asymmetric information, agency issues, clientele effects, and purely tax based explanations in some form. The two theories that stand on opposing sides to each other are information asymmetry theories and agency theories. Theories on information asymmetry argue that a higher degree of information asymmetry should result in higher dividends and dividend smoothing in order to mitigate the costs of information asymmetry and uncertainty of investors. Agency based theories on the other hand argue that firms subject to higher agency costs should smooth their dividends more in order to mitigate such costs. Further, firms that are subject to higher degrees of agency costs are in general firms that are profitable, are considered cash cows, have less investment opportunities, etcetera. Incidentally, these firms are on the other hand less subject to information asymmetry costs, and therein lies the contradiction in these two theories.

In table 2.1 a summary of some of the most cited papers in the area of dividend smoothing that have been published during the 21st century are presented. As can be interpreted there is no consensus of which factor that is more central with regards to dividend policy and smoothing, with different studies showing different results. Several studies like Leary and Michaely (2011) and La Porta et al. (2000) seem to argue for the superiority of agency based explanations with regards to dividend smoothing. Then there are other studies like Chemmanur et al. (2010) that give support for the signaling and information asymmetry explanations. Interestingly, there are also studies like Al-Yahyaee et al. (2010) that actually give support for both theories while other studies instead give no support for either explanation, like Brav et al. (2005). Jeong (2013) argues that macroeconomic factors such as interest level and taxes have a significant effect on dividend smoothing, this however, contradicts Al-Yahyaee et al. (2010) that finds that absence of taxation on dividends in Omani firms do not have the expected effects.

Table 2.1 Summary of empirical studies and main findings

Authors	Area of study	Studied Period	Country	Sample	Main findings
La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000)	International comparison of dividend policy	1989-1994	33 Countries	4 103	Support agency based explanation of dividend policy. Shareholder protection highly relevant.
Brav, Graham, Harvey, and Michaely (2005)	Payout policy	2005	US	384	Managers prefer repurchases due to its flexibility. Weak support for agency, information asymmetry and clientele motivations in deciding dividend policy.
Aivazian, Booth, and Cleary (2006)	Dividend smoothing and debt ratings	1981-1999	US	127 516 (firm year obs.)	Bond rated firms tend to smooth their dividends more. Higher leverage associated with lower degree of dividends and dividend smoothing.
Andres, Betzer, Goergen, and Renneboog (2009)	Dividend smoothing and partial adjustment model	1984-2005	Germany	220	Dividends more volatile than in US and UK. Cuts in dividends occur more frequently and higher speed of adjustment in Germany.
Al-Yahyaee, Pham, and Walter (2010)	Dividend smoothing in a unique environment	1989-2004	Oman	545	No support for tax motivated dividend smoothing. Supporting agency- and information asymmetry based motives.
Chemmanur, He, Hu, and Liu (2010)	Differences in dividend smoothing	1984-2002	Hong Kong and US	153 (HK) + 603 (US)	US firms smooth dividends more. Support for signaling implications of differences in the two countries' tax regimes.
Leary and Michaely (2011)	Determinants of dividend smoothing; Comprehensive study on dividend smoothing	1985-2005	US	1 335	Increasing trend in dividend smoothing. Dividend smoothing associated with agency costs.
Jeong (2013)	Determinants of dividend smoothing	1980-2012	Korea	279	Korean firms have a lower degree of dividend smoothing than US firms. Dividend smoothing influenced by firm characteristics and macroeconomic factors. Support neither agency- nor information asymmetry based explanations.

While criticism is directed towards Lintner's original model, most of the studies in table 2.1 that tackle the problem of dividend smoothing uses his partial adjustment model to estimate the speed of adjustment. One source of criticism for the Lintner model is that the target payout ratio is unknown and must be estimated. Further, Brav et al. (2005) finds that American firms do no longer target a payout ratio in the same extent as before, but rather target the dividend per share. This could be cumbersome when using the partial adjustment model.

Some studies use alternative measures of dividend smoothing besides the partial adjustment model. For example, Leary and Michaely (2011) use a model where they try to capture the relative volatility of dividends to volatility of earnings. However, there is no existing consensus regarding an alternative to Lintner's partial adjustment model, and which is also the model that is still mostly used to measure. Therefore, from a validity point of view, it can arguably be safer to use the Lintner model.

3. METHODOLOGY

This chapter contains a detailed description of the methodology that is used in this study. Research approach, data sample and collection, the regression model, and both the dependent and independent variables are discussed. Further, how to interpret the regressions in terms of significance levels as well as normality, heteroskedasticity, nonlinearity and multicollinearity are also discussed. Lastly, the reliability and validity of the study is discussed.

3.1 Methodological Approach

The methodological approach used in this study is largely influenced by Leary and Michaely (2011) but also combines elements with the study made by Jeong (2013). Both studies are similar in that they investigate smoothing behavior of firms and what factors drive dividend smoothing in the US and Korea respectively. However, the theoretical approach of the two scholars differs somewhat in that the theory that Leary and Michaely use is based purely on three market frictions that are seen as the possible sources of dividend smoothing. Jeong on the other hand bases his study on that the differences between Korea and other developed countries may be a reason for how Korean firms smooth their dividends. The method used in this study is to some extent mimicking the way Leary and Michaely (2011) use information asymmetry, agency costs, and investor clientele as possible explanations for dividend smoothing. However, some variables utilized in Jeong (2013) is used as a complement or substitute. In line with both of these studies, Lintner's (1956) speed of adjustment model is used to capture the degree of dividend smoothing for Swedish firms. The approach is also based on the existing literature and previous research which have been discussed in the previous chapters.

3.1.1 Research approach

The research approach of a study can either be inductive or deductive. According to Saunders, Lewis and Thornhill (2009), with an inductive approach, the researcher generates theories from the data collected and then relates the conclusions to existing theories. In a deductive approach however, the researcher uses existing theories which will be tested using data. This paper uses a deductive research approach since already existing literature and theories on dividend smoothing, and its determinants, are used on Swedish firms.

It is also important to distinguish between different kinds of data. Data can either be quantitative or qualitative. Saunders et al. (2009) explain how a quantitative approach is a collection technique or data analysis procedure that generates numerical data while a qualitative approach is a collection technique that generates non-numerical data. For this study, numerical data is required as the aim is to study how certain variables impact the speed of adjustment of firms' dividend

level so that hypothesis testing can be done. Secondary data is also used, referring to data that has already been collected for other purposes (Saunders et al., 2009), as this type of study requires historic firm data.

3.2 Data

3.2.1 Data collection

The two databases that were used to gather all relevant data except from share repurchases were Thomson Reuters Datastream and Thomson Reuters Eikon. From the trading software Thomson Reuters Eikon data regarding credit rating (used in the decision making whether a company is a cash cow), ownership concentration, and institutional holdings. Data regarding share repurchases were acquired manually from Nasdaq OMX's web page where such information is publicly available. Swedish companies listed on Stockholm Stock Exchange are forced, due to legislation, to disclose information about trading in their own shares (Nasdaq OMX, 2014). All other data were collected from Thomson Reuters Datastream.

The data sources above are considered highly reliable. Especially reliable are the data from Nasdaq OMX since it is regulated by law. However, entering this data manually leaves some room for human error. Hopefully, these errors are put to a minimum by a careful and accurate working method.

3.2.2 Time period and sample

The data in this study cover companies listed at the Nasdaq OMX Nordic Stockholm Stock Exchange as of 24 of April 2014. Companies from small-, mid- and large cap are included. The period covered is 2001 to 2012, and the main reason for this is that stock repurchases were first allowed in March 2000 and therefore 2001 would be the first full year where repurchases would be allowed.

There are certain risks to using this approach in deciding the sample, and one of the most prominent is the survivor bias. This means that dead or suspended listings do not make the sample, which might bias the results.

