# Does Dodd-Frank Disclosure Regulation Benefit Investors?

# Theory, Landscape, and Application to Extractive Industries*

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*Summary*

*Drawing upon scholarly research that finds that increased financial disclosure lowers firms' cost of capital and provides a net benefit to investors, and our analysis of a sample of 1,582 equity securities representing 639 unique issuers and a total market capitalization of approximately $2.5 trillion, we estimate the impact of Section 1504 of the Dodd-Frank Act on firms' cost of capital. We estimate that the increased transparency resulting from disclosures required under Section 1504 may lower the cost of capital for covered US-listed firms by $6.3 billion to $12.6 billion.*

## 1.    INTRODUCTION

This paper examines corporate disclosure from an investor perspective. Motivated by the US Securities and Exchange Commission (SEC) request for comments on its recent notice of proposed rulemaking pursuant to Section 1504 of the Dodd-Frank Act (hereafter Section 1504),[1] we ask whether public disclosure of payments to governments would help or harm investors.

We seek to contribute to the ongoing debate over implementation of extractive-industry firms' project-level reporting; however, our focus differs from both published articles and public comments submitted to the SEC. The emphasis in the literature and comments is on social benefits (e.g., Reilkoff, 2013; Topal and Toledano, 2013), whereas we examine the implications of Section 1504 for investors in US-listed companies, whom the SEC is charged with protecting.

Disclosure requirements can affect equity investors in two ways. Since equity value is equal to a firm's cash flows deflated by its cost of capital, disclosure can affect value through changes to cash flows or changes to cost of capital. We focus on the latter, but there will also likely be enhanced cash flow from gains arising from expanded growth opportunities associated with reduction in government corruption associated with higher levels of disclosure. However,

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[1] In its notice of proposed rulemaking of 11 December 2015, the SEC requested comments, including from the investor viewpoint (p. 113). The SEC notes that "the legislative history also indicates that Congress intended for the section 13(q) disclosures to serve as a potential informational tool for investors." (p. 27, footnote 75). This study provides evidence that could help the Commission address a number of the questions raised in its proposed rule, including questions 41, 71, 78, 80, and 82 in its proposed rule. Page numbers reference the SEC document posted to http://www.sec.gov/rules/proposed/2015/34-76620.pdf

these are hard to quantify, and not included in our estimates. We discuss them further below.

Our analysis proceeds in five stages. First, we survey the landscape of research on relationships between financial disclosure and firms' cost of capital. The intuition is that investors are more willing to provide capital to companies with extensive disclosure.  If the information is relevant to firm value, investors not only have a better idea of the firm's opportunities and challenges, but also whether the firm's management is using its capital wisely, in pursuit of the most prospective opportunities.  Investors' increased willingness to provide funds results in a lower cost of capital to the firm, which in turn raises its value.

Disclosure may entail administrative costs, and depending on the type of disclosure, may reveal information to competitors. Thus, increased disclosure may raise or lower the value of the firm, helping or harming investors. Therefore, the sign of the effect is an empirical question.  Numerous studies find that the reduction in the cost of capital outweighs disclosure costs, resulting in increased firm value, and hence gains to investors.

Second, we focus on the extractive industries, since they are the focus of Section 1504.  These industries have a long history of investor concern about transparency, in part because their key assets, underground mineral and petroleum deposits, are not easily verified.

Industries where investors have difficulty assessing firms' management and business prospects have the most to gain in lowering their cost of capital (and thus raising their value) through mandatory disclosure. Indeed, prior to the era of mandatory financial disclosure, the New York Stock Exchange (NYSE) listed very few mining or petroleum securities, which were traded primarily on the outdoor Curb Market (O'Sullivan, 2007), and on regional mining exchanges (Garvy, 1944; Burt, 1972).[2] Even Standard Oil, the world's largest company by market capitalization (Hannah, 2007:418), traded on the Curb Market, although it had several thousand shareholders.

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[2] The NYSE, which had the strictest disclosure and capital standards of any US stock exchange (White 2013), did not allow listing of mining and petroleum securities for many years (Michie, 1986: 185). In 1930, only 2% of NYSE listings were mining companies (O'Sullivan, 2007, Table 2), despite 41 of the 200 largest US (non-bank) corporations (measured by assets) being in mining or petroleum (Berle and Means, 1932; Table 1).

Oil and mineral payments to governments are material. They have a major effect on company profitability and value. Outside the USA, governments own subsurface rights (including mineral rights), with minor exceptions (Daintith 2010).[3] Companies pay subsurface rights owners for the right to explore (signature bonus) and produce (royalty and production sharing) on top. Governments also collect taxes on corporate income and production (severance tax). Tax rates are often higher than manufacturing corporate tax rates. As a result, governments "take" a large part of the rent associated with minerals and petroleum extraction.

Third, we survey the empirical results in the academic literature studying disclosure effects on firms' cost of capital. We apply these effects to US-listed firms required to disclose payments to governments under Section 1504 of the Dodd-Frank Act. Our objective is to estimate the dollar value to investors of the new disclosure regulations.

To do so, we start by compiling a list of firms likely to be subject to Section 1504 disclosure regulations, based initially upon the Standard Industrial Classification codes referenced by the Commission in its notice of proposed rulemaking issued 11 December, 2015.[4]

Next, we exclude firms already required to report under project-level disclosure regulations in the European Union, Canada, and Norway. Actual and potential shareholders in these firms already enjoy the benefits of stricter disclosure by these firms, allowing them to monitor management and assess firm investments more accurately, and to decide whether they wish to continue as, or become owners. Further, these firms have already incurred the costs of establishing processes for collecting and disseminating project-level information. Disclosures under Section 1504 are unlikely to provide additional information or expense to investors; hence these investors will neither benefit nor lose from SEC implementation.[5]

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[3] In the USA, governments own subsurface rights offshore, on federal, state, and tribal lands, and some private lands with split estate.

