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An analysis of the Extractive Industry Transparency Initiative implementation process

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ABSTRACT

The Extractive Industries Transparency Initiative (EITI) has become an international hallmark of the efforts to promote better extractive-sector management and improved societal development in natural resource-rich countries. Since its establishment in 2003, a large number of resource-dependent countries have committed to the EITI Standard, and support of the EITI from donors, nongovernmental organizations, and extractive industry companies has been vast. To understand whether and how adherence to the EITI Standard can affect resource governance and development, it is crucial to examine what factors influence a country's decision to join and implement the Standard. This article examines why and how rapidly countries adopt the Standard using survival analysis methods and a global dataset on countries' progress in implementing the EITI Standard. It finds that several factors influence progress and proposes that these can be categorized as internal motivation, internal capacity, and external pressure to implement the Standard. This article contributes to understanding why the EITI Standard implementation stalls in some countries whereas it progresses in others. Importantly, it outlines which factors need to be controlled for in studies that seek to evaluate the impact of the EITI on resource governance and societal development, and argues that such impact evaluations need to correct for the selection biases in countries' decisions to commit to and implement the EITI Standard.

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1. Introduction

The Extractive Industries Transparency Initiative (EITI) has become the most widely implemented and supported transparency initiative within natural resource governance. Thus far, almost sixty countries have publicly committed to implement the EITI Standard, which specifies the requirements for countries implementing the EITI. The implementing countries, donors, extractive companies, and the other EITI supporters fund EITI International, providing between USD 4–5 million annually (EITI, 2017). In addition, regional development banks, other international development agencies, bilateral agencies, and international civil society organizations fund the activities of national EITIs, as well as the implementation of the Standard in the member countries. The World Bank's Multi-Donor Trust Fund for EITI (EITI-MDTF), for example, disbursed almost USD 70 million in technical and financial assistance to EITI-related programs and projects in over 40 countries during the period 2005–2015 (World Bank, 2016). Furthermore, the member countries' own investments in implementing the Standard are often considerable.

Despite support and effort put into implementation of the EITI Standard, many participating countries are slow to fully implement it. Some countries, such as Guinea, the Democratic Republic of Congo (DRC), and Kazakhstan, took almost a decade after having officially committed to implementing the EITI Standard before becoming fully compliant members.¹ In some countries, the interest falters even before the commitment stage as, for example, in Bolivia, where the EITI was seen as a neoliberal instrument and thus not in accord with the ideological position of the government (Bebbington, Arond, & Dammert, 2017). The data on the progress of EITI implementation that is used in this article shows that it takes, on average, 5.7 years – varying between 2.4 years (Liberia) and 9.5 years (DRC) – to proceed from officially committing to the EITI to fully implementing the EITI Standard.²

¹ To become 'EITI compliant', a country needs to pass a validation that assesses it against the requirements set by the EITI Standard.

² The data covers the period from June 2003 to February 2016. This corresponds to the period from the launch of EITI to the introduction of the EITI 2016 Standard. In this article, 'EITI implementation', 'EITI Standard implementation', and 'Standard implementation' are used interchangeably.

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This article examines what factors influence the speed at which countries implement the EITI Standard. Further, it proposes a simple conceptual framework to categorize the different factors that may influence the progress of EITI implementation. These categories are internal motivation, internal capacity, and pressure from outside actors, such as development agencies and organizations. To study indicators that fall within the three different categories, the article uses survival analysis adapted for ordered multiple failure-time data to examine how quickly countries pass through the different EITI implementation stages. The article finds support for all three categories and makes an important contribution to the literature by identifying new indicators that are linked to a country's decision to join and implement the EITI. These indicators include previous experience of a "resource curse" or a major armed conflict, which are both related to faster implementation, and the curvilinear relation between income level and the implementation progress.

This article is the first to consider EITI implementation as a process with multiple stages, and not simply a discrete decision to either become an EITI member or not. This innovative approach makes it possible to analyze the entire implementation process, and better reflects the continuous effort (or lack thereof) a country is making towards EITI Standard implementation. The approach thus also better captures the impact of the covariates on the progress of EITI implementation.

Further, this article contributes to systematic research on the EITI's impact on resource governance and on other objectives attributed to the EITI. The numerous quantitative evaluations of the EITI's impact have yielded many mixed or negative results (Rustad, Le Billon, & Lujala, 2017; Sovacool, Walter, Van de Graaf, & Andrews, 2016). However, these studies, with a few exceptions, do not fully consider why certain countries become EITI members whereas others do not. And none considers the progress (or lack thereof) of implementation as a factor that may be relevant for explaining the (lack of) success of the EITI. Slow implementation, for example, may indicate that a country has joined the EITI for reasons other than a genuine interest in improving the governance of its extractive sector. Alternatively, it may mean that its capacity to implement the EITI Standard is low. Both explanations would have consequences for what – and how fast – the EITI conceivably can achieve in that particular country. Unless these aspects are controlled for in a study that seeks to assess the success of the EITI, it risks underestimating the effect, and the potential, of the EITI (Corrigan, 2014; Papyrakis, Riger, & Gilberthorpe, 2017; Sovacool et al., 2016).

This article proceeds as follows. Section 2 describes the EITI implementation process. Section 3 summarizes earlier systematic studies conducted on EITI membership. Section 4 presents the conceptual framework for categorizing the factors that may affect the progress of implementation. This section also outlines the study's hypotheses. Section 5 describes the data and methods, and Section 6 presents the results. Section 7 discusses the main findings, and Section 8 discusses their implications.

2. The EITI and EITI Standard implementation process

The EITI and its functions were first publicly outlined by the UK Prime Minister Tony Blair at the World Summit on Sustainable Development in Johannesburg in 2002; the EITI was formally launched in London in June 2003. The EITI started as an initiative to make publicly available the information on revenue flows between extractive industry companies and national governments, with the objective of curbing corruption (Papyrakis et al., 2017). Since then, the EITI has grown into a widely used instrument, and the latest EITI Standard, in place since 2016, includes several aspects of the natural resource value chain (EITI, 2016). For example, the 2016 Standard requires that implementing countries pub-

licly disclose information about exploration activities, licenses and contracts, beneficial owners, and revenue use. Further, the Standard requires the National EITIs "to take steps to act upon lessons learnt; to identify, investigate and address the causes of any discrepancies; and to consider the recommendations resulting from EITI reporting", and to report on their progress in addressing the recommendations (EITI, 2016, p. 30).³

The countries seeking to implement the EITI Standard and to become fully compliant with it must follow a specific process set by the EITI (EITI International Secretariat, 2016a). The process starts with the country's government publicly committing to joining the EITI and to implementing the EITI Standard. After the commitment announcement, the government must appoint a senior official to lead the implementation and to establish both a national EITI secretariat and a multi-stakeholder group (MSG) to oversee the implementation. The MSG needs to comprise representatives from the government, civil society, and the private sector, and it is responsible for setting objectives for EITI implementation, producing the different EITI reports, and ensuring that the findings from the reports contribute to public debate. A fully-functioning MSG, in which civil society has a genuine voice and influence, is a requirement for a country to be accepted as an EITI candidate country.

After the country has fulfilled the initial requirements, the government can apply to the EITI Board to become a candidate country. The application must be endorsed by the MSG. If the application is accepted, the candidate country is expected to start publishing the annual EITI Report⁴ and to fulfill the other requirements set for an EITI compliant country. The validation process to become a fully compliant EITI country consists of the MSG and the national EITI Secretariat preparing the required documents and data for the validation and conducting a self-assessment of the EITI progress to date; an independent consultant preparing a Validation Report, which is subsequently submitted to the EITI Board; and the EITI Board reviewing the Validation Report and other documents and making a judgment as to whether the country is compliant or not (EITI International Secretariat, 2016b, 2017).

