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Determinants of CSR disclosure:
The effect of unobservable manager characteristics on the
firms' CSR disclosure.

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Abstract

I examine in this study the effect of the unobservable manager characteristics on the CSR disclosure level of US firms. Examples of these unobservable manager characteristics are the manager style, ability and personality. This study captures the unobservable manager characteristics by using manager fixed effects. I use the spell fixed effects approach to measure the influence of these manager fixed effects. The spell fixed effects capture the combined manager and firm fixed effects. I show in this study that the manager fixed effects have a significant effect on the explanatory power (adjusted R^2) of the regression models in this study. This means that the unobservable manager characteristics have a significant influence on the firms' CSR disclosure level. These findings hold after additional tests to verify the robustness of the findings. Additionally, this study finds that the CSR performance is an important determinant of the firms' CSR disclosure level. An increase in CSR performance leads to a higher CSR disclosure level. This is in line with the findings of a previous study. Taken together, this study demonstrates that unobservable manager characteristics play a significant role in explaining the firms' CSR disclosure level.

Keywords: Corporate Social responsibility (CSR), CSR disclosure, manager fixed effects, spell fixed effects, unobservable manager characteristics,

Preface

This thesis has been written as final step in completing the Master Accounting & Control at the Erasmus University. The reason for writing a thesis related to Corporate Social Responsibility is my interest in this topic. I believe that the relevance of this topic will increase in the near future.

During the writing process, I have experienced this as a very interesting but challenging subject. However, I felt support during the whole process of my supervisor. He gave me good feedback during the whole process. His professionalism and knowledge about this topic helped me a lot in tackling the difficulties and constructing the final version of this research, which you are reading now. Therefore, I would like to thank my thesis supervisor, Nico Lehmann.

Table of Contents

Tables	4
Appendices	4
1. Introduction	5
2. Theoretical Framework	7
2.1 <i>Prior literature on CSR disclosures</i>	7
2.1.1 <i>Firm level</i>	8
2.1.2 <i>Industry level</i>	8
2.1.3 <i>Manager level</i>	10
2.1.4 <i>Consolidation and research gap</i>	11
2.2 <i>Hypothesis development</i>	11
3. Methodology	13
3.1 <i>Regression design</i>	13
3.2 <i>Variable measurement</i>	14
3.2.1 <i>Dependent variable: CSR disclosure</i>	14
3.2.2 <i>Main interest</i>	14
3.2.3 <i>Control variables</i>	15
3.3 <i>Data and sample selection</i>	16
4. Empirical Results	18
4.1 <i>Spell test</i>	18
4.2 <i>Vuong test on the final sample</i>	21
4.3 <i>Additional findings</i>	22
5. Robustness check	23
5.1 <i>Spell fixed effects approach</i>	23
5.2 <i>Connectedness sample</i>	23
5.2.1 <i>Regressions on the connectedness sample</i>	24
5.2.2 <i>Relative importance of the determinants on the CSR disclosure</i>	26
5.2.3 <i>Vuong test on the connectedness sample</i>	28
5.2.4 <i>Additional findings</i>	28
6. Conclusion	29
7. Limitations and further research	30
Bibliography	32
Appendices	35

Tables

Table 1: Sample selection	17
Table 2: Descriptive statistics - Final sample	18
Table 3: Determinants of CSR disclosure - Full sample regressions.....	19
Table 4: Likelihood ratio test of Vuong (1989) - Final sample	22
Table 5: Determinants of CSR disclosure - Connectedness sample regressions	25
Table 6: Relative impact of the determinants on the variation in CSRDISCLOSURE (Shapley decomposition).....	27
Table 7: Likelihood ratio test of Vuong (1989) - Connectedness sample.....	28

Appendices

Appendix A: Equations of the regression models.....	35
Appendix B: Definition of variables.....	36
Appendix C: Descriptive statistics - Mean comparison Pre-selected sample and Final sample.....	38
Appendix D: Managerial mobility	40
Appendix E: Descriptive statistics - Connectedness sample.....	41

1. Introduction

This study focuses on the relation between the manager and Corporate Social Responsibility (CSR) disclosures. CSR is the continuous commitment of a firm to act in an ethical way and commit to the economic development of the firm, while they also put effort in improving the quality of life of its employees and their families, the local population, and society (Carroll, 1999). In other words, CSR aims at reducing the impact of a firm on the environment and the society (Rondinelli & Berry, 2000).

Information is being revealed to stakeholders to inform them about the firms' activities and results. When talking about CSR disclosure, it's about the communication of information regarding CSR activities, CSR risks, CSR policies and other CSR-related topics (Christensen, Hail, & Leuz, 2018). CSR disclosures have a voluntary nature, however they can be strategically or triggered by the market (Kitzmueller & Shimshack, 2012). The way how this information is being disclosed differ between firms. Some firms disclose CSR information in the annual report and other firms publish a separate CSR report (Christensen, Hail, & Leuz, 2018). One reason why firms disclose about their CSR is to inform potential investors. Investors can use this CSR related information to make predictions about the firms' future cash flows or it can be used to evaluate the firms' risks (Dhaliwal, Li, Tsang, & Yang, 2011). According to Christensen et al. (2018), CSR disclosures are used to influence the view on the firms' impact on the society.

This study investigates the relation between managers and the Corporate Social Responsibility (CSR) disclosure level of firms. Previous studies show that managers do have a big influence on the disclosure level of a firm (Song & Thakor, 2006); (Goldman & Slezak, 2006). However, there are only few studies that examine the relation between managers and the firms' CSR disclosure level. Lewis et al. (2014) is one of those studies. They found in their study that the tenure and education of a manager drive the CSR disclosure level (Lewis, Walls, & Dowell, 2014). Tenure and education are examples of manager characteristics that are 'observable' and easy to measure. However, there are also manager characteristics that are 'unobservable' like manager style, ability and personality (Graham, Li, & Qiu, 2012). These are examples of time-invariant manager characteristics. Time-invariant means that those characteristics do not or slowly change over time. The goal of this study is to investigate the effect of the unobservable time-invariant manager heterogeneities on the firms' CSR disclosure. There are only a few studies that investigate the role of unobservable manager characteristics. Graham et al. (2012) conducted one of these studies. They found in

their study a significant influence of unobservable manager characteristics on executive compensation. These results give the inspiration for this study. It is interesting to examine if these unobservable manager characteristics also show a significant influence on the firms' CSR disclosure level. Therefore, this study tries to answer the following research question: *“Do unobservable manager characteristics influence the firms' Corporate Social Responsibility disclosure level?”*. To answer this research question, I test the following hypothesis in this study: *“Unobservable manager characteristics have a significant influence on the firms' CSR disclosure level.”*.

I capture the unobservable manager characteristics by using manager fixed effects. These manager fixed effects capture the time-invariant manager characteristics. The spell fixed effects approach from the study of Graham et al. (2012) makes it possible to include the manager fixed effects to the regression model. The idea behind the spell fixed effects is that they capture the combined effect of the manager and firm fixed effects by using a dummy variable for each unique firm-manager combination. I combine this approach with the likelihood ratio test of Vuong (1989) to be able to draw conclusions about the significance of the manager fixed effects. The Vuong method compares two models and shows which one is better in explaining the variation in the dependent variable. Using this method makes it possible to draw conclusions about the significance of the change in explanatory power between two regression models.

Using these methods, I find that the manager fixed effects play a significant role in explaining the variation in the CSR disclosure level. The significance of the manager fixed effects is found by using the Vuong likelihood ratio test. I use this test to compare two identical models where the only difference is that one model includes the spell fixed effects and one model only firm fixed effect. The Vuong test indicates that the model including the spell fixed effect is significantly better in explaining the variation in the CSR disclosure level. This means that the manager fixed effect, which are included in the spell fixed effects, play a significant role in explaining the firms' CSR disclosure level.

Additionally, I implement additional tests to verify the robustness of the findings of the main method I described above. To test the robustness of these findings I use the connectedness sample. The variation in the connectedness sample is lower than in the sample I use for the main method. This makes it possible to use the Shapley decomposition. The Shapley decomposition measures the relative impact of the determinants in the regression model on

the variation in the dependent variable. I use this model to compare two identical models where the only difference is that one model includes the spell fixed effects and one model only firm fixed effect. This method shows that the relative impact of the spell fixed effects is 7.5% higher than the firm fixed effect. This indicates that the manager fixed effects play a role in explaining the variation in the CSR disclosure level. Moreover, the Vuong likelihood ratio test gives the same result when using the connectedness sample. Namely, it indicates that the model including the spell fixed effect is significantly better in explaining the variation in the CSR disclosure level. This means that the manager fixed effects play a significant role in explaining the variation in the CSR disclosure level. These findings are in line with the findings of the main method.

A final contribution of this research is that the CSR performance has a significant positive effect on the firms' CSR disclosure level. This finding is in line with the results of the study by Dhaliwal et al. (2011).