[4] SEC, December 11, 2015, "Disclosure of Payments by Resource Extraction Issuers," Proposed Rule, https://www.sec.gov/rules/proposed/2015/34-76620.pdf.

[5] For example, under Norwegian disclosure regulations, Statoil now provides this information. See http://www.statoil.com/no/InvestorCentre/AnnualReport/AnnualReport2014/Documents/DownloadCentreFiles/01_KeyDownloads/2014%20Payments%20to%20governments.pdf

We then multiply the remaining firms' market value by the estimated reduction in their cost of capital to arrive at their estimated increase in value, the net benefit to investors.

Fourth, we go beyond the cost of capital, and examine stock-price reactions to four announcements related to implementation of section 1504 – the release of the proposed Section 13(q) rules in 2012,[6] the filing of a court challenge to the rules by the American Petroleum Institute (API) and other parties in 2012, the vacating of the rules by the DC Circuit Court in 2013, and the SEC's notice of proposed revised rules in late 2015.

These announcements correspond to changes in the likelihood that the SEC will adopt strict disclosure rules. Events that increase this likelihood should push extractive firms' stock prices higher if investors believe they will benefit from their adoption (and hence will pay more for ownership of petroleum and mining companies), but will push them lower if investors expect to be harmed by their adoption.

If the SEC's disclosure rules had caused a burden on competition by putting US-listed companies at a competitive disadvantage, then these firms' stock prices should have fallen when the rules were first released, risen when a suit was filed challenging their adoption, risen again when the rules were vacated, and fallen when the proposed revised rules were released.

The empirical results are not consistent with these predictions, however. Adjusting for changes in the overall stock market and oil prices, various measures of extractive-industry returns tend to move in the direction opposite to that predicted by the disclosure-as-burden hypothesis, implying that investors believed the value of their stock was higher under project-level disclosure. Any costs associated with disclosure administration or competition are outweighed by gains from investors' improved access to information.

Finally, we compiled and examined the public comments submitted by investors on the proposed rules for section 1504 that the SEC received prior to issuing the revised notice (i.e., through 10 December, 2015). To be conservative, we focus solely on investors that are concerned with financial performance. We did not examine letters from organizations identifying themselves as social investors, as their views may be based on non-pecuniary motivations.

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[6] Section 1504 of the Dodd-Frank Act adds Section 13(q) to the Securities Exchange Act.

If these investors believed that project-level disclosure would hurt the value of their investments in companies in extractive industries, they should have opposed the proposed regulations. Instead, we found that of the 18 letters we examined, all supported making disclosure public, and only one said that project-level disclosure was not necessary.[7] Further, several letters mentioned that private information providers track and sell project-level information, indicating that such information is indeed valuable.[8] These comments are consistent with the importance of project-level information to investors in the extractives sector.

Why are companies not required to report under Section 13(q) not at a substantial competitive advantage? Many of the largest petroleum companies worldwide are 100% state-owned, and hence not subject to the Section 1504 disclosure rules (except if they issue debt securities registered with the SEC). Of the 50 largest petroleum companies ranked on reserves and operating criteria in 2014 by *Petroleum Intelligence Weekly* (2015), 19 are fully state-owned, 11 are partially state-owned, and 20 are fully private.

However, a review of the fully state-owned companies reveals that almost none have substantial operations outside their home country, where they already have a privileged position, and hence a decisive advantage.[9] While these companies could venture abroad, their best opportunities are at home, where they can take advantage of their privileged positions, provide employment, etc. In contrast, partially state-owned companies are active abroad; however, most are listed in New York and/or London, and hence subject to Section 1504, the EU Directives, or both.[10] Moreover, state-owned companies in the mining industry are few.

The remainder of this paper is organized as follows. Section 2 surveys the theoretical underpinning of effects of disclosure on investors. Evidence on disclosure and investment is reviewed in Section 3. Section 4 presents our empirical estimates of the impact of Section 1504 on investors. Section 5 concludes.

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[7] British Columbia Investment Management Corporation (2 March 2011)

[8] Examples include IHS (https://www.ihs.com/products/energy-company-transaction-research.html), Derrick (http://www.1derrick.com), and PLS (http://www.plsx.com)

[9] The one exception is Petronas of Malaysia. For details, see Victor et al (2012).

[10] Chinese fully state –owned companies conducted most of their foreign operations through their partially-private, listed subsidiaries.

## 2. INVESTOR BENEFITS FROM VOLUNTARY AND MANDATORY CORPORATE DISCLOSURE – THEORY

### a. Direct Channels

The literature in accounting highlights two direct channels through which disclosures influence cost of capital. First is the resulting increase in the precision of investors' information. Without perfect information, the expected returns, variances and covariances investors contemplate when assessing their optimal portfolio must be estimated (Jorion, 1985). Increased disclosure decreases the uncertainty in these parameter estimates, which has been shown to lower a firm's cost of capital (Lambert, Leuz & Verrecchia, 2012).

Disclosures also reduce adverse selection problems surrounding asymmetric information (Leuz & Wysocki, 2008). When information about firm operations is only available to management or a select group of investors ("informed investors"), those without information ("uninformed investors") face the added risk that they may be trading with a party that is better informed. Uninformed investors reduce the price at which they are willing to buy securities to insure themselves against the potential opportunism of better informed counter-parties (Verrecchia, 2001; Easely & O'hara, 2004).