After removing companies that lack a sufficient data set for the desired variables in Datastream, 229 companies remain for the first round of analysis. An interesting observation emanating from this sample is that only 12 different companies repurchase shares during at least one year where

they have not paid dividends. Moreover, only two of the companies have repurchased shares when not paying dividends for at least half of the sampled years. These figures are effectively questioning the existing beliefs of repurchases being a widely used as a substitution for dividends. 138 companies, or a little more than 60 percent of the original sample, have not used repurchases during the sample period. Only 23 companies are repurchasing more than half of the years that data is sampled, and the number of companies that is repurchasing shares during all of the sampled years are limited to three.

Table 3.1: Number of companies paying dividends in a given year

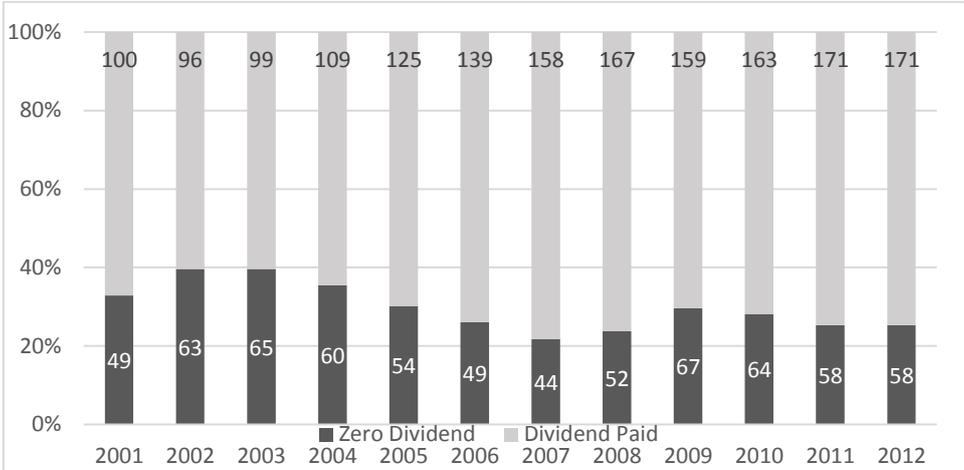


Table 3.1 describes the number of companies paying dividends in a given year. In the original sample, 106 of the 229 companies paid dividends for all of their sampling years. 28 companies did not pay dividends at all. 66 companies paid dividends for less than half of the years sampled. 137 companies paid dividends in 75 percent of the years. The percentage of companies paying dividends is lowest in 2002 and 2003 where it is close to 60 percent, and highest in 2007 where 78 percent of the companies paid dividends. In the year of 2012, close to 75 percent of the companies were paying dividends. Thus, it is possible to anticipate an increasing trend in the fraction of companies paying dividends.

To be able to measure dividend smoothing, two selection criteria are imposed on the sample. The company should have been listed for at least seven years and also having paid dividends for all of the sampling years. These selection criteria creates a trade-off between getting reliable estimates of the speed of adjustment without losing out all that much on the number of observations. The

final sample consists of 85 companies out of which 44 are listed on large cap, 22 are listed on mid cap and 19 are listed on small cap.

3.3 Regression model

In general terms, this paper follows Leary and Michaely's (2011) study, in order to capture the determinants of dividend smoothing. The ordinary least square (OLS) regression model is carried out in two steps in order to investigate the causal relationship between the explanatory variables and the dependent variable.

In the first step, regressions are made through each cross-section unit (each company) in order to determine each firm's specific speed of adjustment. The speed of adjustment captures how firms smooth their dividends over time. Chapter 3.4.1 describes more in detail how the speed of adjustment is determined.

In the second step, cross-sectional data is used in order to investigate what characteristics that determine the speed of adjustment. From the perspective of this study's scope it would have been desirable to use panel data, however, since the speed of adjustment is determined over several years, panel data is not really an option unless the speed of adjustment is determined as a rolling value. As for the independent variables, both firm medians and averages collected from the sample period are used in order to determine how they influence the speed of adjustment. This increases the reliability of the study.

Since there are no clear and widely accepted determinants of dividend smoothing, there is neither any existing regression models explaining dividend smoothing. To investigate whether the suggested independent variables have a causal effect on the speed of adjustment, a regression including all the assumed regressors is first run. Thereafter, the variables that turn out to be significant are used as control variables when exploring the significance of all the other variables one by one. This way of conducting the regressions are in line with Leary and Michaely (2011).

3.4 Variables

3.4.1 Dependent variable: Speed of adjustment

To determine the degree of dividend smoothing across the entities in the sample, regressions are run through each entity to receive an estimate of speed of adjustment. The speed of adjustment is

a commonly used measure of dividend smoothing used in many previous studies (e.g. Lintner 1956; Fama and Babiak, 1968; Goddard, McMillan, and Wilson, 2006; Andres et al., 2009; Chemmanur et al., 2010). The speed of adjustment estimates how fast the target payout ratio is adjusted in relation to the change in a firm's earnings. The slower the target payout ratio is adjusted, the higher the degree of smoothing.

Below follows the Lintner model regression (1) as it is implied by Lintner (1956):

$$(1) \Delta Dividend_{it} = \alpha_i + SOA (Target\ payout\ ratio \times Earnings_{it} - Dividend_{i(t-1)}) + \varepsilon_{it}$$

Where $\Delta Dividend_t$ is the change in dividend from the preceding time period, $t-1$. α is a constant. SOA is the speed of adjustment, which describes how fast the dividends change in relation to a change in earnings. If SOA is equal to 1, the dividends are adjusted to the same magnitude as the change in *Earnings*. If it is less than one, there are only partially adjustments to the divergences in earnings. The *Target payout ratio* is a target of cash dividends as a fraction of earnings in a given year. Shortly, a ratio that the management strive to maintain. Together, $(Target\ payout\ ratio \times Earnings_{it})$ would equal the cash dividend a firm would have if it solely relied on its target payout ratio. $Dividend_{i(t-1)}$ is the dividend that actually got paid in the preceding year. ε_{it} is an error-term.

The target payout ratio is a variable that is not readily available. In line with Leary and Michaely (2011), the firm median payout ratio that is measured over the sample period is used to represent the target payout ratio.

3.4.2 Independent variables

These variables have been used to explain what firm characteristics influence the decision to smooth dividends. Like Leary and Michaely (2011), these variables represent proxies for the different market frictions that are possible sources of dividend smoothing; information asymmetry, agency problems and investor clientele. Some variables are used for two or even all of the three sources of dividend smoothing. Also note that, sometimes they are interpreted differently, meaning that for one source of smoothing, a proxy should show a positive relationship with dividend smoothing whereas for another source, that same proxy is expected to show a negative relationship.

Firm maturity

As proxies for firm maturity, firm age and firm size are used. The rationale of analyzing firm maturity is that more mature firms should experience less information asymmetry. Leary and Michaely (2011) argue that older firms should not be exposed to as much information asymmetry as newer firms since they are better known by the market. The same argument goes for firm size; the larger the firm, the more well-known it is to investors and market participants. In line with Jeong (2013), listing years (in Datastream) is used as proxy for firm age, and the natural log of total assets as proxy for firm size.

Firm age and firm size are expected to be negatively correlated with information asymmetry. Low information asymmetry is expected to yield a high speed of adjustment. So the coefficients of firm size and firm age are expected to be positive.

Growth opportunities

The market-to book ratio is a proxy for growth opportunities. This is a measure of the value gap between a firm's market value and its' book value. The rationale is that the larger the gap is, the more investment opportunities the company is expected to have. Since investment opportunities are hard to evaluate for investors, a large market-to-book ratio is expected to bring greater information asymmetry.

Thus, from an information asymmetry point of view, the market-to-book ratio should be negatively correlated to the speed of adjustment.

Growth opportunities are also related to some agency problems. Companies with less investment opportunities are expected to have more excess cash. Having more excess cash means that the problem of free cash flow is greater and this increases the overinvestment problem (Leary and Michaely, 2011). Therefore, it can be expected that firms with higher market-to-book ratios will pay out less and smooth their dividends to lesser extent.