My study contributes to the accounting literature by documenting that the unobservable manager characteristics significantly affect the firms' CSR disclosure level. This finding is in line with my expectations based on previous research.

2. Theoretical Framework

2.1 Prior literature on CSR disclosures

CSR is the continuous commitment of a firm to act in an ethical way and commit to the economic development of the firm, while they also put effort in improving the quality of life of its employees and their families, the local population, and society (Carroll, 1999). CSR focuses on reducing the impact of a firm on the environment and the society (Rondinelli & Berry, 2000).

CSR disclosure is about the communication of information regarding CSR activities, CSR risks, CSR policies and other CSR-related topics (Christensen, Hail, & Leuz, 2018). CSR disclosures are voluntary, however they can be used for strategical purpose or forced by the market (Kitzmueller & Shimshack, 2012). These disclosures differ between firms. Some firms disclose CSR information in the annual report and other firms publish a stand-alone CSR report (Christensen, Hail, & Leuz, 2018). One reason for firms to disclose about their CSR performance is that this information could be relevant to investors. Investors can use this information to make predictions about the firms' future cash flows or it can be used to evaluate the firms' risks (Dhaliwal, Li, Tsang, & Yang, 2011). According to Christensen et

al. (2018), CSR disclosures are used to influence the view on the firms' impact on the society.

Prior research provides evidence on various determinants of CSR disclosures, which broadly fall into three categories (e.g. (Graham, Li, & Qiu, 2012); (Dhaliwal, Li, Tsang, & Yang, 2011))

2.1.1 Firm level

Previous studies show that there are some firm characteristics that drive the level of CSR disclosures. One of the main papers on this topic is the one of Dhaliwal et al. (2011). They found in their study various firm characteristics that influence the firms CSR disclosure level. One of these characteristics is the firms CSR performance. The CSR performance has a significant positive effect on the voluntary CSR disclosure level (Dhaliwal, Li, Tsang, & Yang, 2011). Furthermore, they found that firms using CSR disclosures are significantly larger than firms that do not voluntarily disclose this information. In other words, firm size has a significantly positive effect on the CSR disclosure level. They argue that the bigger firms have more motivating factors to disclose about their CSR performance, like financial resources and public pressure. (Lang & Lundholm, 1993). This finding is supported by other studies (e.g. (Hahn & Kühnen, 2013); (Reverte, 2009)). Various studies explained this relation by the fact that large firms have greater public scrutiny. This incentivizes these firms to provide CSR disclosures (e.g. (Cormier & Magnan, 2003); (Thorne, Mahoney, & Manetti, 2014); (Giannarakis, 2014)). To compliment to this finding, Giannarakis (2014) found in his study a positive relation between board size and the CSR disclosure level of a firm.

Other studies also found a positive relation between the firms' profitability and the CSR disclosure level (Hahn & Kühnen, 2013); (Gamerschlag, Möller, & Verbeeten, 2011). However, there is mixed evidence on this point because Reverte (2009) did not find a significant relation. As a final point, Dhaliwal et al. (2011) found a significant negative relation between the firms' liquidity and the CSR disclosure level. This means that firms with a higher liquidity do have a lower CSR disclosure level. Based on Dhaliwal et al. (2011), it can be said that firm size, liquidity and CSR performance positively drive the CSR disclosure level. These findings are supported by various other studies (e.g. (Hahn & Kühnen, 2013); (Reverte, 2009); (Giannarakis, 2014)).

2.1.2 Industry level

Besides the firm characteristics, there are also industry characteristics that drive the CSR

disclosure level. There are various studies that investigated the relation between industry effects and the CSR disclosure level (e.g. (Dhaliwal, Li, Tsang, & Yang, 2011); (Byrd, Hickman, Baker, & Cohanier, 2007); (Grougiou, Dedoulis, & Leventis, 2016)). Dhaliwal et al. (2011) included a couple of industry related characteristics in their study as determinants of the CSR disclosure level. One of these characteristics is litigation risk. Skinner (1997) states that firms with a high litigation risk are more likely to provide voluntary reports to mitigate potential trials. Dhaliwal et al. (2011) found in their study a positive relationship between the litigation risk and the CSR disclosure level. However, they did not find a significant relation. Other studies also investigated this relation. In one of those studies, they found that external events like accidents or environmental catastrophes increase firms' CSR disclosures (e.g. (Patten, 1992)). Patten (1992) found that after the Exxon oil spill in 1989, there was a significant increase in CSR disclosures of firms in the oil industry other than Exxon. This also happened after other catastrophes like the BP oil spill in 2010 and the Fukushima nuclear accident in 2011 (Christensen, Hail, & Leuz, 2018). Furthermore, controversial industries tend to have a higher level of CSR disclosures compared to non-controversial firms. Firms in controversial industries such as tobacco, alcohol and firearms disclose more about their CSR actions than firms in non-controversial industries like supermarkets (Byrd, Hickman, Baker, & Cohanier, 2007); (Grougiou, Dedoulis, & Leventis, 2016). Grougiou et al. (2016) found evidence that CSR disclosures reduce the litigation risk of firms that act within controversial industries.

Moreover, Dhaliwal et al. (2011) also included another industry characteristic as a determinant of the CSR disclosure level. They included a proxy for firms that operate on emerging markets. In other words, firms with a global focus (Dhaliwal, Li, Tsang, & Yang, 2011). Dhaliwal et al. (2011) found a significant positive relation between firms that operate on emerging markets and the CSR disclosure level. They explain this relation by the fact that these firms have a greater pressure to meet the desired level of social performance to be able to expand their business (Dhaliwal, Li, Tsang, & Yang, 2011).

Based on the findings of Dhaliwal et al. (2011), it can be said that litigation risk and the fact if a firm operates on an emerging market, positively drive the CSR disclosure level. Where Dhaliwal et al. (2011) did not find a significant effect of the litigation risk, other studies did find this significant positive relation (e.g. (Patten, 1992); (Byrd, Hickman, Baker, & Cohanier, 2007); (Grougiou, Dedoulis, & Leventis, 2016)).

2.1.3 Manager level

The aim of this study is to investigate the role of the Chief Executive Officer (CEO) regarding the CSR disclosure. The determinants of the CSR disclosure on the manager level will be divided into two parts. The first part looks at the power of a CEO within the firm. The second part elaborates on the specific characteristics of a manager.

CEO power

Previous studies show that the power of a CEO influences the firms' CSR disclosure level. According to Höllerer (2013), ownership is positively related to the CSR disclosure level. Moreover, this finding is supported by other studies that found that a high manager ownership is associated with a lower level of environmental disclosures (e.g. (Cormier & Magnan, 1999); (Cormier, Magnan, & Van Velthoven, 2005)). Ownership is explained as the percentage of the total shares of the firm that are owned by the CEO.

Furthermore, firms where the CEO is also the chairman are likely to disclose less information about their CSR activities, this lowers the transparency of the firm (Giannarakis, G. (2014)). Additionally, Muttakin et al. (2018) found a negative relation between CEO power and CSR disclosure level. They measure CEO power based on CEO tenure, CEO ownership, CEO duality¹ and if the CEO is appointed by family members (Muttakin, Khan, & Mihret, 2018). This is in line with the findings of Hollerer (2013), Cormier et al. (1999) and Cormier et al. (2005). Furthermore, the study of Samaha et al. (2015) supports the negative relation between CEO duality and the CSR disclosure level. Based on these finding, it can be stated that CEO power has a negative influence on the CSR disclosure level.

CEO characteristics

This study mainly focuses on the manager characteristics. There has been done some studies on the relation between manager characteristics and CSR reporting. One of these studies is the one by Lewis et al. (2014) which found an association between the CEO characteristics tenure and education, and the level of environmental disclosures. They found that newly appointed CEOs are significantly more likely to disclose environmental information (Lewis, Walls, & Dowell, 2014).

Furthermore, Lewis et al. (2014) found in their study that managers that have an MBA of legal degree are more likely to disclose about their environmental performance. This is in line with the findings of Bamber et al. (2010) regarding the positive relation between education

¹ CEO duality is the phenomenon that a manager is the CEO and the chair of the board of directors. (Samaha, Khlif, & Hussainey, 2015)

and the voluntary disclosure level. They state that education is related to the managers' voluntary disclosure style (Bamber, Jiang, & Wang, 2010).

2.1.4 Consolidation and research gap

There has been done various studies on the determinants of the CSR disclosure level. However, when looking at the determinants on the manager level, most of these characteristics are observable. In other words, they can be easily observed and/or measured. According to Graham et al. (2012), there are also manager characteristics that are 'unobservable' like manager style, ability and personality. In their study they found that these unobservable manager characteristics have a significant influence on the executive compensation. Bertrand and Schoar (2003) state that unobservable manager characteristics also influence other corporate activities. Previous studies mainly aim at the observable determinants of the CSR disclosure level. It is also interesting to investigate the influence of the unobservable manager characteristics as a determinant of the CSR disclosure level. This has not been done in the past. Therefore, this study focuses on this research.

