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Master Thesis

The US Market Effect of the Conflict Mineral Risk Disclosure due to the Dodd-Frank Act Section 1502

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Abstract

The purpose of this thesis is to examine the effect of the increased disclosure requirements of the Dodd-Frank Act Section 1502 on investors on the US market. This effect is measured by the change in information asymmetry expressed as the bid-ask spread and the change in the cost of capital expressed as the change in share turnover. Previous empirical literature describes decreasing effects of increased disclosures on the information asymmetry and bid-ask spread and even a decreasing effect on the cost of capital. By running several univariate and multivariate regressions on observations of both mining and non-mining firms around the periods of the Dodd-Frank Act Section 1502 becoming effective and the period around the announcement of the proposed executive orders of the Trump administration to change or even cancel the increased disclosure requirements of section 1502, this thesis investigates the effect of the increased disclosure requirements on the investors. The results show no significant effect of section 1502 becoming effective and the proposed executive orders to change or cancel the section, neither on the bid-ask spread nor on the cost of capital expressed as share turnover. This thesis attempts to expand the established empirical literature on the effect of increased disclosures on investors, especially for increased disclosure requirements contained in a regulation with a humanitarian objective.

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1.   Introduction

During the years between 1998 and 2012, six million people died in the Democratic Republic of Congo (DRC) due to armed conflicts among rebel militias (Seay). The people living in the DRC are feeling less safe than the year before, each year again. The Congolese army and other armed rebel militias in the DRC are committing horrific violations ruthlessly. This results in the fact that the current condition of the DRC population is among the worst in Africa. There are several causes for these extreme conditions to point out, but there is no doubt that one of the main causes of conflict is the illegal exploitation of the mineral resources in the DRC (Autesserre). The DRC holds vast resources of minerals that are of an enormous global demand, for example minerals integral in the manufacturing of phones, tablets, and other electronic devices. Additionally, the DRC also contains notable gold deposits (Emerson).

Because of these extreme conditions of conflict, there are a lot of international attention and external efforts that aim to help the DRC to build peace and democracy. Germany, the European Union, the OECD, the US, the UN, and the World Bank have all passed legislation or set up projects to reform the mining sector and help prevent the use of Congolese conflict minerals (Verbruggen et al.).

As a result of the humanitarian catastrophe in combination with the curse of the minerals which are originated in the DRC, the US has announced legislation with the objective "to cut off the funding to people who kill", as said by Barney Frank, one of the funders of the Dodd-Frank Act Section 1502. This section 1502 was announced by the SEC to enhance transparency by mandating to "issuers with conflict minerals that are necessary to the functionality or production of a product manufactured by such person to disclose annually whether any of those minerals originated in the Democratic Republic of the Congo or an adjoining country. If an issuer's conflict minerals originated in those countries, Section 13(p) requires the issuer to submit a report to the Commission that includes a description of the measures it took to exercise due diligence on the conflict minerals' source and chain of custody." These conflict minerals include tin, tungsten and tantalum, also mentioned as the 3T's, and gold (SEC, Release No. 34-67716; File No. S7 40- 10).

Prior research focusses mainly on the effects of this section 1502 in the DRC and the surrounding countries and regarding the implementation in the US auditing system, i.e. research by Seay (2012) regarding the effects of the DRC conditions as a result of section 1502, research by Bayer (2011) regarding the implementation costs of section 1502 and research by Woody (2012) regarding issues with the implementation of the section.

To the best of my knowledge, the US market effect as a result of the mandatory disclosures due to the Dodd-Frank Act Section 1502 have not been investigated before. This thesis examines whether and how the US market reacts to the disclosure of the risk of conflict minerals by US listed firms, as a result of the implementation of the Dodd-Frank Act Section 1502. This effect of a humanitarian policy might

be very interesting since it depends on the ethics of the US market of investors, which is reflected in economic numbers. In this research, I investigate whether investors judge this information as important and significant, and if it influences their investing behavior. This thesis investigates the effect of the increased disclosure requirements of section 1502 on the bid-ask spread as a measure of information asymmetry and the effect on the cost of capital.

To investigate the relation between this economic law addressing public policy issues and the effect on the market, the research question will be as follow:

"Does the US market react to the disclosures of US listed firms due to the implementation of the Dodd-Frank Act Section 1502?"

This research is a contribution, since the US market effect of the Dodd-Frank Act Section 1502 has not been investigated before. Only the effects of this act in the DRC and the implementation of this rule by US listed firms has been investigated in prior research. Prior research has been done to the financial and market effects of corporate social responsibility disclosure, but those researches were not focused on the disclosure of the risk of conflict minerals.

The results of this research might be useful to some interested parties and might provide an alternative outcome to the previous studies regarding increased disclosure requirements, since the objective behind the requirements of section 1502 is a humanitarian objective. First, the results of this research could be valuable to policy makers. Especially for the SEC the results might be valuable, since it reflects the reaction of the market to and the effectiveness of their policy and also the sensibility and ethics of the stakeholders. Besides of the SEC, the result might be valuable to other policymakers, who might be interested in the market effects of risk disclosures due to humanitarian objectives and in controlling humanitarian objectives by disclosure policies.

Second, the result of this research might be interesting for non-disclosing private firms, to see if they might change their cost of capital by disclosing information about the resources of the materials they are using.

The rest of this thesis is arranged as follows. Chapter 2 provides background information about the Dodd-Frank Act Section 1502, to create a basic understanding of the regulation; Chapter 3 provides the prior literature on increased disclosures; Chapter 4 describes the development of the hypotheses that are tested in this research; Chapter 5 contains the research design; Chapter 6 describes the process of data collection; Chapter 7 gives a description and interpretation of the results of the tests performed; and finally chapter 8 concludes this thesis, mentions the limitations and provides suggestions for further research.

2.   Background information

In this part, I discuss some information about the Dodd-Frank Act Section 1502. For this thesis, it is important to understand the content of this act and the objectives behind the act. First, I discuss the Dodd-Frank Act in general. Second, I mention and explain the objectives of section 1502. Third, I pay attention to the consequences of the section in practice and discuss the effectiveness of the increased disclosure requirements.

The Dodd-Frank Wall Street Reform and Consumer Protection Act has passed Congress and was signed by Obama in July 2010 as a reaction to the recent financial crisis, to which is also referred to as "the worst financial crisis since the Great Depression". This crisis has caused enormous damage towards both the financial markets and economies around the whole world. Besides, this crisis has enlightened several fundamental weaknesses of financial regulatory systems all over the world, which called for regulatory reforms as an urgent priority (Wilmarth, 2010). The act of 2010 is widely described as "the most ambitious and far-reaching overhaul of financial regulation since 1930", and is, together with other regulatory reactions to the recent financial crisis, an attempt to radically change the structure of financial markets in a profound way to prevent such a crisis in the future. (Cooley & Richardson, 2010)

The Dodd-Frank Act Section 1502 is about the use of the so called conflict minerals and is part of the Dodd-Frank Act of 2010. This section 1502 contains an increased disclosure regulation about the use of conflict minerals from the Democratic Republic of Congo (DRC) and surrounding countries, in order to decrease the providing of weapons of rebel militias in regions of conflict.

By the announcement of the Dodd-Frank Act Section 1502, the Congress has decided to use the securities laws disclosure requirement for their intention to reach the humanitarian goal of ending the extremely violent conflict in the DRC. Both the legislative history surrounding the Conflict Minerals Statutory Provision and prior legislation regarding the trade of conflict minerals show this similar motivation to contribute in ending the humanitarian disasters in the DRC. By those legislative provisions, Congress intents to contribute in the reduction of funding armed groups in the conflict and at the same time exercising pressure on these groups to end the conflict.

Besides of this main purpose to contribute in ending the armed conflict in the DRC, the Congress also has the objective to enhance transparency and to help investors on the US market to make informed decisions by obtaining relevant information.

The disclosure provision of section 1502 mandates to "issuers with conflict minerals that are necessary to the functionality or production of a product manufactured by such person to disclose annually whether any of those minerals originated in the Democratic Republic of the Congo or an adjoining country. If an issuer's conflict minerals originated in one of those countries, Section 13(p) requires the issuer to submit a report to the Commission that includes a description of the measures it took to exercise

due diligence on the conflict minerals' source and chain of custody." These conflict minerals include tin, tungsten, tantalum, also mentioned as the 3T's, and gold. (SEC, Release No. 34-67716; File No. S7 40- 10)

Unless the main purpose of the SEC behind this regulation are humanitarian consequences to arise in the DRC, the regulation is likely to have certain economic consequences for the US market as well, because of Congress' use of the securities law disclosure and the other purpose of the section to increase the information provision for investors. This will result in more publicly available information, used by both shareholders and other stakeholders. When more information becomes available, investors are expected to react to this information and economic consequences will arise as a result of the reactions to the disclosure.

To achieve the objectives of the increased disclosure regulation, the regulation must be effective. The effectiveness of section 1502 in achieving its objectives is in doubt, since there is some room for improvement of the regulation in achieving its objectives. These doubts are dominated by Donald Trump, who is willing to change or even cancel section 1502. First of all, there is room for improvement regarding the humanitarian objectives and geographical scope. Section 1502 is only covering the DRC, while there are more high risk countries such as Afghanistan and Colombia. In these countries, the distribution of conflict minerals also contributes to the perpetuation of violent conflicts. Second, there are some complications with the compliance to the increased disclosure regulation. About 80% of all public companies in US, who are mandated to disclose under section 1502 were not able to fully comply with the increased disclosure regulation in 2015. (Lorenzo 2018)

Unless the US government is facing those doubts about the future of the disclosure regulation, the European Parliament implemented an increased disclosure regulation similar to section 1502. As a result of this new regulation in the European Union, EU importers, refiners and smelters are mandated to carry out due diligence from 2021. The focus in this new regulation is again to break the link between minerals and armed groups in conflict areas but this regulation consists of a global geographical scope, instead of only the DRC and its surrounding regions.

3.   Literature review

In section 2, I discussed background information about the Dodd-Frank Act Section 1502, regarding the content of section 1502 and its objectives. In this literature review, I first discuss the general economic consequences and advantages and disadvantages of the Dodd-Frank Act Section 1502. Afterwards, I continue with literature about the bid-ask spread and the effect of increased disclosure regulation on this measure. The last subject I discuss in the literature review is the effect of increased disclosure on the cost of capital.

As mentioned in the background information, the increased disclosure regulation is likely to cause some economic consequences. In this part, I mention some economic consequences and besides I discuss the benefits and disadvantages of these consequences.

Regarding to Bailey et al. (2006), absolute abnormal returns and abnormal trading volume around earnings announcements are economically and statistically higher for firms with increased disclosure standards and requirements. They show empirical evidence by comparing the absolute abnormal returns and abnormal trading volumes around earnings announcements by non US-companies and US listed companies. These results reflect the economic consequences of increased disclosure, since firms listing their shares on the US market are obligated to apply increased standards and requirements of disclosure.

The economic consequences of increased disclosure in the research of Bailey et al. (2006) are supported by the benefits of increased disclosure for shareholders, as mentioned by Cormier and Magnan (1999). They mention that an increase in disclosure will decrease the information gathering costs for shareholders, which will result in a decrease in information asymmetry between managers and shareholders. When investors do not have access to enough credible information that is relevant for making their investment decisions and managers have decided not to disclose the maximum amount of information, investors will assume the worst and, as a result, bid down the stock prices. Instead of making decisions with this lack of information, investors also have the ability to privately collect information. Private gathering of information can be costly, and will only be undertaken when the benefits of collecting the information will be at least equal to the costs. Besides, privately gathering information will only be done by investors with access to required resources, this results in higher transaction costs for shareholders.

Besides these benefits, there are also some disadvantages and unintended consequences of the regulation for shareholders when a firm decides to increase their disclosures. First, managers' disclosures may not always be viewed as credible for shareholders, because of the potential conflicts of interest between managers and shareholders. This view decreases the value of an increase in information disclosure. Second, increased disclosure of information might reduce the shareholder value by disclosing valuable information to competitors, which could influence the competitive position of the

firm. Third, the disclosure of valuable information to all parties could result in an increase of the amount of legal costs for the firm, which will also lower the shareholder value of the firm.

In the next part, I discuss the decrease in information asymmetry. It is important to discuss this subject further and to measure it, because the decrease in information asymmetry is an important source for the economic consequences of the increased disclosure regulation.

The economic consequences and other intended and unintended consequences are a result of the decrease in information asymmetry between managers and shareholders. This reduction in information asymmetry is a potential objective of disclosure regulation and becomes important if it impacts the market microstructure (Greenstein and Sami 1994). Lev (1988) has provided an economically sound justification for expanding disclosure regulation and besides, offers an operational public interest criterion for disclosure choices for accounting policymakers. He defines the inequity in capital markets as 'the inequality of opportunity of the existence of systematic and significant information asymmetries across investors', which results in both adverse private and social consequences as high transaction costs and decreased gains from trade. These consequences could be mitigated by increasing disclosure requirements and standards in order to decrease the information asymmetry between investors and firms.

Bagehot (1971) distinguishes two different types of traders interacting with dealers. According to Bagehot there are informed traders, which are considered to have private, insider information, and liquidity traders. Because of the privileged information, informed traders will always benefit over liquidity traders in transactions with dealers. As a result, traders are only able to make a gain when they trade with liquidity traders and expect losses when trading with informed traders. Because of this difference for dealers between trading with informed traders and trading with liquidity traders, trading with informed traders will increase the transaction costs and the bid-ask spread for the dealer. Greenstein and Sami (1994) combined the link between an increase in disclosure requirements and standards and a decrease in information asymmetry with the link between a decrease in information asymmetries and lower transaction costs. As a result, they conclude that regulatory acts requiring companies to disclose more information affect the size of the bid-ask spread, mediated by a decrease in information asymmetry. Besides, this downward shift in the bid-ask spread is a function of the number of segments reported.

The bid-ask spread could be defined as the tight between the bid price and the ask price of the stocks of a particular firm. The bid price consists of a concession required for immediate sale and the ask price consists of a premium for immediate buying. In this way, the bid-ask spread can be a measure of illiquidity of the firm, such that the bid-ask spread is the sum of the selling concession and the buying premium. The relative bid-ask spread of the stocks of a firm has been found to be negatively correlated with the characteristics of the liquidity of the firm, such as trading volume, number of shareholders and the continuity of the stock price. (Amihud & Mendelson, 1986)

To conclude, the bid-ask spread is able to measure the changes in information asymmetry between a firm and its shareholders directly. An increase in disclosure regulation will result in the disclosure of additional information, which will diminish adverse selection and tighten the bid-ask spread (Leuz & Verrecchia, 2000).