This asymmetry results in an increase in bid-ask spreads between buyers and sellers, which reduce liquidity and increases the return investors require (Amihud and Mendelson, 1986). If this adverse selection becomes severe, markets may cease to function (Akerlof, 1970).

Disclosures increase the amount of information that is publicly available to investors. This mitigates the adverse selection problem by reducing both the number of uninformed investors, and the size of the asymmetries between informed and uninformed investors (Diamond & Verrecchia, 1991; Verrecchia, 2001).

### b. Indirect Channels

Information asymmetries also exist between investors and firm insiders (Jensen & Meckling, 1976). In the classical principal-agent conflict, managers (as principals) hold superior information regarding firm operations than investors (agents). This creates the potential for managerial opportunism if managers' interests are not aligned with those of investors. This opportunism may come in the form of value-destroying investments that benefit managers at the expense of investors (Marris, 1964; Williamson, 1964), or through a failure

to pursue value-enhancing investments (Holmström, 1979; Grossman and Hart, 1983; Bertrand and Mullainathan, 2003).

Investor perceptions of potential agency conflicts are relevant for firms in need of external financing (Healy and Palepu, 1993). Investors demand a premium to compensate for the risk of opportunism that arises from managers' information advantage (Merton, 1987). Thus, managers are able to reduce the firm's cost of capital by disclosing information that assuages these concerns (Healy and Palepu, 2001).

Greater disclosure for one firm also creates positive market-wide externalities for other firms. Within industries, correlations in cash flows across firms suggest that disclosures regarding the operations of one firm are informative for assessing the value of other firms (Admati & Pfleiderer, 2000). Further, by revealing information about best practices, governance arrangements and systematic risks, disclosures provide benchmarks that allow investors to evaluate the managerial efficiency and potential for agency conflicts in other firms (Leuz & Wysoki, 2008). This abundance of information may reduce the cost of capital for all firms in the market (Lambert et al, 2007).

It is important to note that disclosures may also generate negative externalities. Fishman and Hagerty (1989) note that, in markets that are not perfectly competitive, disclosures by a single firm attract investors at the expense of other firms. Leuz & Wysocki (2008) extend this argument to markets, suggesting that transparency in one market may draw investors from alternative markets, increasing the cost of capital for firms that trade on those alternatives. This is particularly relevant to the rule currently under contemplation, as several countries around the world have enacted (or are in the process of enacting) similar or more stringent reporting requirements.

c. Mandatory vs. Voluntary Disclosure

The channels described above are generic to any form of disclosure, and thus do not distinguish between mandatory and voluntary disclosure. However, many scholars have noted that there are several benefits to mandatory disclosures that should translate to a firm's cost of capital.

First, mandatory disclosures act as a low-cost commitment device. Leuz & Wysocki (2008) note that firms may be incentivized to be fully transparent during their initial public offering (when the benefits of disclosure are substantial), but may not be so forthcoming in the future (if the firm or the economy is in a bad state). Managers cannot credibly commit to transparency.

Disclosing bad news – information that would lead investors to sell the firm's securities – would be against their interest, as it would cause the value of the firm to decline.

Requiring disclosure forces firms to reveal information in bad times as well as the good. Voluntary disclosure does not provide investors comfort; managers voluntarily disclose good news, but not bad news, making all such disclosures incomplete. This is the essence of the asymmetric information problem discussed above.

Second, mandatory disclosures cause new information to be reflected in market prices more quickly and at less cost than voluntary disclosures. Mahoney (1995) argues that information relevant to firm value is a public good which will be under-produced when reporting is purely voluntary. Further, when disclosure is not mandated, individual parties are incentivized to uncover the information to make private use of it for profit. This results in the duplication of efforts to uncover information, which is costly and wasteful, and may create further information asymmetries between those with the resources or contacts to successfully acquire such information and those who do not.

This argument was highlighted by several investor comment letters (e.g., Allianz Global Investors et. al., 28 April, 2014; AP1/Första AP-Fonden et. Al., 9 May, 2014), which note that much of the information Section 1504 seeks to reveal is already available through specialist consultants at a premium, ensuring competitors can typically access the information (at a price) while common investors and the public cannot.

Mahoney further proposes that these efficiencies are best realized when the information is related to promoting good governance and preventing the agency conflicts discussed above. The government payments contemplated in Section 1504, which seek in part to curb firm participation in government corruption, meet this criterion. Such information that is common to all firms, he argues, is more efficiently disclosed through a mandatory regime.

Third, mandatory disclosures are particularly effective at creating the positive externalities discussed in the previous section, as industry-wide disclosure allows for better benchmarking. In general, theory suggests that increases in the quality of mandated disclosures should reduce the cost of capital for all firms in the economy (Lambert et al, 2007). Armstrong, Barth, Jagolinzer & Riedl (2010) find evidence of this in relation to the mandatory adoption of International Financial Reporting Standards (IFRS) in the EU. They find that the market reacted positively following events surrounding the IFRS

adoption, which they attribute in part to increased comparability of information across firms.

In addition to lower cost of capital, investors are likely to benefit from reduced corruption associated with increased disclosure. Greater disclosure requirements make corruption harder to hide, likely reducing corruption levels. Foreign direct investment (FDI) is sensitive to corruption; lower levels of corruption tend to encourage FDI (Wei, 2000). FDI tends to be profitable; hence greater FDI will benefit investors with stakes in the firm.

