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Clawbacks and accounting conservatism, complements or substitutes?

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Abstract

Using a sample of 1,451 Russel 3000 firms, this paper runs two OLS regression models, where three proxies for conservatism are regressed on a clawback variable, indicating whether a firm has a clawback in place or not. The paper finds a substitutionary relation between clawbacks and accounting conservatism. These results mean that the firms, regulators & other stakeholders, can focus on the implementation of either clawbacks or accounting conservatism measures. With regards to scientific relevance, the finding of a substitutionary relation offers an opportunity for researchers, to analyse whether clawbacks or accounting conservatism is more effective in restricting executive opportunism.

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1. Introduction

Clawback provisions ("clawbacks") have been an up and coming trend in the corporate world, with the adoption rate going from around 12% in 2007 to 45% in 2013 (Erkens et al., 2018). First introduced in 2002 as part of the Sarbanes-Oxley Act ("SOX"), section 304 requires CEO's and CFO's to give back any incentive compensation they have earned, when there is a restatement to the financials due to misconduct.

Accounting conservatism, on the contrary, is a principle which has been used for centuries, with Basu (1997) arguing that conservatism has impacted accounting for more than 500 years. Watts (2003), however, found in his review of empirical research, that during the last few centuries, the discipline of accounting has become more conservative. Accounting conservatism essentially is a principle which requires firms to 'play it safe'. This means that there is a higher need for evidence regarding the recognition of gains, than for losses.

The connection between both cases described above, is that they act as a restriction to the possibilities for opportunism by executives. Executive opportunism comprises the possibility for CEO's and CFO's, to use their improved knowledge about the firm's prospects compared to shareholders, to bias the firm's financials (Iwasaki et al., 2018). This research will investigate the effectiveness of a combination of measures to restrict executives' opportunism and tries to provide an answer to the following research question:

"What is the relation between clawbacks and conservative accounting, do they act as substitutes or complements?"

The topic of executive opportunism is an interesting subject to explore, since both regulators as well as firms would like executives to be as responsible and unbiased as possible (Drucker, 2018). What makes the combination of clawbacks & accounting conservatism an interesting subject to explore, is that it might possibly lead to a greater restriction than one of the two measures separately. If this paper finds evidence of a complementary effect for the combination, it might encourage regulators and firms to use clawbacks and be more conservative instead of just one of the two. On the other hand, if the paper detects a substitutional effect, it allows regulators and firms to focus on which of the two is the most effective.

This research paper intends to contribute to existing literature in the sense that it looks at the combination of both clawbacks and accounting conservatism. In previous research, the focus was always on the effect of either clawback provisions or accounting conservatism, as a standalone measure. By exploring the combined effect of these measures, the paper provides an opportunity for researchers to analyse either the most effective measure to restrict executive opportunism, or collect further evidence on a complementary effect of clawbacks and accounting conservatism.

Using a sample of 1,451 Russel 3000 firms, this paper runs two OLS regression models, where three proxies for conservatism are regressed on a clawback variable, indicating whether a firm has a clawback in place or not.

The first regression model finds a substitutionary relation between clawbacks and accounting conservatism. The second regression model finds a weaker complementary relationship for smaller firms compared to larger firms. These results mean that the firms, regulators & other stakeholders, can focus on the implementation of either clawbacks or accounting conservatism measures. With regards to scientific relevance, the finding of a substitutionary relation poses an opportunity for researchers, to analyse whether clawbacks or accounting conservatism is more effective in restricting executive opportunism.

The paper is organized as follows: the next paragraph covers the literature review. In section 3, the background is presented and hypotheses are developed. Section 4 presents the methodology to test the hypotheses. Section 5 discusses the data and sample selection. Section 6 explores the results. And finally, in section 7, the conclusion is formed.

2. Literature review

Prior literature has focussed mainly on ways to restrict executive opportunism. Two tools that have been highlighted in past research, are clawback provisions and accounting conservatism. This research connects these three main streams of literature, starting with the literature on executive compensation.

<u>Executive compensation</u>

First, it is important to understand the compensation structure in place for CEO's and CFO's. Apart from a fixed salary, most firms have bonuses in place (often in the form of stock options). These bonuses are granted if certain targets are realized, such as a % growth in market share or a certain profit level. These bonuses, combined with reputational incentives, give rise for executives to manipulate the financials of their firms. Executives acting this way, is called 'executive opportunism' (Ali & Hirshleifer, 2017).

As for executives manipulating their financials, the most well-known method is earnings management (hereafter EM). Whilst EM can be positive (executives know more about the firm and might present a more representative image by adjusting the financials), EM is regularly regarded as negative, as people (or in this case executives) are assumed to be self-interested. There are two types of EM, accrual EM (where executives make use of accounting policies to affect the books) and real EM (e.g. CEO's starting a marketing campaign on the 30th of December to increase the expenses and in return decrease the profits) (Chen et al., 2010).

Healy and Wahlen (1999), summarized the main incentives for engaging in EM. They established three main reasons: The first reason, which is often seen as the most important one, as executives themselves profit the most from it, is the capital market incentive. The general idea behind this incentive is that executives want to convey a better picture to investors. The second incentive is contracting motivations, e.g. making sure the firm complies with debt covenants. The final main reason presented in this paper is the regulatory incentive, i.e. making sure that the firm avoids regulatory scrutiny.

Additional empirical evidence shows that beyond manipulating financials, executives affect the board to receive their option grants shortly before the release of good news. Yermack (1997), looked at the rewarding process of stock options to executives of Fortune 500 companies in the sample period of 1992-1994. He finds that the timing of executive stock option compensation occurs to be even more favourable, than the timing of regular stock transactions made by insiders. This result indicates that executives who recognize that the performance of

their company will raise soon, have an incentive to ask their compensation board to award them stock options within the interval of the good news release. This phenomenon is not the exact same as manipulating the financials, but also belongs to the concept of executive opportunism.

The second paragraph looked at the utilization by executives of an upcoming positive news announcement, to affect the date of the option grants. Another option for executives in addition to manipulating financials and exploiting upcoming good news announcements, is the practice of executives making public disclosures to affect the stock price. Daines et al. (2018), found evidence of the fact that CEO's tend to create bad news before the option grant date (e.g. giving investors rather conservative projections of prospective firm performance or moving up the issuance of existing negative news). On the contrary, they found an increase in the occurrence of good news after the release of the option grants. This is amongst other things possible, by postponing the release of positive news.