3. Earlier empirical studies of EITI membership

The literature using systematic empirical studies to examine the EITI is rapidly growing. This literature can be divided into two broad themes: one that looks at the factors that correlate with a country's likelihood of joining the initiative; and the other that examines the initiative's impact on governance of the resource sector, FDI flows, and more general development outcomes.⁵ The studies that have used statistical methods to examine which countries tend to join the EITI are few in number and include Pitlik, Frank, and Firchow (2010), Öge (2016a), Kasekende, Abuka, and Sarr (2016), and David-Barrett and Okamura (2016).

Pitlik et al. (2010) was the first article to explore the factors related to an increased likelihood of joining the EITI. It used cross-section data for 2008 and included up to 143 developing countries, 19 of which had joined the EITI at the time. In an article that examined the EITI's effect on corruption, Kasekende et al. (2016) included a first stage in which they modeled countries' likelihood of joining the EITI. The authors used panel data for the period 2002–2012 and included 76 resource-rich countries, 37 of which became EITI

³ For a more detailed account of how the EITI came into existence, how it functions, and what its objectives are, see, Hauffer (2010); Öge (2016a); Rustad et al. (2017); Sovacool and Andrews (2015); and Van Alstine (2017).

⁴ The annual EITI Report is the core EITI product. It contains the data on the country's extractives industries in accordance with the EITI Standard (see <https://eiti.org/document/guidance-note-on-publishing-eiti-data>).

⁵ For a recent overview of the literature on the EITI's impact, see Rustad et al. (2017).

members during the study period. David-Barrett and Okamura (2016) examined how and why the norm of transparency has spread internationally. Their empirical analysis focused on the EITI as a case study, using qualitative analysis of WikiLeaks and quantitative analysis of how donors may influence EITI participation. The quantitative analysis in the study used a Cox proportional hazard model in which becoming an EITI member was considered the failure. It is unclear how many countries in all were included in the analysis, but the study considers at least 36 EITI countries and excluded developed countries. Also unclear is what time period was covered in the analysis. Öge (2016a) studied why countries join the EITI, focusing on foreign direct investment (FDI) and using a cross-section analysis and data for 2014. This study included up to 176 countries, 46 of which were EITI members at the time.

Each of the above mentioned studies used a slightly different cut-off for the dependent variable (that is, for EITI membership), but all treated EITI membership as a dichotomous dummy variable. Pitlik et al. (2010) included as EITI members all countries that had committed to the EITI at the time. Kasekende et al. (2016) included those that had reached EITI candidate status. David-Barrett and Okamura (2016) present results separately for two different samples: those that include countries who have published at least one EITI Report and those that have reached the candidate status. Öge (2016a) states that the dependent variable is coded as 1 when a country “has made an official membership application” (p. 136), but the author’s underlying inclusion criteria seem to have been candidate status as well (Table 1 in Öge (2016a)).

All four studies conclude that countries with a relatively higher level of dependence on the extractive sector are more likely than others to join the EITI. All studies also find that countries that are relatively poorer are more likely to join the EITI, as well as those that are more corrupt. A few other robust findings emerge from these studies. All except for David-Barrett and Okamura (2016) include measures for the quality of the general governance. Although the results are somewhat mixed and the measures included vary across the studies, the generalized finding is that countries with relatively higher degrees of openness and political freedom tend to be more likely to join the EITI than others. OPEC countries are more reluctant to join (Kasekende et al., 2016; Pitlik et al., 2010), whereas countries that are relatively more ethnically diverse are more likely to join (David-Barrett & Okamura, 2016; Pitlik et al., 2010). Kasekende et al. (2016) find evidence that a relatively higher level of aid decreases a country’s likelihood of joining the EITI, whereas David-Barrett and Okamura (2016) find evidence for the opposite.

4. The conceptual framework and hypotheses

The quantitative and qualitative studies of the EITI unequivocally state that the decision to join the EITI and to implement the Standard is based on the government’s or the ruling elite’s cost-benefit analysis of the tangible and reputational consequences for the country as a whole, and, in some cases, specifically for the government, or certain groups or individuals. Some of the factors related to a country’s decision to join or not to join are internal to that country and related to its motivation, as well as its capacity to implement the EITI Standard. The decision may also be partly a response to external pressure to join the initiative from international donors or other agencies. These different aspects are outlined in Table 1.

4.1. Internal motivation

The internal motivation of a country to implement the EITI Standard is likely to depend on the degree to which it believes that

Table 1
Factors influencing the EITI implementation process.

Internal motivation	Internal capacity	External pressure
<ul style="list-style-type: none"> • Natural resource dependence • Resource curse experience • Development level • FDI flows • Corruption 	<ul style="list-style-type: none"> • Quality of institutions • Development level 	<ul style="list-style-type: none"> • (Post) conflict country • Aid and development assistance • External debt

the EITI process can support its objectives with regard to improved extractive-sector management. The benefits are likely to be larger in countries that (1) have large extractive sectors that they depend upon for generating exports and income, (2) have in the past experienced a squandering of their plentiful resources without any gain in long-term economic growth and development, or (3) are relatively poor. These provide the basis for the following hypotheses:

H1a. *Countries dependent on their extractive sectors are likely to implement the EITI Standard faster than other countries*

H1b. *Countries that have experienced the “resource curse” are likely to implement the EITI Standard faster than others*

H1c. *Poor countries are likely to implement the EITI Standard faster than countries that are relatively richer*

A country’s motive for joining the EITI may be to secure investment in its extractive sector. Being an EITI member, and especially, being a compliant country, signals to international investors that the country is likely to have a relatively functional and stable system for managing its extractive sector and revenues (Öge, 2016a). Indeed, there is some evidence that countries that have implemented the EITI have seen their foreign direct investment (FDI) increase as a consequence (Malden, 2017; Öge, 2016a). Thus, a country with lower FDI should be more likely to consider the EITI as a means of indicating its determination to reform its extractive sector and, thus, its suitability as a host for foreign investment. Thus,

H1d. *Countries with lower levels of FDI are likely to implement the EITI Standard more quickly than other countries*

Finally, countries suffering from corruption may benefit from the EITI-type of transparency more than other countries. By making revenues and other aspects of extractive-sector management public, they can make it more difficult to divert revenue both before it arrives in state coffers, as well as afterwards. Further, countries with rampant corruption may signal with the EITI uptake that they are willing to reform the resource sector, in order to gain tangible benefits in the form of investments, loans, or debt relief, or for more intangible reputational gains (David-Barrett & Okamura, 2016; Öge, 2016b). However, those benefiting from the prevailing conditions risk losing their access to revenues if the Standard is implemented. Thus, countries with high levels of corruption may be more likely to commit to the EITI in the first place, but their ability to implement the EITI may be reduced due to internal resistance to reforms. The resistance to the EITI is likely to be highest in countries with high extractive-sector rents and high levels of corruption, and these countries may thus be among the slower EITI adopters (David-Barrett & Okamura, 2016). Therefore,

H1e. *Countries with higher levels of corruption are more likely to commit to the EITI Standard than those with lower levels of corruption*

H1f. Countries with high levels of corruption as well as a high degree of dependence on extractive rents are likely to implement the EITI Standard more slowly than others

4.2. Internal capacity

Countries with higher internal capacity are likely to adopt the EITI Standard faster than others simply because they are capable of doing so. Regimes that are more open are more likely to have existing channels for making information public as well as experience less internal resistance to increased transparency. Countries with higher quality institutions may also already have in place some of the procedures and information required by the EITI Standards, and are likely to have a more active civil society with more rights and political influence than other countries (Pitlik et al., 2010). All these aspects should make implementing the EITI Standard easier and faster. Thus,

H2a. Countries with relatively better overall governance and more open societies are likely to implement the EITI Standard faster than others

A country's general level of development can play a role as well. Richer countries are better able to finance the reforms required by the EITI Standard and likely to have a higher level of competence within their state bureaucracies. Thus, the more developed countries may find it easier and less costly to join and implement the EITI. Furthermore, for the very rich countries, such as Norway, the US and Germany, implementation of the EITI not only requires very moderate effort, but it also offers considerable symbolic value: recognition as a world leader in promoting transparency, a structure to trumpet (a country's own) best practices, and the moral authority to press other countries to join the initiative (Fineberg, 2014; Öge, 2016a; Russell, 2014; Sturesson & Zobel, 2015). Thus,

H2b. More developed countries are likely to implement the EITI Standard faster than less developed countries

4.3. External pressure

The EITI is a voluntary scheme. However, some countries may be encouraged or even coerced to join it. This may be the case for countries that recently have experienced major armed conflict. The presence and influence of international organizations and agencies in these countries can be substantial and can be used to promote extractive-sector reforms (Lujala & Rustad, 2012; Lujala, Rustad, & Kettenmann, 2016). In Liberia, for example, after the brutal civil war ended in 2003, implementation of the EITI became an integral part of the wider governance reforms that were promoted by international aid and development agencies (Sovacool & Andrews, 2015).