In contrast to the information asymmetry argument, the market-to-book ratio in an agency setting should instead have a positive relationship to the speed of adjustment.

Asset tangibility

The nature of assets is an important aspect of information asymmetry. It should be easier for investors to value tangible assets compared to intangibles and growth opportunities. Accordingly, firms with larger proportion of tangible assets are expected to have lower information asymmetry. In line with Leary and Michaely (2011), net property, plant and equipment (PPE) to total assets are used as a proxy for the nature of assets.

PPE to total assets is expected to be negatively correlated with information asymmetry. As low information asymmetry is expected to generate a high speed of adjustment, the PPE to Assets coefficient is expected to be positive.

Risk

As in Leary and Michaely (2011), return volatility functions both like a risk measure and an information asymmetry measure. A greater volatility is associated with higher uncertainty and accordingly greater information asymmetry. The return volatility is calculated on a yearly basis as the standard deviation of changes in monthly stock prices.

As the return volatility increases, higher information asymmetry is expected. Thus, the return volatility is expected to be negatively correlated to the speed of adjustment.

Analyst coverage

Analyst coverage and analyst attributes highlight the information gap between inside and outside investors. Leary and Michaely (2011) measure the dispersion between different analysts' forecasts. The greater dispersion, the greater is the information gap, i.e. the information asymmetry. The forecast dispersion is measured through the standard deviation of analysts' 12 month forecast of earnings per share divided by the average of analysts' 12 month forecast of earnings per share, both are collected from Datastream.

Accordingly, a great dispersion of analysts' forecasts are expected to yield a low speed of adjustment. Thus, the expected coefficient is negative.

Also the number of analysts is a proxy for information asymmetry between uninformed and informed investors. More analysts are associated with lower asymmetry of information. Therefore, the coefficient of number of analysts is expected to be positive.

Investment horizon

In Leary and Michaely (2011), the investment horizon of stockholders is proxied by the stock turnover. The stock turnover is calculated as the number of shares traded in a given year divided by the number of outstanding shares in the same year. Guttman et al. (2010) imply that longer investor horizon is associated to lower information asymmetry and lower dividend smoothing.

Since low stock turnover is translated to longer investor horizon, the coefficient of stock turnover should be negative.

Institutional holdings

The percentage of institutional holding as a percentage of total common shares is used as a proxy for all three market frictions. From an information asymmetry perspective, institutional holdings are expected to lower the information asymmetry between insider and outsider investors since institutions are relatively better at gathering information than individual investors (Allen et al. 1999). Hence, institutional ownership should be linked to lower information asymmetry.

This should result in a positive relationship between institutional holding and the speed of adjustment from an information asymmetry point of view.

From an agency point of view, having institutional ownership will lower agency costs due to the monitoring abilities and incentives. Through their power position, institutions can influence corporate behavior through monitoring and voting, as well as by the threat that they will sell their shares. According to Jeong (2013) companies exposed to agency conflicts are expected to smooth their dividends to greater extent in order to mitigate agency problems.

In such case, institutional ownership is expected to be positively related to dividend smoothing. Hence from an agency point of view the coefficient of institutional holdings should be negative.

From the investor clientele point of view, there are two different implications on the relationship between the institutional holding variable and the speed of adjustment.

From the institutional tax advantage point of view, the relationship is the same as for the agency perspective; a negative relationship between institutional holdings and the speed of adjustment.

From an individual investor clientele perspective, a company is expected to have relatively more individual investors the lesser the share of institutional holding a company has. From this point of view individual investors tend to prefer dividends due to effects on tax planning and due to loss-aversion. Thus, companies with a larger share of individual investors are expected to smooth their dividends to a greater extent.

Therefore, from an individual investor clientele perspective, a positive relationship between institutional holdings and the speed of adjustment is predicted.

Cash cow

Being a cash cow should result in the company being exposed to more agency problems as there is more excess cash and less investment opportunities. In line with Brav et al. (2005) a cash cow is described as a company that has positive earnings, good credit rating (A or higher, using Standard & Poor's long-term rating standards) and a price to earnings ratio below the median for companies with a credit rating of A or higher.

Being a cash cow should result in higher degree of dividend smoothing to resolve the agency issues related to excess cash holdings. Thus, in regards to speed of adjustment, the causality of the cash cow variable is negative.

Ownership concentration

The ownership stake of the ten largest shareholders is used as a proxy for ownership concentration. This is measured through ownership stake divided by the number of common shares outstanding and is intended to capture if the company is closely held by a family or a cluster of companies. Jeong (2013) argues that more closely held firms does not have as severe agency problems as firms with more dispersed ownership. It can thus be expected that a firm

with a higher concentration of ownership will not need to pay out and smooth as much as firms with dispersed ownership.

This should result in the ownership concentration coefficient being positive in regards to the speed of adjustment.

Financial slack

As previously discussed, having excess cash, which is equivalent to financial slack, can incur higher agency costs. According to Jeong (2013) excess cash holdings can also be associated with a larger ‘cushion’ which will allow the company to smooth their dividends to a greater extent. The financial slack is measured through the cash and equivalents post from Datastream divided by total assets.

Thus, from an agency point of view, cash-to-assets will have a negative effect of the speed of adjustment.

Leverage

Leverage has been associated with a lower degree of dividend smoothing in previous studies.² As the opposite of financial slack, having high leverage will decrease the agency costs associated with excess cash (Jensen and Meckling, 1976). Leverage is measured as total assets minus the book value of equity divided by total assets.

From an agency perspective, higher leverage should thus result in a lower degree of smoothing due to lower agency costs and therefore the leverage coefficient should be positive in regards to the speed of adjustment.

Stock repurchases

Leary and Michaely (2011) find that firms that repurchase shares tend to smooth their dividends more. A dummy variable is included to control for whether a company repurchase shares in a given year. The dummy takes the value of 1 if the firm has repurchased any shares during a given year, 0 otherwise.

² See for example Aivazian, Booth and Cleary (2006).

As repurchasing companies are expected to smooth more, the expected coefficient of repurchases is assumed to be reverse to the speed of adjustment.

Dividend level

The dividend level is proxied by the payout ratio. In this case the payout ratio is basically the dividend per share divided by earnings per share. Leary and Michaely (2011) find that the degree of dividend smoothing is positively related to the dividend level.

The payout ratio is assumed to have a negative effect on the speed of adjustment.

3.5 Testing the regressions

3.5.1 Significance levels and their implications

Saunders et al. (2009) have a discussion of different errors that can occur when making inferences from a sample. They are referring to Type I and Type II errors. A Type I error occurs when the null hypothesis is rejected when it should not be rejected. In the case of this study such mistake could involve accepting a coefficient even though there is no existing relationship in reality. A type II error infer the opposite, namely that the null hypothesis is accepted even though it should be rejected. This would mean rejecting a coefficient even though a relationship exists. Saunders et al. (2009) argue that the different errors are related to the significance levels that are used in the study. A commonly used significance level is 0.05 which infer that if the p-value is below 0.05 there is 5% risk that a Type I error occurs. A lower significance level, i.e. 0.01, would decrease the risk of a Type I error but increase the risk of making a Type II error. In this study, the significance is denominated for the significance levels of 0.01 (***), 0.05 (**), 0.10 (*).

3.5.2 Normality

The distribution of normal distributed standard errors is one of the main assumptions behind the OLS regression model. In Appendix 1, results from the Jarque-Bera test are supplied in order to test for non-normality. The null hypothesis of normality is rejected approximately half the time. Normality for the dependent variable, speed of adjustment, is not rejected. However, according to the central limit theorem, normality is not an issue when a sample is large enough (Wooldridge, 2009). A common, but yet disputed, approximation of a large sample used is that the number of observations is larger than 30. The number of observations in this sample is 85 and is well above that number, thus the non-normal variables are not discarded.