Now I have discussed the decrease in information asymmetry and how this is reflected by the bid-ask spread, I will continue this literature review with the effect of this decrease on investors. In this part, I will discuss literature about the cost of capital. First, I will pay attention to the effect of increased disclosure and the cost of capital in general and second, I will discuss different evidence.

As the bid-ask spread reflects the change in information asymmetry, the cost of capital are a reflection of the return which investors demand for holding stocks. According to Easley and O'hara (2004), these cost of capital are expected to decrease when additional information is disclosed due to increased disclosure regulation. They developed a model about the association between disclosing information and the cost of capital. Regarding to this model, stockholders require a higher return for holding stocks of firms with a higher level of private information relative to firms for which this is lower. This higher return is caused by the fact that non-disclosed information increases the risk of uninformed investors of holding stock, since informed investors are better to change their portfolio while incorporating information.

The cost of capital are important to a firm, since it reflects the cost of the main financing of all activities of the firm. The cost of capital can be used by the firm to make rational choices in the investment structure of the firm (Modigliani & Miller, 1958).

Healy and Palepu (2001) support the finding of Easley and O'hara by mentioning that investors bear their risks in forecasts of future pay offs resulting from their investment, if the firm's disclosure is imperfect or incomplete. In case of this risk being undiversifiable, investors are likely to demand an incremental return for bearing the risk of the unavailable information. This causes the expectation of lower cost of capital for firms with higher levels of disclosure and hence a lower risk of imperfect information, relative to firms with a lower level of disclosure and a higher risk of imperfect information. These described expectations are supported by evidence of prior researches.

First of all, Piotriski (1999) found evidence for lower cost of capital related to contemporaneous increases in market capitalization of earnings due to providing additional segment disclosures to investors and other stakeholders. Second, Botosan and Plumlee (2000) found a negative cross-sectional relation between cost of capital and analyst rankings of annual report disclosures and a positive relation between the cost of capital and rankings of quarterly disclosures. Besides, they found no association between the cost of capital and investor relations activities.

Richardson and Welker (2001) performed an investigation in which they divided the effect of financial and social disclosure on the cost of capital. For financial disclosure, they found a negative relation with the cost of capital. This result is in accordance with the results of the researches of Piortiski (1999) and

Botosan and Plumlee (2000). Meanwhile, they investigated a positive relation between social disclosure and the cost of capital. This positive relationship is moderated by the return-on-equity of the firm, such that more successful firms are less penalized for social disclosures. Besides, this relation is not affected by the number of analysts following or whether the disclosure contains good or bad news. Richardson and Welker mention that these results are not based on the content of disclosures, but only measure the completeness and the value of information in the disclosure. Because of this limitation, there are several possible explanations for the positive relation between social disclosures and cost of capital. One of these explanations is that the investigation might be consistently biased when firms with social cost above average are likely to disclose more information to justify for these costs. Besides, the research only includes the years 1990, 1991 and 1992, which were during an economic recession.

To summarize the described literature above, the increased disclosure regulations of the Dodd-Frank Act Section 1502 result in economic consequences in the United States next to the humanitarian objectives. These consequences are a result of a decrease in information asymmetry between shareholders and the company. Because of the decrease in information asymmetry, the bid-ask spread will decrease according to prior research. There is different evidence about the effect of the increased disclosure on the cost of capital. In general, increased disclosure regulation will cause a decrease in the cost of capital, because of the lower required return by shareholders. Especially for social disclosures, there is significant evidence that an increase in disclosure will not result in lower cost of capital, but there are some restrictions to this research which could have affected the result.

4.   Theory and hypotheses

In the previous chapter, I discussed prior researches about the effects of increased disclosures. First, I paid attention to economic consequences of increased disclosure. Second, I mentioned the effect of increased disclosure requirements on the information asymmetry and the bid-ask spread and at the end of the literature review I discussed the effect of the increased disclosure on the cost of capital.

During this chapter, I enlighten the theories behind the effects of increased disclosure requirements and develop hypotheses based on these theories and prior researches, which I discussed in the literature review. The first hypothesis will concern the relation between the increased disclosure requirements of the Dodd-Frank Act Section 1502 and the information asymmetry. The second hypothesis will be based on the effect of increased disclosure requirements on the cost of capital. After the first and second hypothesis, I discuss the executive orders of the Trump administration to change or cancel the current Dodd-Frank Act Section 1502. Based on this information and the information used to derive the first and second hypothesis, I derive the third and fourth hypothesis.

The first hypothesis concerns the effect of the increased disclosure requirements on the information asymmetry between firms and its investors. This is in line with the humanitarian objective of ending the extremely violent conflict in the DRC, which the SEC is trying to reach by implementing an economic section. By decreasing the information asymmetry as a consequence of increased disclosure requirements, investors should be able to obtain more information which enables them to have a choice to contribute in this ethic situation. The concept of information asymmetry between the firm and its investors is captured by Ross' agency theory (Ross, 1973). Ross mentions that "an agency relationship has arisen between two (or more) parties when one, designated as the agent, acts for, on behalf of, or as representative for the other, designated the principal, in a particular domain of decision problems". The theory describes the asymmetry of control between a principal and an agent. When this theory is applied to shareholders and managers of the firm, a shareholder is the principal and a manager is the agent. The manager has more information about the firm and its performance than the shareholder and besides, has incentives to use the invested resources for their own benefit instead of for the benefit of the firm.

Increased disclosure requirements are likely to decline the effects of this problem, since it will decrease the information asymmetry between the principal and the agent, which will cause an increase in control for the principal. According to Leuz and Verrechia (2000), the bid-ask spread is able to measure the change in information asymmetry between a principal and an agent. The bid-ask spread will decrease when the information asymmetry between a principal and an agent decreases and will increase when the information asymmetry increases.

The Dodd-Frank Act Section 1502 contains increased disclosure requirements. Regarding to the information above, this will result in a decrease in information asymmetry and a decrease in the bid-ask spread. The first hypothesis concerns the effectiveness of section 1502 in accomplishing the

humanitarian objective of ending the violent conflicts in the DRC, which should be accomplished by less information asymmetry and the ability of investors to make a choice based on all available information. Since the bid-ask spread will decrease when the information asymmetry decreases, the expectation arises that this spread will decrease as an effect of the implementation of the Dodd-Frank Act Section 1502. The hypothesis I derive regarding to this information is as follows:

H1: *"The bid-ask spread of mining firms will decrease as a result of increased disclosure requirements of the Dodd-Frank Act Section 1502 becoming effective."*

Besides the expected effect of the increased disclosure requirements on the bid-ask spread, it is also likely that it will affect the return demanded by investors. This demand of return is expressed in the cost of capital. From the majority of researches mentioned in the literature review, one will expect that the cost of capital will decrease because of the decrease in information asymmetry between the insiders of the firm and the investors. This will cause a decrease in the degree of uncertainty with which investors have to deal and the risks they have to bear in forecasting future payoffs. According to Healy and Palepu (2001), investors are likely to demand an incremental return for bearing the risk of the unavailable information which will cause higher cost of capital for firms that disclose less private information. Regarding to those researches, one will expect that the increased disclosure requirements of the Dodd-Frank Act Section 1502 will result in a decrease of the cost of capital for mining firms, which are obligated to apply the increased disclosure requirements.

On the other hand, Richardson and Welker (2001) came up with a contrary result. They found a positive relation between social disclosure and cost of capital as a result of a research divided into financial and social disclosure. The result is moderated by the return-on-equity of the firm and is not affected by the connect of the disclosure. The research does not distinguish between the disclosure of good and bad news, but only measures the completeness of the disclosure and the value of information.

Another research investigating the effect of social disclosure on the cost of equity was performed by El Ghoul et al. (2011). They investigated that firms with higher scores of CSR disclosure should have lower cost of capital as compared to firms with lower scores of CSR disclosure. Since the disclosure regarding to the Dodd-Frank Act Section 1502 is concerned with due diligence and corporate responsibility, this result could be useful for the investigation of the effect of the increased disclosure requirements on the cost of capital.

To conclude, there is different evidence available about the effect of the increased disclosure on the cost of capital. In general, increased disclosure regulation will cause a decrease in the cost of capital, because of the lower required return by shareholders. Especially for social disclosures, there is significant evidence that an increase in disclosure will not result in lower cost of capital, but there are some restrictions to this research which could have affected the result and besides, contrary results of research based on CSR disclosures are presented. The second hypotheses I derive from the information above is as follows:

H2: *"The cost of capital for mining firms will decrease as a result of the announcement of the increased disclosure requirements of the Dodd-Frank Act Section 1502 becoming effective."*

On February 9th 2017, a press release occurred mentioning the Trump administration issued proposed executive orders targeting section 1502. According to the press release there is a rumor that "Donald Trump is planning to issue a directive targeting towards the controversial Dodd-Frank rule that requires companies to disclose whether their products contain "conflict minerals" from a war-torn part of Africa, according to sources familiar with the administration's thinking" (Worstall, 2017).

Donald Trump does not have its doubts about the objectives of the section but has his doubts about the effectiveness of achieving this objectives by the current section. In his opinion, there are possibilities to improve the section regarding the humanitarian objectives and the geographical scope (Lorenzo, 2018).

Since the current section is not optimally effective according to the Trump administration, this administration might introduce a new ruling with the same objectives. Because the main objective of the section is a humanitarian objective, the transparency aspect to the investors might reduce since this objective will no longer be accomplished by an increased share of information to the investors. This will decrease the transparency of information again, which will cause an increase in information asymmetry and so, in the bid-ask spread.

The third hypothesis I derive from the information above and the information discussed to derive the first hypothesis is as follows:

H3: *"The bid-ask spread of mining firms will increase as a result of the announcement of the Trump administration issuing proposed executive orders targeting the Dodd-Frank Act Section 1502."*

Because of this expected increase in the bid-ask spread after the announcement of the proposed executive orders to change or even cancel the increased disclosure requirements, the cost of capital are expected to rise again. This is the result of more private information and less information for the investors, which will cause an increase in the demanded return by the investors.

This results in the fourth hypothesis I derive from the information above and the information discussed to derive the second hypothesis is as follows:

H4: *"The cost of capital of mining firms will increase as a result of the announcement of the Trump administration issuing proposed executive orders targeting the Dodd-Frank Act Section 1502."*

5.   Research design

The objective of this research is to answer the following research question by archival research:

"Does the US market react to the disclosures of US listed firms due to the implementation of the Dodd-Frank Act Section 1502?"

To answer this research question, I test the four hypotheses with collected applicable data. First of all, I use only data of US listed companies, because of the effect on investors that I investigate in this research. Those effects on investors are only applicable when a company has shares outstanding, on which investors are able to trade based on their knowledge of available information.

Since the section is only applicable for firms in the mining industry, I include only those firms in the research sample. I select those firms based on their SIC code, an industry characteristic for data, which starts with the numbers 10-14 for firms operating in the mining industry. Besides of the sample firms, I use control firms to control for other effects that might influence the firms and the investors. Those firms will be other US stock listed companies of all industries, which I use to isolate the effect of the increased disclosure requirements from other time variant effects on the dependent variables.

I collect this data for two different periods. First, for the period before and after the announcement of the Dodd-Frank Act Section 1502 becoming effective, to analyze the effect of the introduction on the investors on the US market. Second, for the period before and after the announcement of the proposed executive orders of the Trump administration to change section 1502, to analyze the effect of the announcement of a change in or cancelation of the increased disclosure requirements. For the first period of research, the date of the end of the first fiscal year when section 1502 became effective is the date around which the observation period of this research takes place. This date will be December 31st 2012 for firms with a fiscal year ending in December and May 31st 2012 for firms with fiscal year ending in May (SEC, 2010). The press release of Trump's proposed executive orders to change section 1502 was announced on February 9th 2017 (Worstall, 2017). To produce a representative average number and because of the necessary time to incorporate the information fully into the stock prices, I collect data for the 10 days before and the 10 days after the mentioned dates. Because of the different fiscal book years, I sort the firms for fiscal years ending in May and fiscal years ending in December. Which will result in two different groups of data and analyses for the periods around both measuring dates. I will perform the research twice for the two periods separately.

Both the bid-ask spread and the share turnover are seen as representative proxies for a change in information asymmetry. The probability of informed traders to generate and exploit private information to gain from uninformed traders is higher, when the information asymmetry between inside traders as managers and investors is higher. As a consequence, stock dealers are able to analyze this informational advantage and will increase the bid-ask spread to protect themselves against the exploitation by

informed traders. Besides, uninformed traders are less likely to trade these shares with high information asymmetry between informed and uninformed investors, because they will recognize their own disadvantage relative to informed traders. As a result, the share turnover will be lower, when the information asymmetry between the traders is higher (Kim and Verrecchia 1994).

First, I perform univariate analyses on both the bid-ask spread and the turnover. This univariate analysis consists of two-sample t-tests. The first two-sample t-tests are sorted by whether a firm is operating in the mining industry or operating in another industry. Next, I perform the t-tests again but now sorted by whether the observations are from the period before the increased disclosure requirements are becoming effective or from the period after. The same tests I will perform again for the period around the press release of the Trump administration announcing proposed executive orders to change the section 1502 and the possible cancelation of the increased disclosure requirements for firms in the mining industry.

To account for the endogeneity between the bid-ask spread and the share turnover, I analyze the two equations using the two stage least squares regressions method. These equations are based on Iskandar-Datta and Jia (2013), who investigated the effect of claw back provisions on information asymmetry and the effect on investors, and adjusted for the variables applicable for the effects of the increased disclosure requirements.

The first and third hypothesis concern the change in information asymmetry expressed as a change in bid-ask spread and will be tested by estimating the first equation:

$$Spread_{it} = \beta_0 + \beta_1 After + \beta_2 Mining + \beta_3 Mining \times After + \beta_4 Turnover_{it} + \beta_5 SharesOuts_{it} + \beta_6 Price_{it} + \beta_7 Variability_{it} + \varepsilon_{it}$$

Appendix A contains a list of variables.