The aversion of FDI to environments with relatively high risks of corruption is evident in the allocation of FDI in the extractive industries.[11] Corruption is higher in the extractives sector than elsewhere (Jeong and Weiner, 2012). Although subsoil resources should be distributed largely randomly (and thus independently of national boundaries), the stock of FDI in extractive industries (primarily petroleum) per $km^2$ is roughly ten times higher in Western Europe and North America, where corruption is low, than in developing and formerly-socialist countries, where it is high (Ross 2012). However, the quest for natural resources is increasingly shifting to countries with higher corruption risks.[12] As such, the overall positive impacts of curbing corruption – including through Section 1504 – for firms and their investors should be even greater in the future.

Furthermore, corruption revelation damages firm value, hurting investors. For example, the Brazilian oil company Petrobras has lost over half its value in the wake of an ongoing corruption scandal.[13] Better monitoring through increased disclosure should reduce the likelihood of such scandals. Indeed, the investors commenting on the Commission's 2012 rule cite curbing corruption in resource-rich countries as one of its main benefits.

Lastly, without a uniformly implemented and enforced set of reporting standards, voluntary disclosures may be inconsistent and difficult for investors

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[11] Other factors besides levels of corruption may also factor into the current FDI bias toward Western Europe and North America, including quality of infrastructure, proximity to refineries and consumers, and more effective government institutions, though corruption can negatively impact the quality of a country's infrastructure and institutions.

[12] Evidence of this can be seen in the recent expansion of exploratory and production efforts of oil companies across broad swaths of East and West Africa, where corruption levels are notably higher than in Western Europe and North America.

[13] Segal, David. "Petrobras Oil Scandal Leaves Brazilians Lamenting a Lost Dream." The New York Times. August 7, 2015.

to compare or analyze (e.g., the patchwork and varied implementation of the Extractive Industries Transparency Initiative at the national level).

## 3. INVESTOR BENEFITS FROM VOLUNTARY AND MANDATORY CORPORATE DISCLOSURE – EVIDENCE

### a. General

This section summarizes the empirical evidence on the relationship between disclosure and cost of capital. As we are not aware of any peer-reviewed research that specifically examines the introduction of mandatory project-level reporting on firms' cost of capital, we examine two streams of literature we believe will contribute to a better understanding of how Section 1504 may impact affected issuers. The first stream examines the informativeness of disclosures generally. We believe this is useful for understanding how the increased precision of available information provided by project-level reporting may reduce a firm's cost of capital. The second stream examines past changes in mandatory disclosure requirements.[14]

Most studies in the accounting literature examining how informative and useful disclosures are for investors utilize earnings reporting. These studies focus on the information released through quarterly earnings reports, and proxy information quality using the covariance of earnings and stock returns.

Exploring differences in the cost of capital across countries, Bhattacharya, Daouk & Welker (2003) examine the impact of what they refer to as "earnings opacity". The authors define earnings opacity as the average lack of informativeness of the reported earnings in a particular country. They employ two models to capture the effect of earnings opacity on cost of capital: a constant growth dividend discount model, and an international asset pricing model. In the former, they find that an overall increase in earnings opacity from the 25th percentile to the 75th percentile is associated with a 2.8 percentage point increase in a country's cost of equity capital. For the latter, they find a similar increase across percentiles is associated with a 3.2 percentage point increase. Both findings suggest that, as reporting in a country becomes less informative, the average cost of capital increases (and vice-versa).

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[14] A third literature stream examines nondisclosure as a means of hiding assets from exposure to political risk (Cannizzaro and Weiner, 2015; Durnev and Guriev, 2011), Liu et al, 2015). However, since the payments discussed here are already known to government officials, public disclosure does not incur additional exposure.

Francis, LaFond, Olsson & Schipper (2004) perform a similar analysis at the firm-level for US listed firms, and come to a similar result. Among other attributes of earnings, the authors examine a construct they call "value relevance", which is similar to the opacity measure in Bhattacharya et al (2003). They conceptualize this construct as a "direct measure of decision usefulness" of a disclosure. Using a dividend growth model to capture cost of capital, they find that moving from the lowest decile to highest decile in value relevance results in a 0.81 percentage point reduction in a firm's cost of capital.

Most recently, Barth, Konchitchki & Landsman (2013) studied what they refer to as "earnings transparency". Similar to earnings opacity and value relevance, earnings transparency is a measure of the informativeness of a disclosure operationalized as the covariance of earnings and stock returns. The authors model cost of capital using excess and portfolio mean subsequent returns, as well as Fama-French and momentum factor models. Across methods, they consistently find that firms with the mean level of earnings transparency experience a lower cost of capital than firms with no earnings transparency. This benefit ranges from a 1.26 percentage point reduction to a 3.36 percentage point reduction depending upon the specification used.

Regardless of how cost of capital is measured across studies, the results in the literature are consistent. More informative disclosures reduce a firm's cost of capital. This finding supports investors' appeals to the SEC for project-level information to be disclosed under Section 1504.[15]

b. Mandatory vs. Voluntary Disclosure

The second stream of literature specifically examines how variations in countries' mandatory reporting requirements impact firms' cost of capital. Findings that mandatory disclosure benefits investors hold across time.

At the end of the 19th century, the New York Stock Exchange (NYSE) required all its listed firms to publish annual reports audited by third parties. Stock prices rose (Neal and Davis, 2007). Investors in firms that deregistered their securities with the SEC (allowing them to avoid SEC disclosure) experienced sharp declines in value to their stock, as they were no longer protected by SEC regulations (Leuz, et al, 2008).

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[15] The SEC's proposal to "mak[e] each resource extraction issuer's disclosures available on EDGAR in XBRL format" would enhance the usefulness and value of the disclosures to investors.