3.5.3 Heteroskedasticity

One of the assumptions of OLS estimation is that the variance of the explanatory variables' error terms is constant (Wooldridge, 2009). The assumption of homoskedasticity is tested by conducting a Breusch-Pagan-Godfrey test as well as a White test. The result of the Breusch-Pagan-Godfrey test rejects the null of homoscedasticity. Also the White test shows signs of heteroskedasticity. As a remedy, White's heteroskedasticity-robust standard errors are used throughout this study. Wooldridge (2009) argues that in large samples, as described in the central limit theorem, heteroskedasticity-robust standard errors can be used whether heteroskedasticity exists or not.

3.5.4 Nonlinearity

Ramsey's regression specification error tests (RESET) are conducted to control for functional form misspecifications. The RESET controls for important nonlinearities and the null is that the model is correctly specified (Wooldridge, 2009). No rejections of the null hypotheses are identified.

3.5.5 Multicollinearity

Multicollinearity occurs when the explanatory variables are highly correlated to each other (Brooks, 2008). Typically are explanatory variables correlated to some extent, but it is when this correlation is high there is risk for biased estimates. Multicollinearity can cause increased standard errors due to increased variance among some of the variables (Wooldridge, 2009). The threshold value for near multicollinearity use to be 0.8. However, multicollinearity is not a clear violation of the OLS assumptions, so common sense should be used to decide whether to discard a variable or not.

Appendix 2, depicts a correlation matrix that is used to check for multicollinearity. The matrix shows that there is risk that can be a multicollinearity problem between the number of analyst and the stock turnover variables. Further, the number of analysts variable shows signs on being strongly correlated to the size variable ($\ln(\text{Assets})$). Therefore the multivariate regression is also performed without the number of analyst variable.

3.6 Validity and Reliability

Below follows a discussion regarding the validity and reliability of this study. Validity refers to how well the measures used in a study correspond with what you intended to investigate. That a study is reliable refers to whether its results are going to be the same if the study is to be repeated.

This study uses a methodological framework influenced by several studies, foremost from the study made by Leary and Michaely (2011), which are two of the most prominent authors in the field of dividend policy. The dependent variable, speed of adjustment, is among researchers a commonly used measure on dividend smoothing and should thus be regarded as a suitable measure. Lately however, researchers like Brav et al. (2005) have questioned the partial adjustment model's ability to capture dividend smoothing as managers no longer appear to target the payout ratio in same extent as earlier. As mentioned previously, also the omission of share repurchases has been questioned (e.g. Lambrecht and Myers, 2012). However, this paper targets the dividend smoothing factor as repurchasing of shares does not seem to be as common in Sweden as for example in the US. However, in this study share repurchases are controlled for using a dummy variable. Regarding the payout ratio, some approximation is needed since companies normally do not disclose what kind of target measure they have for dividends, if they have any. This study uses the median payout ratio (from the period observed) to depict the target payout ratio. This measure is prone to error, but as an approximation it has to be considered as reliable, and it is also the same measure as is used by Leary and Michaely (2011).

Determinants of dividend smoothing is not as a widely explored subject as dividend smoothing itself and most likely, there are real world determinants left out from this study. However, those determinants explored in this study have proxies that have been used in several other studies and thus, they should also be trusted as valid.

Regarding the reliability of this study, it is to be considered as high. While conducting this study, very reliable data sources have been used and the methodological approach has been followed closely. The study is also described thoroughly so any replication study would be possible. The exclusion of firms is motivated by the methodological restrictions to measure dividend smoothing, i.e. the companies must have paid dividends regularly and over a certain amount of time, otherwise it would be impossible to measure the dividend smoothing. The companies investigated comprises of all companies that meet these requirements in Sweden and thus, replicating studies should yield the same result.

4. RESULTS

In this chapter the findings of the study are presented. The descriptive data and regression results are displayed using accompanying tables.

4.1 Descriptive data

Table 4.1 provides an overview of the speed of adjustment for all companies. The sample mean speed of adjustment is 0.392 and the sample median is 0.358. Worth noting is that companies listed on the large cap seem to have lower speed of adjustment on average. Also the median is lowest for the large cap sample. Surprisingly, small cap companies has lower mean and median than the mid cap companies. This makes it harder to distinguish any pattern between the different caps.

Further, there is a wide range of values on the speed of adjustment, where values differ from close to zero to close to one. Financial companies³ provide both high and low values of speed of adjustment, however this group has the lowest speed of adjustment mean and median values, suggesting that financial firms smooth their dividends more than other firms.

Table 4.1: Descriptive data of speed of adjustment

	Mean	Median	Max	Min	Std. dev.	Sum
Large Cap	0.337	0.290	0.983	0.006	0.270	44
Mid Cap	0.456	0.430	0.998	0.021	0.262	22
Small Cap	0.445	0.363	0.878	0.170	0.218	19
All	0.392	0.358	0.998	0.006	0.261	85
Financial Companies	0.303	0.199	0.983	0.006	0.268	23

Descriptive data of firm median values of the explanatory variables collected during the sample period are presented in table 4.2, whereas the corresponding firm mean values are presented in table 4.3. To clarify, table 4.2 depict mean, median, maximum, and minimum values, as well as standard deviations of the medians of different firm specific characteristics. Table 4.3 depict the same descriptive data of the mean of different firm specific characteristics.

³ Financial companies include real estate companies, banks, private equity companies etcetera. The financial companies can be listed at any cap.

Table 4.2: Descriptive data of firm characteristics (Median values)

	Mean	Median	Maximum	Minimum	Std. Dev.
PPE to Assets	0.283	0.181	0.994	0.003	0.303
Leverage	0.546	0.576	0.963	0.045	0.188
Forecast dispersion	0.063	0.064	0.194	0.000	0.057
Stock turnover	0.548	0.385	1.927	0.045	0.468
Top 10 ownership (%)	0.532	0.526	0.878	0.181	0.174
Return volatility	0.079	0.079	0.143	0.043	0.016
Firm age	13.771	13.5	26	4	7.083
Institutional holdings	0.492	0.502	0.854	0.049	0.182
Market-to-book	1.590	1.213	6.183	0.562	1.043
Ln(Assets)	15.752	16.015	21.944	11.067	2.221
Payout ratio	0.476	0.473	1.000	0.106	0.204
Repurchases	0.141	0	1	0	0.333
Cash cow	0.071	0	1	0	0.258
Cash to Assets	0.099	0.061	0.928	0.001	0.135
Number of Analysts	7.482	4	28.5	0	8.087

Table 4.3: Descriptive data of firm characteristics (Mean values)

	Mean	Median	Maximum	Minimum	Std. Dev.
PPE to Assets	0.271	0.195	0.989	0.003	0.275
Leverage	0.551	0.583	0.962	0.064	0.179
Forecast dispersion	0.085	0.081	0.329	0.000	0.070
Stock turnover	0.608	0.409	2.979	0.046	0.537
Top 10 ownership (%)	0.533	0.526	0.878	0.181	0.173
Return volatility	0.085	0.084	0.158	0.049	0.018
Firm age	13.95	13.50	25.5	4	7.17
Institutional holdings	0.493	0.510	0.854	0.049	0.182
Market-to-book	1.633	1.312	6.241	0.632	1.078
Ln(Assets)	15.695	16.011	22.017	10.789	2.235
Payout ratio	0.615	0.508	1.000	0.148	0.328
Repurchases ⁴	0.192	0.083	1	0	0.262
Cash cow	0.082	0	1	0	0.277
Cash to Assets	0.109	0.071	0.857	0.006	0.129
Number of Analysts	7.177	4	25.667	0	7.312

4.2 Regression results

In tables 4.4 and 4.5 the regression output of this study is presented. The dependent variable for both tables is the speed of adjustment. In the regressions in Table 4.4, median values of firm specific characteristics are used to examine their causal effect on the speed of adjustment, where as in table 4.5 mean values are used for the same objective.

⁴ A median value of 0.083 corresponds to a company that has been repurchasing shares 1/12 of the years.