To determine the effect of the increased disclosure requirements as a result of the announcement of the Dodd-Frank Act Section 1502, the bid-ask spread ($Spread$) will be determined as the relative daily difference between the bid price and the ask price of a stock. Calculated as the daily relative bid-ask spread defined as the absolute bid-ask spread divided by the average bid-ask spread over the total test period.

$$Spread_{it} = \frac{(Ask\ price - Bid\ price)}{Average\ (Ask\ price - Bid\ price)}$$

Logarithm transformations will be done for dependent variables, control variables and firm variables, to minimize the probability of outliers effecting the results and facilitate the interpretation of coefficients. $After$ and $Mining$ are both dummy variables in the equation. $After$ is defined as 1 when the $Spread$ is concerning the period after the announcement (0,10) of the implementation of the Dodd-Frank Act Section 1502 and again for the period after the announcement of Donald Trump willing to propose executive orders to change section 1502. $Mining$ is defined as 1 when the $Spread$ is concerning a firm that is operating in the mining industry and so likely to adopt the increased disclosure

requirements according to section 1502. A firm is defined as a firm operating in the mining industry when the SIC code is between 1000 and 1499. The interaction effect of these dummy variables $After \times Mining_{it}$ is of primary interest for this investigation. The coefficient of this interaction variable represents the incremental change in the bid-ask spread as a result of the increased disclosure requirements applicable for firms operating in the mining industry relative to firms who do not have to adopt these increased disclosure requirements. The share turnover, mentioned as $Turnover$ in the equations, is defined as the daily trading volume scaled by the total amount of shares outstanding and is even used as independent variable for the second regression, concerning the first and third hypothesis.

$$Turnover = \frac{Total\ number\ of\ shares\ traded\ (daily)}{Number\ of\ shares\ outstanding}$$

In the first equation the share turnover is used as a control variable, even as the number of shares outstanding ($SharesOuts$), the daily closing stock price ($Price$) and the stock return variability ($Variability$). The number of shares outstanding is included as a control variable, since it is expected to be correlated with the share turnover. The adoption of the daily closing stock price has to control for the mechanical relationship between the stock price and the bid-ask spread, because in general firms with lower stock prices are more likely to have higher relative bid-ask spreads. The last mentioned control variable in the regression is the variability of stock returns, which is expected to be positively related to the bid-ask spread and negatively related to the share turnover. This control variable will be measured as the square of daily stock return.

The second hypothesis concerns the return demanded by shareholders. This demand is defined as the cost of capital, but the reaction of the investors will be measured as the share turnover. The reason for the use of the share turnover instead of the cost of capital is the probability of complications when using the cost of capital as a dependent variable. To decrease the probability of these implications that could affect the results, the share turnover will be used. This share turnover is expected to increase when the information asymmetry decreases. Because uninformed traders are less likely to trade when there is more information asymmetry between informed and uninformed traders. This share turnover can be linked to the cost of capital, as the share turnover is increasing as a consequence of the decreased information asymmetry and the cost of capital is expected to decrease for the same reason.

$$if\ Cost\ of\ Capital\ increases\ \rightarrow\ Turnover\ decreases$$

$$if\ Cost\ of\ Capital\ decreases\ \rightarrow\ Turnover\ increases$$

The change in share turnover will be analyzed by the following regression, which is the second regression of the two-stage least square regressions method.

$$Turnover_{it} = \beta_0 + \beta_1 After + \beta_2 Mining + \beta_3 Mining \times After + \beta_4 Spread_{it} + \beta_5 SharesOutsanding_{it} + \beta_6 Price_{it} + \beta_7 Variability_{it} + \varepsilon_{it}$$

To determine the effect of the increased disclosures requirements of the Dodd-Frank Act Section 1502 on the investors, the coefficients of the equation will be analyzed for both the periods before and after

the announcement of the requirements becoming effective and for the periods before and after the announcement of Trump's proposed executive orders to change section 1502. To perform all of the univariate and multivariate analyzes and the regressions I make use of STATA[1].

Figure 1 and figure 2 in appendix B represent the predictive validity framework (Libby Boxes) of the conceptual and operational level of the research design for this thesis.

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[1] STATA Software Application: https://www.stata.com/.

6.   Data collection

In section 5, I discussed the research design to test the hypotheses of section 4. To test the hypotheses, I collect data to use in the research design. In this part of the thesis I discuss the process of data collection.

I derive all data I use for testing the hypotheses from the CRSP Database[2]. The Center for Research in Security Prices provides historical market data of US firms. For this research, the daily numbers of the database are used. The daily number of trades for US listed firms is only available for firms listed on the NASDAQ exchange. This is a limitation on the available number of observations to include in the sample. Because of this decrease in observations, different datasets are used for the univariate tests and regressions of the bid-ask spread and the turnover, to increase the number of available observations for the univariate tests and regressions concerning the bid-ask spread. For the two-stage analysis, the same database is used as for the univariate tests and regressions concerning the turnover.

To control for additional firm level variables extra data is collected from the CRSP Compustat Merged database (CCMD)[3]. The additional firm level variables are capital intensity, cash return, earnings growth, leverage, loss, sales growth and size. Due to this additional data collection, the number of observations in the sample decreases since this additional data is not available for all firms.

Table 1 displays the descriptive statistics for all firms incorporated in the univariate analysis of the bid-ask spread for the period around the end of the first fiscal year in which the increased disclosure requirements of section 1502 are becoming effective. Observations with missing values for bid price or ask price are excluded from the sample, since these numbers are necessary to calculate the bid-ask spread. According to the research design, the sample should be split for firms with fiscal years ending in May and fiscal years ending in December. Unfortunately, no data is available for mining firms with a fiscal year ending in May. Since the additional firm level variables concern annual numbers, only firms with a fiscal year ending in December are included in the dataset. This is to rule out other timely factors that could influence the firm level characteristics. For example, for a firm with a fiscal year in May, the numbers will reflect the value of assets in May instead of in December. As a result, only firms with a fiscal year ending in December are included in the sample for the test period December 21st 2011 until January 10th 2012.

Panel A shows that the total number of firms included in the sample is 3762, of which only 261 firms are qualified as firms operating in the mining industry. The descriptive results of all firms together are displayed in panel B and the descriptive statistics of both groups are described in panel C and D.

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[2] CRSP Database: http://www.crsp.com/.

[3] CRSP Compustat Merged Database: http://www.crsp.com/products/research-products/crspcompustat-merged-database.

Table 1: Descriptive statistics dataset bid-ask spread for the period December 21st 2011 – January 10th 2012

Panel A: Sample selection period December 21st 2011 – January 10th 2012 (section 1502 becoming effective)

	#Observations	Unique firms	Mining firms
CRSP sample of observations for bid-ask spread analysis	87889	6758	348
Less: Observations with missing values in CRSP data	-951	-73	-4
	86938	6685	344
CRSP sample merged with CCMD[4] sample			
Less: Observations with missing values in CCMD data	-38038	-2923	-83
Total	**48900**	**3762**	**261**

Panel B: Full sample descriptive statistics for the bid-ask spread dataset for the period December 21st 2011 – January 10th 2012 (section 1502 becoming effective)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	48,900	53.37197	1880.887	0.04	116600
Assets total	48,900	16422.57	125212	0	2807491
Bid price	48,900	53.28095	1878.904	0.038	116505
Capital intensity	45,546	2.94655	96.53414	-10.2587	5695.86
Cash return	46,391	0.134329	3.384298	-9.04634	200.9071
Change in net income	48,900	-15367	120455.8	-2523220	273.283
Debt total	48,900	3720.69	29330.96	0	622827
EBITDA	48,900	913.0325	3996.241	-15913.9	69687
IBEI	48,900	340.3722	1868.037	-16013.9	41060
Leverage	46,391	0.216993	0.230206	0	3.020069
Market capitalization	48,900	3658486	14800000	-566045	412000000
Net income	48,900	345.6023	1876.94	-16013.9	41060
PPE	48,900	3641.632	18512.47	0	393995
Price	48,900	53.03279	1880.254	-101.8	116530
Relative spread	48,900	1	0.466641	-2.6	8.047619
Return	48,900	0.003963	0.032603	-0.6848	1.202381
Return on assets	46,391	0.065091	3.386636	-9.19723	200.9081

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[4] Data derived from CRSP Compustat Merged database.

Variable	#Observations	Mean	SD	Minimum	Maximum
Sales	48,900	4653.456	22604.49	-6749.63	470171
Sales growth	48,900	463.4402	4576.157	-52450	108236.9
Shares outstanding	48,900	125066.5	414561	100	10600000
Spread	48,900	0.091016	2.389881	-75	267
Variability	48,900	0.001079	0.010046	0	1.44572

Panel C: Mining firms descriptive statistics for the bid-ask spread dataset for the period December 21st 2011 – January 10th 2012 (section 1502 becoming effective)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	3,391	23.8973	27.09458	0.1339	196.47
Assets total	3,391	10842.92	35580.79	10.519	319410
Bid price	3,391	23.85002	27.03696	0.13	196.46
Capital intensity	3,066	7.244713	28.3902	0	380.85
Cash return	3,391	0.138521	0.226343	-0.77506	1.358741
Change in net income	3,391	-8891.17	29825	-288562	5.665
Debt total	3,391	2331.616	7449.988	0	82048
EBITDA	3,391	1910.258	6398.107	-449.67	50672.55
IBEI	3,391	701.2512	2834.344	-5922	21125.38
Leverage	3,391	0.233594	0.202903	0	1.299885
Market capitalization	3,391	4707362	10200000	-98990.9	95000000
Net income	3,391	718.043	2843.529	-5725	21125.38
PPE	3,391	10782.12	35125.18	0	355083.3
Price	3,391	23.82734	27.11178	-21.755	196.71
Relative spread	3,391	1	0.407075	-1.3	5.2
Return	3,391	0.006304	0.035908	-0.15944	0.827273
Return on assets	3,391	0.026307	0.191664	-0.82164	1.325893
Sales	3,391	6246.528	28145.56	0	318378.6
Sales growth	3,391	1219.542	6668.449	-879.978	96346.02
Shares outstanding	3,391	173634.6	225464.5	1500	1342126
Spread	3,391	0.047275	0.308111	-0.01	11.31
Variability	3,391	0.001329	0.012278	0	0.684381

Panel D: Non-mining firms descriptive statistics for the bid-ask spread dataset for the period December 21st 2011 – January 10th 2012 (section 1502 becoming effective)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	45,509	55.56821	1949.673	0.04	116600
Assets total	45,509	16838.32	129419.8	0	2807491
Bid price	45,509	55.47393	1947.617	0.038	116505
Capital intensity	42,480	2.636329	99.65871	-10.2587	5695.86
Cash return	43,000	0.133999	3.514638	-9.04634	200.9071
Change in net income	45,509	-15849.5	124583.9	-2523220	273.283
Debt total	45,509	3824.194	30333.5	0	622827
EBITDA	45,509	838.7265	3745.785	-15913.9	69687
IBEI	45,509	313.4821	1772.208	-16013.9	41060
Leverage	43,000	0.215684	0.232175	0	3.020069
Market capitalization	45,509	3580331	15100000	-566045	412000000
Net income	45,509	317.8507	1781.007	-16013.9	41060
PPE	45,509	3109.575	16500.28	0	393995
Price	45,509	55.20896	1949.017	-101.8	116530
Relative spread	45,509	1	0.470782	-2.6	8.047619
Return	45,509	0.003789	0.032337	-0.6848	1.202381
Return on assets	43,000	0.06815	3.517212	-9.19723	200.9081
Sales	45,509	4534.751	22131.94	-6749.63	470171
Sales growth	45,509	407.101	4375.307	-52450	108236.9
Shares outstanding	45,509	121447.6	425078	100	10600000
Spread	45,509	0.094275	2.475863	-75	267
Variability	45,509	0.00106	0.00986	0	1.44572

Table 2 displays the descriptive statistics for the univariate analysis of the turnover for the period of the end of the first fiscal year the increased disclosure requirements of section 1502 are becoming effective. Observations of firms that are not listed on the NASDAQ exchange are excluded from the sample, since the daily number of trades is missing for those observations. Besides, all observations with missing values for bid price or ask price are excluded to complete the filtering of the sample. For this sample, there is no filter applied based on fiscal year end since the number of observations of firms operating in the mining industry is already small and a result of a filtered sample will no longer be representative. This decrease in number of observations is the result of the availability of daily trade numbers only for US firms listed on the NASDAQ exchange. The sample includes 1826 different firms, of which only 49 are operating in the mining industry.

For the multivariate analysis for the period of December 21st 2011 and January 10th 2012, the same dataset is used as for the univariate test of the turnover.