H3a. Countries with a history of armed civil conflict are likely to implement the EITI Standard faster than other countries

Countries in need of external assistance development provide external organizations and governments with an opportunity to push reforms. Although the implementation of EITI rarely has been made an official condition for assistance or debt relief, anecdotal evidence suggests a link between assistance and progress in implementing the EITI (David-Barrett & Okamura, 2016). In the case of Uganda, for example, some development agencies proposed to make future aid conditional on Uganda's progress in implementing the EITI (Sturesson & Zobel, 2015). In Nigeria, it appears that the

substantial debt write-off in 2005 was linked to Nigeria's agreement to push forward with reforms, of which the EITI was a part (Kasekende et al., 2016). Thus,

H3b. Countries with high levels of debt are likely to implement the EITI Standard faster than others

H3c. Countries with high levels of incoming development assistance are likely to implement the EITI Standard faster than others

5. Data and methods

The panel dataset used in the analysis includes all independent countries with a population of 500,000 or larger in 2012 (Lujala, 2018). In total, it includes 167 countries and covers the period 2003–2016. Some of these countries are lost in the analysis due to missing data. The dataset includes 53 countries that at some point during the study period had committed to the EITI. (For a list of the countries, see Appendix 1.)

5.1. Progress in EITI implementation

Six steps of the EITI implementation process could be coded for all of the EITI countries. These were:

1. Government commitment (month and year)
2. Establishment of MSG (month and year)
3. Candidate status (month and year)
4. First EITI Report (month and year)
5. First validation report (month and year)
6. Compliant status (month and year)

The order of the steps, especially in the early years of the EITI, was not set in stone. In a few cases, the establishment of MSG preceded the official government commitment to the EITI, and in some cases, the first EITI report was published before the country was recognized as an EITI candidate. However, government commitment and establishment of the MSG always precede candidate status; candidate status always comes before the validation report; and the validation report is submitted before compliant status can be obtained.

The vast majority of the data were gathered from the country profiles published on the EITI's homepage. For most countries, the profiles included a timeline which indicated the timing of these stages. When this information was missing, it was obtained from annual EITI reports, validation reports, or other EITI publications. In the few cases in which the information could not be found in these sources, it was either obtained from the EITI Board meeting minutes, or from news items or other documents located through a standard Google search of the Internet.

The raw data had to be adjusted in some cases as the survival analysis method used in this article requires that the order of the events be the same for all countries. There were four cases in which the establishment of the MSG took place before the government commitment (Kazakhstan, by 2 months; Liberia, by 1 month; Mongolia, by 2 months; and Ethiopia, by 1 month). For these countries, the MSG establishment date has been dated for the month following the government commitment. In the case of six countries (Azerbaijan, Cameroon, Guinea, Mauritania, Nigeria, and Gabon), the first annual EITI Report was published prior to the country becoming an EITI candidate country; in these instances the date of the first EITI Report after the country became a candidate was coded.

Further, the survival analysis used on this article method cannot process ties – that is, two events that occur at the same time. On those occasions when two events took place in the same month, the latter of the two events was coded as occurring one month later. Thus, the following events were postdated by one month: the achievement of compliant status by Azerbaijan; the validation report for Cameroon; the establishment of MSG by Timor-Leste, Ethiopia, Kazakhstan, Liberia, Madagascar, Mongolia, Tajikistan, Trinidad and Tobago; and the first EITI report from Ghana and Mauritania.

The EITI was officially launched on June 17, 2003, at the Lancaster House Conference in London. This date is thus considered to be date “zero” in the analysis. When a government’s commitment to EITI took place in June 2003, as was the case of Ghana and Azerbaijan, the date is set to July 2003. In the analysis, the follow-up period for a country ends either when it became compliant or on February 1, 2016, if it had not become compliant by that time (that is, the country was right censored at this point of time).

Table 2 provides the median time in years that it took a country to move from one stage to the next (first column). In general, countries have moved relatively quickly from the stage of government commitment to that of candidate; the median time is 17 months. To move from the candidate to the compliant stage has taken a considerably longer time – nearly four years. The average time lapses between the stages are somewhat longer (second column), suggesting that some countries have an especially slow adoption speed and are skewing the distribution.

Appendix 1 lists all the EITI countries that are included in the dataset, the event dates, and their EITI status as of February 2016. The map in Figure 1 shows the progress of implementation of the EITI over time and space. It reveals that a number of individual countries have achieved progress in implementing the EITI Standard, and that, for the most part, the EITI has spread from African countries to all major continents.

5.2. Independent variables

The analysis includes several indicators to test the hypotheses outlined in Section 4. The summary statistics for the variables are provided in Table 3.

Data for dependence on *extractive rents* comes from the World Development Indicators (WDI) (World Bank, 2017). The WDI rents data is calculated as the difference between the international market value of the production and production costs, and is expressed as a share of GDP. For this article, coal, mineral, natural gas and oil rents were extracted from the WDI dataset and added together.⁶ Since the values for the variable are highly skewed, the *extractive rents* variable was transformed using natural logarithms.⁷

Some estimations in the analysis are restricted to countries with a certain level of dependence on extractive rents. The first threshold, or benchmark, was established using the EITI country

⁶ When adding the rents together to construct the *extractive rents* variable, missing values in the data were considered as zeros. Except for a very few cases, the values for the preceding or following years showed that rents for these country-years were in practice either zero or very close to zero (a full list of these can be obtained from the author). However, if *all* rent variables for a given country-year were missing, a missing value was coded for the *extractive rents* as well. These include Cuba 2014–15, Iran 2015, Iraq 2003, Libya 2012–15, Papua New Guinea 2015, North Korea (whole period), Syria 2008–15, Taiwan (whole period), and Venezuela 2014–2015. Minerals included in the WDI data are tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite and phosphate. The WDI codes missing values for many countries that do not produce oil or gas in economic quantities. For these countries, the missing rents data for oil and gas were recoded to zeros.

⁷ Analysis using Martingale residuals suggests that the log-transformed *extractive rents* is the best functional form for this covariate. By far the most extreme values in the dataset are for Timor-Leste. Dropping this country from the analysis, however, does not alter the analysis results.

Table 2

The median and mean duration between the EITI stages for the EITI implementing countries.

	Time from the previous EITI stage (in years)	
	Median	Mean
Commitment	–	–
MSG established	0.7	0.9
Candidate	0.7	1.0
First Report	1.8	1.7
Validation Report	0.8	1.0
Compliant	1.3	1.5

Note: The calculations include countries that had committed to the EITI by February 2016. The mean is calculated using the extended mean that takes into account the right censoring.

with the lowest extractive-rents share of GDP for the period 2002–2015; all countries that had higher extractive rents at some point during the study period were included in the analysis. The EITI country with lowest share of extractive rents for the period was Malawi with a dependence rate of 0.09%. Using Malawi as the benchmark (i.e., excluding countries with dependency rates lower than 0.09% from the analysis) reduces the number of countries included in the analysis by 26. Other estimations also use the benchmarks of 1% and 4% of GDP. Use of the 1% threshold results in excluding approximately 50 countries from the analysis; the 4% benchmark excludes approximately 80 countries (effectively reducing by half the number of countries included in the estimation).