There are various methods to measure these unobservable manager characteristics. One of them is by using surveys or psychological assessments. However, using these methods will be hard using them on a large sample size. As this study focuses on the determinants of the CSR disclosure level by using a large US sample, it will be difficult to use surveys or psychological assessments. To capture the unobservable manager characteristics, a research design called manager fixed effects will be used. This method makes it possible to capture the time-invariant manager characteristics which includes the unobservable manager characteristics.

2.2 Hypothesis development

The unobservable manager characteristics that are mentioned by Graham et al. (2012) are the style, ability and personality of a manager. Bertrand and Schoar (2003) state that these unobservable characteristics influence various corporate activities. The goal of this study is to investigate if these unobservable manager characteristics also influence the CSR disclosure level. The way how CEOs manage a firm differs between CEOs. In the previous paragraphs, some characteristics have been explained that influence the way managers disclose about the firms' CSR. Graham et al. (2012) describe three unobservable manager characteristics in their study. The ones they describe are manager style, ability and personality.

Manager style

Manager style is one of the unobservable manager characteristics that Graham et al. (2012) mention in their study. Bamber et al. (2010) find in their study that there are some observable manager demographic characteristics such as military experience, functional career track, M.B.A education and age explain a part of the managers' disclosure style. Peters and Romi (2015) support the finding of Bamber et al. (2010) regarding the functional career track. They found in their study that a managers' CSR expertise positively influences the voluntary disclosure level. However, a big part of the manager style is created by unobservable experience, values and traits (Bamber, Jiang, & Wang, 2010). In other words, Bamber et al. (2010) state that the unobservable part of the manager style has an influence on the firms' disclosure style.

Manager ability

Manager ability is another unobservable manager characteristics that is mentioned by Graham et al. (2012). The ability of a manager is partly explained by their age and partly by their tenure (Bochkay, Chychyla, & Nanda, 2018). These are observable characteristics. These two characteristics have an influence on the experience of a CEO (Bochkay, Chychyla, & Nanda, 2018). Bochkay et al. (2018) state that managers with a lower ability are more likely to voluntary disclose information to their stakeholders. In other words, younger CEO are more optimistic in their voluntary disclosures than CEOs with more experience (Bochkay, Chychyla, & Nanda, 2018). Other aspects that drive the ability of a manager are for example the unobservable pre knowledge and career track of a CEO (Bochkay, Chychyla, & Nanda, 2018). Based on these findings, it can be stated that a part of the manager ability is created by observable characteristics like age and tenure. Besides that, there is also a part of the ability that is created by the unobservable career and pre knowledge of a CEO. This part of the ability is hard to observe and measure. Additionally, according to Bochkay et al. (2018) there is a negative relation between manager ability and the voluntary disclosure level (Bochkay, Chychyla, & Nanda, 2018).

Manager personality

Another unobservable manager characteristic that Graham et al. (2012) mention in their paper is the personality of a manager. There has been done some studies on the relation between manager personality and firm disclosures. Marquez-illescas et al. (2019) look in their study to the tone of firm disclosures. They find that CEOs with a narcissistic personality are more likely to bias the qualitative disclosure upwards. The level of bias is moderated by the age of

the CEO (Marquez-Illescas, Zebedee, & Zhou, 2019). As already said, manager style, ability and personality are closely related. According to Pervin (2003), values and traits are part of someone's personality. The study by Bamber et al. (2010) shows that the manager style is also partly explained by the managers' values and traits. Based on the commonalities, it can be said that the personality of a manager is closely related to the style of the manager.

Hypothesis

In the previous paragraphs, it has been explained that the unobservable manager characteristics from the study by Graham et al. (2012)² significantly influence the firms' voluntary disclosure level. According to Kitzmueller et al. (2012), CSR disclosures are an example of voluntary disclosures. Based on these findings, I expect that unobservable manager characteristics have a significant influence on the firms' CSR disclosure level. This is captured in the following hypothesis: *H1: Unobservable manager characteristics have a significant influence on the firms' CSR disclosure level.*

3. Methodology

3.1 Regression design

To address H1, I run the regressions the regression models that are documented in Appendix A. I run these regressions (Equations 1-4) at firm-year level (without firm and time subscripts). These regression models aim to capture the effect of the unobservable manager characteristics on the firms' CSR disclosure. These regression models contain different combinations of fixed effects. The first regression model (*Equation 1*) only contains year fixed effects. The second regression model (*Equation 2*) includes year and firm fixed effects. The third regression model (*Equation 3*) includes year and manager fixed effects. The final regression model (*Equation 4*) includes year and spell fixed effects. The spell fixed effects method captures the combined effect of the manager and firm fixed effects. The spell fixed effects are captured by including a dummy variable *FIRMMANAGER*. This is a dummy variable for each unique firm-manager combination (Graham, Li, & Qiu, 2012). These regression models are based on the study by Graham et al. (2012).

By using these four different regression models, I am able to compare their explanatory power (adjusted-R²). The adjusted-R² indicates how much of the variation in the dependent variable (CSR disclosure) is explained by the independent variable(s). The higher the adjusted-R², the better the model explains the dependent variable. To address H1, I compute

² Manager ability, manager style and manager personality.

the likelihood ratio developed by Vuong (1989) to test if the change in explanatory power (adjusted R^2) between the regression models is significant. This makes it possible to compare these models based on their explanatory power. The idea behind the likelihood ratio test is that it tests if the models are equally close in explaining the real data (null hypothesis), against the alternative hypothesis that one of the models is better in explaining the real data (Dechow, 1994). The benefit of the Vuong likelihood ratio test is, that it compared to other models, captures which model is better in explaining the real data (e.g. (Vuong, 1989); (Dechow, 1994). This method is often used in accounting research (e.g. (Dechow, 1994); (McInnis, Yu, & Yust, 2018); (Ball, Kothari, & Robin, 2000). The combination of using the spell fixed effects and the Vuong likelihood ratio test is the main research approach in this study.

The use of this method in this study makes it possible to investigate if the effect of the unobservable manager characteristics on the firms' CSR disclosure level is significant or not. To accept H1, the difference in explanatory power (adjusted R^2) between **Equation 2** and **Equation 4** has to be significant. The difference between these two regression models is the inclusion of the manager fixed effects in **Equation 4** which are captured in the spell fixed effects. I run **Equation 1** and **Equation 3** to compare if the increase in adjusted R^2 between the four regression models show the same pattern as in the study by Graham et al. (2012). The result of the study by Graham et al. (2012) are used as a benchmark in this study. Furthermore, I implement additional tests to check the robustness of the findings from the main research approach. These additional tests are explained in section 5.

3.2 Variable measurement

3.2.1 Dependent variable: CSR disclosure

CSR disclosure (*CSRDISCLOSURE*) is the dependent variable in this study, and it captures the firms' level of CSR disclosure. The CSR disclosure variable is computed based on five variables from the ASSET4 database. CSR disclosure score assigns 1 point for each of the following four ASSET4 categories: CSR report available (1), GRI report or OECD report available (2), CSR report covers global activities (3), and CSR report is audited (4). Score ranges between 0 (low levels of CSR disclosures) and 4 (high levels of CSR disclosures) (Fiechter, Hitz, & Lehmann, 2020).

3.2.2 Main interest

The main independent variable in this study is the FIRMMANAGER dummy. This dummy variable indicates all the unique firm j and manager i combinations. This dummy variable is

used in the spell method. Graham et al. (2012) use three different methods in their study to capture the manager fixed effects. Due to sample limitations, I get small samples when using the AKM and MDV approach. Therefore, the main method that I use in this study is the spell method. The idea behind the spell method is that you create a dummy variable for each unique pair of firm j and manager i . This dummy variable is called FIRM_MANAGER and is used as a fixed effect for the unique firm-manager combinations. The benefit of this approach is that it is relatively easy to execute because it can be used on the final sample by using standard fixed effect methods. The idea behind this method is that it controls for firm and manager fixed effects to reduce bias as result of omitted variables (Graham, Li, & Qiu, 2012). A limitation of this method is that it is not possible to separate the firm and manager fixed effects. However, the likelihood ratio of Vuong (1989) makes it possible to test if the change in explanatory power (adjusted R^2) between the regression models is significant. By using this method, I am able to capture the difference in adjusted R^2 between the model without manager fixed effects (*Equation 2*) and the model including the manager fixed effects (*Equation 4*). A significant increase in the adjusted R^2 between *Equation 2* and *Equation 4* indicates that the unobservable manager characteristics play a significant role in explaining the firms' CSR disclosure level.