Clawback provisions

The second stream of literature that is important for this paper, is prior research on clawbacks. First introduced in 2002 as part of the Sarbanes-Oxley Act ("SOX"), section 304 requires CEO's and CFO's to give back any incentive compensation they have earned, when there is a restatement to the financials due to misconduct. Under section 954 of the Dodd-Frank act, introduced in 2010, all firms are required to introduce a protocol to recoup compensation from executives which they gained as a result of inaccurate reporting. This does not necessarily mean that firms are obligated to take up clawback provisions ('clawbacks'), as the section regarding clawbacks is not yet included in the US constitution. There is however a trend visible regarding clawback adoption, with the adoption rate going from around 12% in 2007 to 45% in 2013 (Erkens et al., 2018).

A company that adopts a clawback is able to recoup money from an executive in an easier manner when clawbacks are in place. This makes the compensation of executives less certain, therefore, as a drawback of the clawback introduction, most executives would like to receive higher compensation. However, since they know that they will be punished in case of financial misconduct, they are expected to engage in improved managerial behaviour. According to Babenko et al. (2017), firms with clawbacks in place seem to be less risky in their decision making (e.g. they have a lower stock volatility and reduced R&D expenditures compared to firms without a clawback). With regards to the adoption of clawbacks, they find

that the likelihood of a firm adopting a clawback is higher when there is a history of executive wrongdoing in the firm or when the compensation scheme gives more room for malfeasance.

Chan et al (2012), use a difference-in-differences design to assess the effectiveness of clawbacks in improving the reliability of financial statements. They initially selected all Russel 3000 firms over the sampling period 2000-2009, reaching a final sample of 2.183 firms after adjustments. Of these firms, 343 firms had adopted a clawback in 2009. Comparing the treatment group (clawback adopters) vs the control group (non-clawback adopters), they find that the occurrence of accounting restatements falls significantly for the treatment group. This result indicates a diminished incentive for executives to engage in EM and an increase in reporting quality. In addition to this, they use the earnings response coefficient (ERC), which is higher for the treatment group, to demonstrate that investors perceive the financial statements to be more trustworthy. Overall, this paper suggests that there is less room for executive opportunism when clawbacks are in place.

A recent study by Erkens et al. (2018), looked at the importance of the design of the clawback on its effectiveness. They test this using a sample of non-financial Russel 3000 firms from 2007 till 2013. They performed a linguistic study, for which they developed a model that assesses the clawback strength based on five determinants. These determinants are: the types of compensation that are covered, which employees are liable to possible redemption, whether the clawback automatically triggers (or whether this has to be done by the firm manually), the period covered by the clawback and finally when exactly is the clawback provoked. Their results suggest that clawback strength does make a significant difference with regards to the consequences. Firms with strong clawbacks in place, encounter a significant upgrade in reporting quality compared to firms with weak clawbacks. In addition, they have a lower CEO turnover rate. What is interesting to note is the fact that they find no significant difference between weak adopters and firms with no clawback in place at all.

De Haan et al. (2013), used a difference-in-difference design to look at voluntary clawback adopters during the period 2007-2009. Similar to what other literature finds, they find that clawback adopters experience an improvement in financial reporting quality and like Chan et al. (2012), they also notice that investors perceive earnings that are reported with a clawback in place as more trustworthy, illustrating the need for unbiased information by stakeholders.

Accounting conservatism

Finally, the stream of literature on accounting conservatism is essential to cover. (Accounting) conservatism is an accounting principle requiring a higher degree of verification to recognize good news as gains, than to recognize bad news as losses. Watts (2003) wrote two papers which cover the rationale and implications of accounting conservatism. The first paper acts as a theoretical introduction to the concept of conservatism, the second paper covers empirical evidence. He covers four justifications, which he regards as the main explanations for conservatism. The first one is the contracting explanation, this basically covers the agency problem that exists between a firm and an executive (asymmetric information and the risk of moral hazard). Accounting conservatism, Watts argues, gives the opportunity of being able to asymmetrically verify losses versus gains. The second explanation covers litigation, empirically, there are more lawsuits for overstatements than for understatements and therefore the risk of litigation is lower for firms with a high degree of accounting conservatism. The third explanation considers income tax, Watts states that taxes provide incentives for firms to align their reported accounting income to their taxable income. The fourth and final explanation relates to regulation, losses from overvalued assets and overstated income are observable and can be used in the political process.

Iyengar & Zampelli (2010) study the relation between accounting conservatism and CEO/CFO compensation. They construct a microeconomic model to show the agency problem managers face because their effort is non-observable. To address this, Iyengar & Zampelli argue, there is the need for an incentive-based compensation contract. To test their hypothesis, they analyse a model of executive compensation on accounting performance and market return. As for accounting conservatism, they include two interaction variables between the independent variables and the conservatism measures selected by Iyengar & Zampelli. These accounting conservatism measures are mainly based on accrual measures. Using a sample of 4508 observations over the sampling period 1994-2003, they find that the reactivity of executive compensation to accounting performance, is larger for firms that have an increased amount of conservative accounting conventions in place. This is due to the fact that conservatism in accounting leads to less opportunities for earnings management and that it enhances the reliability of the financials, as shown by the results of their research.

Penman & Zhang (2002), look at NYSE (New-York stock exchange) and AMEX (American stock exchange) non-financial firms between 1975 to 1997. For these firms they calculated a C-score indicating the level of accounting conservatism and a Q-score indicating the level of earnings quality. They then go on to calculate the predicted return on net operating assets for the following year (RNOA), using the Q-score and C-score. By comparing this prediction to the actual RNOA, they can check the quality of earnings for firms who have a high C-score compared to firms with a lower C-score. Following their results, Penman & Zhang point out that due to conservative accounting regarding investments, unrecorded reserves are created and this causes earnings to be of lower quality. They do however note, that if the change in investments is temporary, it only affects earnings on a short-term basis as well.

Heflin et al. (2015), find that conservatism lowers earnings persistence, causes earnings to be more volatile, and reduces the informational power of earnings. In addition, their results suggest that conservatism (in this paper they use conditional conservatism), relates with substantially bigger errors in analysts' forecasts of earnings indicating division between analysts. This paper shows that accounting conservatism is not always advantageous.

Yet, most evidence shows that accounting conservatism has a positive impact in preventing executive opportunism. Zhong & Li (2017), did a literature review on accounting conservatism research. As this paper is relatively new, it gives a rather clear summary of the currently available literature on accounting conservatism. They state that conservative accounting has had a major impact on financial reporting and accounting. Their article shows that many stakeholders urge firms to make us of accounting conservatism (including shareholders, suppliers and regulators). The reason for this, is the by Iyengar & Zampelli (2010) mentioned agency problem which can be reduced by accounting conservatism. Finally, it is argued that with conservatism, managers engage less in risk-loving behaviour and therefore it decreases the investment risk of firms.