Hail and Leuz (2006) study the association of cost of capital and institutional quality across a sample of 40 countries. They separately test the quality of disclosure regulations, securities regulation enforcement and rule of law using measures derived in La Porta, Lopez-de-Silanes & Shliefer (2006) and La Porta, Lopez-de-Silanes, Shliefer & Vishny (1997). They show that firms in countries with more extensive disclosure regulations, stronger securities regulation and stricter enforcement have a significantly lower cost of capital. This effect size is estimated to be approximately 0.7 percentage points for integrated markets such as the United States (the effect is larger, nearly 20.0 percentage points, for segmented markets).

Chen, Dhaliwal & Xie (2006) use the implementation of Regulation Fair Disclosure (RFD) in the United States as a natural experiment to study the effect of increasing mandatory disclosure requirements on firms' cost of capital. Prior to RFD, firms could selectively disclose some information to analysts while withholding it to the broader market. In theory, this should generate the information asymmetries discussed in the prior section. They found a significant decrease in US firms' cost of capital post-RFD, with an average effect size of 0.74 percentage points.[16] For robustness, Chen et al. assessed whether similar effects were present post-RFD in American Depository Receipts (ADRs). ADRs were exempt from RFD. If contemporaneous events in the US cause both RFD and the observed decrease in firm cost of capital, we would expect these events to influence ADRs' cost of capital as well. However, if RFD itself drove the reduction, ADRs should not be affected. Consistent with a causal effect from RFD, ADRs did not experience a similar decline.

Li (2010) examines the cost of capital impact of IFRS adoption in the European Union (EU). Using a difference-in-difference design, the study shows that the IFRS mandate in the EU resulted in a significant cost of capital reduction. The study found the average effect for the EU to be 0.47 percentage points. Further, when breaking countries down by strength of legal enforcement, they find that firms from countries with strong legal enforcement experience a 0.96 percentage point reduction. The author attributes the decrease to two of the theoretical channels described above. First, IFRS reduced information asymmetries, mitigating adverse selection problems and improving market liquidity. Second, the mandate created a uniform set of accounting standards, improving the comparability of information across firms.

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[16] They find this decrease is significant for medium and large sized firms, but insignificant for small firms. They attribute this discrepancy to loss in analyst coverage for smaller firms. We have no theoretical reason to anticipate a similar reduction in analyst coverage for small extractive firms following the implementation of Section 13(q).

## c. Considerations regarding foreign companies listed on US markets

Many foreign extractives firms are listed on US markets. They could delist their securities in order to avoid project-level reporting, but extensive research finds that bonding themselves to SEC regulation, with its more stringent rules on disclosure and monitoring, lowers their cost of capital, not only in the USA, but at home as well. Because US regulation protects investors more effectively than elsewhere, investors are willing to provide capital to firms more cheaply. Hence delisting from a US exchange would negatively impact investor value.

Research by Hail and Leuz (2009) finds that foreign firms that cross-list on US stock exchanges experience a decrease in their cost of capital of 0.7-1.2 percent. These firms must file annually with the SEC form 20-F, which includes extensive disclosure requirements (analogous to form 10-K required of US listed firms). The benefits to firms (and hence investors, through higher equity valuation) of more stringent mandatory disclosure are present both before and after the passage of the Sarbanes-Oxley Act (SOX) of 2002 (which tightened corporate-governance regulations for US-listed firms). These benefits are larger for investors in US-listed firms from countries with weaker investor protection. In contrast, foreign firms listing on the London Stock Exchange (where regulation of foreign firms' securities is light) do not experience a decline in their cost of capital.

Employing different methodology, Doidge et al (2009) find similar results. Foreign firms cross-listing in the USA trade at a premium relative to firms that do not. The premium arises from "the US investor protection regime, which includes securities laws and regulations, regulatory oversight and enforcement by the Securities and Exchange Commission (SEC), and monitoring by gatekeepers such as analysts and institutional investors." In contrast, foreign firms cross-listing in London do not trade at a premium.

SEC rule 12h-6 (2007) made it easier for foreign firms offering securities on US markets to deregister with the SEC, thus avoiding SEC disclosure regulations. Announcement of the rule caused the prices of foreign companies with securities traded in the USA to fall on average, in anticipation that disclosure would no longer be mandated. Stock prices of companies from countries with the weakest investor protection fell the most. Stock prices of companies from countries with the strongest investor protection did not fall, because the information was available credibly through their home stock market listings (Fernandes et al, 2010).

Hostak et al (2013) show that foreign firms that deregistered their securities and delisted from US stock exchanges after the passage of SOX lost value (relative to a benchmark of foreign firms that did not delist). Doidge et al (2010) find that investors who were helped by the passage of SOX (which tightened regulation) were hurt by the SEC's adoption of rule 12h-6 (which loosened them).

The implication of these studies is that SEC regulation helps protect investors in foreign firms that list in the USA, especially those from countries with poor governance. The regulatory benefit is present despite (1) these firms are subject to disclosure regulation at home, from both their home governments and stock exchanges, and (2) the extensive disclosures required of US-listed firms incur administrative costs, and depending on the type of disclosure may reveal information to competitors. Investors in foreign firms that choose to delist their securities from US stock exchanges on average experience losses in value. These findings are part of the broader patterns of strict disclosure rules aiding investor protection.