3.2.3 Control variables

Firm specific variables

As already mentioned in the theory section, there are various determinants of CSR disclosures. One category of these determinants is the (observable) firm characteristics. Dhaliwal et al. (2011) focused in their study on these determinants. Based on their study, I use the following firm characteristics. The first one I use is the firm size (*SIZE*). I measure the *SIZE* as the natural logarithm of the market value of the equity. Another firm specific variable that I use in this study is litigation risk (*LITIGATION*). I compute *LITIGATION* as an indicator variable giving a 1 to the firms that operate in industries with a high litigation risk³ and 0 otherwise (Dhaliwal, Li, Tsang, & Yang, 2011); (Francis, Philbrick, & Schipper, 1994); (Matsumoto, 2002). This dummy variable for the litigation risk will be left out of the regression which include firm fixed effects. The reason for this is that the litigation risk is a time-invariant firm characteristic that is captured in the firm fixed effects. The inclusion of the firm fixed effects result in the drop of time-invariant firm characteristics like

³ SIC codes of 2833 - 2836, 3570 - 3577, 3600 - 3674, 5200 - 5961, and 7370. (Francis, Philbrick, & Schipper, 1994); (Matsumoto, 2002).

LITIGATION. Furthermore, I include the return on assets (*ROA*). The *ROA* is measured by dividing the net income by the total assets. I also control for the firm's opportunity to grow by using the Tobin's Q (*TOBINQ*). I measure *TOBINQ* by taking the market value of the common equity plus the book value of the preferred stock plus the book value of long-term debt and the current liabilities, divided by the book value of total assets. (Dhaliwal, Li, Tsang, & Yang, 2011). Dhaliwal et al. (2011) found in their study also a positive relation between the CSR performance and the CSR disclosure level. Therefore, I control for the effect of CSR performance (*CSR_PERFORMANCE*) on the CSR disclosure level. I also add the debt ratio, also known as the leverage (*LEV*). I calculate the *LEV* by taking the ratio of the total debts divided by the total assets. (Dhaliwal, Li, Tsang, & Yang, 2011). Last, I include a measure for the liquidity (*LIQUIDITY*). The *LIQUIDITY* is measured as the ratio of the total number of shares traded in the year divided by the total number of shares outstanding at the end of the year. (Dhaliwal, Li, Tsang, & Yang, 2011). All the variable definitions can be found in Appendix B.

Manager specific variables

I use some variables that capture some manager characteristics to control for the (observable) manager effect on the CSR disclosure level. I include a measure for CEO ownership (*OWNERSHIP*) to control for the CEO power on the CSR disclosure. According to Höllerer (2013), ownership is positively related to the CSR disclosure. *OWNERSHIP* is measured by taking the percentage of shares owned by the CEO. Furthermore, I also include a measure for the CEO tenure (*TENURE*) in weeks. Lewis et al. (2014) found in their study that new CEOs (short tenure) are more likely to voluntarily disclose their environmental performance. I also add the observable manager characteristics age (*AGE*) and gender (*GENDER*) to control for these effects. *GENDER* is a dummy variable, giving a 1 in case of a male and 0 for females. This dummy variable for gender will be left out of the regression which include manager fixed effects. The reason for this is that *GENDER* is a time-invariant manager characteristic that is captured in the manager fixed effects. The inclusion of the manager fixed effects result in the drop of the dummy variable *GENDER*. This approach regarding the dummy variable for *GENDER* is comparable to the study by Graham et al. (2012). All the variable definitions can be found in Appendix B.

3.3 Data and sample selection

This study focuses on the US market. The sample that is used for this study consist of matched Compustat-Execucomp-Asset4 panel (US) dataset from 2010 to 2019. The reason

for taking this period is the increase in coverage of US firms in 2010 of the Asset4 database. The firms in the sample are listed on the NYSE or Nasdaq. This dataset contains the relevant CEO information that is covered in the Execucomp database. This data is merged with the firms' accounting variables from the Compustat database. Finally, the CSR disclosure level and CSR performance variables are added to the dataset. This CSR information is extracted from the Asset4 database by Thomson Reuters. The pre-selected sample, after excluding the firms in the banking, insurance and utilities industries, consist of 3530 managers that worked for 1584 firms. This can be seen in Table 1. However, the pre-selected sample contains a lot of missing data regarding the CSR disclosure scores. To be able to draw conclusion about the relation of the manager fixed effects on the CSR disclosure, I deleted the firm-year observations without CSR disclosure scores. The final sample I use for this study consists of 1957 managers that worked for 1063 firms during the period of 2010-2019. The final sample has 10169 firm-year observations. This can be seen in Table 1. The descriptive statistics of the final sample are documented in Table 2. The mean comparison between the pre-selected sample and the final sample can be found in Appendix C.

Furthermore, I also use the connectedness sample to perform a robustness test on the results from the spell method. The connectedness sample is based on the AKM method by Abowd, Kramarz and Margolis (1999). Table 1 shows that the connectedness sample consists of 58

Table 1: Sample selection

<i>Selection criteria</i>	Managers	Firms	Firm-year
Start: Execucomp	5026	3030	44872
<i>Less observations:</i>			
Without Compustat data	(1496)	(1446)	(10420)
Pre-selected sample	3530	1584	34452
Without ASSET4 data	(1541)	(521)	(24164)
With duplicates	(32)	0	(137)
Final sample	1957	1063	10169
<i>Less observations:</i>			
Without connection according to the AKM method	(1899)	(1035)	(9881)
Connectedness Sample	58	28	270

Note: This table shows the sample selection of the *Pre-selected sample*, *Final sample* and the *Connectedness Sample*.

Table 2: Descriptive statistics - Final sample

<i>VARIABLE</i>	<i>N</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>AGE</i>	10169	57.143	6.897	37	75
<i>TENURE</i>	10169	657.758	417.98	12.571	2139.286
<i>OWNERSHIP</i>	10169	1.698	4.485	0	28.503
<i>GENDER</i>	10169	0.961	0.195	0	1
<i>ROA</i>	10169	0.05	0.096	-1.997	0.842
<i>LEV</i>	10169	0.563	0.264	0	4.35
<i>TOBINQ</i>	10169	0.851	0.186	-0.162	3.878
<i>SIZE</i>	10169	8.144	1.636	2.7	13.185
<i>CSRDISCLOSURE</i>	10169	0.915	1.411	0	4
<i>CSR_PERFORMANCE</i>	10169	58.459	54.197	0	191.41
<i>LIQUIDITY</i>	10169	22.585	15.091	0	95.106
<i>LITIGATION</i>	10169	0.21	0.407	0	1

Note: The sample in this Descriptive table consists out of 10169 Firm-year observations of the *Final sample* over the period 2010 to 2019. The variable descriptions can be found in Appendix B.

managers that worked for 28 firms during the period of 2010-2019. The idea behind the connectedness sample is that you divide all managers into groups. You start with randomly selecting one manager (A). After that, you add all the managers (B, C, etc.) that worked in the same firms (during the sample period) as manager (A) to this group. Next, you add all the managers who worked in the same firms as the managers (B, C, etc.). One group is formed when it is not possible to add a new connected manager. You have to continue these steps until there are no managers left and all the managers are divided into groups (Graham, Li, & Qiu, 2012); (Abowd, Kramarz, & Margolis, 1999). An important criterion is that every group needs at least one manager that worked in at least two different firms within the sample and sample period. This ensures that every group contains at least two different firm.

4. Empirical Results

4.1 Spell test

In this section, I analyse the effect of the unobservable manager characteristics on the CSR disclosure. Table 3 shows the analysis of the determinants of CSR disclosure using the Spell method. Columns (1) to (4) contain the regression models which I described in Equation 1 to 4 (see Appendix A). Table 3 shows the results of these regression models using the final sample.

Table 3: Determinants of CSR disclosure - Full sample regressions

	<i>Dependent variable:</i>			
	<i>CSRDISCLOSURE</i>			
	Pooled OLS Regression (without manager and firm fixed effects)	Firm fixed effects (without manager fixed effects)	Manager fixed effects (without firm fixed effects)	Firm and manager fixed effects (Spell fixed effects)
	(1)	(2)	(3)	(4)
<i>Constant</i>	-0.133 (0.114)	2.106*** (0.299)	-0.990 (0.620)	-0.279 (0.973)
<i>SIZE</i>	0.014* (0.008)	-0.081*** (0.017)	-0.067*** (0.019)	-0.065*** (0.019)
<i>OWNERSHIP</i>	0.003 (0.002)	0.010** (0.004)	-0.006 (0.007)	-0.005 (0.007)
<i>TENURE</i>	-0.0001*** (0.00002)	0.00002 (0.00004)	-0.001*** (0.0002)	-0.001*** (0.0004)
<i>AGE</i>	0.002 (0.001)	-0.002 (0.002)	0.034** (0.015)	0.057*** (0.021)
<i>GENDER1</i>	-0.005 (0.043)	0.106* (0.060)		
<i>LITIGATION1</i>	-0.147*** (0.021)		-0.240 (0.836)	
<i>ROA</i>	-0.178* (0.094)	0.114 (0.098)	0.172* (0.103)	0.166 (0.103)
<i>TOBINQ</i>	-0.212*** (0.049)	-0.140 (0.117)	0.022 (0.128)	-0.073 (0.131)
<i>LEV</i>	0.055 (0.033)	-0.095 (0.061)	-0.052 (0.069)	-0.039 (0.070)
<i>LIQUIDITY</i>	-0.004*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)
<i>CSR_PERFORMANCE</i>	0.021*** (0.0002)	0.016*** (0.0004)	0.016*** (0.0004)	0.015*** (0.0004)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	10,169	10,169	10,169	10,169
Adjusted R ²	0.644	0.800	0.826	0.827
Degrees of Freedom	10148	9087	8193	8180

Note: This table presents the regression results of the determinants of CSR disclosure, using the Final sample. The dependent variable is *CSRDISCLOSURE*. (1) is a pooled OLS regression without firm or manager fixed effects; (2) is the regression including firm fixed effects; (3) is the regression including manager fixed effects; and (4) is a spell fixed effects regression including both firm and manager fixed effects. The detailed variable descriptions can be found in Appendix B. Significance level at 10%, 5%, and 1% levels is indicated by *, **, and *** respectively.