A *resource curse* dummy was assigned to countries that have been highly dependent on natural-resource rents but have had negative economic growth in the past. To establish the dummy, the mean extractive rents for each country for the period 1983–2002 was calculated. Countries that were both in the upper 25th percentile (that is, the countries for which extractive rents accounted for at least 4.7% of GDP) and had negative average economic growth during the same 20-year period were assigned the value of 1.⁸

Data for foreign direct investment (FDI) are measured as net inflows of FDI and are expressed as a share of GDP. The data come from the WDI dataset (World Bank, 2017). The data have some extreme values and to limit the influence of these, the variable was transformed using the inverse hyperbolic sine.⁹

Measures for *corruption* and for *voice & accountability* come from the World Bank Worldwide Governance Indicators (Kaufmann, Kraay, & Mastruzzi, 2010). These composite measures range roughly between –2.5 and 2.5. For *corruption*, higher values indicate higher levels of corruption.¹⁰ *Voice & accountability* measures citizens’ freedom to participate in selecting their government, freedom of expression, freedom of association, and freedom of the press and other media. Higher scores on this variable indicate a higher degree of openness and accountability in the society. As alternative measures for the quality of institutions, some estimations include composite indicators for *press freedom*, *political rights*, and *civil liberties*, which come from Freedom House (Freedom House, 2016, 2017). The variables for civil liberties and political rights vary between 1 to 7, with 1 denoting the countries that are least free and

⁸ These countries are Venezuela, Suriname, Russia, Azerbaijan, Mauritania, Liberia, Cameroon, Nigeria, Gabon, the Republic of the Congo, Angola, Zambia, Libya, Saudi Arabia, UAE, Turkmenistan, Uzbekistan, and Kazakhstan.

⁹ The STATA command *asinh* was used for the transformation. The transformation is similar to a log transformation, except that it also transfers the negative values. Analysis using Martingale residuals suggests that the *asinh* transformation provides the best functional form for the covariate.

¹⁰ *Corruption* is the inverse measure of the dataset’s variable Control for Corruption.

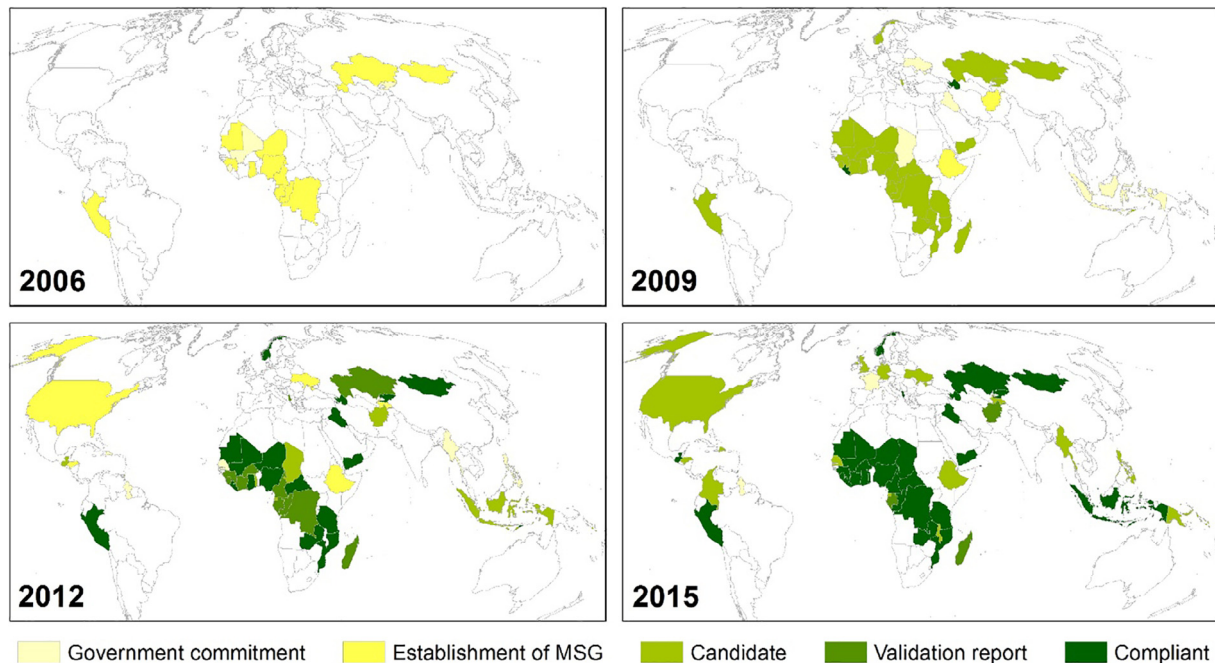


Fig. 1. The EITI progress in the member countries and the Global spread of the EITI.

Table 3
Summary statistics for the period 2002–2015.

Variable	# obs.	Mean	Std. dev.	Min.	Max.
Year	2312	–	–	2002	2015
Extractive rents (% GDP)	2259	8.07	19.3	0	344
Resource curse (dummy)	2250	0.11	0.3	0	1
FDI (% GDP)	2201	4.99	10.1	–80	255
Corruption	2293	0.15	1.0	–2.6	1.9
Per capita income (in '0000 dollars)	2208	1.62	1.9	0.05	13.5
Voice & Accountability	2293	–0.20	1.0	–2.3	1.8
Debt (% GDP)	2203	53.08	48.6	1	786
ODA by G7 (% of GNI)	2194	1.77	4.4	0	97
ODA by DAC countries (% of GNI)	2194	2.78	6.4	0	123
ODA by all donors (% of GNI)	2194	4.61	9.5	0	181
Major war (dummy)	2312	0.04	0.2	0	1
Press freedom	2297	49.38	23.6	1	92
Political rights	2311	4.37	2.1	1	7
Civil rights	2311	4.49	1.8	1	7
Regime type	2273	3.77	6.3	–10	10
Regime change	2312	0.07	0.3	0	1

7 those that are the most free. Press freedom is measured on a scale from 0 (the least free) to 100 (the most free). The final alternative measure for institutional quality is *regime type*, which is drawn from the Polity IV dataset (variable *polity2*) and ranges from –10 (strong autocracy) to 10 (strong democracy) (Marshall, Gurr, & Jaggers, 2016). As it can be that changes in regime can affect the EITI implementation process, the Polity data was also used to construct a dummy for political instability (*regime change*) that indicates country-years with a 3-or-greater change in the polity measure compared to the previous year.¹¹

Per capita income data come from the WDI as well. Two transformations have been used in the analysis. The first is the conventional log transformation. Most of the models in the estimations,

¹¹ Transition period (–88) and collapse of central authority (–77), that are coded as missing in *polity2* measure, were recoded as regime changes.

however, use the non-logged income measure together with its square term. The purpose is to capture the hypothesized log-linear effect of income level on the progress of EITI implementation (that is, the hypothesis that both the high- and low-income countries are likely to implement the EITI Standard more rapidly than other countries). To avoid reporting many decimals in the coefficients, the variable has been divided by 10,000. The indicator uses per capita income based on purchasing power parity (PPP), using constant 2011 international dollars.

Data for *debt* come from the World Economic Outlook Database (IMF, 2017), which measures a central government's gross debt as a percentage of GDP. To limit the influence of the extreme values, this variable has been log-transferred.¹²

Official Development Assistance (ODA) includes all ODA disbursements from the G7 countries; it is expressed as a percentage of GNI.¹³ The data come from the International Development Statistics of the Organization for Economic Cooperation and Development (OECD) (OECD, 2017). The largest G7 recipients of ODA are Liberia, DRC, Iraq, Afghanistan, Mozambique, and the Republic of the Congo. As alternative measures, some estimations include ODA from Development Assistance Committee (DAC) countries as well as all ODA, regardless of the source.¹⁴

The source for *major war* is the UCDP/PRIO Armed Conflict Dataset v4–2016 (Gleditsch, Wallensteen, Eriksson, Sollenberg, & Strand, 2002; Melander, Pettersson, & Themnér, 2016). The dummy variable included in the analysis codes all years for which there were at least 1000 battle-related deaths.