Contribution

This research paper intends to contribute to existing literature in the sense that it looks at the combination of both clawbacks and accounting conservatism. In previous research, the focus was always on the effect of either clawback provisions or accounting conservatism, as a standalone measure. By exploring the combined effect of these measures, the paper provides an opportunity for researchers to analyse either the most effective measure to restrict executive

opportunism, or collect further evidence on a complementary effect of clawbacks and accounting conservatism.

3. Background & hypothesis development

<u>Hypothesis 1</u>

In order to formulate the first hypothesis, it is necessary to expand the knowledge on the rationale behind firms adopting a clawback. On the one hand, clawbacks put a financial penalty on executives who take unreasonable risks, engage in financial malfeasance, lead the way in poor performance or behave inappropriate in general. Important to note with regards to the first rationale behind clawbacks is that firms can indeed recoup (a part of) the compensation of executives, but that the amount which they recoup is often just a minor sum for companies. For executives however, this can be a large share of their yearly earnings, therefore, the clawback is aimed at restricting the executive rather than getting the compensation back for the companies. On the other hand, do clawbacks deal with the timing issue which exists between the economic consequences of executive decisions and the collection of their compensation (this issue was also illustrated in the executive opportunism paragraph of the literature review). What these two motives show, is that the main goal of clawbacks is to restrict the room for executives to engage in executive opportunism (Babenko et al, 2017).

This motivation was also presented in the other articles that were covered in the literature review. Literature showed a negative relation between clawbacks and executive opportunism. Meaning that firms that have a clawback in place, suffer less from executive opportunism (Chan et al., 2012; Dehaan et al., 2013).

In the literature review, the motivations for accounting conservatism were already shortly touched upon while discussing the Watts (2003) paper. However, to make the link between clawbacks and accounting conservatism more clear-cut, the next paragraph expands the knowledge on the rationale behind firms adopting accounting conservatism practices, in a similar manner as what was done in paragraph one of this section (hypothesis development) for clawbacks.

Firms want to attract as much capital as possible for them to be able to make more investments. In order for them to attract these funds, investors would like to be able to get information to assess whether the investment will bring them a return. Therefore, it is necessary to have reliable financial information available to present to the potential investors. Accounting conservatism is a tool that can be used to lessen the information asymmetry that is usually

present in the debt/equity market. In addition to this, firms with accounting conservatism practices in place, delay the recognition of positive news and speeds up the release of negative news. Due to this circumstance, executives of firms with a high degree of accounting conservatism tend to take less risks in their investment behaviour (Wang, 2009).

The conclusion as presented above is similar as to what was found in the literature review. Meaning that when there is an increase in accounting conservatism practices, e.g. understating net assets (for example R&D) to be more cautious or decreasing the leverage to reduce contracting requirements, it leads to less executive opportunism (Watts, 2003; Khan & Watts, 2009).

Based on the rationales, it is possible to spot the parallels between the two tools that are essential in this paper. The main rationale between both clawbacks as well as accounting conservatism is to restrict executive opportunism. And while clawbacks do not put direct restrictions on the decision-making process of executives, it indirectly leads to less executive opportunism as shown in the literature review. Accounting conservatism, does have a direct effect on the freedom in the behavioural room managers have, in the sense that there are requirements with regards to recognition of gains and losses. However, in the end, they both result in a restriction of executive opportunism. When taking a more in depth look at the mechanisms, the link between investment risk taking behaviour is visible. For both clawbacks and accounting conservatism, the amount of risk taken with regards to investments reduces as a result of the implementation of the instruments.

Considering the fact, that there is no previous literature on the combination of both measures, it is difficult to make an educated presumption. But since the two separately seem to lead to less executive opportunism and the two tools seem to have a lot of similar characteristics, as covered in the previous paragraph, one would expect that having a mix of both arrangements would only decrease the room for CEO's and CFO's to engage in opportunism. Hence the formulation of the following hypothesis:

H1: Clawbacks and accounting conservatism act as complements in restricting executive opportunism.

<u>Hypothesis 2</u>

As mentioned before in this section as well as in the literature review, one of the main causes of executive opportunism is the existence of information asymmetry. For the second hypothesis, this information asymmetry and how it differs with firm size is explored.

Cormier et al. (2010), find that larger firms produce higher quality financial reports and are covered by a larger group of analysts. Therefore, they argue, there is less information asymmetry as opposed to smaller firms where there is a lower level of analyst coverage and a reduced quality of financial reporting.

Frankel and Li (2004), also point out the importance of analyst following and the quality of financial reports. In addition, they suggest that due to the increased amount and timeliness of disclosures of larger firms, they reduce information asymmetry (for which they proxy by the magnitude of insider trading).

Brent & Addo (2012), identify another reason for reduced information asymmetry in larger firms. Larger firms, are required by law to comply with specific public disclosures concerning financial information. This reduces the amount of information asymmetry existent in these firms. They also declare that it is in the best interest of firms to (voluntarily) engage in credible and informative public disclosures, as it decreases the amount of information asymmetry and by doing this, increases the stock price.

The articles show that smaller firms are often less monitored and report a lower amount of disclosures, resulting in a higher degree of information asymmetry. One would therefore expect a higher need for measures. The effect of having both measures in place is consequently expected to be bigger for smaller firms. This leads to the formulation of the second hypothesis:

H2: There is a significantly stronger complementary relation between clawbacks and accounting conservatism for smaller firms compared to larger firms.

4. Methodology

<u>Hypothesis 1</u>

The most efficient method to test the main research question of this paper, is to regress clawbacks on conservatism. This way, it is possible to test for a substitution or complementary effect. The formula used for Hypothesis 1: *"Clawbacks and accounting conservatism act as complements in restricting executive opportunism."* is presented below:

$$Clawback_{it} = \alpha_1 + \beta_1 Conservatism_{it} + \sum \beta_k \ Control \ variables_i +$$
$$\sum \beta_f (Industry, Year) + \varepsilon_i \qquad (1)$$

In the section below, the different measures used for clawbacks, conservatism and the control variables are further explained.

<u>Measure for clawback</u>

Since it requires a linguistic study to test for the strength of clawbacks, the variable for *clawback* will simply be an indicator/dummy variable which indicates whether the firm has a clawback in place or not, this is specified by year (since data on the adoption date is available).