Dependent variable: Speed of adjustment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
PPE to Assets	-0.295**	-0.308***	-0.319***	-0.287***	-0.232**	-0.279***	-0.296***	-0.259***	-0.275***	-0.244**	-0.277***	-0.292***	-0.268***	-0.300***
Leverage	0.367*	0.386**	0.350**	0.289*	0.277*	0.265*	0.292*	0.271*	0.415***	0.249*	0.269*	0.306**	0.284*	0.336**
Forecast dispersion	1.616**	1.646**	1.691***	1.291**	0.925*	1.194**	1.275**	1.131**	1.562***	1.133**	1.154**	0.989*	1.160**	1.457***
Stock turnover	-0.160	-0.093	-0.132*											
Top 10 owners (%)	-0.047	-0.002		0.133										
Return volatility	1.704	1.194			3.279*									
Firm age	-0.002	-0.001				-0.007*								
Inst. holdings	-0.191	-0.203					-0.201							
Market-to-book	0.000	0.019						0.022						
Ln(Assets)	-0.035	-0.015							-0.037***					
Payout ratio	0.032	0.063								0.161				
Repurchases	0.007	-0.012									-0.008			
Cash cow	-0.005	-0.059										-0.187*		
Cash to Assets	-0.160	-0.141											0.063	
Number of Analysts	0.009													-0.005
C	0.752	0.430	0.257***	0.164	-0.010	0.343***	0.335***	0.211**	0.734***	0.177*	0.252***	0.259***	0.234**	0.242***
R- Square	0.299	0.287	0.210	0.181	0.211	0.207	0.192	0.181	0.250	0.189	0.174	0.206	0.175	0.194
Adjusted R-square	0.146	0.144	0.170	0.140	0.171	0.167	0.152	0.141	0.212	0.148	0.133	0.166	0.134	0.153
P-value (f-stat)	0.031	0.029	0.001	0.003	0.001	0.001	0.002	0.003	0.000	0.002	0.004	0.001	0.004	0.002

Table 4.4: Regression output from using median values

*) Significant on the 10 % level.

**) Significant on the 5 % level.

***) Significant on the 1 % level.

Table 4.5: Regression output from using mean values

Dependent variable: Speed of adjustment	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
PPE to Assets	-0.335***	-0.341***	-0.288***	-0.279***	-0.236***	-0.273***	-0.293***	-0.260***	-0.280***	-0.303***	-0.294***	-0.308***	-0.270***	-0.287***
Leverage	0.456**	0.479**	0.377**	0.349**	0.353**	0.353**	0.368**	0.348**	0.505***	0.357**	0.391**	0.392***	0.358*	0.397**
Forecast dispersion	0.872*	0.898*	0.852**	0.761**	0.481	0.747**	0.837**	0.774**	1.006***	0.836**	0.805***	0.626**	0.758**	0.852**
Stock turnover	-0.071	-0.024	-0.034											
Top 10 owners (%)	-0.137	-0.107		0.020										
Return volatility	1.631	1.275			3.201**									
Firm age	-0.001	-0.001				-0.006								
Inst. holdings	-0.114	-0.120					-0.173622							
Market-to-book	0.004	0.022						0.025						
Ln(Assets)	-0.032	-0.015							-0.033**					
Payout ratio	-0.069***	-0.068***								-0.049				
Repurchases	-0.069	-0.086									-0.156			
Cash cow	-0.126	-0.157										-0.227***		
Cash to Assets	-0.157	-0.138											0.052	
Number of Analysts	0.008													-0.003
C	0.738	0.466	0.219**	0.208	-0.043	0.296***	0.292***	0.172*	0.623***	0.245***	0.227***	0.234***	0.207*	0.211**
R- Square	0.311	0.303	0.165	0.162	0.204	0.186	0.176	0.172	0.220	0.179	0.185	0.217	0.162	0.168
Adjusted R-square	0.162	0.163	0.124	0.120	0.164	0.145	0.134	0.131	0.181	0.138	0.144	0.178	0.120	0.127
P-value (f-stat)	0.021	0.018	0.006	0.006	0.001	0.002	0.004	0.004	0.000	0.003	0.002	0.001	0.006	0.005

*) Significant on the 10 % level.

**) Significant on the 5 % level.

***) Significant on the 1 %

In tables 4.4 and 4.5, regression (1) represent the output for when all the identified regressors are used in the same regression. Regression (2) represent the output from all the regressors less the *number of analysts* variable since it is a risk that that variable causes multicollinearity. Regressions (1) and (2) consistently show significance for the *PPE to assets*, *leverage* and the *forecast dispersion* variables, whereas all the other variables are insignificant except from the dividend payout ratio, which is significant when average values are used. As for the rest of the regressions (3-12), the three significant variables, *PPE to assets*, *leverage* and *forecast dispersion*, act as control variables when the insignificant variables from regressions (1) and (2) are tested one at the time. From here on out, these tests are referred to as individual tests.

The individual tests generate a few more significant coefficients. To start with, *return volatility* (5), *Ln(Assets)* (9) , and the *cash cow* (12) variables are significant both when using mean and median values. Further, the *stock turnover* (3) and *firm age* (6) variables are significant when median values are used. The *payout ratio* (10) variable is only significant when using firm averages and running the multivariate analysis, i.e. it is not significant in the individual test.

5. ANALYSIS AND DISCUSSION

In this chapter, the results and the different variables are discussed and analyzed in detail using previous research and theory as a base.

Proxy	Theory	Expected sign	Actual Sign: Median	Actual Sign: Mean	Leary and Michaely (2011) findings	Jeong (2013) findings
PPE to Assets	(1)	+	—***	—***	—	
Leverage	(2)	+	+***	+***		
Forecast dispersion	(1)	—	+***	+***	+	
Stock turnover	(1)	—	—*	—	+	
Top 10 owners (%)	(2)	+	inconclusive (+) ^A	inconclusive (+)		—
Return volatility	(1)	—	+*	+**	+	
Firm age	(1)	+	—*	—	—	0
Institutional holdings	(1)	+	—	—	—	
	(2)	—	—	—	—	
	(3)	+	—	—	—	
	(3)	—	—	—	—	
Market-to-book	(1)	—	+	+	+	
	(2)	+	+	+	+	
Ln(Assets)	(1)	+	—***	—**	—	—
Payout ratio ^B		—	+	—***	—	
Repurchases (Dummy)		—	inconclusive (—)	—	—	
Cash cow	(2)	—	—*	—***	—	
Cash to Assets	(2)	—	inconclusive (+)	inconclusive (+)		+
Number of Analysts	(1)	+	inconclusive (—)	inconclusive (—)	—	

(1) Information asymmetry ^A) The sign in parentheses represent the sign in the individual regression analysis.
(2) Agency theory ^B) Payout ratio only significant in the multivariate regression analysis.
(3) Investor clientele *) Significant on the 10 % level.
 **) Significant on the 5 % level.
 ***) Significant on the 1 % level.

Table 5.1: Coefficient comparisons: Expectations, outcomes, and previous studies

Dividend smoothing seem to be apparent in Swedish public firms. According to the theory, a speed of adjustment between 0 and 1 indicate that dividend smoothing is apparent. The relationship between dividend smoothing and the speed of adjustment is inverse and in such high speed of adjustment is translated to a low degree of dividend smoothing. As can be read in table 4.1, the sample mean in Swedish public firms is 0.392 and the median is 0.358. This speed of adjustment factor is higher than the speed of adjustment factor found in studies of American

firms, but lower speed of adjustment than East Asian firms⁵.

It is difficult to speculate about what kind of reasons that lies behind these international differences. La Porta et al. (2000) suggest that legal origins might matter. We argued that dividend frequency might matter, but since Hong Kong firms have a higher speed of adjustment as well as higher dividend frequency than Swedish firms, this seems hard to support.