All variables have been lagged by one year. All analyses include clustering on country, time trend (year dummies), and region effects (dummies for sub-Saharan Africa, Asia, Central and South

¹² The most extreme values are for Liberia, Japan, and Iraq. Again, analysis using Martingale residuals suggests the transformation provides the best functional form for the covariate.

¹³ The G7 countries are Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

¹⁴ The Development Assistance Committee (DAC) is OECD's forum for aid and development. It currently has 30 members. The ODA from all donors include all bilateral and multilateral ODA.

America, and the Middle East and North Africa; Europe and North America, together with Australia and New Zealand, are used as the reference category).¹⁵

5.3. Methods

The progress in the implementation of the EITI Standard occurs in distinct, ordered stages. For some countries, the stages are separated by short intervals; for others, the length of time may be significant. These facts – that there are clear stages through which a country must progress in order to implement the EITI Standard – make the implementation process ideally suited for survival analysis of ordered multiple failure-time data.¹⁶ This approach is used to analyze the duration of the EITI implementation process using the six stages (government commitment, establishment of the MSG, candidate, first EITI report, first validation report, and compliant), as the ‘failures’ (also called events). The shorter the period of time between these ‘failures’, the faster the country is progressing through the implementation process.

The EITI stages are ordered in the sense that the next stage cannot take place before the previous one. They are also distinguishable from each other. Therefore, this article uses the conditional risk-set model developed by Prentice, Williams, and Peterson (1981) (PWP).¹⁷ The conditional risk sets used in the PWP model only include the information from observations that are at risk of experiencing the specific failure. This means that although all countries in the dataset are included in the calculation of the conditional risk set for the first EITI stage (government commitment), only those that have made the commitment are included in the calculation of the risk set for the next stage (establishment of MSG). Similarly, only countries that have submitted the validation report are included in the calculation of the risk set for the last stage (compliant). As the focus is on examining how fast the countries proceed after committing to the EITI rather than how long it took for each country to reach a specific stage after the 2003 Lancaster House Conference, the analysis uses the gap approach to the PWP model in which the time is set to restart from zero after each event. For the government commitment, June 2003 is used as the starting point.

Fig. 2 shows the overall smoothed hazard function for the data (Panel A) as well as hazard functions for each EITI stage separately (Panel B). Panel A shows that the hazard that any EITI stage would take place increased during the first 6 years after the EITI was launched, but has decreased steadily afterwards. Panel B shows that the shape of the hazard function varies across the EITI stages. As the PWP is a stratified model, it allows the baseline hazard to be different for each EITI stage. Further, as there is no theoretical or empirical basis to determine what the baseline hazard functions

would look like, the Cox proportional hazards model is used in the analysis as it does not require parameterization of the hazard function.¹⁸ In this way, the analysis is not vulnerable to misspecification of the hazard function.

For the analysis in this article, the hazard function for the j^{th} event and i^{th} subject using the stratified Cox model is given by $h_{ij}(t) = h_{0j}(t - t_{j-1})e^{\beta X_{ij}}$ where h_{ij} is the hazard function for the j^{th} EITI event of the i^{th} country at the time t , h_{0j} is the event specific baseline hazard, X is the covariate vector and β is the corresponding vector for coefficients, and $t - t_{j-1}$ denotes the time since the previous EITI event (for the first event, the time since June 2003).

6. Analysis

Tables 4–6 show the main results for the Cox survival analyses, and further results are provided in Appendices 2–7. The coefficients are reported in hazard ratios that can be interpreted as the chance of an event occurring when the covariate is increased or decreased by one unit. A coefficient above 1 indicates a positive relation between the variable and the progress of implementation. That is, the failures (the EITI implementation stages) follow each other faster, meaning that the variable is related to more rapid EITI implementation. Coefficients below 1 indicate that the variable is negatively associated with the speed of EITI implementation progress.

The first part of the analysis includes all countries, both EITI and non-EITI members (Table 4), whereas the second set of analyses only focuses on the countries that at some point have committed to the EITI. The latter set includes two types of estimations: i) all of the EITI stages since June 2003 (Table 5), and ii) the stages from candidate to compliant (Table 6). Estimations in Table 6 use the date on which the country was granted candidate status as the starting point and thus measure the progress made from the point after which the country needs to invest seriously in the implementation process by producing annual EITI Reports and preparing for and obtaining validation. Moving through these later stages requires substantial investment and engagement by both the state and its institutions; it also involves making information publicly available, possibly exposing incompetent or corrupt practices and individuals. Therefore, it is possible that the progress from candidate to compliant stage may differ from the overall progress toward implementation.

6.1. Estimations with the global dataset

Models 1–3 in Table 4 show the results from the analysis where the grouped variables have been added stepwise in the estimated model. Model 1 adds the indicators for the internal motivation to implement the EITI Standard: high *extractive rents*, previous *resource curse* experience, small *FDI* inflows, high *corruption*, and low *per capita income* level. The model also includes the interaction term for resource rents and corruption (*resource rents * corruption*)

¹⁵ STATA 15 is used in all analysis. The dataset and detailed replication instruction are available Lujala, 2018 through Mendeley Data.

¹⁶ Survival analysis methods (also called duration analysis and event history analysis) are used when the outcome variable is the time to the occurrence of the event of interest (e.g. death, end of war, or marriage). Survival analysis of ordered multiple failure-time data analyzes data series with several sequential events that follow each other in time. It is commonly used in medicine to study factors that influence progressive illnesses with multiple sequential phases (see, for example, George, Seals, and Aban (2014)).

¹⁷ The modeling approach for recurrent data depends on whether the data is of recurrent events (recurrence of the same event) or multiple events (occurrence of different types of events), and whether the events are non-sequential or sequential (i.e. ordered). In the PWP model, only subjects that have experienced the previous event are considered to be at the risk of incurring the successive one, but other approaches, such as Wei, Lin, and Weissfeld model, consider all subjects to be at risk of experiencing a specific event, regardless of whether they have experienced the previous event or not. Others, such as the Andersen-Gill model, do not account for the different types of events and, depending on the model specification, may not account for the order either. See, for example, Amorim and Cai (2015), Kelly and Lim (2000), and Villegas, Juliá, and Ocaña (2013) for further reading on choosing appropriate approaches for analyzing recurrent event data.

¹⁸ Cox proportional hazards model is *semiparametric* survival estimation approach. *Non-parametric* approaches estimate the survival as function of time only, using split samples to compare survival rates between groups (e.g. between low- and high-income countries or females and males). In the Cox model, the parametric component is the covariate vector, but the baseline hazard function is estimated non-parametrically and is not assumed to follow any specific distribution: its form is arbitrary and thus not vulnerable for misspecification. In *parametric* approaches the underlying distribution of the survival times (i.e. hazard function) must be specified. If the shape of the distribution is known or can be derived correctly from a theory, the parametric models can perform better and produce smaller standard errors and more precise estimates than the Cox model. They, however, are not robust for misspecification of the hazard function and thus are more risky to use than the Cox model. For more on parametric and semiparametric regressions, see, for example, George et al. (2014).