<u>Measures for conservatism</u>

Conservatism is a proxy for conservative accounting. This paper will make use of two different proxies as accounting conservatism is not something than can easily be proxied for. The proxies used are the *C-score* and *G-score*, developed by Khan & Watts (2009), these build on the Basu measures, but differ in the sense that the C & G-score can vary between years, whereas the Basu measures are constant for the entire sample period. To calculate the C-score and G-score, various steps have to be taken. This process, is explained in the next paragraph.

The main model used to calculate both the C-score and G-score, is a modified version of the Basu (1997) model. This model estimates the cross-sectional Basu regressions, on an annual basis. In doing this, the asymmetric earnings timeliness coefficient is specified as a linear function of firm-specific characteristics (size, M/B and leverage). This equation (2) is presented on the next page:

$$E_i = \beta_1 + \beta_2 D_i + R_i \left(\mu_1 + \mu_2 Size_i + \mu_3 \left(\frac{M}{B} \right)_i + \mu_4 Lev_i \right) + D_i R_i \left(\lambda_1 + \lambda_2 Size_i + \right.$$

$$\lambda_3 \left(\frac{M}{B} \right)_i + \lambda_4 Lev_i \right) + \left(\delta_1 Size_i + \delta_2 \left(\frac{M}{B} \right)_i + \delta_3 Lev_i + \delta_4 D_i Size_i + \delta_5 D_i \left(\frac{M}{B} \right)_i + \right.$$

$$\left. \delta_6 D_i Lev_i \right) + \varepsilon_i \tag{2}$$

In this equation, i is an index for the firm,

E are the earnings before extraordinary items scaled by lagged market value of equity,

R is the stock return calculated as the closing price in year t minus the closing price in year t-1, divided by the closing price in year t-1,

D is a dummy variable that is equal to 1 for R<0,

$Size$ is the natural log of market value of equity,

M/B is the ratio of market value of equity to book value of equity,

Lev is the ratio of debt to equity.

The outcomes of equation (2) are used to derive the C-score and G-score. The equations to calculate these are presented below, including the required interpretations of the results of these scores.

$$C\text{-}score = \lambda_1 + \lambda_2 Size_i + \lambda_3 \left(\frac{M}{B} \right)_i + \lambda_4 Lev_i \tag{3}$$

In the above equation (3), the calculation of the C-score is shown. The C-score is a measure of the incremental timeliness of negative/bad news. A higher C-score indicates that a firm is more conservative in its financial reporting. This is due to the, in the literature review described, difference in recognition requirements. Where positive news (gains) need a higher degree of verification than negative news (losses).

$$G\text{-}score = \mu_1 + \mu_2 Size_i + \mu_3 \left(\frac{M}{B} \right)_i + \mu_4 Lev_i \tag{4}$$

Equation (4) shows the calculation of the G-score. The G-score is a measure of the timeliness of positive/good news. The higher the G-score, the lower the conservatism of firms. The sum of the G-score and C-score is the total bad news timeliness. Therefore, the paper will run three regressions, two with the G-score and C-score as separate independent variables respectively and one with the sum of both scores as the independent variable.

For the *C-score*, a positive and significant sign of coefficient β_1 (in equation 1), would indicate that conservatism and clawbacks are complements in restricting executive opportunism. If the sign if significant and negative, there is a suggestion of a substitution effect. This is the same when the sum of the C-score and G-score is used as the independent variable for conservatism.

If, however, the *G-score* is used, the sign works in the opposite direction. Here, a positive and significant sign of coefficient β_1 (in equation 1), would indicate that conservatism and clawbacks are substitutes in restricting executive opportunism. A negative and significant sign would suggest a complementary effect.

<u>Control variables</u>

To ensure that the effect of clawbacks and conservative accounting on executive opportunism is investigated, it is necessary to mitigate the influence of other variables. This means that a series of control variables is included in the regression analysis. Based on the studies by Erkens et al. (2018) and Lara et al. (2016), it was possible to do an informed selection. The former is a study on clawbacks, the latter a study on accounting conservatism.

The control variables include *firm size, leverage & sales growth*, as these are all factors that could influence both clawbacks, conservatism (& CEO opportunism). For *firm size*, bigger firms possibly have stronger clawbacks in place as the stakes are higher, on the other hand there might also be more control/monitoring because of the firm size. With regards to conservatism, larger firms usually have a lower degree of information asymmetry (Easley et al., 2002). This means that there is a lessened need for conservatism (bad news can easily be verified). While this would indicate a negative effect of firm size on conservatism, literature also suggests that bigger firms usually have a higher chance of being sued, which in turn would imply an increased need for conservatism (litigation demand).

Regarding *leverage*, higher levered firms deal with various lenders and other stakeholders, which leads to agency problems. Therefore, these stakeholders might require firms to implement a stronger clawback to ensure that their interests are promoted. It however also puts an extra burden/increased pressure on executives as they have to manage the interest of different parties. This might lead them to make less well thought out decisions, which in turn implicates a higher degree of CEO opportunism. Leverage is also an important control variable when thinking about conservatism. This is again due to the aforementioned agency problem. Conservatism leads to verifiable bounds for accounting numbers that are included in debt

contracts. Firms with a higher degree of leverage, would therefore experience a greater demand for conservatism from their stakeholders (Khan & Watts, 2009).

Sales growth is used as a control variable since sales is one of the main accounts that can be influenced by executives to engage in EM. It is also expected that firms with a higher level of conservatism have a lower level of sales growth since it requires more verifiability to recognize the gains.

Additionally, the study by Lara et al. (2016) showed that it is important to control for *R&D expenditures* as well, as these are often lower when accounting conservatism is followed, but this is an account frequently used as a tool to engage in earnings management as well, which is a form of executive opportunism.

The full list of variables and how they are calculated can be found in Appendix A.

Similar to Erkens et al. (2018), the decision was made to use industry & year fixed effects. With this, it is possible to account for all factors that are not directly observable, but are constant for certain groups of observations. As for industry, this is done on the basis of the first two digits of the SIC-code. For the year, the financial year was used. In addition, all standard errors are clustered by firm, to mitigate the bias of repeating firm observations in the sample.

