



# The power of financial transparency: An event study of country-by-country reporting standards



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## HIGHLIGHTS

- We study a recent European legislation on financial transparency using an event-study methodology.
- Country-by-country reporting of tax payments are associated with significant decreases in firm value.
- Disclosure rules reduce rents deriving from tax evasion for firms in extractive industries.

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## ABSTRACT

We show that recent European legislation requiring oil, gas and mining companies to disclose their tax payments on a country-by-country basis was associated with significant decreases in firm value. This suggests that tax evasion creates considerable rents for firms in extractive industries and that disclosure rules have the potential to reduce these rents.

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## 1. Introduction

In recent years, tax evasion by multinational firms has attracted much attention: investigative journalists have documented cases of aggressive tax practices (e.g. [New York Times, 2011](#)), academics have produced new evidence on the revenue consequences (e.g. [Zucman, 2014](#)) and governments have agreed on joint action (e.g. [OECD, 2013](#)).<sup>1</sup>

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<sup>1</sup> Multinational firms may reduce their global tax bill by shifting income to low-tax countries through manipulation of the intra-firm allocation of debt ([Huizinga et al., 2008](#)) and intellectual property ([Dischinger and Riedel, 2011](#)) or through mispricing of intra-firm trade in goods ([Cristea and Nguyen, forthcoming](#)) and services ([Hebous and Johannesen, 2015](#)). Alternatively, tax avoidance may involve the use of hybrid entities and securities ([Johannesen, 2014](#)).

This paper studies a novel type of policy intervention that aims to curb corporate tax evasion by increasing the transparency of firms' financial accounting. Specifically, recent European legislation requires firms in the extractive industries, notably oil, gas and mining companies, to disclose their tax payments on a country-by-country basis. The policy explicitly aims to improve tax compliance in developing countries where taxation of natural resources is often an important source of government revenue ([UCTAD, 2015](#)) and where concerns about corporate tax evasion are widespread (e.g. [Oxfam, 2014](#)).

There are at least two channels through which more detailed reporting of tax payments can affect tax compliance. First, the disclosed information may facilitate the detection of evasion by tax authorities. Second, it may mobilize public pressure on firms with low effective tax rates ([Dyregren et al., 2015](#)).

This study first identifies the four key dates in the European legislative process leading to the adoption of the disclosure rules and then employs an event study methodology to estimate how

the rules affect firm value. We find significant decreases in firm value around two of the event dates and argue that the stock price movements cannot be driven by compliance costs, which are likely to be small. The most plausible interpretation is that disclosure rules are successful at reducing rents created by tax evasion.

The analysis relates to existing studies of how disclosure rules affects tax compliance (e.g. [Bøet et al., 2015](#)) as well as the literature on tax avoidance by multinational firms in developing countries (e.g. [Fuest et al., 2011](#)).

## 2. Background

While NGOs concerned with tax and development have promoted country-by-country reporting since the early 2000s under the slogan “publish what you pay”, the concept gained traction among governments after the financial crisis in the context of a broader campaign for transparency and international cooperation in tax matters (e.g. [Johannesen and Zucman, 2014](#)).

A technical report from the European Commission published on 24 April 2010 proposes country-by-country reporting in the extractive industries as a tool to promote good tax governance in developing countries and calls for further research. On 11 October 2010, the Development Committee of the European Parliament publishes a report proposing that country-by-country reporting is integrated into international financial reporting standards. After discussions in other committees, a modified version of the report proposing to integrate the new reporting rules into Europe’s own legislation is adopted by the Parliament on 8 March 2011. This first endorsement of country-by-country reporting by the European Parliament represents our first event.

In the following months, a legislative proposal is drafted and negotiations with the other European legislator, the Council, commences. The draft published on 25 October 2011 is discussed at the Council on 20 February 2012 where several countries express concern about its effect on the competitiveness of European undertakings. The negotiations then proceed with few and slow advances until 9 April 2013 when the Irish Presidency of the European Union breaks the legislative gridlock and brokers a compromise between the Parliament, the Council and the Commission. The announcement of the agreement represents our second event.

The agreement implies that extractive firms registered in Europe or listed on a European stock exchange must disclose all payments to governments in excess of €100,000 by country as well as by project. The legislation is adopted by the European Parliament on 12 June 2013, which is our third event, and by the European Council on 17 October 2013, which is our fourth event.

## 3. Data and methodology

We employ an event study methodology by estimating the stock price responses to the four events described in the previous section. Assuming that we have correctly identified the events that shifted market participants’ beliefs about the likelihood of disclosure rules coming into force, changes in firm value around the event dates can be interpreted as the net present value of future costs and benefits associated with disclosure of accounting information.

In the first step of the analysis, we obtain a comprehensive list of firms in extractive industries listed on global stock exchanges from the Natural Resource Governance Institute and add daily stock prices from Yahoo Finance for the period August 2009–December 2014. Our sample includes 3642 extractive firms listed in 13 different countries; 1978 firms are listed on at least one European stock exchange and thus affected by the European disclosure rules (“treated firms”) while the remaining 1664 firms are listed outside

Europe and unaffected. After discarding daily stock returns below the 1st percentile (−24%) and above the 99th percentile (33%), the sample mean of the returns is 0.04% and the standard deviation is 5.18%.