In table 5.1, the results of the study are compared to the theoretical expectations as well as the results from the studies made by Leary and Michaely (2011) and Jeong (2013). The independent variables serve as proxies for the different market frictions, namely information asymmetry (1), agency issues (2) and investor clientele (3). Coefficient signs of firm characteristics, with regards to the speed of adjustment, are presented from using both the median and mean values. The actual sign is the same whether median or mean values are used, except for one variable, namely the payout ratio. The consistency brings credibility to this study.

Firm maturity

As highlighted in table 4.1, larger firms (firms on the large cap) appear to be smoothing their dividends to a greater extent than other companies. This is a result that is in line with both Leary and Michaely (2011) and Jeong (2013). As Leary and Michaely (2011) argue, being a large firm most often indicates that the firm also is older on average. It can also be assumed that on average, firms on the large cap are more mature than firms on the mid- and small caps. Older and larger firms are then relatively more well-known according to Leary and Michaely (2011) which should result in less information asymmetry between management and investors.

Starting by looking at firm age in table 5.1, the expected sign is positive since a higher firm age is expected to bring less information asymmetry and thus less dividend smoothing is needed. The actual sign however were in both cases negative, with the median showing a significance level of 10 percent. While the significance is quite low, the actual sign is aligned with Leary and Michaely's (2011) findings. This suggests that on the Swedish stock exchange, firms that are older seem to smooth more. As for firm size, represented by the natural logarithm of assets, the expected sign is the same as for firm age, but again the actual sign, both for mean and median

⁵ Chemmanur et al. (2010) found a mean (median) of 0.279 (0.058) for American firms and 0.684 (0.678) for Hong Kong firms. Leary and Michaely (2011) found a mean (median) of 0.14 (0.11) for US firms. Andres et al. (2009) find a speed of adjustment coefficient for German firm ranging between 0.21-0.49 depending on method used, however, this study is not really comparable since it regresses all the firms altogether and not individually. Jeong (2013) demonstrates a speed of adjustment mean of 0.689 for Korean firms.

values, is negative. In the individual tests, this variable showcases a significance level of 1 percent for median values and 5 percent for mean values. The interpretation is that larger firms smooth more, and not less as the information asymmetry theory would suggest.

Overall, firm maturity on the Swedish stock exchange seems to be negatively correlated with the speed of adjustment. It is not just that firm maturity does not have an impact on smoothing, but it has an opposite impact of what signaling and information asymmetry theory would suggest.

This goes against the findings of Chemmanur et al. (2010) on dividend smoothing where information asymmetry, and thus signaling, seems to be an important determinant of the degree of smoothing. However, our findings are in line with the studies of Leary and Michaely (2011) as well as Jeong (2013), which supports the negative impact of firm maturity on speed of adjustment.

Growth opportunities

Growth opportunities is estimated as the market-to-book ratio, and from an information asymmetry perspective, a higher market-to-book ratio points towards a higher degree of information asymmetry. This is due to that the larger the discrepancy between market- and book value, the more growth opportunities the firm can be assumed to have. This means that the expected sign is going to be negative; a higher market-to-book ratio should generate a lower speed of adjustment since more smoothing is needed to mitigate the costs of asymmetric information. While the actual signs are insignificant, they are positive which once again is in line with what Leary and Michaely (2011) found regarding growth opportunities and their impact on the speed of adjustment. This could be an indication of that once again the signaling theory regarding dividends does not hold up on for Swedish firms.

The market-to-book ratio is also used as a proxy for agency costs of excess cash. The more growth opportunities, i.e. higher ratio, the less the amount of excess cash the firm is believed to be holding and thus the smaller the agency costs are. Thus, from an agency point of view, the market-to-book ratio is expected to be positively correlated with the speed of adjustment.

Looking at table 5.1, in line with Leary and Michaely (2011), the expected and actual values of the speed of adjustment are positive. Once again it should be stressed that the coefficient of market-to-book ratio is not significantly different from zero.

Asset tangibility

In accordance with Leary and Michaely's (2011) study, PPE-to-total assets are used to represent asset tangibility which is a proxy for information asymmetry. Compared to intangible assets, tangible assets should, due to their nature, be easier to value for investors. Thus, the information asymmetry is expected to be lower for firms with a high degree of asset tangibility and therefore the degree of dividend smoothing is expected to be negative. This means that the coefficient should be positively correlated with the speed of adjustment. As presented in table 5.1, the value of the coefficient in relation to the speed of adjustment is actually negative, both when using mean and median values. It is also worth noting that this value is significant on the 1 percent level, which strengthens the confidence in the result. The results show that when the tangibility of assets is high, then the speed of adjustment is low meaning that these firms smooth their dividends more than firms with a lower relative amount of tangible assets. Just like with the previous proxies for information asymmetry, this shows an opposite relationship with the speed of adjustment than what can be expected from relevant theory. These findings are again in line with Leary and Michaely's (2011) results. They also find a significant negative relationship, indicating that firms with less information asymmetry problems smooth more, and not the other way around.

Risk

Risk is represented by the variable return volatility; the volatility of the firm's stock returns. Having a greater volatility in the returns results in more asymmetric information and investor uncertainty and therefore it is expected that the sign of the coefficient to be negative. With a significance level of 10 percent and 5 percent respectively in the individual tests for the median and mean values, the return volatility coefficient has a positive impact on the speed of adjustment. Once again the information asymmetry theories of dividends can be discarded for Swedish firms as having more risky returns actually equal a higher speed of adjustment of the dividends. Leary and Michaely (2011) get the same finding regarding the riskiness of US firms. One could argue that larger firms with less growth opportunities have less risk than smaller firms with more growth opportunities and thus, these results are also in line with this study's previous findings.

Analyst coverage

The asymmetry in information between inside and outside investors in a firm is represented by analyst coverage. In line with Leary and Michaely (2011) this is measured as the difference in analysts' forecasts, and the higher the difference, the larger the information asymmetry between inside and outside investors. It is expected that the dispersion of forecasts will be negatively related to the speed of adjustment as more smoothing would be needed to mitigate higher information asymmetry costs. As indicated in table 5.1, the actual sign of the dispersion of forecasts coefficient was positive on a 1 percent significance level. This suggests that the dispersion of analysts' forecasts is actually positively correlated with the speed of adjustment and thus lower dividend smoothing. This result is in line with Leary and Michaely (2011) who derive the same result regarding dispersion of analysts' forecasts.

Another variable that is used to represent this information gap is the number of analysts. The rationale is that the more analysts that cover the firm, the less information asymmetry between inside and outside investors. After running the regressions, the actual sign on the coefficient is negative, although inconclusive, meaning that the univariate and the multivariate regressions show different signs for the coefficient. Leary and Michaely (2011) uses the same variable and find a negative coefficient as well.

Investment horizon

Investment horizon is another proxy for information asymmetry and is represented by stock turnover. Lower stock turnover means that the investment horizon is longer which according to Guttman et al. (2010) should equal lower information asymmetry. Therefore, the expected sign on the coefficient in relation to the speed of adjustment is negative, indicating a greater need for dividend smoothing. Table 5.1 shows that the actual coefficient is negative, with a 10 percent significance when using median values. This is the first proxy for information asymmetry that actually is in line with the relevant theory. Of course, a higher significance level would strengthen the reliance in the variables impact on the speed of adjustment, but nonetheless, it shows that in some respect a longer investment horizon results in more dividend smoothing. Leary and Michaely (2011) also use this proxy for asymmetric information and they get the opposite result; that a longer investment horizon results in less smoothing, which is in line with the results of the other information asymmetry proxies.

Institutional holdings

Institutional holding, or ownership, is a proxy for all three market frictions; asymmetric information, agency costs, and taxes (and clientele effects). Starting off with information asymmetry, the expected relationship between institutional holdings and the speed of adjustment is positive, meaning lower dividend smoothing. This is because institutions are expected to lower any information asymmetry as they gather information much better than individual investors (Allen et al., 1999). While not significant, the results however, indicate that the degree of institutional ownership is negatively correlated with the speed of adjustment.