Hypothesis 2

To test for the second hypothesis: *"There is a significantly stronger complementary relation between clawbacks and accounting conservatism for smaller firms compared to larger firms."*, an extension of the model for hypothesis one was used. The formula for this is presented below:

$$Clawback_{it} = \alpha_1 + \beta_1 Conservatism_i + \beta_2 Smallfirm_i + \beta_3 Conservatism_i * Smallfirm_i + \sum \beta_k \ Control \ variables_i + \sum \beta_f (Industry, Year) + \varepsilon_i \qquad (5)$$

So, it is essentially the same formula as for hypothesis 1, but two variables were added. One indicator/dummy variable β_2 which takes the value 1 for small firms and 0 for big firms, the threshold for this is set at the median. Therefore, a small firm will be a firm which has a *size* smaller than the median, and a big firm will have a *size* larger of equal to the median. The other added variable, is an interaction variable β_3 between conservatism and the dummy variable for small firms. By checking the significance and sign of this variable, it is possible to test the second hypothesis. Logically, *size* does not serve as a control variable in this regression, as it is used in the determination of the variable *smallfirm* (multicollinearity).

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The interpretation of coefficient β_3 in equation 5, is more complicated than the interpretation of the equation of hypothesis 1. For the regressions ran with the *C-score* or the sum of the C-score and G-score as the independent variable, there are four possible outcomes. Firstly, if β_3 is significant, positive and bigger than β_1, smaller firms have a stronger complementary relation between conservatism and clawbacks than bigger firms. Secondly, if β_3 is significant, positive and smaller than β_1, smaller firms have a weaker but still a complementary relation between conservatism and clawbacks compared to bigger firms. Thirdly, if β_3 is significant, negative but still bigger than β_1, smaller firms have a weaker substitutionary relation between conservatism and clawbacks than bigger firms. Finally, if β_3 is significant, negative and smaller than β_1, smaller firms have a weaker yet still substitutionary relation between conservatism and clawbacks compared to bigger firms. This, including an example for every possible outcome is summarized in table 1 below:

Table 1: The four different outcomes of the hypothesis two test for C-score and the sum of both scores

Sign and magnitude of β_3 and β_1	(Example)	Relation between conservatism and clawbacks
β_3 positive and $> \beta_1$	($\beta_3 = 0.5$, $\beta_1 = 0.2$)	Stronger complementary for smaller firms
β_3 positive and $< \beta_1$	($\beta_3 = 0.5$, $\beta_1 = 0.8$)	Weaker complementary for smaller firms
β_3 negative and $> \beta_1$	($\beta_3 = -0.5$, $\beta_1 = -0.8$)	Weaker substitutionary for smaller firms
β_3 negative and $< \beta_1$	($\beta_3 = -0.5$, $\beta_1 = -0.2$)	Stronger substitutionary for smaller firms

The above only holds if β_3 is significant. The first column shows the sign and magnitude of the important coefficient(s), the second column an example & the final column shows the appropriate interpretation.

For the G-score, it is again the opposite of the C-score regarding the interpretation of the coefficient β_3. For redundancy (presentation) purposes, this interpretation will only be presented in table 2 below rather than fully written out in the text.

Table 2: The four different outcomes of the hypothesis two test for G-score

Sign and magnitude of β_3 and β_1	(Example)	Relation between conservatism and clawbacks
β_3 positive and $> \beta_1$	($\beta_3 = 0.5$, $\beta_1 = 0.2$)	Stronger substitutionary for smaller firms
β_3 positive and $< \beta_1$	($\beta_3 = 0.5$, $\beta_1 = 0.8$)	Weaker substitutionary for smaller firms
β_3 negative and $> \beta_1$	($\beta_3 = -0.5$, $\beta_1 = -0.8$)	Weaker complementary for smaller firms
β_3 negative and $< \beta_1$	($\beta_3 = -0.5$, $\beta_1 = -0.2$)	Stronger complementary for smaller firms

The above only holds if β_3 is significant. The first column shows the sign and magnitude of the important coefficient(s), the second column an example & the final column shows the appropriate interpretation.

5. Data & Sample selection

<u>Sample selection</u>

For the sample selection, the paper is dependent on the availability of clawback data, since the Compustat database contains data from 1950 onwards. As the database on clawbacks only contains data from 2007 onwards (as specified in the next section on data), the sampling period of this paper is from 2007-2018. 2018 was chosen as the final year since not all firms had provided their financial data for 2019 yet. Financial year 2006 was included in the initial sample as well, because the variable *sales growth* requires the sales from 2006. This financial year was removed from the sample after the creation of this variable. In addition, financial firms were excluded from the sample (SIC code 6000-6999), as these firms often have a high level of leverage, which has a different meaning for non-financial firms (indication of distress) & the fact that financial firms which received funds after the financial crisis, had to implement clawbacks by law. Finally, the observations for which no C & G-score could be calculated (due to missing data in the underlying variables), were removed from the sample. An overview of the sample selection process is provided in the table below.

Table 3: The sample selection process

	Unique firms	Unique firm-years
Merged database total	**1,455**	**17,298**
Less: Financial firms	*-1*	*-14*
	1,454	17,284
Less: Duplicate firm-years	*-/-*	*-47*
	1,454	17,237
Less: Financial years 2006 & 2019	*-/-*	*-2,183*
	1,454	15,054
Less: Missing C & G-scores	*-3*	*-862*
Final sample 2007-2018	**1,451**	**14,492**

The table describes the process that was undertaken to arrive at the final sample used in this paper.

<u>Data</u>

The data that was used for this paper, came from two main sources. For the data on clawbacks, data from the GMI ratings (formerly known as the Corporate Library), was used. This database contains data on clawbacks for all Russel 3000 firms. From this, a random sample of 1500 firms was drawn. While the total database consists of data from 2001 till now, data on clawbacks is only available from 2007 up until now. With regards to new adoptions of clawbacks, the final available year is 2016. Therefore, the summary table of clawback adopters, table 4, only extends to 2016.

As can be seen from table four, the percentage of clawback adopters has increased significantly from 2007 till 2016. This shows the developed popularity of the measure amongst Russel 3000 firms.

Table 4: Clawback adopters by year (final sample)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Firms with a clawback	132	222	325	429	478	551	643	652	707	714
Total number of firms	1,239	1,256	1,273	1,295	1,280	1,273	1,262	1,233	1,179	1,124
Adoption rate (in %)	10.65	17.68	25.53	33.13	37.34	43.28	50.95	52.88	59.97	63.52

The table presents the number of firms that voluntarily adopted a clawback between 2007 & 2016.