Regression model (1) shows the results of the pooled OLS regression without manager and firm fixed effects. It can be seen that the adjusted R² for this regression is 64.4%.

In the second regression model (2), I add the firm fixed effects to control for time-invariant differences between firms. It can be seen that the variable *LITIGATION* is missing in regression models (2) and (4). As earlier indicated, the reason for this is that time-invariant variables drop from the model in the presence of the respective fixed effects. The variable

LITIGATION is time-invariant firm effect and is therefore captured in the firm fixed effects. In regression model (2), using the firm fixed effects, the adjusted R^2 increases to 80.0%. Based on this result, it can be said that unobservable heterogeneity of a firm has a substantial role in explaining the CSR disclosure. This increase in explanatory power is in line with the findings of Graham et al. (2012), who state that this increase indicates that the firm fixed effects play a significant role in explaining the dependent variable.

In regression model (3) the manager fixed effects are added to the regression instead of the firm fixed effects. It can be seen that the variable *GENDER* is missing in regression models (3) and (4). The reason for this is the same as for the variable *LITIGATION*. When adding the manager fixed effects in regression (3) (instead of the firm fixed effects), the adjusted R^2 increased to 82.6%. This is an absolute increase of the adjusted R^2 of 18.2% compared to the pooled OLS regression model (1), which does not include manager and firm fixed effects. Furthermore, the adjusted R^2 of regression model (3) has an absolute increase of 2.6% compared to regression model (2) including only firm fixed effects. The increase in adjusted R^2 suggests that the unobservable manager characteristics (like manager personality, ability, style, etc.) play a role in determining CSR disclosure. However, the increase in adjusted R^2 is lower compared to the findings of Graham et al. (2012) who found an increase of 10% between models (2) and (3). It can be concluded that the manager fixed effects in this regression model have a lower explanatory power in determining the dependent variable. On the other hand, the results in this study show the same pattern when looking at the increase in adjusted R^2 between the four regression models as in the study by Graham et al. (2012). The only difference is the magnitude of the increase between the four regression models. This could be the result of the high increase in explanatory power when adding the firm fixed effects to regression model (2). The higher the explanatory power of the firm fixed effects, the relatively lower the difference between the adjusted R^2 's of regression models (2) and (3). Besides that, the study of Graham et al. (2012) use the manger compensation as dependent variable. The adjusted R^2 (explanatory power) indicates how much of the variation of the dependent variable is explained by the regression model. Therefore, the difference in magnitude of the increase in explanatory power is also influenced by the type of dependent variable. Graham et al. found in their study that their dependent variable (manager compensation) is for around 50 percent explained by manager fixed effects, compared to around 5 percent by firm fixed effects (using AKM approach). This indicates the relative high increase in explanatory power between model (2) and (3) in the study by Graham et al. (2012). Later on in this study, I dive deeper into the difference in magnitude of the increase in

explanatory power between the regression models.

Finally, in regression model (4), I include a dummy variable that is called *FIRMMANAGER*. This variable captures the combined manager-firm fixed effects using the spell fixed effect approach. The results show that the adjusted R^2 between regression models (3) and (4) slightly increases to 82.7%. Comparing the results of regression model (2) and (4), show that including the manager fixed effects, which are captured in the spell fixed effects, show an absolute increase of 2.7% of the adjusted R^2 . This indicates that the manager fixed effects play a role in explaining the variation in *CSRDISCLOSURE*. The relatively small increase in adjusted R^2 between regression model (3) and (4) is in line with the findings of Graham et al. (2012). Only the magnitude of the increase is lower in this study.

Based on these results it can be said that the combined manager and firm fixed effects cause a significant increase in the adjusted R^2 ⁴, which means that these time-invariant firm and manager characteristic play an important role in explaining the CSR disclosure. Furthermore, based on the comparison of the adjusted R^2 between regression model (2) and (4) it can be stated that the manager fixed effects play a role in explaining the variation in the CSR disclosure level. However, this study focuses on finding the significance of the standalone effect of the unobservable manager characteristics on the CSR disclosure level, which are captured in the manager fixed effects. Therefore, it is important to find the impact of the manager fixed effects on the variation in *CSRDISCLOSURE*. One way to investigate this effect is the use of the likelihood ratio test of Vuong (1989).

4.2 Vuong test on the final sample

In the previous section I conducted the regression models on the final sample using different fixed effects models. These models are documented in Table 3. This table shows that the explanatory power (adjusted R^2) of the regression models increase between the models. To address H1, I compute the likelihood ratio test developed by Vuong (1989) to test if the models are equally close in explaining the real data (null hypothesis), against the alternative hypothesis that one of the models is closer in explaining the real data (Dechow, 1994). In other words, the Vuong test makes it possible to test if the regression models significantly differ in explaining the variation in the dependent variable. Besides that, this approach also indicates which model is better in explaining the dependent variable and if the difference between the models is significant or not.

⁴ The absolute increase between regression model (1) and regression model (4) is 18.3%. This is a substantial part of the total explanatory power (adjusted R^2) of regression model (4).

To test H1, I compare the explanatory power (adjusted R²) between regression model (2) and (4). The reason for choosing these two models is because the difference in adjusted R² between these two models is attributable to the inclusion of manager fixed effects in regression model (4) using the spell fixed effects approach. Regression model (2) only includes firm fixed effects and regression model (4) includes the spell fixed effects, which is a combination of the manager and firm fixed effects. Table 4 shows the results of the likelihood ratio test of Vuong. In the last column of this table, it can be seen that the absolute difference of the adjusted R² between regression model (2) and (4) is 2.7%. The table shows that the Vuong Z-statistic for this difference is 18.23 and that it is significant at the 1%-level. This indicates that regression model (4) is significantly better than regression model (2) in explaining the variation in *CSRDISCLOSURE*. From this, I conclude that the manager fixed effects have a significant influence in determining the firms' CSR disclosure level. Considering the above findings, H1 is supported that the unobservable manager characteristics have a significant influence in explaining the firms' CSR disclosure level. Furthermore, Table 4 shows that including the manager and firm fixed effects in regression models (2), (3) and (4) results in models which are significantly better in explaining the variation in *CSRDISCLOSURE*, compared to regression model (1) which only contains year fixed effects.

Table 4: Likelihood ratio test of Vuong (1989) - Final sample

Regression model						
Adj. R ² model (a)	(1)	64.4	(1)	64.4	(1)	64.4
Adj. R ² model (b)	(2)	80.0	(3)	82.6	(4)	82.7
Diff [(b)-(a)]		15.6		18.2		18.3
Vuong Z-statistic		34.68***		40.68***		40.74***
						18.23***

Note: This table shows the results of the likelihood ratio test of Vuong (1989) on the final sample. Significance level at 10%, 5%, and 1% levels is indicated by *, ** and, *** respectively.

4.3 Additional findings

Additionally, regression model (4) in Table 3 shows some additional findings. The results show a significant negative relation of the *LIQUIDITY* on the CSR disclosure when taking into account the manager and firm fixed effects. This finding means that when the firms' liquidity increases the CSR disclosure level decreases. Furthermore, regression model (4) also shows that managers of which the tenure increases result in a lower CSR disclosure level. These findings are in line with the findings of Lewis et al. (2014) and Dhaliwal et al.

(2011). Furthermore, *CSR_PERFORMANCE* has a significant positive effect on the CSR disclosure level. This means that firms that perform good when it comes to CSR are more likely to have a higher CSR disclosure level. This finding is also in line with the findings of Dhaliwal et al. (2011).

5. Robustness check

5.1 Spell fixed effects approach

In this section I describe the limitations of the spell method and the sample selection.