Table 2: Descriptive statistics dataset turnover and multivariate analysis for the period December 21 2011 – January 10 2012

Panel A: Sample selection period December 21st 2011 – January 10th 2012 (section 1502 becoming effective)

	#Observations	Unique firms	Mining firms
CRSP sample of observations for bid-ask spread analysis	87889	6758	348
Less: Observations with missing values in CRSP data	-951	-73	-4
	86938	6685	344
CRSP sample merged with CCMD sample			
Less: Observations with missing values in CCMD data	-38038	-2923	-83
	48900	3762	261
Merged sample of observations for turnover analysis and regression analyses			
Less: Observations with missing values for turnover	-25162	-1936	-212
Total	**23738**	**1826**	**49**

Panel B: Full sample descriptive statistics for the bid-ask spread dataset for the period December 21 2011 – January 10 2012 (section 1502 becoming effective)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	23,738	16.43775	28.90369	0.07	668.28
Assets total	23,738	2369.37	9757.033	0	193345
Bid price	23,738	16.3619	28.86714	0.069	668.13
Capital intensity	23,296	4.067733	134.5457	-10.2587	5695.86
Cash return	23,699	0.030456	0.356773	-9.04634	1.24705
Change in net income	23,738	-0.21761	163.9012	-3273	1478

Variable	#Observations	Mean	SD	Minimum	Maximum
Debt total	23,738	613.3924	4980.168	0	183966
EBITDA	23,738	213.4293	1185.356	-1484.46	23996
IBEI	23,738	69.48412	521.0803	-3113	12942
Leverage	23,699	0.162124	0.215874	0	2.444689
Market capitalization	23,738	1267844	6197099	-495422	174000000
Net income	23,738	70.29753	521.6458	-3140	12942
Number of trades	23,738	2817.754	7722.694	0	129172
PPE	23,738	548.5715	3238.282	0	64087
Price	23,738	16.00994	29.10436	-101.8	668.28
Relative spread	23,738	1	0.504536	-2.6	8.047619
Return	23,738	0.00391	0.037984	-0.6848	1.202381
Return on assets	23,699	-0.03035	0.380577	-9.19723	6.996073
Sales	23,738	996.3824	4175.781	-188.225	62071
Sales growth	23,738	123.1707	852.5734	-1759	17905
Shares outstanding	23,738	60272.89	190078.1	769	5092000
Spread	23,738	0.075856	0.216291	-0.03	11.31
Turnover	23,738	0.036767	0.063901	0	1.429854
Variability	23,738	0.001458	0.013197	0	1.44572

Panel C: Mining firms descriptive statistics for the bid-ask spread dataset for the period December 21 2011 – January 10 2012 (section 1502 becoming effective)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	637	22.26103	26.33538	0.31	110.97
Assets total	637	1073.059	1371.77	10.519	8000.137
Bid price	637	22.10663	26.07815	0.3001	110.93
Capital intensity	637	3.770339	2.95052	0	15.86756
Cash return	637	0.14904	0.218196	-0.77506	0.543174
Change in net income	637	34.38653	108.5377	-266.111	552.727

Variable	#Observations	Mean	SD	Minimum	Maximum
Debt total	637	350.2583	651.082	0	3993.657
EBITDA	637	165.9872	241.5746	-33.951	1143.634
IBEI	637	56.55298	122.9008	-191.899	438.439
Leverage	637	0.26144	0.20455	0	0.754289
Market capitalization	637	983665.5	1398021	-59151.8	6777117
Net income	637	55.82951	123.3373	-191.899	438.439
Number of trades	637	2877	4287.172	11	22152
PPE	637	1183.642	1496.601	0	8032.885
Price	637	22.12206	26.27097	-21.755	110.97
Relative spread	637	1	0.465275	0	2.802173
Return	637	0.005954	0.048212	-0.15944	0.827273
Return on assets	637	0.022636	0.193207	-0.82164	0.37967
Sales	637	440.492	602.3031	4.214	2565.943
Sales growth	637	119.8762	220.0491	-60.186	1103.012
Shares outstanding	637	56751.57	56727.03	2702	344139
Spread	637	0.154399	0.685349	0	11.31
Turnover	637	0.051799	0.063519	0.000324	0.336429
Variability	637	0.002356	0.027389	0	0.684381

Panel D: Non-mining firms descriptive statistics for the bid-ask spread dataset for the period December 21 2011 – January 10 2012 (section 1502 becoming effective)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	23,101	16.27718	28.95522	0.07	668.28
Assets total	23,101	2405.115	9885.619	0	193345
Bid price	23,101	16.20349	28.92459	0.069	668.13
Capital intensity	22,659	4.076093	136.423	-10.2587	5695.86
Cash return	23,062	0.02718	0.359292	-9.04634	1.24705
Change in net income	23,101	-1.17181	165.064	-3273	1478

Debt total	23,101	620.6482	5047.017	0	183966
EBITDA	23,101	214.7375	1200.893	-1484.46	23996
IBEI	23,101	69.84069	527.8178	-3113	12942
Leverage	23,062	0.159381	0.215534	0	2.444689
Market capitalization	23,101	1275680	6277497	-495422	174000000
Net income	23,101	70.69648	528.3875	-3140	12942
Number of trades	23,101	2816.12	7796.056	0	129172
PPE	23,101	531.0598	3271.474	0	64087
Price	23,101	15.8414	29.16096	-101.8	668.28
Relative spread	23,101	1	0.505585	-2.6	8.047619
Return	23,101	0.003854	0.037663	-0.6848	1.202381
Return on assets	23,062	-0.03181	0.384357	-9.19723	6.996073
Sales	23,101	1011.711	4230.75	-188.225	62071
Sales growth	23,101	123.2615	863.4769	-1759	17905
Shares outstanding	23,101	60369.99	192450.1	769	5092000
Spread	23,101	0.073691	0.18699	-0.03	7.58
Turnover	23,101	0.036352	0.063863	0	1.429854
Variability	23,101	0.001433	0.012582	0	1.44572

Table 3 and 4 contain the descriptive statistics for the second test period, concerning the period surrounding the Trump administration proposing executive orders to change or cancel section 1502. In creating these samples for the second period, the same filters are applied as for the samples displayed in table 1 and table 2, respectively. The period consists of the days between January 30th and February 19th 2017. For the same reason as for the first two datasets, only firms with a fiscal year ending in December are included and even the end of year numbers of 2016 are used for the additional firm variables. Table 3 contains the descriptive statistics for the dataset used for the univariate test of the bid-ask spread. Table 4 contains the descriptive statistics for the dataset used for both the univariate tests of the turnover and the multivariate analysis. Table 3 shows a sample containing 3953 firms of which 259 firms are operating in the mining industry. The sample showed in table 4 consists of 2017 firms of which only 40 firms are operating in the mining industry.

Table 3: Descriptive statistics dataset bid-ask spread for the period January 30th 2017 – February 18th 2017

Panel A: Sample selection period January 30th 2017 – February 19th 2017 (announcement of proposed executive orders)

	#Observations	Unique firms	Mining firms
CRSP sample of observations for bid-ask spread analysis	106024	7066	304
Less: Observations with missing values in CRSP data	-161	-10	-2
	105863	7056	302
CRSP sample merged with CCMD sample			
Less: Observations with missing values in CCMD data	-46587	-3103	-43
Total	**59276**	**3953**	**259**

Panel B: Full sample descriptive statistics for the bid-ask spread dataset for the period January 30th 2017 – February 19th 2017 (announcement of proposed executive orders)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	59,276	97.92161	3934.035	0.0596	252838
Assets total	59,276	16351.17	105449	0	2490972
Bid price	59,276	97.81118	3932.495	0.0595	252705
Capital intensity	54,103	2.039124	9.862039	0	349.5241
Cash return	56,291	0.021202	0.8345318	-18.07163	43.53194
Change in net income	59,276	42.54397	963.0471	-11293.95	21714
Debt total	59,276	3722.726	21000.04	0	495354
EBITDA	59,276	843.8272	3321.2	-2349	56690
IBEI	59,276	261.3687	1449.569	-6949	24733
Leverage	56,291	0.275778	0.3062348	0	6.206513
Market capitalization	59,276	5913196	22500000	-28600000	404000000
Net income	59,276	267.85	1467.183	-6486.795	24733
PPE	59,276	4367.548	22961.43	0	489071.2
Price	59,276	97.24102	3931.816	-193.2	252838
Relative spread	59,276	1	0.4343184	-2.8125	7.627373
Return	59,276	0.00161	0.0341798	-0.764103	2.498995
Return on assets	56,291	-0.04419	0.8894561	-18.41292	43.53393
Sales	59,276	4216.954	17501.85	0	482154

Variable					
Sales growth	59,276	9.712756	2193.34	-39886	28981
Shares outstanding	59,276	135553.3	406107.4	50	10100000
Spread	59,276	0.110428	1.898518	-15.5156	169
Variability	59,276	0.001171	0.0339238	0	6.244976

Panel C: Mining firms descriptive statistics for the bid-ask spread dataset for the period January 30th 2017 – February 19th 2017 (announcement of proposed executive orders)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	3,881	21.70266	31.87742	0.106	235.29
Assets total	3,881	13499.55	42461.75	0.8	345189.5
Bid price	3,881	21.63947	31.78811	0.1025	235.28
Capital intensity	3,596	8.599118	23.02008	0	349.5241
Cash return	3,881	-0.0012	0.2793796	-3.45945	0.4360594
Change in net income	3,881	572.0109	2451.701	-8310	21714
Debt total	3,881	3808.971	10953.27	0	116752
EBITDA	3,881	971.4015	3680.388	-2349	37039.03
IBEI	3,881	-198.823	1218.004	-6132	7840
Leverage	3,881	0.350769	0.3379694	0	2.242868
Market capitalization	3,881	6965198	27100000	-341109	352000000
Net income	3,881	-208.661	1204.186	-6132	7840
PPE	3,881	18583.61	56124.65	0	489071.2
Price	3,881	21.10252	32.2178	-125.5	235.31
Relative spread	3,881	1	0.3924506	0	4.830509
Return	3,881	-0.00159	0.0347594	-0.62551	0.471503
Return on assets	3,881	-0.08925	0.2886517	-2.87494	1.962712
Sales	3,881	5255.57	22592.01	0	232882.5
Sales growth	3,881	-923.708	3877.875	-39292	1879
Shares outstanding	3,881	251907.5	400416.7	1221	4146693

| Spread | 3,881 | 0.063189 | 0.4723282 | 0 | 12.55 |
| Variability | 3,881 | 0.00121 | 0.0082399 | 0 | 0.3912578 |

Panel D: Non-mining firms descriptive statistics for the bid-ask spread dataset for the period January 30th 2017 – February 19th 2017 (announcement of proposed executive orders)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	55,395	103.2615	4069.453	0.0596	252838
Assets total	55,395	16550.96	108497.2	0	2490972
Bid price	55,395	103.1478	4067.86	0.0595	252705
Capital intensity	50,507	1.572065	7.948757	0	175.6522
Cash return	52,410	0.022861	0.8615092	-18.07163	43.53194
Change in net income	55,395	5.449267	741.8902	-11293.95	14956
Debt total	55,395	3716.683	21528.94	0	495354
EBITDA	55,395	834.8893	3294.419	-1502	56690
IBEI	55,395	293.6099	1458.999	-6949	24733
Leverage	52,410	0.270224	0.3030194	0	6.206513
Market capitalization	55,395	5839492	22100000	-28600000	404000000
Net income	55,395	301.2346	1478.124	-6486.795	24733
PPE	55,395	3371.564	18121.21	0	425257
Price	55,395	102.5753	4067.157	-193.2	252838
Relative spread	55,395	1	0.4371046	-2.8125	7.627373
Return	55,395	0.001834	0.0341279	-0.764103	2.498995
Return on assets	52,410	-0.04085	0.9183611	-18.41292	43.53393
Sales	55,395	4144.188	17086.38	0	482154
Sales growth	55,395	75.10865	2007.276	-39886	28981
Shares outstanding	55,395	127401.5	405256.4	50	10100000
Spread	55,395	0.113737	1.959874	-15.5156	169
Variability	55,395	0.001168	0.0350243	0	6.244976

Table 4: Descriptive statistics dataset turnover and two stage analysis for the period January 30th 2017 – February 19th 2017

Panel A: Sample selection period January 30th 2017 – February 19th 2017 (announcement of executive orders)

	#Observations	Unique firms	Mining firms
CRSP sample of observations for bid-ask spread analysis	106024	7066	304
Less: Observations with missing values in CRSP data	-161	-10	-2
	105863	7056	302
CRSP sample merged with CCMD sample			
Less: Observations with missing values in CCMD data	-46587	-3103	-43
	59276	3953	259
Merged sample of observations for turnover analysis and regression analyses			
Less: Observations with missing values for turnover	-29052	-1936	-219
Total	**30224**	**2017**	**40**

Panel B: Full sample descriptive statistics for the turnover and two stage analysis dataset for the period January 30th 2017 – February 19th 2017 (announcement of proposed executive orders)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	30,224	28.73877	63.06186	0.0596	1649.24
Assets total	30,224	3674.734	19432.79	0	920291.3
Bid price	30,224	28.63039	63.00376	0.0595	1648.96
Capital intensity	28,351	1.899199	9.64242	0	174.5564
Cash return	30,141	-0.05705	0.5223046	-18.0716	0.9259047
Change in net income	30,224	5.923341	455.2983	-9489	6529
Debt total	30,224	898.6933	4883.606	0	162675.2
EBITDA	30,224	276.6876	1558.094	-1502	29816
IBEI	30,224	87.287	887.1414	-6949	19478
Leverage	30,141	0.227062	0.317755	0	6.206513
Market capitalization	30,224	2981440	16800000	-1313250	404000000
Net income	30,224	89.42351	879.2031	-3569	19478
Number of trades	28,778	3481.969	8858.707	0	114910
PPE	30,224	766.462	4320.275	0	90105

Variable	#Observations	Mean	SD	Minimum	Maximum
Price	30,224	27.98842	63.34946	-125.5	1648.96
Relative spread	30,224	1	0.4639996	-0.72727	6.5625
Return	30,224	0.002283	0.0425798	-0.7641	2.498995
Return on assets	30,141	-0.13115	0.5366073	-18.4129	0.9940829
Sales	30,224	1313.886	6227.754	0	135987
Sales growth	30,224	109.3425	1069.504	-4711	28981
Shares outstanding	30,224	70661.96	214480.5	197	4740947
Spread	30,224	0.108385	0.5958525	-0.01	56.87
Turnover	28,778	0.057284	0.2526834	0	15.47794
Variability	30,224	0.001818	0.0474123	0	6.244976

Panel C: Mining firms descriptive statistics for the turnover and two stage analysis dataset for the period January 30th 2017 – February 19th 2017 (announcement of proposed executive orders)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	555	19.28336	26.83679	0.1942	129
Assets total	555	1278.733	1364.401	6.802	6354
Bid price	555	18.98839	26.0922	0.193	128.1
Capital intensity	510	6.859912	5.928262	0	20.76829
Cash return	555	-0.1036	0.62204	-3.45945	0.399761
Change in net income	555	127.2176	467.8876	-264.228	3833
Debt total	555	473.9598	719.518	0	5176
EBITDA	555	66.66625	239.9629	-621.119	692.22
IBEI	555	-69.0756	247.6364	-979.709	339.398
Leverage	555	0.349431	0.293983	0	1.354562
Market capitalization	555	1032083	1338810	-341109	4938178
Net income	555	-68.6054	247.3434	-979.709	339.398
Number of trades	475	4250.726	7303.371	1	34230
PPE	555	1945.233	2848.073	0	20915

Price	555	15.34824	28.84014	-125.5	128.75
Relative spread	555	1	0.497152	0	4.460432
Return	555	-0.00229	0.049438	-0.62551	0.471503
Return on assets	555	-0.19491	0.531371	-2.87494	0.284379
Sales	555	425.8739	549.2839	0	1931.453
Sales growth	555	-74.2351	218.0506	-975.411	202.486
Shares outstanding	555	69495.2	55412.52	2284	225891
Spread	555	0.294971	1.214446	0	12.55
Turnover	475	0.052401	0.066723	0.000343	0.274029
Variability	555	0.002445	0.020135	0	0.391258

Panel D: Non-mining firms descriptive statistics for the turnover and two stage analysis dataset for the period January 30th 2017 – February 19th 2017 (announcement of proposed executive orders)