## 4. DATA ANALYSIS: SECTION 1504 ESTIMATED IMPACT

### a. Changes in the cost of capital

To provide an analysis of the potential impact of the new disclosure regulation mandated under Section 1504 based upon the literature reviewed above, we construct a sample of issuers we believe will be subject to Section 1504 based upon four-digit Standard Industry Classification (SIC) codes. We begin our query using the SIC codes referenced by the SEC in its notice of proposed rulemaking issued 11 December, 2015, supplementing them with adjacent SIC codes likely to include firms that will be affected by Section 1504. Our sample is comprised of all firms filing Forms 10-K, 20-F & 40-F classified in one of the SIC codes listed in Table 1.[17]

Our initial sample is comprised of 1,582 equity securities representing 639 unique issuers. The total market capitalization of this sample as of 6 January, 2016 was approximately $2.5 trillion.

Some of these issuers are already bound to project-level disclosure via laws in the European Union, Norway, and Canada. This is important for our analysis,

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[17] For inclusiveness, we include issuers that have filed Forms 10-K, 20-F or 40-F any time in the past two years, so long as the security is still actively trading.

as we expect the effects of disclosure under Section 1504 to be less likely to accrue to investors of these firms. Filing in an alternative jurisdiction reduces both the benefits of disclosure (information released is not novel) and the costs (additional effort is not required to prepare necessary information).

**Table 1: Standard Industry Classification Codes included in sample**

| | |
|---|---|
| 1000 Metal mining (Primary) | 1220 Bituminous coal and lignite mining (Primary) |
| 1010 Iron ores (Primary) | 1221 Bituminous coal and lignite surface mining (Primary) |
| 1011 Iron ores (Primary) | 1222 Bituminous coal underground mining (Primary) |
| 1020 Copper ores (Primary) | 1230 Anthracite mining (Primary) |
| 1021 Copper ores (Primary) | 1231 Anthracite mining (Primary) |
| 1030 Lead and zinc ores (Primary) | 1300 Oil and gas extraction (Primary) |
| 1031 Lead and zinc ores (Primary) | 1310 Crude petroleum and natural gas (Primary) |
| 1040 Gold and silver ores (Primary) | 1311 Crude petroleum and natural gas (Primary) |
| 1041 Gold ores (Primary) | 1320 Natural gas liquids (Primary) |
| 1044 Silver ores (Primary) | 1321 Natural gas liquids (Primary) |
| 1060 Ferroalloy ores, except vanadium (Primary) | 1380 Oil and gas field services (Primary) |
| 1061 Ferroalloy ores, except vanadium (Primary) | 1381 Drilling oil and gas wells (Primary) |
| 1080 Metal mining services (Primary) | 1382 Oil and gas exploration services (Primary) |
| 1081 Metal mining services (Primary) | 1389 Oil and gas field services (Primary) |
| 1090 Miscellaneous metal ores (Primary) | 1400 Mining and quarrying of nonmetallic minerals, except fuels (Primary) |
| 1092 Mercury ores (Primary) | 2910 Petroleum refining (Primary) |
| 1094 Uranium, radium, and vanadium ores (Primary) | 2911 Petroleum refining (Primary) |
| 1099 Metal ores (Primary) | 3330 Primary smelting and refining of nonferrous metals (Primary) |
| 1200 Coal mining (Primary) | 3331 Primary copper (Primary) |
| 1210 Bituminous coal and lignite mining (Primary) | 3332 Primary smelting and refining of lead (Primary) |
| 1211 Bituminous coal and lignite (Primary) | 3333 Primary smelting and refining of zinc (Primary) |
| 1213 Bituminous coal and lignite mining services (Primary) | 3334 Primary aluminum (Primary) |

The EU Accounting and Transparency Directives and Canada's Extractive Sector Transparency Measures Act require disclosure for listed firms and large unlisted firms. The EU defines large firms as those exceeding two of the three following criteria: Turnover of €40 million, total assets of €20 million or 250 employees; Canada defines large firms as those exceeding two of the three following criteria for at least one of its two most recent financial years: Revenue of CAD$40 million, total assets of CAD$20 million or 250 employees. As employment information is not readily available for most of our firms, we err on the side of caution and classify any firm meeting one of the other two criteria as large.

Firms listed in Norway are obliged to disclose under Section 5-5a of the Securities Trading Act ("Verdipapirhandelloven"). Similarly, unlisted Norwegian firms are bound under Section 3-3d of the Norwegian Accounting Act ("Regnskapsloven").

In total, 179 firms are listed on exchanges in the EU, Norway, or Canada. An additional 36 are not listed on one of the foreign exchanges, but qualify as "large" and are thus bound by EU or Canadian law.

Lastly, we also account for firms that do not meet the de minimis threshold of US$100,000 in revenues or greater. This accounts for another 28 firms.

Of our initial sample of 639 affected issuers, 396 have revenues greater than US$100,000 and are not otherwise filing in alternative jurisdictions. These issues represent a total market capitalization of approximately US$1.3 trillion.

Next, we derive estimates of the implied net benefit of Section 1504 by multiplying the market capitalization of our sample by the potential cost of capital savings identified in the mandatory disclosure studies discussed above. Li (2010) suggests an effect range from approximately 0.47% to 0.96%, and the estimates from Hail & Leuz (2006) and Chen et al (2006) are centered within this range (0.70% and 0.74% respectively). For simplicity, we report the implied benefits assuming 0.5%, 0.75% and 1.0% cost of capital reductions (the low, middle and high end of the range of results from these studies).