The clawback dataset was then merged with the Compustat fundamentals annual database (Compustat, 2019). This database, which is accessible in the Wharton Research Data Services (WRDS) system, includes all variables needed to compute the C-score. The control variables, are also (computed from the data) available in the Compustat database. It was necessary to collect data from 2006 onwards to be able to calculate the *sales growth & return* variables, this financial year was subsequently removed from the sample after the calculation was performed (as shown in table 3). After winsorizing all variables at the 1% and 99% level of the distribution, the applicable descriptive statistics are presented in table 5.

Table 5: Descriptive statistics for the final sample

Panel A: Descriptive statistics						
Variable	N	Mean	SD	Min.	Median	Max
C-score	14,492	0.563	1.288	-1.062	0.375	5.498
G-score	14,492	-1.107	2.546	-10.289	-0.090	1.666
Earnings	14,219	-0.003	0.172	-1.018	0.042	0.309
Return	14,228	0.138	0.621	-0.809	0.053	3.558
Firm size	14,492	7.213	1.745	3.369	7.082	11.844
Leverage	14,492	0.235	0.213	0	0.208	0.943
Sales growth	14,257	0.291	7.053	-9.286	0.061	710.679
R&D expense	8,812	0.453	2.118	0	0.038	17.959
MVE	14,492	6,811.926	18,915.48	29.047	1,190.227	139,191
M/B ratio	14,492	3.068	5.644	-23.209	2.201	33.557

Panel B: Correlation matrix for key variables. Pearson (Spearman) correlations are shown above (below) the main diagonal				
	Earnings	C-score	G-score	Clawback
Earnings		0.008	-0.020	0.093***
C-score	0.038***		-0.503***	0.073***
G-score	-0.087***	-0.849***		0.004
Clawback	0.111***	0.034***	-0.094***	

Panel A reports the descriptive statistics of the final sample. Panel B shows the correlations between the main variables used in this paper. ***Significant at the 1% level. All variables are winsorized at the top and bottom 1% of the distribution.

To check the regularity of the data as compared to other papers, the descriptive statistics (panel A), are compared to three related papers. These papers are the following: Erkens et al. (2018), Lara et al. (2016) & Khan & Watts (2009).

For the variables, *C-score & G-score,* it is only possible to compare to the latter two papers. In the paper by Khan & Watts, as in the Lara et al. paper ,only the sum of the scores is used and in the Erkens et al. paper, the topic is not conservatism and hence no C-score or G-score is calculated. In the Khan & Watts paper, the C-score and G-score are 0.105 & 0.048, respectively. This means that the scores in panel A have both a considerably larger magnitude for both scores, as well as a different sign for G-score. A reason for this could be that they used a larger sample as well as a different sampling period 1962-2005. This means that clawbacks were not popular yet, which could have an effect on conservatism as well.

The *Earnings*, which are primarily used in this paper to calculate the conservatism scores, are only reported in the Khan & Watts paper. They have a mean of 0.054, which again signals a change in sign, but this is most likely motivated by the different sample (period).

The *Return*, is reported by Lara et al. (0.17) & Khan & Watts (0.157), their mean returns are similar to the return reported in Panel A, and therefore can be assumed as relatively normal.

With regards to *Firm size*, the size found in this paper (7.213) is very much comparable to Erkens et al. (6.278), Lara et al. (5.60) & Khan & Watts (4.765).

A more notable variable is *Leverage*, this is because there is a large spread in the reported means between the three papers, Erkens et al. report a leverage of 0.186, Lara et al. a leverage of 0.42 & Khan & Watts a relatively high leverage of 0.764. This means that the reported leverage in panel A, falls in the lower spectrum of the leverage interval. But still it lies in the interval, which denotes it is not an obvious outlier.

Sales growth, which is 29.1% (0.291), seems to be in line with the other papers which reported this variable: Erkens et al. reported a growth of 14.4% and Lara et al. 28.3%.

The *R&D expense*, reported in this paper is a big higher than Erkens et al. (0.292) & Lara et al. (0.198), but still not considerable enough to assume as irregular.

MVE is not reported by any of the three papers, but since the market value of equity is only used in this paper to calculate the market-to-book ratio, it is possible to check the data based on the *M/B ratio* variable.

The final variable of Panel A, the *M/B ratio*, is higher than what is reported by Lara et al. (2.70) & Khan & Watts (2.121). Yet, the difference is not that considerable.

As can be seen in table 5, panel B, there is a negative and significant correlation between the C-score and the G-score. This is consistent with the Khan & Watts (2009) & LaFond and Watts (2008) papers. It is expected since for firms to be classified as more conservative, they need to have a high C-score and low G-score.

In addition to this correlation between the C-score and G-score, there is also a significant and positive correlation between the earnings and clawback variable. This gives an early indication that the theory used in this paper for the introduction of clawbacks, that the odds of having a clawback in place when there is a higher chance of executive opportunism (higher earnings), holds.

Finally, there is a significant and positive correlation between the clawback and conservatism variables. This is a careful precursor for the main hypothesis and research question of the paper.

6. Results

To support the supposed positive correlation between conservatism and clawbacks, it is necessary to run regressions. The results for the first hypothesis are shown in table 6. The most important coefficient is marked in bold.

Table 6: OLS regression for the effect of conservatism on clawbacks

Panel A: Test for the effect of conservatism (C-score) on clawbacks	
Variable	Coefficient
C-score	**-0.017***
	(-3.19)
Size	0.083***
	(11.92)
Leverage	0.224***
	(4.01)
Sales growth	-0.000
	(-0.49)
R&D expense	-0.012***
	(-2.94)
Constant	-0.030***
	(-3.07)
Controls and year & industry fixed effects	Yes
Observations	8,766
Adjusted R^2	24.18%
Panel B: Test for the effect of conservatism (G-score) on clawbacks	
Variable	Coefficient
G-score	**0.112***
	(2.38)
Size	0.085***
	(11.54)
Leverage	0.213***
	(3.77)
Sales growth	-0.000
	(-0.49)
R&D expense	-0.12***
	(-2.94)
Constant	-0.310***
	(-3.16)
Controls and year & industry fixed effects	Yes
Observations	8,766
Adjusted R^2	24.18%

Table 6 (continued)

Panel C: Test for the effect of conservatism (sum of the C- & G-score) on clawbacks

Variable	Coefficient
Sum of C- & G-score	**0.006**
	(0.86)
Size	0.081***
	(11.67)
Leverage	0.222***
	(3.90)
Sales growth	-0.000
	(-0.48)
R&D expense	-0.012***
	(-2.92)
Constant	-0.286***
	(-2.95)
Controls and year & industry fixed effects	Yes
Observations	8,766
Adjusted R^2	24.14%