First, I dive into the limitations regarding the sample selection. When looking at Table 1 it can be seen that a lot of observations from the pre-selected sample are lost when merging the Execucomp-Compustat data with the ASSET4 data which contains the dependent variable of this study, the CSR disclosure variable (*CSRDISCLOSURE*). The reason for this is that the coverage of the ASSET4 database is relatively low compared to the Compustat and Execucomp databases. This results, after merging the Execucomp-Compustat sample with the ASSET4 data, in a loss of 24164 firm-year observations. These observations contain 1541 different manager and 521 different firms. Due to the importance of the CSR data from the ASSET4 database, I deleted these observations and continue the study with the final sample. Limitations of this relatively small sample are that a small sample size lowers the validity of this study. The smaller the sample size the less precise the results are which lowers the generalisability of the study.

Furthermore, the spell method itself also has a limitation that should be addressed. As described earlier, this study focuses on the effect of the unobservable manager characteristics on the firms' CSR disclosure. However, when using the spell method, it is not possible to capture the relative importance of the manager fixed effects on the CSR disclosure. The spell method uses a dummy variable for each unique firm-manager combination. This dummy variable captures the combined firm-manager fixed effects. Therefore, it is not possible to separate the manager and firm fixed effects. However, the likelihood ratio test of Vuong makes it possible to draw conclusion about the significance of the increase in the explanatory power when including the manager fixed effects.

5.2 Connectedness sample

In this section, I implement some additional tests to verify the robustness of the findings using the main research approach in section 4. To test the robustness of these findings I use the connectedness sample. The connectedness sample is constructed based on the AKM

method. The connectedness sample only contains managers that are connected with at least one manager that moved between firms within the sample. This lowers the variation within the connectedness sample compared to the final sample.

Appendix D panel A shows the number of movers for the pre-selected sample. This is the sample before adding the CSR data from the ASSET4 database. Panel A shows that the pre-selected sample contains 200 movers in total. However, after adding the ASSET4 data only 14 movers are left in the connectedness sample. This is documented in Appendix D. In total, the connectedness sample contains 58 managers who worked in 28 different firms between 2010 and 2019. This is documented in Table 1. The descriptive statistics of the connectedness sample can be found in Appendix E. The connectedness sample has a total of 270 firm-year observations.

Graham et al. (2012) use the connectedness sample to be able to capture the relative impact of the determinants on the variation in the dependent variable. By using this method, I am able to capture the relative impact of the spell fixed effects on the CSR disclosure. The reduced variation in this sample makes it possible to use the Shapley decomposition. The Shapley decomposition is a method that can be used to capture the relative impact of different determinants in explaining the variation in the dependent variable. In other words, the Shapley decomposition measures for each determinant in the regression model what impact they have on the adjusted R^2 . This impact is measured in percentages of the total adjusted R^2 of the regression model. This approach makes it possible to capture the relative importance of the spell fixed effects, including the manager fixed effects, on the dependent variable *CSRDISCLOSURE*.

5.2.1 Regressions on the connectedness sample

Table 5 shows the results of the regression models on the connectedness sample. These regression models are the same as I used on the final sample. Columns (1) to (4) contain different fixed effect combinations to the connectedness sample.

Regression model (1) shows the results of the pooled OLS regression without manager and firm fixed effects. It can be seen that the adjusted R^2 for this regression is 56.1%.

In the second regression model (2), I add the firm fixed effects to control for unobservable differences between firms. In this regression using the firm fixed effects, the adjusted R^2 increases to 72.1%. This result shows the same pattern as regression model (2) in Table 3. Based on this result, it can be said that unobservable heterogeneity of a firm has a substantial effect in explaining the CSR disclosure when using the results of Graham et al. (2012) as the

Table 5: Determinants of CSR disclosure - Connectedness sample regressions

	<i>Dependent variable:</i>			
	<i>CSRDISCLOSURE</i>			
	Pooled OLS Regression (without manager and firm fixed effects)	Firm fixed effects (without manager fixed effects)	Manager fixed effects (without firm fixed effects)	Firm and manager fixed effects (Spell fixed effects)
	(1)	(2)	(3)	(4)
<i>Constant</i>	0.099 (0.804)	2.582 (1.887)	-3.073 (5.116)	2.491 (5.560)
<i>SIZE</i>	-0.034 (0.054)	-0.094 (0.153)	-0.384*** (0.114)	-0.341* (0.195)
<i>OWNERSHIP</i>	0.016 (0.032)	-0.075 (0.055)	0.052 (0.049)	-0.053 (0.095)
<i>TENURE</i>	-0.0004** (0.0002)	0.001*** (0.0003)	-0.0003 (0.0004)	-0.001 (0.001)
<i>AGE</i>	0.011 (0.010)	-0.027** (0.013)	0.079 (0.067)	0.024 (0.074)
<i>GENDER1</i>	-0.059 (0.271)	-0.112 (0.324)		
<i>LITIGATION1</i>	-0.453** (0.205)		-0.956 (0.918)	
<i>ROA</i>	0.920 (1.068)	1.375 (1.205)	2.201* (1.275)	1.577 (1.445)
<i>TOBINQ</i>	0.325 (0.333)	-0.768 (0.952)	0.895* (0.540)	-0.307 (1.112)
<i>LEV</i>	-0.429* (0.223)	-0.166 (0.430)	-0.351 (0.368)	-0.260 (0.536)
<i>LIQUIDITY</i>	-0.011** (0.005)	0.002 (0.008)	-0.007 (0.006)	-0.004 (0.009)
<i>CSR_PERFORMANCE</i>	0.022*** (0.002)	0.025*** (0.003)	0.019*** (0.002)	0.024*** (0.003)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	270	270	270	270
Adjusted R ²	0.561	0.721	0.769	0.774
Degrees of Freedom	249	223	193	181

Note: This table presents the regression results on the determinants CSR disclosure, using the Connectedness sample. The dependent variable is CSRDISCLOSURE. (1) is a pooled OLS regression without firm or manager fixed effects; (2) is the regression including firm fixed effects; (3) is the regression including manager fixed effects; and (4) is a spell fixed effects regression including both firm and manager fixed effects. The detailed variable descriptions can be found in Appendix B. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

benchmark.

In regression model (3) the manager fixed effects are added tot the regression instead of the firm fixed effects. When adding the manager fixed effects in regression model (3) (instead of the firm fixed effects), the adjusted R² increases to 76.9%. This is an absolute increase of the adjusted R² of 20.8% compared to the pooled OLS regression (1), which does not include

manager and firm fixed effects. Furthermore, the adjusted R^2 of regression model (3) has an absolute increase of 4.8% compared to regression model (2) including only firm fixed effects. This increase is inline with the findings of Graham et al. (2012), who also found an increase in adjusted R^2 when adding the manager fixed effects to the model instead of the firm fixed effects. The only difference is that the magnitude of the increase in their study is higher (9%). However, as already explained, the dependent variable in the study by Graham et al. (2012) focuses on the manager compensation which, based on their findings, is mostly explained by the manager fixed effects. That could be a potential explanation for the relative higher increase in the study by Graham et al. (2012) compared to this study.

Finally, in regression model (4) I include manager and firm fixed effects using the spell fixed effects approach. It can be seen that the adjusted R^2 between regression model (3) and (4) slightly increases to 77.4%. Comparing the results of regression model (2) and (4) show that including the manager fixed effects, which are captured in the spell fixed effects, show an absolute increase of 5.3% of the adjusted R^2 . This indicates the importance of the manager fixed effects in explaining the variation in *CSRDISCLOSURE*.

As you can see, the results between the four regressions models in Table 3 and Table 5 show the same pattern when looking at the (increase in) adjusted R^2 between regression models 1 to 4. Additionally, this pattern is in line with the results of Graham et al. (2012), the only difference is the magnitude of the increase. The difference in magnitude can be explained by the difference in dependent variable, as I described earlier.

5.2.2 Relative importance of the determinants on the CSR disclosure

The connectedness sample makes it possible to capture the relative importance of the different determinants I use in this study. I use the Shapley decomposition to capture the relative impact of the various determinants on the CSR disclosure level. This method is also used in the study by Wells (2020) and is in line with the method that is used by Graham et al. (2012).

Table 6 shows the Shapley decomposition of regression (2), (3) and (4) of Table 5. Table 6 shows that 53.7% of the total explained variation of 77.4% in *CSRDISCLOSURE* is explained by the spell fixed effects in regression model (4). This indicates that the combined manager and firm fixed effects have a substantial influence on the variation in *CSRDISCLOSURE*.

Furthermore, Table 6 documents that 46.2% of the total explained variation of 72.1% in *CSRDISCLOSURE* is explained by the firm fixed effects in regression model (2). This shows that the firm fixed effects have a substantial influence on the variation in *CSRDISCLOSURE*

when excluding the manager fixed effects. Additionally, Table 6 shows that 50.9% of the total explained variation of 76.9% in *CSRDISCLOSURE* is explained by the manager fixed effects in regression model (3). Based on these results you could say that the manager fixed effects have a relatively higher impact on the variation in *CSRDISCLOSURE* than the firm fixed effects. However, we need to keep in mind that the relative impact of the manager fixed effects includes also firm fixed effects and vice versa. Using this method, it is not possible to say if the manager fixed effects have a significant influence on the variation in the CSR disclosure level.