Variable	#Observations	Mean	SD	Minimum	Maximum
Ask price	29,669	28.91565	63.52983	0.0596	1649.24
Assets total	29,669	3719.555	19610.03	0	920291.3
Bid price	29,669	28.81075	63.47634	0.0595	1648.96
Capital intensity	27,841	1.808327	9.673566	0	174.5564
Cash return	29,586	-0.05618	0.5202238	-18.0716	0.9259047
Change in net income	29,669	3.654363	454.7594	-9489	6529
Debt total	29,669	906.6385	4927.744	0	162675.2
EBITDA	29,669	280.6163	1571.99	-1502	29816
IBEI	29,669	90.21198	894.5007	-6949	19478
Leverage	29,586	0.224767	0.3177385	0	6.206513
Market capitalization	29,669	3017905	16900000	-1313250	404000000
Net income	29,669	92.37966	886.4764	-3569	19478
Number of trades	28,303	3469.067	8882.026	0	114910
PPE	29,669	744.4114	4340.045	0	90105

Price	29,669	28.22487	63.79382	-68.625	1648.96
Relative spread	29,669	1	0.4633658	-0.72727	6.5625
Return	29,669	0.002368	0.0424372	-0.7641	2.498995
Return on assets	29,586	-0.12995	0.5366416	-18.4129	0.9940829
Sales	29,669	1330.497	6284.092	0	135987
Sales growth	29,669	112.7765	1078.752	-4711	28981
Shares outstanding	29,669	70683.79	216344.8	197	4740947
Spread	29,669	0.104895	0.5774752	-0.01	56.87
Turnover	28,303	0.057366	0.2546478	0	15.47794
Variability	29,669	0.001807	0.0477745	0	6.244976

7. Empirical results

In section 5 and 6, I discussed the research design and data collection. In this section I will combine those last two sections with section 4, by testing the derived hypotheses. First, I discuss the results for the test period concerning the announcement of the Dodd-Frank Act Section 1502 in section 7.1 and 7.2. In section 7.1, I discuss the results of the univariate analyses for both the bid-ask spread and the share turnover. In section 7.2, I continue with the multivariate analyses for this period. I do the same for the period concerning the announcement of the Trump administration's proposed executive orders to change or cancel the increased disclosure requirements of section 1502 in section 7.3 and 7.4, respectively. To derive all results I used the STATA Software Application[5].

In all tables of this section, the variable relative bid-ask spread is defined as follow:

$$\log relative\ bid - ask\ spread = \log \frac{ask\ price - bid\ price}{average\ spread\ between\ ask\ price\ and\ bid\ price}$$

In all tables of this section, the variable relative share turnover is defined as follow:

$$\log turnover = \log \frac{number\ of\ shares\ traded}{number\ of\ shares\ outstanding}$$

7.1 Univariate analyses for the period of the Dodd-Frank Act Section 1502 becoming effective

Univariate analyses are performed for both the change in bid-ask spread and the change in turnover for the period around the Dodd-Frank Act Section 1502 becoming effective. These tests are performed to obtain a first impression of the effects of the increased disclosure requirements on both the information asymmetry expressed as bid-ask spread and on the cost of capital, expressed by share turnover. Section 7.1.1 and 7.1.2 describe the results for the univariate tests concerning the bid-ask spread and the share turnover, respectively. Section 7.1.3 gives an interpretation of the results combined with the first hypothesis of section 4.

7.1.1 Univariate analysis of the bid-ask spread for the period of the Dodd-Frank Act Section 1502 becoming effective

In this section, the change in bid-ask spread as a result of the increased disclosure requirements of section 1502 becoming effective is tested. The objective of this univariate analysis is to obtain a first insight in the difference in the data that will be tested more extensively in the multivariate analyses in section 7.2. This univariate test concerns the period December 21st 2011 until January 10th 2012. Table 5 displays the results of the two paired t-test performed.

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[5] For more information about this software, see: https://www.stata.com/.

Table 5 shows that there has occurred a significant change for both non-mining and mining firms in the period of section 1502 becoming effective. As a result of these changes, the difference between non-mining and mining firms has changed from non-significant to significant in this period. For both groups of firms, the bid-ask spread decreases over the period. This decrease is bigger for firms operating in the mining industry and for both periods of observations the bid-ask spread for non-mining firms is lower than for mining firms.

Table 5: Two paired t-test bid-ask spread for the period December 21st 2011 – January 10th 2012

Panel A: Two paired t-test bid-ask spread December 21 2011 – January 10 2012					
	Non-mining		Mining		Δ Non-mining – mining
	N	Mean	N	Mean	Mean
Before	24445	-0.11257	1817	-0.09754	-0.01503
After	20935	-0.10309	1564	-0.06293	-0.04016***
Δ Before – after	45,380	-0.00948**	3381	-0.03461**	0.02513**

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.1.2 Univariate analysis of the turnover after the Dodd-Frank Act Section 1502 becoming effective

Even as for the bid-ask spread, two paired t-tests are performed for the difference in turnover between mining and non-mining firms and the difference before and after the Dodd-Frank Act Section 1502 becoming effective. The results of these t-tests are described in this section.

Table 6 displays the results of these tests. The results show no significant difference over the periods for both groups, but a significant difference between groups for both periods. For both periods the turnover for mining firms is significantly higher than for non-mining firms, implying lower cost of capital for firms operating in the mining industry in both the period before section 1502 becoming effective and the period after.

Table 6: Two paired t-test turnover for the period December 21 2011 – January 10 2012

Panel A: Two paired t-test turnover December 21 2011 - January 10 2012

	Non-mining		Mining		Δ Non-mining – mining
	N	Mean	N	Mean	Mean
Before	12341	-4.20595	343	-3.71049	-0.49545***
After	10578	-4.20913	294	-3.71064	-0.49849***
Δ Before – after	22919	0.003182	637	0.000147	0.003035

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.1.3 Interpretation of the univariate analyses' results

In this section, the results described in the last two sections are interpreted and discussed. The first univariate analysis concerns the bid-ask spread. The results indicate that a significant increase in bid-ask spread has occurred for both non-mining and mining firms after the implementation of section 1502. This increase is bigger for mining firms than for non-mining firms. As a result, a significant difference between the bid-ask spread of non-mining firms and mining firms arose after section 1502 becoming effective. This result is in partly in contrast with hypothesis 1 which is expecting a decrease of the bid-ask spread of mining firms as a result of the decreased information asymmetry and not for non-mining firms. On the other hand, the decline in bid-ask spread for mining firms is more extensive than the decline in bid-ask spread for non-mining firms. This information asymmetry was expected to decrease as a result of the increased disclosure requirements for mining firms as a part of section 1502. The humanitarian objective of section 1502 to end the extremely violent conflicts in the DRC should have been achieved by more transparency, which would allow investors to make their own choice to contribute to these violent conflicts. The increased disclosure requirements should ensure that investors are able to obtain all information, so there is no more relevant information regarding to this humanitarian goal that is not available to the investors. A possible explanation for the contrast between the result and the expectations is a wrongful implementation of the increased disclosure requirements, which rise suspicions of the information for the investors. This could increase the amount of private information that is not available for investors. Besides, the information could be too complicated for the investors to understand or the information could be interpreted as irrelevant for investors.

The results of the univariate analyses concerning the turnover indicate an insignificantly decline in turnover for both mining and non-mining firms. The difference between the turnover for mining and non-mining firms is significantly higher for mining firms than for non-mining firms in both periods. This indicates that the cost of capital for firms in the mining industry are lower than for firms not operating in the mining industry. The insignificant decline in turnover is not in line with the expectation of a decrease in cost of capital as a result of section 1502 becoming effective, since a decline in turnover

is associated with an increase of the cost of capital. A possible explanation for this increase in cost of capital are investors becoming more alert as a result of the increased disclosure requirements, since they are attended by the introduction of section 1502.

7.2 Multivariate analysis of the Dodd-Frank Act Section 1502 becoming effective

To test the effect of the implementation of the increased disclosure requirements of the Dodd-Frank Act Section 1502, a two-stage regression analysis is performed in which the effect on the bid-ask spread and the turnover are combined. In this section, first the regression analysis is performed for the bid-ask spread, second the regression analysis is performed for the turnover and in the end the two regressions are combined by cross-using the dependent variable as independent control variables.

Regression 1: The first regression is the main bid-ask spread analysis. The dependent variable in this single regression is the relative bid-ask spread. The purpose of this regression is to test the effect of the implementation of the increased disclosure requirements on the information asymmetry, measured by the relative bid-ask spread. The direct effect of the implementation on the bid-ask spread is tested and both control variables and additional firm variables are included in the regression.

Regression 2: The second regression is the main turnover analysis. The dependent variable is the turnover. The purpose of this regression is to test the effect of the implementation of the increased disclosure requirements on the cost of capital, or the required return by investors, measured by the relative share turnover. The direct effect of the implementation on the turnover is tested and control variables and firm variables are included in this single regression.

Regression 3: The third and fourth regression are part of the two-stage analysis. In the third regression the dependent variable is the bid-ask spread. The turnover is included as a control variable in the regression on the bid-ask spread next to the other independent variables, as mentioned in regression 1.

Regression 4: The fourth regression is a regression on the turnover, in which the bid-ask spread is included as a control variable next to the other independent variables, as included in regression 3.

7.2.1 Results of the multivariate analyses

Regression 1: The effect of the implementation of the Dodd-Frank Act Section 1502 on the bid-ask spread

Regression 1 is run to test the effects of the implementation of the increased disclosure requirements of the Dodd-Frank Act Section 1502 on the information asymmetry of firms operating in the mining industry. The dependent variable in regression 1 is the bid-ask spread. The independent variables in this regression are the period of observation, measured as before or after the implementation, the necessity to implement the section, determined as being a firm in the mining industry and measured by SIC code, and the interaction effect of those two independent variables. Besides, control variables and firm

variables are included to filter the effect of the increased disclosure requirements. The control variables included in the regression are the number of shares outstanding, the daily closing price and the variability of the return.

Table 7 displays the results of the multivariate analysis of the relative bid-ask spread for the period of section 1502 becoming effective, sorted by four different models.

Table 7: Multivariate regression analysis for the period December 21st 2011 – January 10th 2012 with bid-ask spread as dependent variable

Panel A: Multivariate tests for the effect of section 1502 becoming effective on the bid-ask spread

	Model 1	Model 2	Model 3	Model 4
Variable	Spread	Spread	Spread	Spread
After	0.011**	0.009**	0.008	0.017**
	(0.005)	(0.005)	(0.005)	(0.007)
Mining	0.027***	0.015	-0.016	0.007
	(0.009)	(0.012)	(0.012)	(0.015)
AfterMining		0.025	0.028	0.021
		(0.018)	(0.018)	(0.021)
Price			0.006***	-0.020***
			(0.002)	(0.004)
Shares outstanding			0.031***	0.030***
			(0.002)	(0.004)
Variability			0.005***	0.002
			(0.001)	(0.001)
Capital intensity				-0.004
				(0.003)
Cash return				0.003
				(0.005)
Earnings growth				-
Leverage				0.004*
				(0.002)
Loss				-0.002
				(0.011)

Sales growth				-0.002
				(0.003)
Size				0.009**
				(0.004)
Constant	-0.113***	-0.113***	-0.417***	-0.408***
	(0.003)	(0.003)	(0.020)	(0.035)
Observations	48,761	48,761	46,563	20,705
Adjusted R^2	0.03%	0.03%	0.81%	1.10%
F-value	7.33	5.53	64.05	20.14
	(2, 48758)	(3, 48757)	(6, 46556)	(12, 20692)
Prob > F	0.0007	0.0009	0.0000	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of all four models show very low values for the adjusted R^2, the highest R^2 in the results of regression 1 is 1.10%. The coefficient of main interest is the variable AfterMining, this variable reflects the effect of the implementation of the increased disclosure requirements since this variable is a dummy variable with value 1 only for observations of mining firms in the period after section 1502 becoming effective. The coefficient for this variable is insignificant in all four models, which indicates that there is no significant change as a result of the implementation of the Dodd-Frank Act Section 1502 on the information asymmetry. Besides, the insignificant value for the coefficient is positive, which would indicate an increase in the bid-ask spread and so an increase in information asymmetry, which is the opposite of the expectation. The coefficient for the variable After gives a significant positive value in the models 1, 2 and 4. This indicates that there is a significant increase in bid-ask spread for all firms after the implementation of section 1502. Other significant variables with significant coefficients in model 4, the most extensive model, are the closing price (negative) and the number of shares outstanding (positive).

The results show no result for the coefficient of the variable Earnings growth, because this variable is omitted because of collinearity in this regression.

Regression 2: The effect of the implementation of the Dodd-Frank Act Section 1502 on the turnover

Regression 2 is run to test the effect of the implementation of section 1502 on the cost of capital for firms operating in the mining industry. In regression 2 the dependent variable has changed from the bid-ask spread to the turnover. As a consequence of the increased disclosure requirements, one could expect a decrease in information asymmetry between investors and an increase in the turnover, defined

as the number of shares daily traded relative to the number of shares outstanding. The independent variables in the regression are the period of observation, measured as before or after section 1502 becoming effective and the necessity to implement the section, determined as being a firm operating in the mining industry or not, characterized by SIC code. Besides those two variables, the main variable implemented in the regression is the interaction effect of those two variables, which combines the fact that an observation is from a firm in the mining industry and observed in the period after the increased disclosure requirements have become effective. Next, control variables and additional firm variables are added to the regression.

In table 8 the results of the regression are displayed and sorted in model 1, 2, 3 and 4.