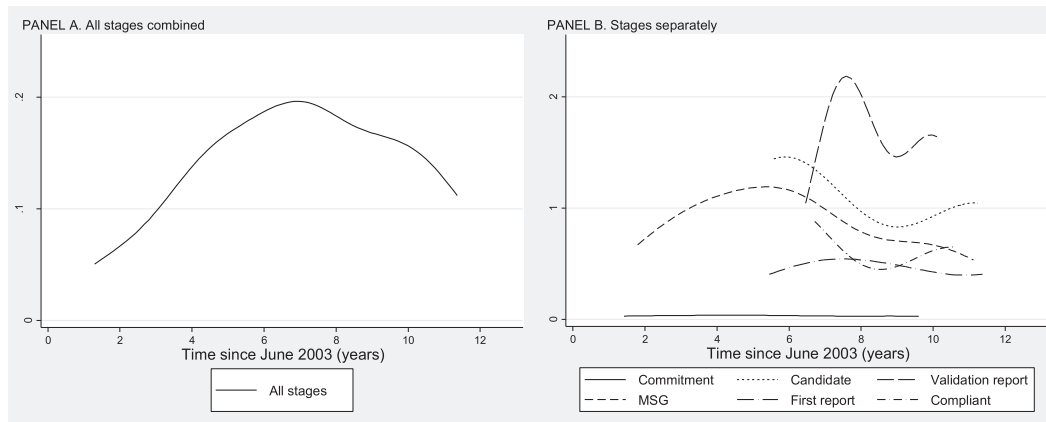


Fig. 2. Smoothed hazard estimates for the EITI stages. Panel A shows the combined hazard estimate and Panel B the hazard estimate for each stage separately.

Table 4

EITI progress, all stages. EITI and non-EITI countries, 2003–2016.

	(1)	(2)	(3)	(4)	(5)	(6)
	All countries			Resource rich countries		
Extractive rents (ln)	1.17*** (4.10)	1.15*** (3.74)	1.16*** (3.63)	1.11* (1.87)	1.09 (1.41)	1.30*** (3.52)
	0.000	0.000	0.000	0.062	0.157	0.000
Resource curse	1.43* (1.90)	1.48** (2.29)	1.42* (1.74)	1.50** (2.01)	1.50** (1.97)	1.41* (1.73)
	0.057	0.022	0.081	0.044	0.049	0.084
FDI (asinh)	1.20*** (2.97)	1.18** (2.76)	1.15** (2.39)	1.14** (2.08)	1.14** (2.06)	1.15** (2.08)
	0.003	0.006	0.017	0.037	0.039	0.037
Corruption	0.92 (-0.78)	1.42** (2.03)	1.25 (1.37)	1.33 (1.57)	1.42** (2.02)	2.09*** (2.76)
	0.437	0.043	0.172	0.116	0.043	0.006
Extractive rents * Corruption	0.95 (-1.17)	0.95 (-1.10)	0.95 (-1.09)	0.94 (-0.86)	0.96 (-0.54)	0.84** (-2.05)
	0.241	0.273	0.275	0.390	0.588	0.040
Per capita income (ln)	0.72*** (-5.26)					
	0.000					
Per capita income		0.73*** (-2.77)	0.75** (-2.31)	0.77** (-2.01)	0.77* (-1.95)	0.80 (-1.60)
		0.006	0.021	0.044	0.051	0.109
Per capita income SQ		1.03** (2.13)	1.02* (1.78)	1.02 (1.63)	1.02 (1.60)	1.01 (0.89)
		0.033	0.075	0.104	0.111	0.372
Voice & Accountability		1.73*** (3.66)	1.54*** (2.86)	1.55*** (2.86)	1.74*** (3.31)	2.15*** (3.97)
		0.000	0.004	0.004	0.001	0.000
Debt (ln)			1.01 (0.056)	0.99 (-0.098)	0.96 (-0.40)	0.97 (-0.30)
			0.955	0.922	0.691	0.761
ODA		1.01** (2.28)	1.01** (2.28)	1.01* (1.66)	1.01* (1.69)	1.01** (2.24)
		0.023	0.023	0.097	0.091	0.025
Major war		1.94* (1.77)	2.00* (1.77)	2.00* (1.83)	1.95* (1.65)	2.22* (1.68)
			0.077	0.067	0.098	0.093
Number of countries	160	160	156	130	104	74
Number of failures	262	262	242	238	229	186
Pseudo R2	0.039	0.045	0.043	0.032	0.031	0.048
Log likelihood	-612	-609	-555	-539	-505	-373

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are showed in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. ***p < 0.01, **p < 0.05, *p < 0.1.

to see if countries with high rent and corruption levels are less inclined than others to implement the EITI. Model 2 adds the indicators that measure internal capacity to implement the EITI Standard: high *per capita income* level and *voice & accountability*

in governance. To include high income levels in the model, the logged *per capita income* level in Model 1 is replaced by *per capita income* and its square term (*per capita income SQ*). Finally, Model 3 includes the measures for external pressure to join and implement

Table 5
EITI progress, all stages. EITI countries, 2003–2016.

	(1)	(2)	(3)
	All	Resource-rich	
Extractive rents (ln)	1.17*** (3.43) 0.001	1.16** (2.27) 0.024	1.32*** (3.34) 0.001
Resource curse	1.58** (2.16) 0.030	1.63** (2.25) 0.024	1.40 (1.51) 0.131
FDI (asinh)	1.18*** (3.04) 0.002	1.18*** (2.70) 0.007	1.14* (1.85) 0.064
Corruption	0.93 (-0.35) 0.723	0.98 (-0.11) 0.913	0.82 (-0.47) 0.639
Extractive rents * Corruption	0.89** (-2.27) 0.023	0.90 (-1.27) 0.205	0.81* (-1.95) 0.051
Per capita income	0.69* (-1.92) 0.055	0.65** (-2.11) 0.035	0.68 (-1.56) 0.119
Per capita income SQ	1.04 (0.94) 0.348	1.05 (1.16) 0.246	1.04 (0.67) 0.500
Voice & Accountability	1.10 (0.54) 0.590	1.20 (0.97) 0.331	1.06 (0.23) 0.819
Debt (ln)	0.87 (-1.62) 0.106	0.84** (-1.97) 0.049	0.81** (-2.46) 0.014
ODA	1.01 (1.47) 0.143	1.01* (1.67) 0.095	1.02*** (2.62) 0.009
Major war	2.21* (1.93) 0.053	2.16* (1.82) 0.069	2.56** (2.00) 0.045
Number of countries	49	45	35
Number of failures	242	229	186
Pseudo R2	0.042	0.038	0.049
Log likelihood	-467	-436	-327

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are showed in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. *** p < 0.01, ** p < 0.05, * p < 0.1.

the EITI: higher levels of *debt*, dependence on *ODA*, and experience of *major war*. Models 4–6 show the results for different subsamples using Model 3 as the baseline. Model 4 shows the results for all countries during the period 2002–2015 that had, in at least one year, higher rates of extractive-rents dependence than Malawi. Models 5 and 6 show the results for a sample that only includes the countries that had extractive-rents ratios greater than 1% and 4% of GDP, respectively, at least once during the period 2002–2015.

The models show some support for all three categories of factors that potentially affect the progress of implementing the EITI. With regard to internal motivation, the results show that countries that are more dependent than others on *extractive rents* implement the EITI Standard more rapidly as do those that have experienced a *resource curse*. Also, countries with higher *FDI* are more likely to progress faster. Models show consistently positive estimates for *corruption* and negative estimates for the *extractive rents* * *corruption* interaction term; the coefficients, however, are not significant in all estimations.

The *per capita income* and its square term provide evidence that there is a curvilinear, U-shaped relationship between income level and the speed of EITI implementation: poorer and richer countries are more likely to implement the EITI Standard faster than others. This trend is weaker when only the most resource dependent

Table 6
EITI progress, stages from Candidate to Compliant. EITI countries, 2003–2016.