The results of this analysis are shown in Table 2. The first three rows of the table benchmark against our full sample of 639 potentially affected issuers. The implied aggregate net benefit ranges from US$12.7 billion to US$25 billion. The subsequent rows report results for sub-samples we create by removing firms that may already report, or may not be required to report. For the 460 US issuers not cross-listed on exchanges that require similar reporting, the implied net benefit ranges from US$6.7 billion to US$13.3 billion. When we remove firms that are not listed in these jurisdictions, but have operations that are considered "large", we are left with 424 firms and an implied net benefit ranging from US$6.3 billion to US$12.6 billion. Lastly, if we remove firms that do not have revenues exceeding US$100,000, we are left with 396 firms and an implied net benefit ranging from US$6.3 billion to US$12.6 billion.[18]

If we were to expand this analysis to include the potential cost of capital effects implied by the literature discussed in Section 3.a above, the potential net benefit would increase accordingly. This literature suggests a range of effects from as low as 1.26% to an upper bound of 3.36%. To be conservative, we do not take this into account in this analysis.

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[18] This quantification of the impacts of Section 1504 disclosures on the cost of capital is of particular relevance to questions 78 and 80 posed in the SEC's proposed rule.

The above analysis is an attempt to quantify the value of Section 1504 to investors by drawing on prior evidence from the academic literature. These estimates are informative of potential effect sizes, but difficult to generalize to the project-level disclosures mandated by Section 1504 (as previously noted, to our knowledge there is no peer-reviewed academic research that has tried to measure impacts on cost of capital of project-level disclosure).

**Table 2**

| | Number of Firms | Market Capitalization ($Billions) | Cost of Capital Reduction | Implied Net Benefit ($Billions) |
|---|---|---|---|---|
| All Affected Issuers | 639 | $2,542.4 | 0.50% | $ 12.7 |
| | | | 0.75% | 19.1 |
| | | | 1.00% | 25.4 |
| | | | | |
| Issuers not listed on exchanges in other jurisdictions | 460 | 1,330.2 | 0.50% | 6.7 |
| | | | 0.75% | 10.0 |
| | | | 1.00% | 13.3 |
| | | | | |
| Issuers not listed on exchanges or otherwise filing in other jurisdictions | 424 | 1,259.9 | 0.50% | 6.3 |
| | | | 0.75% | 9.4 |
| | | | 1.00% | 12.6 |
| | | | | |
| Issuers not filing in other jurisdictions with revenues greater than $100k | 396 | 1,257.8 | 0.50% | 6.3 |
| | | | 0.75% | 9.4 |
| | | | 1.00% | 12.6 |

b. Market reactions to announcements regarding Rule 13q implementation

Stock-market reaction indicates the value of project-level disclosures to investors. Below, we undertake an analysis of events surrounding the evolution of Rule 13q-1. We examine cumulative abnormal returns (CARs) for extractive-industry issuers around dates when new information became available to the market – referred to as an event study. Abnormal returns represent the difference between the actual return on a stock, and the expected returns (that is, its systematic risk multiplied by the realized market return). CARs are the sum of abnormal returns for a security in the days directly preceding and following an unanticipated event, and are thus meant to be representative of the implied value investors derive from the introduction of new information into the market (Fama, Fisher, Jensen & Roll, 1969).

The four dates we examine are as follow:

Event 1: Rule 13q-1 implementing 1504 is adopted by SEC (8/22/12)

Event 2: API sues the SEC over Rule 13q-1 (10/10/12)

Event 3: Court vacates original rule, remands to SEC for additional consideration (7/2/2013)

Event 4: SEC Re-proposes Rule 13q-1 (12/11/2015)

These dates are chosen both for their relevance, and for the market's lack of *a priori* knowledge as to their timing and substance.

To proxy for portfolios of potentially affected issuers, we examine the CARs of three exchange traded funds (ETFs) and one index that focus on the extractive industries. These are the SPDR® S&P Oil & Gas Exploration & Production ETF (XOP); the iShares U.S. Oil & Gas Exploration and Production ETF (IEO); the iShares MSCI Global Energy Producers ETF (FILL); and the NYSE ARCA Oil and Gas Index (XOI). In addition, we examine the market returns of two value-weighted industry portfolios compiled by Eugene Fama of the University of Chicago and Kenneth French of the Tuck School at Dartmouth College (one focusing on the oil sector, and one focusing on the mining sector)[19].

Our simple market adjusted abnormal return model is as follows:

$$AR_{it} = R_{it} - [\alpha_i + \beta_1 * R_{mt} + \beta_2 * R_{pt}]$$

where $R_{it}$ is the actual return on the target portfolio, and the quantity in the parentheses represents the expected return on the portfolio. Following Rajgopal (1999), we treat expected return as a function of both the performance of a benchmark market portfolio ($R_{mt}$, here the S&P 500 index) and the return on underlying commodity prices ($R_{pt}$, which is calculated using the average spot price of oil for XOP, IEO, FILL, XOI, and the Fama & French oil portfolio, and the Dow Jones Commodity Index for Fama & French mining portfolio). The estimation period for the benchmarks is for the 6 months directly preceding our event window.

The event window represents the days immediately preceding and following the particular date in question. These days represent the period when it is most likely information concerning the event became public, and was thus factored

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[19] Fama & French portfolios are widely used in finance research. To construct these portfolios, Fama and French assign each US exchange listed stock to an industry portfolio at the end of June of year *t* based on its four-digit SIC code at that time. They then compute returns from July of *t* to June of *t*+1. Details of these portfolios are available at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_17_ind_port.html

into the market price of the portfolio. Using this model, we calculate the cumulative abnormal return as the sum of abnormal returns for each day in the event window. For robustness, we use both a 3 day event window (which includes the day before the event, the day of the event, and the day following the event), and a 7 day event window (which includes three days prior to the event, the day of the event, and three days following the event). The results of our calculations are presented in Table 3.