Table 8: Multivariate regression analysis for the period December 21st 2011 – January 10th 2012 with turnover as dependent variable

Panel A: Multivariate tests for the effect of section 1502 becoming effective on the share turnover			
	Model 1	Model 2	Model 3	Model 4
Variable	Turnover	Turnover	Turnover	Turnover
After	-0.003	-0.003	-0.020	-0.030
	(0.020)	(0.020)	(0.016)	(0.026)
Mining	0.497***	0.495***	0.168***	0.190**
	(0.061)	(0.083)	(0.063)	(0.076)
AfterMining		0.003	-0.013	-0.011
		(0.123)	(0.094)	(0.106)
Price			0.611***	0.669***
			(0.007)	(0.015)
Shares outstanding			0.446***	0.269***
			(0.007)	(0.017)
Variability			0.034***	0.031***
			(0.004)	(0.006)
Capital intensity				-0.006
				(0.011)
Cash return				0.095***
				(0.018)
Earnings growth				-0.125***
				(0.029)

Leverage			-0.047***
			(0.008)
Loss			0.346***
			(0.038)
Sales growth			0.028**
			(0.012)
Size			0.030
			(0.019)
Constant	-4.206***	-4.206***	-9.691***	-8.219***
	(0.014)	(0.014)	(0.074)	(0.147)
Observations	23,556	23,556	22,198	8,172
Adjusted R^2	0.27%	0.27%	40.79%	41.88%
F-value	32.93	21.95	2549.19	453.92
	(2, 23553)	(3, 23552)	(6, 22191)	(13, 8158)
Prob > F	0.0000	0.0000	0.0000	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results displayed in model 3 and 4 of table 8 show a reasonable adjusted R^2 with a maximum value of 41.88%. This indicates that regression 2 explains more of the change in turnover than regression 1 explains of the change in bid-ask spread. Again, the variable of main interest, the dummy variable for the interaction effect of period and industry (AfterMining), does not show a significant coefficient. This is in contrast with the expectations of a significant increase in turnover associated with a decrease in the cost of capital.

The coefficient for the dummy variable Mining is significantly positive, which indicates that the turnover for firms in the mining industry is significantly higher than for firms not operating in the mining industry. This indicates lower cost of capital for mining firms than for non-mining firms in both the period before the section becoming effective and the period after. Besides, for almost all control and firm variables significant coefficients are displayed.

Regression 3: Two-stage analysis of the effect of the implementation of the Dodd-Frank Act Section 1502 on the bid-ask spread and the turnover

In this third regression, the first two regressions are combined into a two-stage analysis. The regressions are combined by adding the dependent variable in one regression as a control variable in the other regression. This results in turnover as a control variable in the regression on bid-ask spread and the use of the bid-ask spread as a control variable in the regression on the turnover. The control variables and

firm characteristics are included in these regressions. For the models of these regressions the dataset used for regression 2 is used. The dataset used for regression 1 cannot be used in the two-stage analysis, because this dataset includes observations of firms that are not listed on NASDAQ exchange, which means that the daily number of trades necessary for the turnover is not available for those observations.

The results are displayed in table 9, divided in four different models. Model 1 concerns a multivariate analysis of the bid-ask spread including all control variables and firm characteristics. Model 2 is an extension of model 1, with the turnover as additional independent variable. Model 3 and model 4 concern the turnover. The difference between these models is model 4 including the bid-ask spread as independent variable.

Table 9: Two stage analysis for the period December 21st 2011 – January 10th 2012

Panel A: Multivariate tests for the effect of section 1502 becoming effective on the bid-ask spread and the share turnover				
	Model 1	Model 2	Model 3	Model 4
Variable	Spread	Spread	Turnover	Turnover
After	-0.007	-0.006	-0.030	-0.030
	(0.012)	(0.012)	(0.026)	(0.025)
Mining	0.038	0.033	0.190**	0.177**
	(0.036)	(0.036)	(0.076)	(0.076)
AfterMining	-0.043	-0.043	-0.011	0.002
	(0.051)	(0.051)	(0.106)	(0.106)
Price	-0.012*	-0.026***	0.669***	0.669***
	(0.007)	(0.008)	(0.015)	(0.015)
Shares outstanding	0.028***	0.023***	0.269***	0.267***
	(0.008)	(0.008)	(0.017)	(0.017)
Variability	0.005**	0.005*	0.031***	0.030***
	(0.003)	(0.003)	(0.006)	(0.006)
Turnover		0.020***		
		(0.005)		
Capital intensity	-0.001	-0.000	-0.006	-0.005
	(0.005)	(0.005)	(0.011)	(0.011)
Cash return	0.000	-0.002	0.095***	0.095***
	(0.009)	(0.009)	(0.018)	(0.018)
Earnings growth	-0.015	-0.012	-0.125***	-0.124***
	(0.014)	(0.014)	(0.029)	(0.029)

Leverage	0.004	0.005	-0.047***	-0.047***
	(0.004)	(0.004)	(0.008)	(0.008)
Loss	-0.003	-0.011	0.346***	0.346***
	(0.018)	(0.018)	(0.038)	(0.038)
Sales growth	-0.002	-0.003	0.028**	0.028**
	(0.006)	(0.006)	(0.012)	(0.012)
Size	0.002	0.000	0.030	0.029
	(0.009)	(0.009)	(0.019)	(0.019)
Spread				0.088***
				(0.023)
Constant	-0.321***	-0.154*	-8.219***	-8.198***
	(0.070)	(0.083)	(0.147)	(0.148)
Observations	8,199	8,160	8,172	8,160
Adjusted R^2	0.37%	0.52%	41.88%	42.00%
F-value	3.32	4.04	453.92	423.00
	(13, 8185)	(14, 8145)	(13, 8158)	(14, 8145)
Prob > F	0.0000	0.0000	0.0000	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results show low values for R^2 in the first two models, but values around 42% for model 3 and model 4. The coefficient for the dummy variable AfterMining is not significant in all four models, which indicates that there is no significant change in neither the bid-ask spread nor the turnover as a result of the implementation of the increased disclosure requirements for firms operating in the mining industry. The use of the turnover and the bid-ask spread as independent variables gives significant coefficients in all four models. In model 2, with the bid-ask spread as dependent variable, the coefficient for turnover is significantly positive and in model 4, with the turnover as dependent variable, the coefficient for bid-ask spread is also significantly positive.

7.2.2 Interpretation of the results of the multivariate analyses

In this section, I interpret and discuss the results described in the last section concerning the two-stage analysis, combined with the derived hypotheses of section 4.

The first regression models concern the bid-ask spread. The R^2 of those models is very low. The highest R^2 is reached in the fourth regression model and has a value of only 1.10%. This indicates that the independent variables in the regression only explain 1.10% of the variation in the relative bid-ask

spread. The variable of main interest is the interaction effect of an observation of a mining firm in the period after the implementation of the increased disclosure requirements. The Dodd-Frank Act Section 1502 has the humanitarian objective to end the extremely violent conflicts in the DRC by enabling investors to obtain all available information to make their own considerations whether they are contributing to these violent conflicts or not. The expected result of the implementation of section 1502 is a decrease in information asymmetry and so a decrease in the bid-ask spread, as mentioned in hypothesis 1 of section 4. The results show a positive coefficient for this variable that is not significant. This is the opposite of the expected result, since this is indicating that there is no significant effect on the bid-ask spread as a result of the increased disclosure requirements of section 1502. The coefficient of the interaction effect was expected to be significantly negative, since the increased disclosure requirements would increase the available information for investors and as a consequence decrease the information asymmetry expressed by a decrease in the bid-ask spread.

The models of the second regression concern the turnover. The R^2 of model 1 and 2 of this second regression are even very low, but model 3 and model 4 show values of an R^2 around 41%. The results show a significantly positive coefficient for the variable Mining, which indicates that that an observation has a higher probability for a higher turnover when it concerns a mining firm. This higher turnover is associated with lower cost of capital for mining firms. The R^2 of model 4 has a value of 41.88%, which indicates that 41.88% of the change in turnover is explained by the independent variables included in model 4 of regression 2. This could be explained by the majority of control variables and firm variables showing significant coefficients. The results do not show a significant coefficient for the interaction effect of the industrial and the periodic variable. This is not in line with hypothesis 2, which contains the expectation of an increase in turnover as a result of the decrease in information asymmetry.

The results of the two-stage analyses are in line with the results of the single regression models. The regression on the bid-ask spread extended with turnover as independent variable results in an adjusted R^2 of only 0.52% and neither a significant coefficient for the interaction effect nor for the periodic and mining variable. The coefficient for the turnover is significantly positive, which indicates a positive effect on the bid-ask spread when the turnover increases. The results of the two-stage analysis with turnover as dependent variable has a value of an adjusted R^2 of 42.00%. The regression result is equal to the result of model 3 of regression 2 and results in a significantly positive coefficient for mining and no significant coefficients for both the periodic effect and the interaction effect. The bid-ask spread has a significantly positive coefficient in the regression on the turnover, which indicates that an increasing bid-ask spread increases the turnover. This is neither in accordance with the expectations of a decreasing information asymmetry increasing the turnover, since a decreasing information asymmetry results in a decrease of the cost of capital.

7.3 Univariate analyses for the period of the announcement of the Trump administration's proposed executive orders to change section 1502

On February 9th 2017, the Trump administration announced proposed executive orders to change or even cancel the increased disclosure requirements of the Dodd-Frank Act Section 1502. To obtain a first impression of the effect of this announcement on investors, univariate analyses are performed for both the bid-ask spread and the turnover. In this analyses, the bid-ask spread expresses the change in information asymmetry and the turnover expresses the change in cost of capital. Section 7.3 contains the results of the univariate analyses for both the bid-ask spread and the share turnover. Section 7.4 describes and interprets the results of the multivariate analysis.

7.3.1 Univariate analysis of the bid-ask spread after the proposed executive orders

This section describes the results of the univariate tests of the difference in bid-ask spread performed for the period before and after the announcement of the proposed executive orders of the Trump administration to change the Dodd-Frank Act Section 1502. This announcement was dated on February 9th 2017. The period for performing this tests contains of the days between January 30th 2017 and February 19th 2017. For this period, the same tests are performed as for the period of the Dodd-Frank Act Section 1502 becoming effective. Table 10 shows the results of these tests. The results show a decline in the mean bid-ask spread for both mining and non-mining firms. This decline is significant for non-mining firms, but not significant for mining firms. The difference between the bid-ask spread of mining firms and non-mining firms is not significant in both periods and shows a higher bid-ask spread for mining firms in both periods.

Table 10: Two paired t-test bid-ask spread for the period January 30th 2017 – February 19th 2017

Panel A: Two paired t-test bid-ask spread January 30th 2017 – February 19th 2017					
	Non-mining		Mining		Δ Non-mining – mining
	N	Mean	N	Mean	Mean
Before	33222	-0.08514	2327	-0.07403	-0.01111
After	22144	-0.10265	1548	-0.09948	-0.00317
Δ Before – after	55366	0.017505***	3875	0.025448	0.007943

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.3.2 Univariate analysis of the turnover after the proposed executive orders

A two paired t-test is performed for the difference in share turnover between non-mining and mining firms for both the periods before and after the announcement of the proposed executive orders to change or cancel the increased disclosure requirements of section 1502. Table 11 displays the results of this two paired t-test. The results show neither significant differences between the turnover of mining firms

and non-mining firms in both periods, nor significant differences between the turnover of non-mining and mining firms before and after the announcement. For both periods, the turnover for non-mining firms is higher than for mining firms. Over the period, the turnover of mining firms has insignificantly decreased and the turnover of non-mining firms has insignificantly increased.

Table 11: Two paired t-test turnover for the period January 30th 2017 – February 19th 2017

Panel A: Two paired t-test turnover January 30th 2017 - February 19th 2017					
	Non-mining		Mining		Δ Non-mining – mining
	N	Mean	N	Mean	Mean
Before	16846	-3.76879	288	-3.80843	0.039635
After	11232	-3.76882	187	-3.79138	0.022566
Δ Before – after	28078	0.0000212	475	-0.01705	0.017069

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.3.3 Interpretation of the univariate analyses' results

In this section, the results described in the last two sections are interpreted and discussed, by combining those with the derived hypotheses in section 4. The first univariate analysis concerns the bid-ask spread. Since the Dodd-Frank Act Section 1502 includes increased disclosure requirements to end the conflicts in the DRC, the cancelation of this section is expected to increase the information asymmetry, since there are no longer requirements that ensure investors of this information. As a result of the expected increase in information asymmetry, the bid-ask spread is also expected to increase. The results are not in line with the expectations of an increase of the bid-ask spread as a result of these proposed orders to cancel the increased disclosure requirements. A possible explanation could be that the orders are proposed executive orders and so not concerning any current changes. The results indicate a significant decrease of the bid-ask spread of non-mining firms over the period. This significant decrease is not present for mining firms. For both groups of firms, the bid-ask spread has declined over the period. This indicates a decrease in information asymmetry. The proposed executive orders of the Trump administration concerning changing or even cancelling the increased disclosure requirements of section 1502 could have had a declining effect on the decrease of the bid-ask spread for mining firms. This could be reasonable, because there is a possible effect of those orders that mining firms do no longer have to implement the increased disclosure requirements, which would increase the information asymmetry between firms and investors.

The second univariate analysis concerns the turnover. The results of this t-test show no significant differences, neither over the period nor between the groups of firms. There is an insignificantly increase in turnover for mining firms and an insignificantly decrease in turnover for non-mining firms. These differences are very small and not indicating any real differences. This is not in line with the expectation of increasing cost of capital for mining firms as a result of the proposed executive orders to change or

cancel section 1502. The expectation of increasing cost of capital is associated with an expectation of a decrease in turnover as the result of an increase in information asymmetry due to the change or cancellation of the increased disclosure requirements for mining firms. Even as for the insignificant change in bid-ask spread over this period, the insignificant change in turnover could be explained by the orders being proposed orders. Investors might not directly react to the proposed orders, since it might take some time before real changes are made.

7.4 Multivariate analysis of the announcement of the proposed executive orders to change section 1502

To test the effect of the announcement of the Trump administration of the proposed executive orders to change or cancel the Dodd-Frank Act Section 1502, because of ineffectiveness of the rule for the humanitarian objective it was supposed to alleviate, a two-stage regression analysis is performed in which the effects on the bid-ask spread and the turnover are combined. In this section, first the regression analysis is performed for the change in bid-ask spread, second the regression analysis is performed for the change in turnover and in the end the two regressions will be combined by cross-using the dependent variable as independent control variable in the other regression. The single regressions are performed based on two different datasets, to increase the number of observations available for the regression on the bid-ask spread. For the regression on the turnover and the two-stage analysis, a smaller dataset is available because of the limitation of the availability of the number of shares daily traded only being available for firms listed on the NASDAQ exchange.

7.4.1 Results of the multivariate analyses

Regression 1: The effect of the Trump administration announcing proposed executive orders to change or cancel the Dodd-Frank Act Section 1502 on the bid-ask spread

Regression 1 is a single regression to test the effect of the announcement of the proposed executive orders of the Trump administration to change or cancel the increased disclosure requirements of section 1502. The dependent variable in regression 1 is the bid-ask spread. The independent variables in this regression are the period of observation, measured as before or after the announcement, the necessity to apply the section, determined as being a firm in the mining industry and measured by SIC code, and the interaction effect of these two independent variables. Besides, control variables and firm variables are included to filter the effect of the increased disclosure requirements. The control variables included in the regression are the number of shares outstanding, the daily closing price and the variability of the return.