Table 6 reports the results of the test for the effect of conservatism on clawbacks. Panel A, contains the results for conservatism proxied by the C-score. Panel B, the results for conservatism proxied by the G-score. And Panel C, shows the results for conservatism proxied by the sum of the C- & G-score. T-values are in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

Panel A, shows the results of the OLS regression of the *C-score* on the *clawback* variable. The coefficient is negative and significant. This indicates that clawbacks and conservatism are substitutes in restricting executive opportunism rather than complements that strengthen each other. It means that this result hints at an opposite relation compared to the relation presumed in hypothesis one (where an expectation of complements is formed). This hypothesis was established in this fashion because according to previous literature, conservatism and clawbacks on their own, seem to restrict executive opportunism. To understand why the hypothesis is rejected, it is necessary to come back to the definition of the *C-score*. The *C-score* is an estimate of the timeliness of negative news. Where a higher C-score signals 'accelerated reporting' of negative news and therefore increased conditional conservatism. Because of this more conservative reporting, the need for clawbacks might be reduced and this could be an explanation of the contradictory results (compared to the hypothesis) that were found.

In Panel B, the results of the OLS regression of the *G-score* on the *clawback* variable are shown. Here the coefficient takes the opposite direction compared to the *C-score*. The coefficient is positive and significant. This again suggests a substitutive instead of a

complementary relation. It further rejects hypothesis one. To understand the possible reasons for this, it is required to explore the *G-score*. The *G-score* is a measure of the timeliness of good news. Where a higher *G-score* signals 'accelerated reporting' of good news. Because of the asymmetric recognition assumption of conservatism, a lower *G-score*, represents a more conservative firm. Firms that are more reluctant in reporting good news, will have to pay less compensation to their executives (as compensation/bonusses, are generally based on the performance of a company). Therefore, there could be a diminished probability of having a clawback in place, because the risk of improper excessive compensation is lower.

The final regression shown in table 6, is the OLS regression of the *sum of the C- & G-score* on the *clawback* variable. Since this coefficient is insignificant, it is not possible to get a useful interpretation.

Regarding the control variables, almost all coefficients are significant, meaning that they help in making sure that the actual effect of conservatism on clawbacks is investigated. S*ize* and *leverage*, both have a positive sign, which implies that when firms are bigger or have a higher leverage, it increases the chance of them having a clawback in place. For *size*, the consideration made in the methodology, was that bigger firms might have stronger clawbacks because of the higher stakes, whilst it could be weaker because of increased monitoring. The results however show that the first explanation prevails in this sample. *Leverage,* had a similar consideration, where agency problems as a result of highly levered firms, could require firms to implement a stronger clawback. On the other hand, the higher pressure from the lenders, could lead to less thought out decisions, which could result in a higher degree of CEO opportunism. Based on the sign of the and magnitude of the *leverage* coefficient, it is fair to assume that the former argument dominates the latter. R*&D expense*, on the contrary, has a negative sign, therefore, firms with a higher expense on R&D have a lower chance of having a clawback in place. This is reversed to what was supposed in the methodology, hence questioning the use of firms in the sample of R&D expenses to engage in earnings management. Only the control variable *Sales growth* is insignificant and equal to 0, this means that in potential future research. This variable can be removed from the regression.

Finally, the adjusted R^2 shows that the regression model explains respectively 24.18; 24.17 & 24.14% of the variation in clawbacks.

To investigate the second hypothesis, the effect of firm size on the relation between conservatism and clawbacks, a second group of regressions was run. The results of these regressions are shown in table 7 on the next page. Similar to table 6, the most important coefficients are marked in bold.

In Panel A of table 7, which shows the results of the OLS regression of the *C-score*, both the coefficient of the *C-score*, *small firm* as well as the interaction variable between the two *(C-score * small firm)* are significant. This means that it is possible to interpret this variable on the basis of the interpretation table that was presented in the methodology (table 1). Since the coefficient of the interaction variable is positive and smaller than *C-score*, the relation between conservatism and clawbacks is weaker complementary for smaller firms compared to larger firms. The hypothesis which belongs to this second string of tests suggested a stronger complementary relation between clawbacks and conservatism for smaller firms. The reason for this supposition was the lower amount of monitoring and disclosures, and the resulting higher degree of information asymmetry for small firms. The results of hypothesis one however already showed for control variable *size* that monitoring does not have an influence, as strong as expected. Therefore, the increased stakes for larger firms will most likely have prevailed with regards to this hypothesis. Important to note is that even though firms with a *size* smaller than the median are classified as small, they are still Russel 3000 firms which means that they are by no means negligible. Therefore, a bigger sample with a larger variety of firms, could result in a different outcome for this hypothesis.

For both the *G-score* as well as the *sum of the C- & G-score* the interaction variable is not significant. This implicates that it is not possible to interpret the coefficient of Panel B & Panel C.

Similar to table 6, all control variables bar one are significant. The reasoning behind the positive sign of *leverage* is the same as for hypothesis one. Agency problems as a result of the increased leverage in firms, put pressure on firms to implement clawbacks. The negative sign of *R&D* expense suggests that this expense item is not used (or at least not considered so, by the people who take the decisions with regards to implementing a clawback or not) to engage in earnings management. The variable sales growth, which is insignificant and has a coefficient close to zero, can be removed in future research.

The adjusted R^2 denotes that the regression model shown in table 7 explains respectively 21.44; 21.63 & 21.58% of the variation in clawbacks.

Table 7: OLS regression for the effect of conservatism on clawbacks, small firms compared to big firms

Panel A: Test for the effect of conservatism (C-score) on clawbacks conditional on being a small firm

Variable	Coefficient
C-score	**0.019*****
	(3.28)
Small firm	-0.216***
	(-9.21)
C-score * Small firm	**0.017****
	(2.37)
Leverage	0.249***
	(4.40)
Sales growth	-0.000
	(-0.62)
R&D expense	-0.013***
	(-3.19)
Constant	0.431***
	(3.83)
Controls and year & industry fixed effects	Yes
Observations	8,766
Adjusted R^2	21.44%

Panel B: Test for the effect of conservatism (G-score) on clawbacks conditional on being a small firm

Variable	Coefficient
G-score	**-0.027*****
	(-4.60)
Small firm	-0.192***
	(-8.10)
G-score * Small firm	**-0.005**
	(-1.28)
Leverage	0.275***
	(4.82)
Sales growth	-0.000
	(-0.60)
R&D expense	-0.13***
	(-3.16)
Constant	0.414***
	(3.82)
Controls and year & industry fixed effects	Yes
Observations	8,766
Adjusted R^2	21.63%