From an agency point of view, the expected sign of the variable relative the speed of adjustment is negative, due to institutions abilities regarding monitoring and thus mitigating managerial misbehavior. By utilizing more smoothing, a firm can attract institutions to continue be owners due to their tax advantage on dividends relative retail investors (Allen et al., 1999). The results, albeit insignificant, points towards an agency explanation of dividend smoothing with regards to institutional ownership. However, as previously mentioned, there are studies like Brav et al. (2005) that conclude that firms rarely use dividends to attract institutions as institutions themselves do not crave dividends more than capital gains (or repurchases).

The clientele motivation of dividend smoothing with regards to institutional ownership has two opposing arguments. Firstly, since institutions are at a tax advantage regarding dividends, they would prefer them over capital gains relative individual investors and hence higher institutional ownership should result in a lower speed of adjustment and thus a higher degree of smoothing. It should be noted that during this time period in Sweden, dividends and capital gains were taxed at the same rate (30 percent), which in turn from a purely economic standpoint should make individual investors indifferent between dividends and capital gains. However, like many researchers point out, investors often prefer dividends as it is considered certain whereas a future capital gain is uncertain, and thus under the same tax rates would prefer dividends. Although institutions still had a relative tax advantage, it could be argued that individual investors also preferred dividends. Thus, this explanation of attracting institutions by paying and smoothing dividends might not be as strong in Sweden compared to countries like the US where dividends were taxed more heavily⁶ than capital gains for individual investors.

⁶ See Ernst and Young (2012).

Secondly, due to tax planning and loss aversion for individual investors, they would prefer dividend smoothing and thus it is expected that firms with less institutional holding (and more individual holding) would smooth more.

In line with Leary and Michaely (2011), the coefficient of institutional holding is in relation to the speed of adjustment negative. However, in this study this coefficient is insignificant, but the consistency with the study of Leary and Michaely (2011) can point in the direction of that the tax advantage of institutional companies has an effect on dividend smoothing

Cash Cow

As it has already been established that larger firms with less growth opportunities and less risk smooth their dividends more than firms with the opposite attributes, being a cash cow should then also result in a higher degree of smoothing. What is referred to as a cash cow in this study is mentioned in chapter 3, and it indicates higher amounts of excess cash. Therefore, the expected sign of the cash cow coefficient in table 5.1 is negative, and the actual sign is also negative, with a 1 percent significance when using median values and a 10 percent significance when using mean values. This is in accordance with theories explaining agency costs of free cash flow like Jensen (1986) and the result is in line with studies like Leary and Michaely (2011).

Ownership concentration

Agency costs also use the proxy ownership concentration, represented by the ownership stake of the top 10 owners. Due to monitoring issues, Jeong (2013) argue that firms that are more closely held do not have as concerning agency costs as firms with more dispersed ownership. Therefore the expected relationship between concentration of ownership and the speed of adjustment is positive, meaning less dividend smoothing. The results suggest that this relationship is positive, when making the individual tests. However, this contradicts the results of Jeong (2013) that actually found a negative relationship. However, as these results are insignificant as presented in table 5.1, no major conclusions can be drawn from the level of concentration in ownership in a firm and its implication on how a firm decides its dividend policy and smoothing practices.

Financial slack

Having financial slack could be considered equivalent to having excess cash, which in turn increases agency costs. Thus it is expected that there exists a negative relationship between financial slack and the speed of adjustment. The results from the regressions suggest that this relationship is instead positive, indicating that financial slack has a negative effect on dividend smoothing. However the results are not significant and are also inconclusive, so nothing can be said regarding this relationship. Leary and Michaely (2011) do not include this in their study, but Jeong (2013) does and finds a positive relationship as well.

Leverage

This is another variable used as a proxy for agency costs as more leverage should indicate lower agency costs as managers are monitored and constrained by debt. Thus the expected relationship between leverage and the speed of adjustment is the opposite of that with financial slack, namely a positive relationship. In line with Aivazian et al. (2006), the results presented in table 5.1 show that there indeed exists a positive relationship, and this is at a 1 percent significance level, indicating that more debt means less dividend smoothing. This is in line with the general theories on agency costs and the constraining ability of debt on a firm's managers. This variable is not included in the studies of Leary and Michaely (2011) or Jeong (2013) for example, but it still shows that debt has an effect on dividend policy and smoothing.

Repurchases

Leary and Michaely (2011) conclude that repurchasing firms smooth more and thus similarly, Swedish firms who repurchase shares are expected to have a lower speed of adjustment with regards to their dividends. When looking at the results when using median values, the result is negative but inconclusive and it is negative without being significant when using mean values. This does not give much evidence if there is a positive or a negative relationship and besides, share repurchases during this time period for Swedish firms were not conducted in any greater extent. However, since the signs in the individual tests are negative, the possibility that repurchasing firms distribute their unexpected excess cash through repurchases should not be left out.

Dividend level

In line with the assumptions of Leary and Michaely (2011), the dividend level, or the payout ratio of a firm, is expected to have a positive relationship with the degree of dividend smoothing. The actual signs are mostly insignificant, but significant in the multivariate analysis when using mean values. The fact that this variable is insignificant in the individual test, and also demonstrates different signs when using mean and median values, points to biases in the variable. Further analysis is therefore refrained.

Summary of discussion

The results of this study tend to support the agency theory explanation of dividend smoothing. As described in table 5.1, five out of six proxies for agency theory are in line with the expected sign. Two of these five variables are proven to be significant, but all of these variables show the same sign as the study of Leary and Michaely (2011). The only variable not agreeing with agency theory was the cash to assets variable (which was insignificant), but other proxies like the market-to-book ratio and cash cow (very significant) show that being cash rich actually result in a lower speed of adjustment of dividends and thus more dividend smoothing.

Regarding information asymmetry, most of our findings are in line with Leary and Michaely (2011) and Jeong (2013), which contradicts an information asymmetry explanation. One of nine proxies, the stock turnover variable, is supporting the asymmetric information explanation. The negative coefficient of stock turnover goes against the finding in Leary and Michaely (2011). Except for stock turnover, all other information asymmetry variables are in line with the results of Leary and Michaely (2011) and Jeong (2013). Thus, these findings suggest that firms with low information asymmetry are actually smoothing their dividends to a higher degree than companies with high information asymmetry.

The proxy used for clientele effects, institutional holding, show no support for Leary and Michaely's (2011) initial theory that individuals would use dividends as a mean for tax planning and thus indicate a higher degree of smoothing, something they also later rejected. This study finds that the tax advantage of dividends for institutions could be seen as a tax clientele effect as firms with higher institutional holding smooth more; catering to institutions preferences.

Regarding the effect of share repurchases, insignificant results are pointing in the expected direction that share repurchasing firms tend to smooth their dividends more. Thus, it can be

argued that firms that repurchase shares distribute their unexpected excess cash through share repurchases.

When comparing variables that represent both agency based- and information asymmetry based explanations (market-to-book and institutional holding), the result support the agency explanation over information asymmetry. Further, even though not all variables are significant, those that are the most significant either support agency costs explanations or strongly disprove the other explanations. This further indicates that agency issues plays a much more central role in dividend smoothing than does asymmetric information problems.

6. CONCLUSION

Here, a summary of the findings is presented and conclusions are drawn. Lastly, suggestions for further research are also presented

This study's purpose was to identify whether dividend smoothing is a pertinent phenomenon in Swedish public firms and if so, identify what characteristics that drive this dividend smoothing. To answer this, three questions were asked.

The first question asked how extensive the use of dividend smoothing is among Swedish public firms. To answer this question, a definition of dividend smoothing was needed. In line with many other studies, interpretation of dividend smoothing was made through Lintner's partial adjustment model, where dividend smoothing corresponds negatively to the speed of adjustment. The findings show that Swedish public firms smooth their dividends, albeit to a lesser extent than companies in the US, but to a greater extent than companies in East Asia. Further, the results show that companies on Large cap are more likely to smooth their dividends than other companies.