**Table 3**

| | XOP | IEO | FILL | XOI | Fama & French | | Median |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Panel A: Cumulative Abnormal Returns --- 7-Day Window | | | | | Oil | Mining | Effect |
| Event 1: Rule 13q-1 implementing 1504 is adopted by SEC (8/22/12) | 0.06% | 0.97% | -0.12% | 0.47% | -0.03% | 1.43% | 0.26% |
| Event 2: The American Petroleum Institute sues the SEC (10/10/12) | 0.38% | -0.61% | -0.01% | -1.77% | -1.14% | 4.86% | -0.31% |
| Event 3: Court vacates original rule, remands to SEC (7/2/2013) | -6.37% | -7.89% | -4.53% | -5.13% | -4.34% | -0.48% | -4.83% |
| Event 4: SEC Reproposes Rule (12/11/2015) | 3.39% | 0.90% | 0.90% | 2.76% | | | 1.83% |
| | | | | | | | |
| Panel B: Cumulative Abnormal Returns --- 3-Day Window | | | | | | | |
| Event 1: Rule 13q-1 implementing 1504 is adopted by SEC (8/22/12) | -0.06% | 0.38% | -0.24% | 0.56% | 0.18% | 2.39% | 0.28% |
| Event 2: The American Petroleum Institute sues the SEC (10/10/12) | 2.08% | 0.63% | 0.07% | -1.33% | -0.77% | 2.78% | 0.35% |
| Event 3: Court vacates original rule, remands to SEC (7/2/2013) | -2.98% | -3.55% | -2.00% | -2.99% | -2.41% | -2.57% | -2.77% |
| Event 4: SEC Reproposes Rule (12/11/2015) | 0.80% | 0.53% | 0.53% | 1.06% | | | 0.66% |

Panel A of Table 3 presents our CARs calculated using a 7 day event window. Each row represents an event which we anticipate will influence investor perceptions of Rule 13q-1, while each column represents a different proxy portfolio of potentially affected issuers. Because our measures of market portfolios are not directly comparable, the far right column presents the median effect experienced across portfolios.

For Event 1, the adoption of Rule 13q-1 by the SEC on August 22, 2012, returns are largely positive. Four of our six portfolios experience positive abnormal returns, with the largest effects evident in the IEO ETF and the Fama & French Mining Portfolio. The median effect for Event 1 is a positive 0.26% CAR[20].

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[20] It is important to note that, in our simple analysis, we do not attempt to assess the statistical significance of the effects calculated.

For Event 2, the American Petroleum Institute filing suit against the SEC, we find four of our six portfolios experience negative returns. The median effect for Event 2 is a negative 0.31% CAR.

For Event 3, when the court vacated the original rule, we see that all six of our portfolios lost value. The strongest effects are seen in the XOP ETF (-6.37%) and the IEO ETF (-7.89%). The median effect for Event 3 is a negative 4.83% CAR.

For Event 4, we similarly see agreement across the four portfolios we are able to calculate (data on the Fama & French portfolios are not available for the second half of 2015, and so we are unable to compute abnormal returns around the final event window). The median effect for Event 4 is a positive 1.83% CAR.

We find similar results in Panel B of Table 3, which presents our CARs calculated using a 3 day event window.

For Event 1, again four of our six portfolios experience positive CARs, with the largest effect still evident in the Fama & French Mining Portfolio. The median effect for Event 1 is a positive 0.28% CAR[21].

For Event 2, unlike in Panel A, we find four of our six portfolios experience positive returns. The median effect for Event is a positive 0.35% CAR.

For Event 3, we again see that all six of our portfolios experience negative returns. The median effect for Event 3 is a negative 2.77% CAR.

For Event 4, we again see agreement across the four ETF portfolios. The median effect for Event 4 is a positive 0.66% CAR.

We find these results largely consistent with investors valuing the new rule, and adjusting their expectations of the market accordingly. For Events 1 & 4, when the rule is either adopted or re-proposed, investors adjust their expected value upwards. Similarly, for Events 2 & 3, when the rule is challenged, investors adjust their expectations downwards (we acknowledge our results are the most inconsistent for Event 2. This may be due, in part, to uncertainty regarding the outcome of the lawsuit at the time of filing).

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[21] It is important to note that, in our simple analysis, we do not attempt to assess the statistical significance of the effects calculated.

## 5.  CONCLUSION

This paper sets out to address whether the implementation of Rule 13q-1 mandated by Section 1504 will benefit US equity investors. Examining the academic literature on corporate transparency, theory suggests the answer is yes. Stricter, more informative disclosures provide investors much needed information to assess investment decisions and monitor management. These gains accrue both directly by reducing adverse-selection problems and promoting liquidity, and indirectly by discouraging managerial opportunism and improving the overall information environment. The empirical literature supports this conclusion, finding that stricter mandatory reporting is typically accompanied by a meaningful positive net benefit to investors.

Our own basic analysis validates these results with respect to Section 1504. Qualitatively, investor letters to the SEC unanimously support Rule13q-1. Quantitatively, the market concurs. Extractive industries' portfolio returns reacted favorably to the new rule and pulled back when it appeared to be in jeopardy, suggesting investors perceive that the benefits of greater transparency outweigh the costs. The value of this net benefit implied by estimates in the extent literature is likely in the billions of dollars.

In regards to the questions for comment posed in the SEC's proposed rule, allowing issuers "to submit the required payment disclosure on a confidential basis" (question 40), granting issuers an exemption from reporting (question 41), or permitting issuers "to provide certain information on a confidential basis" (question 44) would negate part or all of the positive net benefits to investors – including lower cost of capital – detailed in this analysis.

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