On the other hand, I conclude that the manager fixed effects have a higher impact on the variation in *CSRDISCLOSURE* than the firm fixed effects. This is shown by the relatively higher explanatory power of regression model (3) compared to model (2) in Table 5.

Additionally, Table 6 supports this finding by showing a higher percentage of total explained variation in *CSRDISCLOSURE* in regression model (3) by the manager fixed effects compared to the firm fixed effects in regression model (2).

Furthermore, Table 6 shows that the spell fixed effects in regression model (4) have a relative impact on the variation in *CSRDISCLOSURE* of 53.7%. This is higher than the firm fixed effects in regression model (2), which have a relative impact on the variation in *CSRDISCLOSURE* of 46.2%. The change in relative impact on the variation in *CSRDISCLOSURE* between these two regression models is attributable to the inclusion of the manager fixed effects by using the spell fixed effects approach. In other words, including

Table 6: Relative impact of the determinants on the variation in *CSRDISCLOSURE* (Shapley decomposition)

Determinant	Percentage of the regression model adjusted R ² attributable to each determinant		
	<i>Model (2)</i>	<i>Model (3)</i>	<i>Model (4)</i>
<i>Time variant determinants and year fixed effects</i>	53.8%	49.1%	46.3%
<i>Firm fixed effects</i>	46.2%		
<i>Manager fixed effects</i>		50.9%	
<i>Spell fixed effects</i>			53.7%

Note: This table shows the results of the Shapley decomposition on the results of regression model (2), (3) and (4) of Table 5.

manager fixed effects in regression model (4) results in an increase of 7.5% of the relative impact on the variation in *CSRDISLCOSURE*.

5.2.3 Vuong test on the connectedness sample

In section 5.2.1, I analyse the regression models on the connectedness sample using different fixed effects models. These models are documented in Table 5. To test the robustness of the findings on the final sample using the spell method, I compute the likelihood ratio test of Vuong (1989). This is the same method as I used for the main approach of this study using the final sample. The only difference is that I use the connectedness sample for the robustness check.

I test the robustness of the findings by comparing the results of the Vuong likelihood ratio test between the final sample and the connectedness sample. Table 7 shows the results of the likelihood ratio test of Vuong. In the last column of this table, it can be seen that the absolute difference of the adjusted R² between regression model (2) and (4) is 5.3%. The Vuong Z-statistic for this difference is 4.74 and it is significant at the 1%-level. This indicates that regression model (4) is significantly better than regression model (2) in explaining the variation in *CSRDISCLOSURE*. This finding is in line with the findings on the final sample. From this, I conclude that the manager fixed effects have a significant influence in determining the firms' CSR disclosure level. This again supports H1 that the unobservable manager characteristics have a significant influence in explaining the firms' CSR disclosure level.

Table 7: Likelihood ratio test of Vuong (1989) - Connectedness sample

Regression model						
Adj. R ² model (a)	(1)	56.1	(1)	56.1	(1)	56.1
Adj. R ² model (b)	(2)	72.1	(3)	76.9	(4)	77.4
Diff [(b)-(a)]		16		20.8		21.3
Vuong Z-statistic		5.37***		6.86***		7.29***

Note: The table shows the results of the likelihood ratio test of Vuong (1989) on the connectedness sample. Significance level at 10%, 5%, and 1% levels is indicated by *, ** and, *** respectively.

5.2.4 Additional findings

Furthermore, Table 5 shows that the CSR performance is significantly positive related with the CSR disclosure in all four regression models. This finding is in line with the earlier findings using the spell fixed effects on the final sample. Furthermore, the significant positive

relation between CSR performance and the CSR disclosure level is supported by the results of the Shapley decomposition. These results show that 34.4% of the total explained variation of 77.4% in *CSRDISCLOSURE* is explained by the firms' CSR performance (untabulated). This indicates that CSR performance is an important determinant of CSR disclosure. This is in line with the findings of Dhaliwal et al. (2011).

6. Conclusion

This study tries to answer the question: “*Do unobservable manager characteristics influence the firms' Corporate Social Responsibility disclosure level?*”. The unobservable manager characteristics are time-invariant, which means that they do not or slowly change over time. These characteristics are captured in the manager fixed effects. One method to capture manager fixed effects is by using the spell fixed effects approach. This approach combines the manager and firm fixed effects in a dummy variable. I used this approach to capture the combined effect of the manager and firm fixed effects. However, in contrast to the time-variant determinants that are used in this study, is it not possible to measure the significance of the fixed effects by running a linear regression. Therefore, I focused on the explanatory power, also known as the adjusted R^2 , of the regression models. The adjusted R^2 indicates how much of the variation in dependent variable is explained by the regression model. After running the regression models on the CSR disclosure level, I find that the manager fixed effects play a significant role in explaining the variation in the CSR disclosure level. The significance of the manager fixed effects is found by using the Vuong likelihood ratio test. I used this test to compare two identical models where the only difference is that one model includes the spell fixed effects and one model only firm fixed effect. The Vuong test indicates that the model including the spell fixed effects is significantly better in explaining the variation in the CSR disclosure level. This means that the manager fixed effect, which are included in the spell fixed effects, play a significant role in explaining the firms' CSR disclosure level. Considering the above findings, H1 of this research is supported, which means that unobservable manager characteristics have a significant influence on the firms' CSR disclosure level.

Furthermore, I conducted additional tests to verify the robustness of the findings on the final sample. To test the robustness of these findings I used the connectedness sample. The variation in the connectedness sample is lower than in the final sample that is used for the main method. This makes it possible to use the Shapley decomposition. The Shapley decomposition shows the relative impact of the determinants in the regression model on the

variation in the dependent variable. I used this model to compare two identical models where the only difference is that one model includes the spell fixed effects and one model only firm fixed effect. This method shows that the relative impact of the spell fixed effects is 7.5% higher than the firm fixed effect. This indicates that the manager fixed effects play a role in explaining the variation in the CSR disclosure level. Besides that, the Vuong likelihood ratio test gives the same result when using the connectedness sample. The likelihood ratio indicates that the model including the spell fixed effect is significantly better in explaining the variation in the CSR disclosure level. The results of the robustness check show identical results compared to the results of the main approach.

Based on these findings, H1 is supported. This means that the unobservable manager characteristics have a significant influence on the firms' CSR disclosure level.

Additionally, this study shows that the CSR performance is significantly positive related with the CSR disclosure level. This finding is in line with the results of the study by Dhaliwal et al. (2011). Besides that, the Shapley decomposition shows that one third of the variation in the CSR disclosure level is explained by the CSR performance. This indicates the importance of the CSR performance as a determinant of the CSR disclosure level.

7. Limitations and further research

This study has several limitations that might influence the results. First of all, the sample that is used for the main method (final sample) and for the robustness check (connectedness sample) are relatively small due to relatively low coverage of the ASSET4 database. This research would have been more valid and generalizable when using a larger sample. With the increasing importance of CSR, the ASSET4 database might increase their coverage in the future which will make this database more useful for this study in the future.

Furthermore, this study focuses on US firms that are listed on the NYSE and the Nasdaq. After merging the data of the three databases, only the relatively large firms remain in the sample. This can be seen by comparing the means of the pre-selected sample and the final sample (see Appendix C). This means that this study mainly focuses on larger firms. Therefore, the results could not be generalized to the entire US market. Besides that, the results should not be generalized to other countries as this study focuses only on the US market.

Moreover, this study focuses on the effect of the manager fixed effects on the variation (adjusted R^2) in CSR disclosure. A potential limitation of the adjusted R^2 is that it could be

too high as a result of overfitting. In this study, I use a lot of dummy variables to capture the manager and firm fixed effects. This could lead to overfitting of the model which could potentially inflate the value of the adjusted R^2 .

Furthermore, using the Vuong likelihood ratio test makes it possible to find if the increase in adjusted R^2 between two regression models is significant. The use of this method adds important results to this study. However, this method does not show if the significant effect is positive or negative. This is a limitation because it is not possible to conclude if the inclusion of the manager fixed effects (included in the spell fixed effects) results in a significant positive or negative influence on the CSR disclosure level.

Finally, the last limitation I want to bring forward is the fact that the manager fixed effects approach captures all the time-invariant manager characteristics. This study focuses on the unobservable firm manager characteristics which are also captured by the manager fixed effects. However, a characteristic like gender is also time-invariant but is observable. Therefore, the significant effect of the manager fixed effects on the CSR disclosure is not fully related to the unobservable manager characteristics. This is a major limitation of this study and the approach that I used.

Future research could build upon this study by looking at the relation between the manager and the CSR disclosure in other parts of the world. There are many studies in accounting research that show different results between continents. It would be interesting to see if the findings of this study hold when comparing them with the findings in other parts of the world. A potential factor that could influence the findings is the managers' culture. The culture could be considered as a time-invariant unobservable manager characteristic. Furthermore, as this study mainly focuses on bigger firms, it would be interesting to see if the results of this study hold when focusing on smaller firms.