	(1)	(2)
	All	Resource-rich
Extractive rents (ln)	1.25 (1.23) 0.220	0.80 (-0.46) 0.643
Resource curse	2.19** (2.09) 0.036	2.47** (2.02) 0.044
FDI (asinh)	1.16 (1.23) 0.220	1.15 (0.93) 0.351
Corruption	2.61 (1.42) 0.154	0.64 (-0.45) 0.656
Extractive rents * Corruption	0.59** (-2.09) 0.037	1.02 (0.034) 0.973
Per capita income	0.86 (-0.33) 0.742	0.70 (-0.77) 0.442
Per capita income SQ	1.07 (0.85) 0.394	1.06 (0.63) 0.531
Voice & Accountability	1.59 (0.99) 0.323	1.52 (0.85) 0.393
Debt (ln)	1.25 (1.06) 0.289	1.22 (0.85) 0.395
ODA	1.05*** (4.19) 0.000	1.05*** (3.66) 0.000
Major war	2.33 (1.11) 0.266	3.56 (1.12) 0.263
Number of countries	47	34
Number of failures	99	83
Pseudo R2	0.12	0.13
Log likelihood	-218	-165

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are showed in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. *** p < 0.01, ** p < 0.05, * p < 0.1.

countries are included in the sample (Model 6). Countries that already have a higher degree of *voice & accountability* in their governance are considerably more likely to be faster adopters. These two results indicate that the countries with better capacity to implement the EITI are likely to implement it faster than those with less capacity.

Finally, some evidence links external pressure to speedier adoption. Countries with experience of *major war* are more likely to implement the EITI faster, as are those that receive *ODA* from the G7 countries. *Debt* is not related to implementation speed.¹⁹

The effect of development assistance may depend on who is providing it. The EITI has been endorsed by the G7/G8 several times, and therefore it is possible that the conditional effect of *ODA* on the progress of EITI implementation is restricted to *ODA* coming from the G7 countries. As an additional analysis, Models 3, 5, and 6 were run with two alternative variables for development assistance: one that included all *ODA* regardless of the source country, and another that included *ODA* from DAC countries only.

¹⁹ Tests using Schoenfeld residuals suggest that in Models 3 and 4 the proportional hazards assumption of the Cox model is violated for *corruption*. Removing the variable and its interaction term from the models has little effect on other covariates in Model 3 and strengthens some of them in Model 4 (see Appendix 8).

As Models 1–6 in Appendix 2 show, ODA from G7 and DAC countries tends to be more influential than all ODA in general.

Other studies on EITI membership have used measures other than, or in addition to, *voice & accountability* for quality in governance. These include measures for *press freedom*, *civil rights*, *political rights*, and *regime type*. However, these five measures are all very highly correlated and thus cannot be included simultaneously in an estimation model. As a further check, each of the four alternative measures was substituted, one at a time, for *voice & accountability*. The results in Appendix 3 show that each of the alternative measures behaves to a large extent as does *voice & accountability*, and that the inclusion of them has no substantial impact on the other variables. The only exception is *regime type*, which exhibits the weakest impact on the progress of implementation and whose inclusion weakens the impact of *major war*. Inclusion of *regime change* renders *corruption* insignificant (the interaction term with natural resource rents retains its effect size and significance level), but is in itself insignificant and has limited impact on other covariates.

6.2. Estimations with EITI members

Table 5 includes the countries that had officially committed to the EITI at some point during the study period. Model 1 uses the baseline from Table 4 (Model 3) and Models 2 and 3 use the 1% and 4% cut-offs for resource-rich countries.

With regard to internal motivation, most results mirror those with all countries included: higher *extractive rents*, larger *FDI* flows, and experience of *resource curse* are all associated with more rapid progress in EITI implementation. Also, the countries with lower *per capita income* levels are more likely to have a speedier implementation. *Corruption*, however, is not linked to the implementation speed except in the countries where the level of corruption and resource dependence both are high (*resource rents * corruption*); in these countries, the progress of implementation is slower.

When it comes to internal capacity's impact on the progress of the EITI countries, the results with regard to *voice & accountability* are clearly weaker and not statistically significant. However, although *per capita income SQ* is not significant on its own, it is jointly significant with *per capita income* at the $p = 0.05$ level in all models.

Finally, with regard to external pressure, the results show that *major war* and *ODA* still are associated with faster implementation. *Debt*, however, seems to be negatively associated with implementation speed: the more indebted countries are slower implementers.

Additional analysis suggests ODA from the G7 countries is more relevant than other ODA (Appendix 4) for progress of implementation. The alternative measures for *voice & accountability* and *regime change* are not related to the implementation progress (Appendix 5).

Table 6 presents the results based on a country's progress after becoming an EITI candidate country. Model 1 replicates the baseline model, and Model 2 provides the results when the 4% cut-off for resource-rich countries is used.²⁰ In these estimations, the number of failures included in the models is low, especially in Model 2. As a consequence, the standard errors tend to get larger, making it more difficult to obtain statistically significant results. Naturally, this has consequences for the precision of the estimates as well. Despite this, the overall results in Model 1 reflect closely the results of the previous analyses.

With regard to internal motivation to implement the EITI Standard, *extractive rents* is no longer statistically significant, but keeps both its sign and effect size in Model 1. *Resource curse* gains substantially in impact and has the same level of statistical signifi-

cance. *FDI* retains its sign as well as its effect size, but is not significant at the conventional levels. Model 1 lends support to the argument that countries with both high corruption levels and high extractive rents are slower than others to implement the EITI, and offers tentative support to the view that higher levels of *corruption* make countries faster implementers. Some of these relationships, however, completely disappear in Model 2. *Per capita income* and its square term, although retaining their signs and approximate effect sizes, are not statistically significant in the estimations. *Voice & accountability* gain in effect size, but remain statistically insignificant. *ODA* from G7 countries clearly contributes to the implementation progress at this stage of the process. *Debt* now has a positive sign but is statistically insignificant. History of *major war* is no longer statistically significant but it retains the positive coefficient and effect size.²¹

The additional analysis of ODA shows that the origin of development assistance no longer plays a role: all ODA is related to faster implementation (Appendix 6). Of the alternative measures for *voice & accountability*, both *political rights* and *civil rights* seem to be related to faster implementation, whereas *press freedom* and *regime type* do not (Appendix 7). Again, change in *regime type* is neither significant nor affect the results.

7. Discussion of the main results

The analysis yields support for several of the hypotheses outlined in Section 4, although not all. Evidence was found for each of the three categories of factors that potentially can affect the progress of implementing the EITI: the country's internal motivation to implement the EITI Standard, its capacity to implement it, and the opportunities of external actors to press or coerce a country to implement it (Table 1).

7.1. Internal motivation

When it comes to Hypothesis *H1a*, the analysis yields support for the argument that resource-rent dependent countries are likely to implement the EITI faster compared to countries with a lower dependence rate. The only clear exception to this is when the analysis is restricted both to the last three phases of the EITI process and to the most resource dependent countries (Model 2 in Table 6). A possible explanation for this could be that, for the countries that are most dependent on resource-rents, the last phases of EITI implementation demand more effort; and be more costly and time consuming than for less resource-rent dependent countries, slowing down their implementation progress (Hilson & Maconachie, 2009; Papyrakis et al., 2017). For example, these countries may need to deal with a larger number of companies and production sites or different types of resources and thus have a larger number of procedures to implement and revenue flows to monitor.

Countries with previous experience of the "resource curse" are likely to proceed faster in implementing the Standard than others (*H1b*). It appears that this effect is especially strong for the later stages of the EITI implementation process as the coefficients are considerably larger when only the stages from *candidate* to *compliant* are included in the analysis (Table 6). Previous success in natural resource management has not been included in the earlier studies on the EITI membership and its impact, but based on the results in this paper, it seems to be an important factor to be controlled for in future analyses of the EITI.

²⁰ The 1% cut-off was in practice the same as the full sample: it excluded three countries from the estimation.

²¹ The model specification tests suggest that the proportional hazards assumption may be violated for *corruption* in Model 1. Removing the variable and its interaction term strengthens the measures for income and institutional quality (see Appendix 8).

Poorer countries, as expected under *H1c*, are likely to implement the EITI faster. This result is of course not wholly explained by the fact that poorer countries may benefit most from the EITI, but also by the fact that these countries may be less resistant to external pressure as they are more likely to receive international support in different forms. In fact, when the analysis is restricted to the final stages of the EITI process (Table 6), per capita income is significant when the variable for development assistance or external debt is excluded from the estimation (results not shown).