The results of the regression are displayed in table 12 and divided in model 1, 2, 3 and 4.

Table 12: Multivariate regression analysis for the period January 30th 2017 – February 19th 2017 with bid-ask spread as dependent variable

Panel A: Multivariate tests for the effect of the proposed executive orders to change section 1502 on the bid-ask spread

	Model 1	Model 2	Model 3	Model 4
Variable	Spread	Spread	Spread	Spread
After	-0.018***	-0.018***	-0.015***	-0.021***
	(0.004)	(0.004)	(0.004)	(0.007)
Mining	0.008	0.011	-0.012	-0.019
	(0.008)	(0.010)	(0.011)	(0.022)
AfterMining		-0.008	-0.010	0.007
		(0.016)	(0.016)	(0.033)
Price			0.012***	-0.022***
			(0.002)	(0.004)
Shares outstanding			0.028***	0.023***
			(0.002)	(0.004)
Variability			0.005***	-0.001
			(0.001)	(0.001)
Capital intensity				-0.003
				(0.003)
Cash return				0.001
				(0.005)
Earnings growth				-0.016**
				(0.007)
Leverage				-0.000
				(0.003)
Loss				-0.015
				(0.010)
Sales growth				-0.002
				(0.003)
Size				0.003
				(0.004)
Constant	-0.085***	-0.085***	-0.378***	-0.255***
	(0.003)	(0.003)	(0.017)	(0.036)
Observations	59,241	59,241	55,828	17,233
Adjusted R^2	0.03%	0.03%	0.83%	0.76%
F-value	10.73	7.23	78.95	11.14
	(2, 59238)	(3, 59237)	(6, 55821)	(13, 17219)
Prob > F	0.0000	0.0001	0.0000	0.0000

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The adjusted R^2 in the results of all four models of regression 1 is very low with a maximum value of 0.83% in model 3. This indicates that regression 1 is only able to explain a small part of the change in the bid-ask spread during the period of the announcement of the proposed executive orders. The results show significantly negative coefficients for the periodic variable in all four models. This indicates a significant difference over the period of the announcement, for which the bid-ask spread decreases for both mining and non-mining firms after the announcement. The coefficient for the interaction effect, combining the periodic variable and the industry characteristics, does not show a significant coefficient in all four models.

Regression 2: The effect of the Trump administration announcing proposed executive orders to cancel Dodd-Frank Act Section 1502 on the turnover

Regression 2 is a single regression to test the effect of the announcement of the proposed executive orders of the Trump administration to change or cancel section 1502. The dependent variable in regression 2 is the share turnover. The independent variables in this regression are the period of observation, measured as before or after the announcement, the necessity to apply the section, determined as being a firm in the mining industry and measured by SIC code, and the interaction effect of these two independent variables. Besides, control variables and firm variables are included to filter the effect of the increased disclosure requirements. The control variables included in the regression are the number of shares outstanding, the daily closing price and the variability of the return.

The results of regression 2 are displayed in table 13 and sorted in four models.

Table 13: Multivariate regression analysis for the period January 30th 2017 – February 18th 2017 with turnover as dependent variable

Panel B: Multivariate tests for the effect of the proposed executive orders to change section 1502 on the turnover				
	Model 1	Model 2	Model 3	Model 4
Variable	Turnover	Turnover	Turnover	Turnover
After	0.000	-0.000	0.009	-0.012
	(0.018)	(0.018)	(0.015)	(0.023)
Mining	-0.033	-0.040	0.258***	0.312**
	(0.067)	(0.086)	(0.075)	(0.140)
AfterMining		0.017	-0.024	-0.155
		(0.137)	(0.118)	(0.216)
Price			0.490***	0.516***
			(0.006)	(0.014)
Shares outstanding			0.235***	0.055***
			(0.006)	(0.014)
Variability			0.067***	0.022***
			(0.003)	(0.005)

Capital intensity				-0.003
				(0.010)
Cash return				0.142***
				(0.016)
Earnings growth				-0.011
				(0.024)
Leverage				0.059***
				(0.008)
Loss				-0.022
				(0.034)
Sales growth				0.081***
				(0.009)
Size				-0.052***
				(0.014)
Constant	-3.769***	-3.769***	-6.800***	-4.929***
	(0.011)	(0.011)	(0.070)	(0.133)
Observations	28,553	28,553	26,523	7,504
Adjusted R^2	-0.01%	-0.01%	27.07%	35.00%
F-value	0.12	0.09	1641.71	311.80
	(2, 28550)	(3, 28549)	(6, 26516)	(13, 7490)
Prob > F	0.8865	0.968	0.0000	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The adjusted R^2 for the regressions on the share turnover are higher than the adjusted R^2 for the regressions on the bid-ask spread. This is a positive result for this research, since it indicates that the regression on the turnover explains more of the change in share turnover. The maximum adjusted R^2 is showed in model 4, and has a value of 35%. This indicates that the model is able to explain 35% of the change in the turnover. The results show only a significantly positive coefficient for the mining variable and no significant coefficients for neither the periodic variable nor for the interaction effect of the periodic and industrial variables.

Regression 3: Two-stage analysis of the effect of the implementation of the Trump administration announcing proposed executive orders to cancel Dodd-Frank Act Section 1502

In this third regression, the first two regressions are combined to a two-stage analysis. The first and second regression of this section are combined by adding the dependent variable of one regression as a control variable in the other regression. This results in turnover as a control variable in the regression on bid-ask spread and the use of the bid-ask spread as a control variable in the regression on the turnover. The control variables and firm variables are included in these regressions. For all models of these regressions the dataset used to run the regression is the same as the dataset used to run regression 2. The dataset used for regression 1 cannot be used, because this dataset includes observations of firms

that are not listed on NASDAQ exchange, which means that the daily number of trades necessary for the turnover is not available for these observations.

The results of regression 3 are displayed in table 14 and sorted by model 1, 2, 3 and 4.

Table 14: Two stage analysis for the period January 30th 2017 – February 19th 2017

Panel C: Multivariate tests for the effect of the proposed executive orders to change section 1502 on the bid-ask spread and the share turnover

	Model 1	Model 2	Model 3	Model 4
Variable	Spread	Spread	Turnover	Turnover
After	-0.027***	-0.030***	-0.012	-0.008
	(0.010)	(0.011)	(0.023)	(0.023)
Mining	-0.089	-0.134**	0.312**	0.329**
	(0.054)	(0.065)	(0.140)	(0.140)
AfterMining	0.183**	0.219**	-0.155	-0.185
	(0.083)	(0.100)	(0.216)	(0.216)
Price	-0.031***	-0.047***	0.516***	0.520***
	(0.006)	(0.007)	(0.014)	(0.014)
Shares outstanding	0.027***	0.026***	0.055***	0.051***
	(0.006)	(0.007)	(0.014)	(0.014)
Variability	-0.001	-0.003	0.022***	0.023***
	(0.002)	(0.002)	(0.005)	(0.005)
Turnover		0.030***		
		(0.005)		
Capital intensity	-0.005	-0.005	-0.003	-0.002
	(0.004)	(0.004)	(0.010)	(0.010)
Cash return	0.005	0.001	0.142***	0.142***
	(0.007)	(0.008)	(0.016)	(0.016)
Earnings growth	-0.026**	-0.027**	-0.011	-0.007
	(0.011)	(0.011)	(0.024)	(0.024)
Leverage	-0.000	-0.003	0.059***	0.059***
	(0.004)	(0.004)	(0.008)	(0.008)
Loss	-0.021	-0.018	-0.022	-0.020
	(0.015)	(0.016)	(0.034)	(0.034)
Sales growth	-0.005	-0.007	0.081***	0.082***
	(0.004)	(0.004)	(0.009)	(0.009)
Size	0.004	0.005	-0.052***	-0.052***
	(0.006)	(0.006)	(0.014)	(0.014)
Spread				0.141***
				(0.025)
Constant	-0.265***	-0.136**	-4.929***	-4.888***
	(0.060)	(0.067)	(0.133)	(0.133)
Observations	8,037	7,504	7,504	7,504
Adjusted R^2	0.91%	1.37%	35.00%	35.27%

F-value	6.67	8.47	311.80	293.04
	(13, 8023)	(14, 7489)	(13, 7490)	(14, 7489)
Prob > F	0.0000	0.0000	0.0000	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The dependent variable in model 1 and model 2 is the bid-ask spread. The difference between those two models is the addition of the turnover as independent control variable in model 2. The adjusted R^2 for both model 1 and model 2 is very low, around 1%. The coefficient for turnover as an independent variable in model 2 is significantly positive. The coefficients for the periodic variable, the industry variable and the interaction effect are also significant in this model, with negative coefficients for the periodic and industrial variable and a positive coefficient for the interaction effect. This is different in the third and fourth model, in which the dependent variable is the turnover. In these models the coefficients for the periodic and the interaction variables are not significant. The coefficient for the industrial variables is significantly positive, which is the opposite of the first two models. The adjusted R^2 of model 3 and model 4 is relatively higher than those for model 1 and 2. The adjusted R^2 of model 3 and model 4 is around 35%, indicating that the model is explaining 35% of the total change in turnover during the observation period.

7.4.2 Interpretation of the results of the multivariate analyses

In this section, I interpret and discuss the results described in section 7.4.1. The first regression models concern the bid-ask spread. The adjusted R^2 of those models is very low, indicating that the independent variables in the regression explain only 0.76% of the variation in the relative bid-ask spread. The variable of main interest is the interaction effect of an observation of a mining firm in the period after the announcement of the proposed executive orders to change or cancel the increased disclosure requirements of section 1502. According to the third hypothesis in section 4, the coefficient of this variable is expected to be positive. This expectation is because of the increased disclosure requirements of section 1502 which may be no longer effective after the change or cancelation of section 1502. The increased disclosure requirements ensure investors to be able to obtain information. When the Trump administration decides to cancel the increased disclosure requirements of section 1502, this will result in an expected increase in information asymmetry and so in the bid-ask spread. Table 12 shows no significant coefficients for this interaction effect, which is not in line with the expectations of a positive change in the bid-ask spread. The coefficient for the periodic variable is significantly negative, which indicates that the mean bid-ask spread of all observations decreases after the announcement.

The results of the single regression on the turnover show a relatively much higher adjusted R^2 with a maximum value of 35% and show a significantly positive coefficient for the industrial variable. This indicates that mining firms have a higher share turnover than non-mining firms in both periods. Since a higher turnover is associated with lower cost of capital, this also indicates lower cost of capital for

firms operating in the mining industry than for firms not operating in the mining industry. The variable of main interest, the interaction effect, does not show a significant coefficient. This is in contrast with the expectations of a decrease in turnover as a result of the announcement of the possible cancelation of the increased disclosure requirements for mining firms, as mentioned in the fourth hypothesis in section 4.

The two-stage analysis combines the first two regressions, by using the dependent variables as independent variables in the other regression. Model 1 and 2 of the two-stage analysis concern the bid-ask spread as dependent variable, with low values for the adjusted R^2. The values of the coefficient for both the periodic and the industrial variables are significantly negative. This coefficients indicate that the relative bid-ask spread decreases for both mining and non-mining firms after the announcement of the proposed executive orders. Besides, the significantly negative coefficient for the industrial variable indicates that there is a significant difference between the relative bid-ask spread of mining and non-mining firms, with a lower spread for mining firms. The independent variable of main interest is the interaction effect of the periodic and the industrial variable. Model 1 and 2 of table 14 show a significantly positive coefficient for this interaction effect. This coefficient indicates that the relative bid-ask spread for mining firms in the period after the announcement of the proposed executive orders to change or cancel section 1502 is higher than for observations of non-mining firms in both periods and for observations of mining firms in the period before the announcement. This result is in line with hypothesis 3 of section 4, since the information asymmetry and the bid-ask spread are expected to increase as a result of the change or cancelation of the increased disclosure requirements of section 1502, which will decrease the ability of investors to obtain information. Besides, model 2 shows a significantly positive coefficient for turnover as an independent variable in the regression. This indicates that an increase in turnover has a positive effect on the bid-ask spread.

Model 3 and 4 of table 14 show the results for the multivariate regressions with turnover as dependent variable. These two models show values of an adjusted R^2 around 35%. In contrast to the first two models, model 3 and 4 show insignificant coefficients for the periodic variable and the interaction variable. This is in contrast with the expectation of hypothesis 4. Hypothesis 4 of section 4 expects a decreasing turnover for mining firms after the announcement of the proposed executive orders to cancel the increased disclosure requirements, and so a significantly negative coefficient for the interaction effect. Both model 3 and 4 show a significantly positive coefficient for the industrial variable, indicating a higher turnover and lower cost of capital for mining firms. The coefficient for the bid-ask spread as independent variable is significantly positive, indicating a higher turnover as a result of a higher bid-ask spread. This is the opposite of the expectation of increasing cost of capital as a result of an increase in information asymmetry.

8.   Conclusion

The main objective of this master thesis is to answer the research question. This research question is as follows:

"Does the US market react to the disclosures of US listed firms due to the implementation of the Dodd-Frank Act Section 1502?"

To answer this research question I have performed several analysis both for the periods before and after the implementation of the Dodd-Frank Act Section 1502 and the periods before and after the announcement of the proposed executive orders of the Trump administration to change or cancel the increased disclosure requirements of section 1502. In this conclusion I first describe the main results of the research performed in this thesis. Second, I describe some limitations of the research. Third, I mention some suggestions for further research.

8.1   Summary of results

Vast streams of literature have reported the decreasing effects of an increase of disclosure requirements on the bid-ask spread and the cost of capital. In this research, I have investigated the effects of the increased disclosure requirements of the Dodd-Frank Act Section 1502. The increased disclosure requirements of section 1502 are only applicable to firms operating in the mining industry. To control for other variables that might influence the change in bid-ask spread and the cost of capital, measured as change in turnover, the observations used for the research include both mining and non-mining firms.