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Appendices

Appendix A: Equations of the regression models

Equation 1 (without manager and firm fixed effects)

CSRDISCLOSURE

$$= \beta_0 + \beta_1 * \text{Firm specific variables} + \beta_2 * \text{Manager specific variables} \\ + \text{Year fixed effects} + \varepsilon$$

Equation 2 (without manager fixed effects)

CSRDISCLOSURE

$$= \beta_0 + \beta_1 * \text{Firm specific variables} + \beta_2 * \text{Manager specific variables} \\ + \text{Year fixed effects} + \text{Firm fixed effects} + \varepsilon$$

Equation 3 (without firm fixed effects)

CSRDISCLOSURE

$$= \beta_0 + \beta_1 * \text{Firm specific variables} + \beta_2 * \text{Manager specific variables} \\ + \text{Year fixed effects} + \text{Manager fixed effects} + \varepsilon$$

*Equation 4 (including spell fixed effects dummy variable **FIRMMANAGER**)*

CSRDISCLOSURE

$$= \beta_0 + \beta_1 * \text{Firm specific variables} + \beta_2 * \text{Manager specific variables} \\ + \text{Year fixed effects} + \text{FIRMMANAGER} + \varepsilon$$

Appendix B: Definition of variables

Variable	Description	Data source
<i>CSR Disclosures</i>		
CSRDISCLOSURE	The CSR disclosure variable is computed based on five variables from the Asset4 database. CSR disclosure score assigns 1 point for each of the following ASSET4 categories: CSR report available (1), GRI report <i>or</i> OECD report available (2), CSR report covers global activities (3), and CSR report is audited (4). Score ranges between 0 (low levels of CSR disclosures) and 4 (high levels of CSR disclosures) (Fiechter, Hitz, & Lehmann, 2020).	ASSET4
CSR_Report	Score 1 when CSR report is published, 0 otherwise (cgvsdp026).	ASSET4
GRI_Report	Score 1 when CSR report is compliant with GRI reporting guidelines, 0 otherwise (cgvsdp028).	ASSET4
OECD_Report	Score 1 when CSR report is compliant with OECD reporting guidelines for multinational enterprises, 0 otherwise (socodp013).	ASSET4
Global_Scope	Score 1 when CSR report covers global activities, 0 otherwise (cgvsdp029).	ASSET4
Assurance	Score 1 when CSR report is audited, 0 otherwise. (cgvsdp030)	ASSET4
<i>CSR Performance</i>		
CSR_PERFORMANCE	Based on the combined score of the Social score (soscore) and the Environmental score (enscore) from the ASSET4 database. (Fiechter, Hitz, & Lehmann, 2020).	ASSET4
LITIGATION	Indicator variable that equals 1 if the firm operates in an industry with a high-litigation risk. SIC codes of these industries are 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370. 0 otherwise (Dhaliwal, Li, Tsang, & Yang, 2011).	Compustat

Appendix B - Definition of variables (Continued)

Variable	Description	Source
ROA*	The ratio of the Net income (ni) divided by the total assets (at) (Dhaliwal, Li, Tsang, & Yang, 2011).	Compustat
TOBINQ*	Sum of the market value of common equity and the book value of preferred stock (PSKTL), book value of long-term debt (DLTT) and current liabilities (LCT) divided by the total assets (at) (Dhaliwal, Li, Tsang, & Yang, 2011).	Compustat
LEV*	Measured as the ratio of the total debt (DLTT + DLC) divided by total assets (at) (Dhaliwal, Li, Tsang, & Yang, 2011).	Compustat
LIQUIDITY*	Ratio of the number of shares traded to the total shares outstanding (Dhaliwal, Li, Tsang, & Yang, 2011).	Compustat
<i>Manager characteristics</i>		
OWNERSHIP*	Percentage of shares outstanding owned by the executive. In this case the CEO (Höllerer, 2013).	Execucomp
TENURE*	Number of weeks between the date the executive became CEO and the day the executive left as a CEO. Tenure for managers that are still CEO when collecting the data is measured using the date 31-12-2020 as the date the CEO left their position (Lewis, Walls, & Dowell, 2014).	Execucomp
GENDER	Dummy variable indicating 1 for males and 0 for females.	Execucomp
AGE*	Age measured in years.	Execucomp

*Winsorized at a 1% (99%) level.

Appendix C: Descriptive statistics - Mean comparison Pre-selected sample and Final sample

	PRE-SELECTED SAMPLE (N=34452)	FINAL SAMPLE (N=10169)	P-VALUE
<i>AGE</i>	54.690 (7.335)	57.143 (6.897)	< 0.001
<i>TENURE</i>	463.481 (357.721)	657.758 (417.980)	< 0.001
<i>OWNERSHIP</i>	0.951 (3.269)	1.698 (4.485)	< 0.001
<i>GENDER</i>	0.954 (0.209)	0.961 (0.195)	0.007
<i>ROA</i>	0.034 (0.257)	0.050 (0.096)	< 0.001
<i>LEV</i>	0.609 (0.278)	0.563 (0.264)	< 0.001
<i>TOBINQ</i>	0.774 (0.277)	0.851 (0.186)	< 0.001
<i>SIZE</i>	6.866 (2.310)	8.144 (1.636)	< 0.001
<i>CSRDISCLOSURE</i>	NA	0.915 (1.411)	
<i>CSR_PERFORMANCE</i>	NA	58.459 (54.197)	
<i>LIQUIDITY</i>	22.877 (17.054)	22.585 (15.091)	0.001
<i>LITIGATION</i>	0.291 (0.454)	0.210 (0.407)	< 0.001

Note: The Table shows the mean comparison of the determinants of CSR disclosure between the pre-selected sample and the final sample. The variable descriptions can be found in Appendix B.

In the table above I compare the means of the pre-selected sample and the final sample. From this table it can be seen that the difference in mean of almost all the variables that I use as a determinant of CSR disclosure significantly differ from zero between the pre-selected sample and the final sample. The difference between these two samples is, that the pre-selected sample contains a lot of firms that are not covered in the ASSET4 database. On the other hand, the final sample contains only firms that are covered in the ASSET4 database. This could be an explanation for the difference in means. For example, when looking to the variable *SIZE*, it can be seen that firms that are in the final sample (included in the ASSET4 database) are significantly larger than firms in the pre-selected sample. Dhaliwal et al. (2011) found in their study that firms which voluntary disclose about their CSR activities are significantly larger than firms that do not voluntary disclose this information. This could be one reason for the difference in mean values between these two samples. Besides that, there could also be other effects that influence what type of managers and firms are included in the ASSET4 database and which are not. Based on this comparison it can be said that the final

sample not completely represents the pre-selected sample. However, due to the data limitations regarding the CSR data it is not possible to change this phenomenon.

Appendix D: Managerial mobility

Panel A: Number of movers in the pre-selected sample

Mover	Number of firms the managers have been employed during 2010-2019	Number of managers	%
<i>No</i>	1	3320	94.05%
	Subtotal:	3320	94.05%
	2	198	5.61%
<i>Yes</i>	3	12	0.34%
	Subtotal:	210	5.95%
	Total:	3530	100.00%

Panel B: Number of movers in the final sample

Mover	Number of firms the managers have been employed during 2010-2019	Number of managers	%
<i>No</i>	1	1943	99.28%
	Subtotal:	1943	99.28%
	2	14	0.72%
<i>Yes</i>	3	0	0.00%
	Subtotal:	14	0.72%
	Total:	1957	100.00%

Note: This table shows the number of movers in the pre-selected sample and the final sample. The number of movers in the final sample are the same as in the connectedness sample.

Appendix E: Descriptive statistics - Connectedness sample

<i>VARIABLE</i>	<i>N</i>	<i>MEAN</i>	<i>STD. DEV.</i>	<i>MIN</i>	<i>MAX</i>
<i>AGE</i>	270	57.607	6.821	44	75
<i>TENURE</i>	270	573.8	478.094	21.708	2139.286
<i>OWNERSHIP</i>	270	0.812	2.106	0	14.579
<i>GENDER</i>	270	0.959	0.198	0	1
<i>ROA</i>	270	0.052	0.061	-0.189	0.261
<i>LEV</i>	270	0.623	0.257	0.032	2.075
<i>TOBINQ</i>	270	0.796	0.191	0.245	1.305
<i>SIZE</i>	270	8.788	1.315	6.136	11.578
<i>CSRDISCLOSURE</i>	270	1.033	1.286	0	4
<i>CSR_PERFORMANCE</i>	270	67.991	48.395	0	171.82
<i>LIQUIDITY</i>	270	21.883	13.005	4.929	81.455
<i>LITIGATION</i>	270	0.111	0.315	0	1

Note: The sample in this Descriptive table consists out of 270 Firm-year observations over the period 2010 to 2019. The sample that is used in this descriptive table is the *Connectedness Sample*. The variable descriptions can be found in Appendix B.