We then compute daily abnormal returns (AR) for each treated firm by subtracting expected returns (ER) from realized returns (R):

$$AR_{it} = R_{it} - ER_{it}.$$

We take three different approaches to measuring ER. First, we use the market return  $R^M$  directly.<sup>2</sup> Second, accounting for heterogeneity in the sensitivity to market shocks, we estimate a linear relation between R and  $R^M$  in the pre-event period and use it to construct  $ER = E[R|R^M]$  in the event period.<sup>3</sup> Third, accounting for industry-specific shocks, we measure ER as the average realized return of extractive firms listed outside Europe.

For each of these three approaches, we compute the average abnormal return,  $AAR_t$ , as the simple cross-sectional average of  $AR_{it}$ . For each of the four events, we then compute the cumulative abnormal return, CAR, as the sum of the AARs over an event window starting at the event day itself and ending three days later. The CARs have the flavor of difference-in-difference estimates since they effectively compare the *actual* change in the market value of the treated firms to the *counterfactual* change derived from realized returns of non-extractive firms listed in Europe and extractive firms listed outside Europe.

The CARs computed over the four event windows are the principal outcomes of interest. For the purpose of statistical inference, we also compute the CAR for each four-day window in the pre-event period and denote their empirical variance by  $\sigma^2(CAR)$ . The ratio of the event-CAR and the standard deviation of the pre-event CARs,  $CAR/\sigma(CAR)$ , provides a test statistic, which can be assumed to be unit normal under the null hypothesis that the treatment did not affect returns ([Kothari and Warner, 2007](#)). The procedure is robust to cross-sectional dependence (since returns are averages across treated firms) and temporal dependence (since  $\sigma^2(CAR)$  captures the empirical autocorrelation in returns over four-day windows).

## 4. Results

The results are presented in [Table 1](#). At the endorsement of country-by-country reporting by the European Parliament (“Event 1”), the baseline specification yields a strongly significant estimate of the cumulative abnormal return of −4.6%. The estimate is −6.0% in the second specification where the expected return accounts for the pre-event correlation with the market return whereas it decreases to −2.3% when the returns of unaffected extractive firms are used to form expected returns.<sup>4</sup>

A similar pattern emerges at the compromise between the European Parliament, Council and Commission (“Event 2”): the first two specifications yield estimates of the cumulative abnormal return of −5.1% and −6.0% respectively whereas the third specification yields an estimate of −2.5%.

At the final adoption of the disclosure rules by the European Parliament (“Event 3”) and Council (“Event 4”), the abnormal returns are small and statistically insignificant. This may reflect that investors regarded it as almost certain that the proposal would

<sup>2</sup> The realized return of the global stock market index S&P Global 1200.

<sup>3</sup> From 399 until 6 days before the first event date.

<sup>4</sup> Adjusting test statistics for the change in the volatility of returns during event windows ([Kothari and Warner, 2007](#)) makes little difference. Events 1 and 2 remain significant when non-parametric *p*-values are obtained from the empirical distribution of non-event CARs.

**Table 1**  
Cumulative abnormal returns around events.

	(1)	(2)	(3)	Number of treated firms
	Expected return:			
	Realized return of global index	Predicted return based on global index	Realized return of extractive non-EU firms	
Endorsement by the Parliament (Event 1)	−0.046 <sup>***</sup> (−2.781)	−0.060 <sup>***</sup> (−3.397)	−0.023 <sup>**</sup> (−2.034)	1767
Agreement between legislative bodies (Event 2)	−0.051 <sup>***</sup> (−3.077)	−0.060 <sup>***</sup> (−3.401)	−0.025 <sup>**</sup> (−2.248)	1803
Final adoption by the Parliament (Event 3)	−0.014 (−0.851)	−0.020 (−1.119)	−0.002 (−0.209)	1771
Final adoption by the Council (Event 4)	0.000 (0.026)	0.002 (0.086)	0.011 (0.944)	1757

Notes: test statistics in parenthesis.

<sup>\*\*</sup> Indicated statistical significance at the 5% level.

<sup>\*\*\*</sup> Indicated statistical significance at the 1% level.

pass into legislation given the previous political commitments of the legislative bodies.

It is noteworthy that the estimated responses to Event 1 and Event 2 are smaller when expected returns are based on realized returns for extractive firms listed outside Europe. A possible explanation is that the introduction of disclosure rules in Europe was associated with an increased likelihood that such rules would also be implemented in other countries in the perception of the investors. This would imply that also extractive firms listed outside Europe earned negative abnormal returns during the event windows, which would tend to bias our results toward zero.

## 5. Conclusion

We have shown that the adoption of country-by-country reporting rules for European extractive firms was associated with negative abnormal returns of 5%–10% cumulated over the four major events in the legislative process.

This finding is suggestive that tax evasion creates significant rents for extractive firms and that financial transparency is a potentially powerful tool to curb these rents.

An alternative mechanism works through the direct costs of reporting, however, this is unlikely to account for much of the stock market loss given estimated compliance costs of only \$0.3 million per firm (HM Revenue & Customs, 2014). Likewise, the disclosure

of sensitive information to competitors may have contributed to the loss.

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