The first periods of observation are the periods before and after the implementation of the Dodd-Frank Act Section 1502. The first hypothesis in this thesis examines the effect of the increased disclosure requirements on the bid-ask spread. The hypothesis indicates that the increased disclosure requirements will result in a decrease in the bid-ask spread, because of a decrease in information asymmetry. The results show no significant coefficient for the interaction effect of the periodic variable and the industrial variable. This indicates that there is no significant difference between the observations of the bid-ask spread of mining firms in the period after the Dodd-Frank Act Section 1502 has become effective and the observations of both non-mining firms in both periods and the observations of mining firms in the period before section 1502 has become effective.

The results are not in line with hypothesis 1. Thus, I reject H1.

Hypothesis 2 indicates a decrease in the cost of capital as a result of a decrease in information asymmetry. The cost of capital are expressed as the share turnover, with lower cost of capital expressed as a higher turnover. The results show no significant coefficient for the interaction effect of the periodic and industrial variable. This indicates that there is no significant difference between the observations of the turnover of mining firms after section 1502 has become effective and the observations of both non-mining firms in both periods and the observations of mining firms in the period before section 1502 has

become effective. Besides, the results show a significant positive coefficient when the bid-ask spread is used as independent variable in the regression on the turnover. Which indicates that a higher bid-ask spread and so an increase in information asymmetry, will result in a higher turnover and a lower cost of capital. This is neither in line with the expectations.

The results are not in line with the hypothesis, thus I reject H2.

The second periods of observations are the periods before and after the announcement of the proposed executive orders of the Trump administration to change or cancel section 1502, and so the increased disclosure requirements it contains.

The third hypothesis contains the expectation that this announcement will result in an increase in information asymmetry, since it does no longer require firms operating in the mining industry to apply the increased disclosure requirements. This will decrease the ability of investors to obtain information, and so the information asymmetry and the bid-ask spread will increase. The results show a significantly positive coefficient for the variable of main interest, the interaction effect of the periodic and the industrial variable. Which means that there is a significant difference between observations of mining firms after the announcement and both observations of non-mining firms in both periods and observations of mining firms in the period before the announcement, with higher bid-ask spreads for mining firms in the period after the announcement. The adjusted R^2 of these models are around 1% and so the regressions only explain around 1% of the change in relative bid-ask spread. The results show a significantly negative coefficient for the periodic variable, which indicates a significant decrease in bid-ask spread for both mining and non-mining firms as a result of the announcement of the proposed executive orders. These results are in line with the expectation of an increase in bid-ask spread as a result of rising information asymmetry because of the change or cancelation of the increased disclosure requirements. Although, the low adjusted R^2 should be taken into consideration by interpreting this result.

The results are in line with the hypothesis, thus I accept H3.

Hypothesis 4 is the last hypothesis of this thesis. This hypothesis concerns the change in turnover as a result of the proposed executive orders of the Trump administration to change or cancel section 1502. The results show no significant coefficient for the interaction effect of the periodic and the industrial variable, which indicates that there is no significant difference between observations of the turnover of mining firms in the period after the announcement and both observations of non-mining firms in both periods and observations of mining firms in the period before the announcement. This is not in line with the expectation of a decrease of the turnover as a result of the expected increase of information asymmetry as a result of the change or cancelation of the increased disclosure requirements. A decrease in turnover is associated with an increase in cost of capital. The results show significantly negative coefficients for the periodic variable, which indicates an increase in the cost of capital in the period after the announcement for both mining and non-mining firms. This is partly in line with the

expectations, since H4 expects the cost of capital of mining firms to increase, but not the cost of capital of non-mining firms.

The results are not in line with the hypothesis, thus I reject H4.

In conclusion, the results of all tests performed do only prove hypothesis 3 of section 4. The thesis finds that there are no significant effects neither on the information asymmetry nor on the cost of capital of firms operating in the mining industry as a result of the Dodd-Frank Act Section 1502 becoming effective. The announcement of the proposed executive orders to change or cancel the increased disclosure requirements of section 1502 only have a significant effect on the bid-ask spread. The statistically insignificant results in testing the effects of the implementation and the cancelation of the increased disclosure requirements of section 1502 indicates that more research is needed to examine the effectiveness of the Dodd-Frank Act Section 1502 in achieving its humanitarian objective by the effects of an economic regulation of increased disclosure requirements on investors.

8.2   Limitations

Although the findings of this thesis might be beneficial to understand the current effects of the Dodd-Frank Act Section 1502, some limitations are connected to this research. In this section I mention the most important limitations to this research.

First of all, the adjusted R^2 for the regressions on the bid-ask spread is very low with values around 1%. This indicates that the independent variables in these regressions only explain a very small part of the change in the relative bid-ask spread. Including more relevant independent variables to the regressions would control more for other factors that might influence the bid-ask spread. Besides, there might be omitted variables that are left out from the regressions, which could affect the results in this thesis.

Second, in the CRSP database the daily number of trades is only available for firms that are listed on the NASDAQ exchange. This decreases the number of available observations to use for the regression on the turnover and the two-stage analysis.

Third, this thesis only makes a distinction between firms that have to apply the increased disclosure requirements of section 1502 and firms that do not have to apply. It does not make any distinction between good and bad news that becomes available after the implementation of the increased disclosure requirements. Besides, firms might have problems with the implementation of the increased disclosure requirements of section 1502, which could influence the effects of the requirements.

Fourth, the announcement of the Trump administration to change or cancel the Dodd-Frank Act Section 1502 are only proposed executive orders, which do not have a direct effect. These proposed executive orders need some time to be executed and implemented.

8.3   Further research

The limitations of this thesis suggested that more research is needed to obtain more prove of the effects of the implementation of the Dodd-Frank Act Section 1502 and the proposed executive orders of the Trump administration to change or cancel this section.

First, the subsequent research could expand the number of observations of the daily share turnover by combining different databases or obtaining data from other sources.

Second, the period of research could be expanded for both the period of section 1502 becoming effective and the period around the announcement of the proposed executive orders. By expanding the period of research for the period of section 1502 becoming effective, a more reliable average of the relative bid-ask spread and share turnover could be used in the research. By expanding the period of research for the period of the announcement of the proposed executive orders, the proposed orders might be turned into real actions which affect firms and investors directly. It might be interesting to investigate the results of the possible cancelation of the increased disclosure requirements.

Third, a more extensive research in which distinction is made between good and bad news and the quantity and quality of the information that becomes available to investors because of the increased disclosure requirements could be interesting to generate more specific results.

Fourth, despite the doubts about the effectiveness of section 1502 achieving its humanitarian objectives, the European Union is implementing due diligence regulations to achieve the humanitarian objective of ending extremely violent conflicts not only in the DRC but also in other regions. It could be interesting to investigate the effects of these regulations and to compare these results to the results only concerning the United States to see a difference in effect.

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10. Appendix

Appendix A – List of variables

Variable	Description	Data Source
After	1 for periods following Dodd-Frank Act Section 1502 becoming effective, and 0 otherwise (for the test period December 21 2011 – January 10 2012)	Own computation
	1 for periods following the announcement by the Trump administration of the proposed executive orders to cancel or change the increased disclosure requirements, and 0 otherwise (for the test period January 30 2017 – February 19 2017)	
AfterMining	1 for observations of mining firms if the value of the variable *After* is 1, and 0 otherwise	Own computation
Ask price	Closing ask price on the trading date being assessed	CRSP
Bid price	Closing bid price on the trading date being assessed	CRSP
Capital intensity	Gross PPE divided by total net sales	CCMD[6]
Cash return	Earnings before interest, taxes, depreciation, and amortization divided by lagged total assets	CCMD
Earnings growth	1 if change in net income is positive, and 0 otherwise	CCMD
EBITDA	Earnings before interest, tax, depreciation and amortization	CCMD
IBEI	Income before extraordinary items	CCMD
Leverage	Long-term debt plus debt in current liabilities divided by total book assets	CCMD
Loss	1 if the firm reports a net loss in the period, and 0 otherwise	CCMD
Market Capitalization	Closing price * shares outstanding (in 1000s), as of end of the period	CRSP
Mining	1 for firms operating in the mining industry, characterized by a SIC code between 1000 and 1499, 0 otherwise	Own computation; CRSP
Number of shares outstanding	The unadjusted number of publicly held shares on NYSE, NYSE American, and NASDAQ exchanges, recorded in 1000s	CRSP
Price	The daily closing price of a security. If unavailable, the number in the price field is replaced with a bid/ask average (marked by a leading cash)	CRSP
Relative spread	Bid-ask spread divided by the average spread of a firm over the period	CRSP
Return	Daily change in the total value of an investment, using prices or bid/ask averages if prices not available. Dividends are reinvested on the Ex-date	CRSP
Return on assets	Income before extraordinary items divided by lagged total assets	CCMD
Sales growth	One-year growth in total sales	CCMD
SIC	Characterizing code used to group companies with similar products or services at the end of the period reported	CRSP
Size	Natural logarithm of total assets	CCMD

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[6] CCMD is the CRSP Compustat Merged Database: http://www.crsp.com/products/research-products/crspcompustat-merged-database.

Spread	The difference between the ask price and the bid price, calculated as ask price minus bid price	CRSP
Trades	Number of trades of shares (daily), only available for firms listed on NASDAQ exchange	CRSP
Turnover	Number of trades divided by the number of shares outstanding for a period	CRSP

Appendix B – Libby boxes research design

Figure 1: Predictive Validity Framework (Libby Boxes) for the period of section 1502 becoming effective

	Independent variable (X)	Dependent variable (Y)
Conceptual	Application of the Dodd-Frank Act Section 1502 by mining firms after the section becoming effective.	Change in information asymmetry Change in cost of capital
Operational	After (0, 1); 0 for period before, 1 for the period after. Mining (0,1); 0 for non-mining firms, 1 for mining firms. AfterMining; 1 for all observations of mining firms in the period after the section becoming effective, 0 for others.	*Spread* *Turnover*

Control variables and firm characteristics: Price, Shares outstanding, Variability, Capital intensity, Cash return, Earnings growth, Leverage, Loss, Sales growth, and Size.
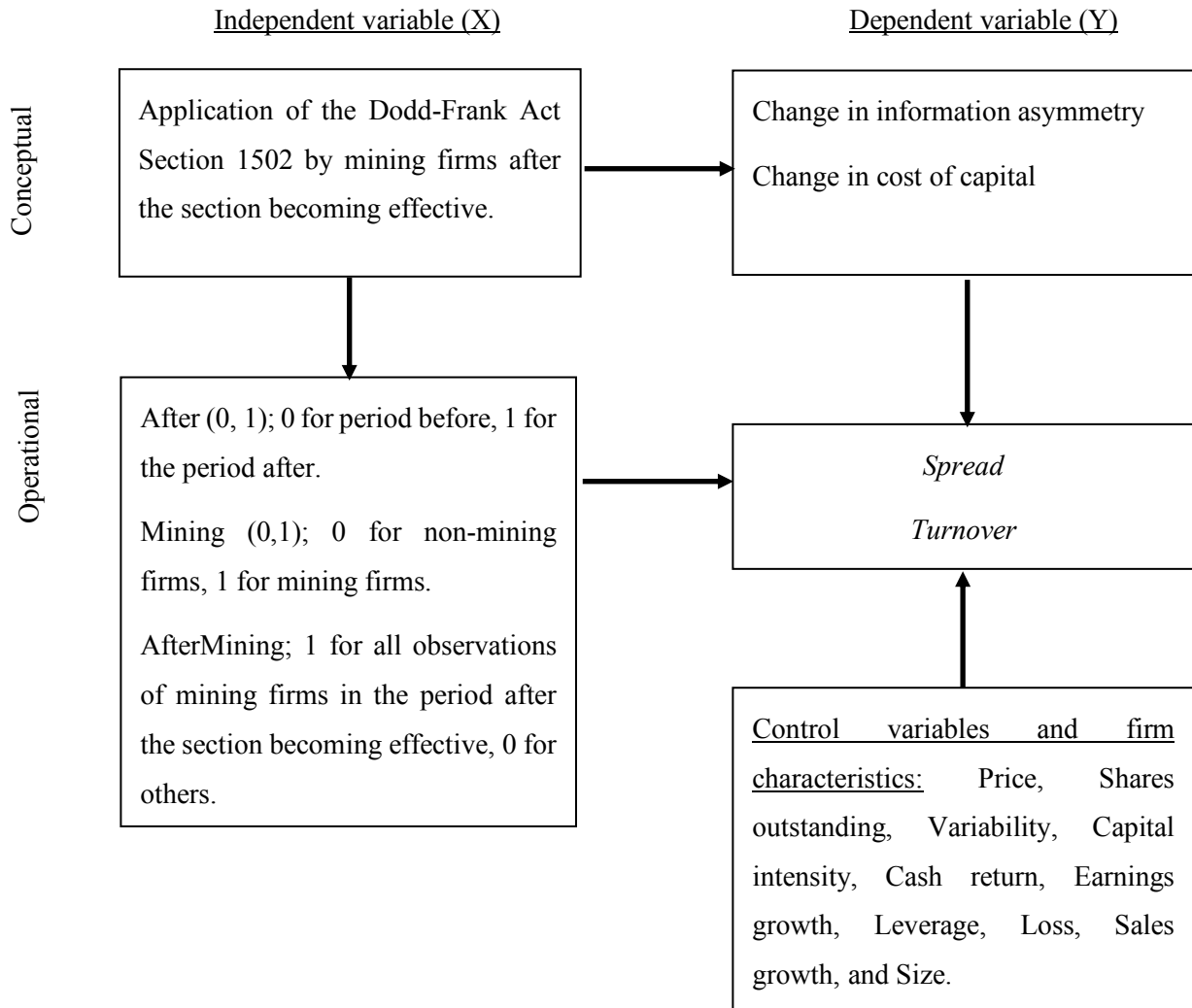
Figure 2: Predictive Validity Framework (Libby Boxes) for the period of the announcement of the proposed executive orders of the Trump administration to change or cancel section 1502

Independent variable (X)   Dependent variable (Y)

Conceptual

| Announcement of the possible change/cancelation of the increased disclosure requirements of section 1502. | → | Change in information asymmetry

Change in cost of capital |

Operational

| After (0, 1); 0 for period before, 1 for the period after.

Mining (0,1); 0 for non-mining firms, 1 for mining firms.

AfterMining; 1 for all observations of mining firms in the period after the announcement, 0 for others. | → | *Spread*

Turnover |

Control variables and firm characteristics: Price, Shares outstanding, Variability, Capital intensity, Cash return, Earnings growth, Leverage, Loss, Sales growth, and Size.