Table 7 (continued)

Panel C: Test for the effect of conservatism (Sum of the C- & G-score) on clawbacks conditional on being a small firm

Variable	Coefficient
Sum of C- & G-score	**-0.035*****
	(-4.39)
Small firm	-0.198***
	(-8.60)
Sum of C-score & G-score * Small firm	**-0.004**
	(-1.07)
Leverage	0.278***
	(4.81)
Sales growth	-0.000
	(-0.61)
R&D expense	-0.013***
	(-3.23)
Constant	0.419***
	(3.81)
Controls and year & industry fixed effects	Yes
Observations	8,766
Adjusted R^2	21.58%

Table 7 reports the results of the test for the effect of conservatism conditional on being a small firm on clawbacks. Panel A, contains the results for conservatism proxied by the C-score. Panel B, the results for conservatism proxied by the G-score. And Panel C, shows the results for conservatism proxied by the sum of the C- & G-score. T-values are in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level.

7. Conclusion

In this study, two hypotheses were used to help getting an answer to the following: research question:

"What is the relation between clawbacks and conservative accounting, do they act as substitutes or complements?"

The first hypothesis was lined up to check the primal relation between the variables clawbacks & (accounting) conservatism. It was formulated in the following way:

H1: Clawbacks and accounting conservatism act as complements in restricting executive opportunism.

The hypothesis was tested by performing three regressions on clawbacks. One for the *C-score*, one for the *G-score* and finally one for the *sum of the C- & G-score*. For the *C-score* and *G-score*, the results indicated that clawbacks and conservatism are substitutes in restricting executive opportunism rather than complements. The coefficient of the *sum of the C- & G-score* was insignificant and therefore not interpretable. Altogether, this leads to the rejection of hypothesis one and the suggestion that they are substitutes, but this would have to be further examined.

Hypothesis 2 delves deeper in the relation between the two variables by checking the effect of a small or a large firm. This hypothesis was formulated in the following manner:

H2: There is a significantly stronger complementary relation between clawbacks and accounting conservatism for smaller firms compared to larger firms.

To test for hypothesis two, again three regression were ran with the *C-score*, *G-score* and *sum of C- & G-score* as proxies for conservatism. The difference compared to question one was the introduction of an interaction variable for *small firm* and *conservatism*. Important to note is that this regression does not give an answer to the question whether clawbacks and conservatism are substitutes, rather it shows the relation between these variables conditional on being a small firm. I.e. finding a significantly stronger substitutionary relation for smaller firms does not mean that there is a substitutionary relation between clawbacks and conservatism. This makes the results that were found in the regressions of hypothesis two, a weaker complementary relation between clawbacks and conservatism for smaller firms compared to larger firms, do not contradict hypothesis one. Rather it only illustrates that the relation is stronger substitutionary for larger firms compared to smaller firms. Therefore, hypothesis two can be

rejected and there is a suggestion that smaller firms have a lower complementary relation in comparison to larger firms.

Based on the results of the two hypotheses, it is now possible to give an answer to the research question. Because of the substitutionary relation found in hypothesis one, this paper answers the research question in the sense that it presumes a substitutionary relation between clawbacks and accounting conservatism. The second hypothesis tried to specify this relation for smaller firms compared to larger firms. As mentioned in the last paragraph however, the result found there only suggested a weaker complementary relationship for smaller firms compared to larger firms.

In terms of social relevance, the results that there is a suggestion of a substitutionary relation between clawbacks and accounting conservatism, means that regulators and firms can focus on either one of the two. Considering it is often costly to implement either a clawback or conservatism measures, it allows for stakeholders to focus on what can benefit them the most in restricting executive opportunism.

What this paper added concerning scientific relevance, is that it is one of the first papers that looks at the combination of clawbacks and accounting conservatism, other papers look at just one of the two. The finding of a substitutionary relation poses an opportunity for researchers to analyse whether clawbacks or accounting conservatism is more effective in restricting executive opportunism.

As mentioned in the methodology section, the variable used for *clawback* was simply an indicator variable which was one for a firm with a clawback in place and zero for a firm without a clawback. It is however questionable whether there is a bigger difference between a firm with a very weak clawback and no clawback compared to a firm with a strong clawback and a firm with a weak clawback.

Another limitation of this paper, is the fact that for clawbacks, only data was available for Russel 3000 firms. This means that for the second hypothesis, firms were classified as small firms when their *size* was smaller than the median *size*. However, as these firms are Russel 3000 firms, they can still be considered as big firms. If there was more data on clawbacks available, it would be possible to include firms which are actually small which could improve the external validity of the results.

Finally, all regression models used in this paper have an adjusted-R^2 score between 20 and 25% which shows that only a quarter of the variation in the dependent variable is explained by the independent variables. This is another weakness/limitation of this paper which could be improved by adding more control variables to the model.

For future research, this paper showed the existence of a substitutionary relation between clawbacks and accounting conservatism. Therefore, it is suggested to do research into the most effective of the two executive opportunism restricting measures. The social relevance further presented that firms would like to implement the measure that benefits them the most. Further research could also focus on what firms would profit the most from which measure. Lastly, the limitations of this paper could be eliminated by extending the clawback variable to include clawback strength, increase the sample size and add more control variables to increase the explanatory power.

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Appendix

Appendix A Variable Definitions

Variable	Description [Compustat Mnemonics]
C-score	A measure of the incremental timeliness of negative/bad news. For the calculation, see the methodology section.
G-score	A measure of the incremental timeliness of positive/good news. For the calculation, see the methodology section
Earnings	Earnings calculated as earnings before extraordinary items [ib] scaled by lagged market value of equity (MVE_{t-1}).
Return	Stock return calculated as the closing price in year t [prcc_c] minus the closing price in year t-1 [l.prcc_c], divided by the closing price in year t-1 [l.prcc_c].
Size	Firm size calculated at the natural logarithm of the market value of equity (MVE).
Leverage	Leverage calculated as long term debt [dltt] plus debt in current liabilities [dlc], divided by total book assets [at].
Sales growth	One-year growth in total sales calculated as the sales in year t [sale] divided by the lagged sales [l.sale], minus one.
R&D expense	R&D expense calculated as research and development expenditures [xrd] divided by total sales [sale].
MVE	Market value of equity at calendar year-end, equal to the common shares outstanding [csho] times the calendar year-end closing price [prcc_c].
M/B ratio	Market-to-book ratio calculated by the market value of common equity (MVE) divided by the total common equity [ceq].