The second and third research questions that this paper was to answer were whether any determinants of dividend smoothing could be identified and how these findings correspond to similar studies. To answer this question a theoretical framework of information asymmetry-, agency-, and tax clientele based explanations were provided. The findings show support for agency based explanations with regards to dividend smoothing and little support for the other two. Dividend smoothing is found to be more likely to occur when companies have; high asset tangibility, low leverage, when the forecast dispersion among analysts is low (low information asymmetry), low stock return volatility, when companies are large, and when companies are considered to be cash cows. These findings are in line with similar studies like Leary and Michaely (2011) and Jeong (2013). Some variables used as proxies for the different explanations were not statistically significant, however, the observed sign of the coefficient of different determinants of dividend smoothing corresponded to a high degree with international studies. This might suggest that there are only minor differences internationally regarding determinants of dividend smoothing, however, as noted above, the degree of dividend smoothing is varying between different countries.

6.1 Further research

Even though news about dividend payments often get a lot of attention in the media, there is often an information gap for investors of why certain dividend decisions are made. We believe it is important for market participants to get a better understanding of firms' dividend policy, why certain firms behave the way they do in terms of dividend policy in general dividend smoothing in particular. Our results suggests that dividend smoothing is conducted to mitigate agency issues, but we believe that there still are aspects to be uncovered. Therefore we feel that further research is needed in this field of research.

For example, the Swedish population of available companies to derive dividend smoothing from was quite scarce, and might have impacted our results. To get a larger sample a study might investigate similar countries, such as other Scandinavian countries, in order to get more significant results. This could potentially further strengthen the results of this study.

Due to the obvious knowledge gap regarding international differences in the degree of dividend smoothing, further research within this subject is desired. Many studies have made international comparisons, but current research have been using two, or a few, countries to conduct these comparisons. Since we have concluded that firm level determinants are quite similar across borders, it could be wise to instead involve possible determinants on a national level to understand why the level of smoothing seems to be so different. Therefore it is recommended to make a comprehensive comparison between a large set of countries in order to capture national level determinants.

This study did not address any differences between different industries. Regarding firm level determinants, it might be interesting to target differences in dividend smoothing between industries, as they might have different characteristics that might influence their dividend smoothing. Further, should in the future repurchases become more common in Sweden, then we recommend a study similar to ours that includes share repurchases and thus targets smoothing of the total payout ratio.

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8. APPENDIX

Appendix 1: Jarque-Bera Test

Means	Speed of adjustment	PPE to Assets	Leverage	Forecast dispersion	Stock turnover	Top 10 ownership (%)	Return volatility	Firm age	Institutional holdings	Market to book ratio	LN (assets)	Payout ratio	Repurchases	Cash cow	Cash to assets	Number of analysts
Skewness	0.385	1.337	-0.338	1.025	1.537	0.047	0.999	0.187	-0.316	2.653	0.373	3.746	1.418	3.038	3.334	1.091
Kurtosis	2.213	3.772	3.428	4.543	6.226	2.043	5.653	1.765	2.502	10.302	2.999	26.852	4.338	10.232	17.192	2.953
Jarque-Bera	4.298	27.450	2.277	23.340	70.350	3.274	39.079	5.896	2.291	288.617	1.971	2214.415	34.852	316.061	870.837	16.895
Probability	0.116	0.000	0.320	0.000	0.000	0.194	0.000	0.052	0.317	0.000	0.373	0.000	0.000	0.000	0.000	0.000
Observations	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Medians	Speed of adjustment	PPE to Assets	Leverage	Forecast dispersion	Stock Turnover	Top 10 ownership (%)	Return volatility	Firm age	Institutional holding	Market to book ratio	LN (Assets)	Payout ratio	Repurchases	Cash cow	Cash to assets	Number of analysts
Skewness	0.411	1.303	-0.487	0.330	0.945	0.039	0.559	0.224	-0.304	2.654	0.360	0.307	2.052	3.353	3.711	1.234
Kurtosis	2.256	3.414	3.491	1.892	2.838	2.033	4.779	1.806	2.506	10.546	2.975	3.324	5.432	12.242	20.400	3.310
Jarque-Bera	4.351	24.688	4.217	5.891	12.758	3.332	15.649	5.764	2.175	301.495	1.840	1.716	80.629	461.820	1267.494	21.914
Probability	0.113	0.000	0.121	0.052	0.001	0.189	0.000	0.056	0.336	0.000	0.398	0.423	0.000	0.000	0.000	0.000
Observations	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85

Appendix 2: Correlation matrix, example of median values

Sample: 1 85

Included observations: 85

Correlation

Probability	Speed of Adjustment	Stock turnover	Top 10 owners (%)	Return volatility	PPE to Assets	Forecast dispersion	Firm age	Market-to-book	Ln(Assets)	Payout ratio	Repurchases (dummy)	Cash cow	Cash to Assets	Number of Analysts	Institutional Holdings.
Speed of Adjustment	1.000000 -----														
Stock turnover	0.069786 0.5257	1.000000 -----													
Top 10 ownership (%)	-0.077572 0.4804	-0.560263 0.0000	1.000000 -----												
Return volatility	0.288358 0.0074	-0.001079 0.9922	0.056143 0.6098	1.000000 -----											
PPE to Assets	-0.224197 0.0391	-0.042644 0.6984	0.029573 0.7882	-0.190457 0.0808	1.000000 -----										
Forecast dispersion	0.229477 0.0346	0.522178 0.0000	-0.356884 0.0008	0.169152 0.1217	0.270411 0.0123	1.000000 -----									
Firm age	-0.167362 0.1258	0.281836 0.0090	-0.299985 0.0053	-0.175375 0.1084	-0.008474 0.9386	0.040095 0.7156	1.000000 -----								
Market-to-book	0.140481 0.1997	0.146210 0.1818	0.048292 0.6607	0.146168 0.1819	-0.210520 0.0531	-0.012694 0.9082	-0.245204 0.0237	1.000000 -----							
Ln(Assets)	-0.097538 0.3745	0.546791 0.0000	-0.493689 0.0000	-0.358153 0.0008	0.127138 0.2462	0.391567 0.0002	0.481736 0.0000	-0.275745 0.0106	1.000000 -----						
Payout ratio	0.213323 0.0500	0.054624 0.6195	0.024514 0.8238	0.072559 0.5093	-0.272414 0.0117	-0.010791 0.9219	-0.158148 0.1483	0.397668 0.0002	-0.262896 0.0151	1.000000 -----					
Repurchases	0.047169 0.6682	-0.053958 0.6238	-0.105029 0.3388	-0.155920 0.1542	-0.075972 0.4895	0.032218 0.7697	-0.044169 0.6881	0.011357 0.9178	0.099180 0.3665	-0.056787 0.6057	1.000000 -----				
Cash cow	-0.160242 0.1429	-0.002077 0.9849	-0.051990 0.6365	-0.261967 0.0154	-0.136149 0.2141	-0.173293 0.1127	0.237290 0.0288	-0.012408 0.9103	0.380769 0.0003	-0.161643 0.1394	0.090639 0.4094	1.000000 -----			
Cash to Assets	-0.006429 0.9534	-0.084774 0.4405	0.145343 0.1844	0.006922 0.9499	-0.346501 0.0012	-0.241898 0.0257	-0.094509 0.3896	0.365317 0.0006	-0.366254 0.0006	0.275056 0.0108	0.010649 0.9229	-0.076452 0.4868	1.000000 -----		
Number of Analysts	0.078541 0.4749	0.798378 0.0000	-0.447713 0.0000	-0.211028 0.0525	-0.016275 0.8825	0.448506 0.0000	0.324364 0.0025	0.198553 0.0685	0.689693 0.0000	0.105947 0.3345	-0.049927 0.6500	0.052027 0.6363	-0.079655 0.4687	1.000000 -----	
Institutional Holdings	-0.019385	0.125446	0.217673	-0.009686	-0.095815	0.187991	0.018253	0.111136	0.172943	0.023497	-0.072101	0.212905	-0.266337	0.164825	1.000000