FDI is indeed related to the speed of implementation, but not as was hypothesized: in fact, it is countries with *higher* levels of FDI that are likely to implement the Standard faster (*H1d*). This result is in line with Öge (2016a), who also finds that a higher level of FDI is associated with a higher likelihood of becoming an EITI member. Öge also shows that the EITI members receive even more FDI after becoming members. The present article thus provides support for the perspective that EITI countries possibly use the EITI to further enhance their already relatively high FDI.²² It is also possible that a country with a high level of national ownership, especially in the oil sector, has both a lower FDI and a lower likelihood of fast-tracking EITI compliance; there could, for example be higher vested interests involved in corruption and non-transparent revenue flows as well as less pressure from foreign investors to adopt the EITI. In the dataset, the countries with the highest dependence rates on oil rents and the lowest FDI levels are Libya, Kuwait, Angola and Saudi Arabia, all countries with large national oil companies that dominate the oil sector. Further research is needed to parse how the dependence on extractive rents, FDI flows, and the ownership structure of extraction affect the decision to join the EITI and implement the Standard.

This study confirms that countries that are more corrupt than others are more likely to at least start the EITI process (*H1e*). But when examining only those countries committed to the EITI, this study finds that corruption at that point may no longer be related to implementation speed. This suggests that while high corruption can motivate a country to join the EITI, it may not be sufficient to push ahead faster implementation. However, as some studies on corruption suggest that the corruption in the EITI countries may decrease already early on in the implementation period (Papyrakis et al., 2017; Villar & Papyrakis, 2017), it is difficult to draw firm conclusions about the relationship between corruption and implementation speed.

The study also finds evidence for the argument put forward by David-Barrett and Okamura (2016) that countries with both high corruption levels and high dependence on extractive rents are less likely to implement the EITI quickly (*H1f*). A good example of a country with stalled EITI implementation is Equatorial Guinea, which is among the most corrupt and also the most resource-dependent countries in the dataset. Equatorial Guinea committed to the EITI in 2005, became candidate in 2008, but failed to submit the validation report and was delisted in 2010.²³ Chad is another country with high levels of corruption and extractive rents; it took ten years from the moment the country informed the World Bank about its intention to implement the EITI Standard for it to progress to the compliant stage (Hoinathy & Janszky, 2017). The results on corruption suggest that in the future studies on the EITI, it may be important to control for the countries that have both high levels of

corruption and high resource-rents as they may be less committed to actually implement the EITI.

7.2. Internal capacity

The results show some evidence that countries with higher scores on governance indicators are faster EITI implementers (*H2a*). The relation is strong in the estimations that include all countries (Table 4), but substantially weaker and insignificant when only EITI-committed countries are included (Table 5). The effect is more noticeable in the estimations that include only the last four EITI implementation stages, especially when indicators for political or civil rights are included in the estimation instead of the measure for voice and accountability (Table 6 and Appendix 7). The results suggest that more “open” and progressive countries are among the faster implementers. This may relate to government behavior, and the capacity of the civil society, which is considered to be the driving force in the EITI implementation (Bebington et al., 2017). For example, governments that allow greater civil rights may tend to adopt progressive norms more quickly than do other governments; there may be more pressure by civil society to join and implement the Standard; or there may be fewer obstacles to implementing the Standard as the capacity of civil society is relatively high, and its participation in the MSG fulfills the requirements set by the Standard when it comes to civil society’s right to have genuine voice and influence (Magno & Gatmaytan, 2017).

The analysis also finds some support for the argument that the richest countries are faster implementers (*H2b*). It is important to notice that the relation between income level and the EITI progress is non-linear: both low and high income countries are more likely to implement the EITI faster. This also is a new result that may need to be incorporated in the future studies of the EITI.

7.3. External pressure

The analysis finds some evidence that the decision to join and implement the EITI may partly be a response to external pressure. One indication of this is that countries with recent major conflict are likely to implement the EITI Standard faster than others (*H3a*). Future research should examine whether this effect is greater in countries in which natural resources played a role in the conflict, whether it especially refers to post-conflict countries such as Liberia, Iraq, or Chad, and whether different types and intensities of conflict affect EITI implementation differently.

The results regarding external governmental debt are mixed at best (*H3b*). The analysis including only the EITI members suggests that, in countries committed to the EITI, external debt may actually slow the process of implementing the EITI (Table 5).

With regard to development assistance, there is clear evidence that countries with a greater dependence on such assistance are faster implementers than others (*H3c*). This effect is largest when the estimation is restricted to the last three phases of the implementation process (Table 6). Interestingly, the source of ODA may play a role: it appears that ODA from G7 and DAC countries is more “coercive.”

8. Concluding remarks

This article examined the factors that influence the progress in implementing the EITI Standard. It used survival analysis methods adapted to multiple-failure data (using the different stages of EITI implementation as the “failures”), and a global panel dataset of 167 countries covering the period from June 2003 to February 2016. It makes four key contributions to the existing literature.

²² Some exploratory testing for non-linearity with respect to FDI suggests that the speed of implementation may initially be increasing with higher levels of FDI but then starts to decrease as the levels get even higher. Thus, there may be a point at which existing FDI is satisfactorily high and thus no longer a motivator for implementing the EITI Standard.

²³ Apparently, Equatorial Guinea joined the EITI to distract attention from a scandal involving the President and people close to him (Hilson & Maconachie, 2009).

First, the article departs from the earlier systematic studies of EITI membership, which consider EITI implementation as a one-off phenomenon. That is, the studies measure the outcome as a dichotomous variable, assigning a country the value of 1 when it reaches a certain stage in the implementation process (most often, candidate status). The present study conceptually understands the EITI implementation as a *process*, composed of different, distinct stages that follow each other sequentially. By using survival analysis methods adapted to multiple-failure data, the analysis better reflects the continuous effort (or lack thereof) a country is making in implementing the Standard.

Second, the article proposes a conceptual framework to understand the different factors driving progress: internal motivation, internal capacity, and external pressure. It finds that all of them are significant in affecting the progress of EITI implementation.

Third, the analysis reveals several factors that are related to the progress of EITI implementation. The article identifies three new covariates for the EITI membership studies: an earlier experience of the “resource curse” is related to faster implementation; income levels and the implementation progress have a non-linear relation; and an experience of a recent major conflict tends to make a country more likely to implement the Standard than one without this experience. Further, the study confirms that dependency on extractive rents, the quality of institutions, and the level of corruption are not only related to a country’s decision to join the EITI (David-Barrett & Okamura, 2016; Kasekende et al., 2016; Öge, 2016a; Pitlik et al., 2010), but are also related to its progress in implementing the Standard. Finally, the analysis provides evidence that higher levels of development assistance (David-Barrett & Okamura, 2016) and higher FDI flows (Öge, 2016a) are related to which countries choose to implement the EITI and how fast they do it.

Fourth, the results suggests that non-EITI countries are likely to be fundamentally different from those that are EITI members in many respects. Consequently, any study on the EITI that is based on comparing the members with non-members risks suffering from selection and omitted-variable biases. This is particularly important for the systematic studies seeking to evaluate the impact of the EITI on various outcomes, such as corruption, resource governance, or development indicators because the impact is likely to be conditional on the country’s capacity and willingness to implement the EITI Standard (Corrigan, 2014, 2017; Sovacool et al., 2016). Of course, the omitted-variable bias is still likely to be present even if all controls incorporated in this present study were included in the analysis, together with an indicator for the implementation speed. Therefore, a better approach for the impact studies could be to use a two-stage modelling whereby one first models a country’s decision to join and implement the EITI, before evaluating the EITI’s impact on the outcome variable, as was done in a recent study by Kasekende et al. (2016). At a minimum, systematic studies of the EITI’s impact need to engage with the issue of selection bias if they are to draw valid conclusions about the EITI’s impact.

The underlying, real motives of leaders and governments in joining the EITI and implementing the Standard cannot be fully revealed by this type of systematic study of register data. Aims such as window-dressing, mock compliance, reputational enhancement, and luring more foreign investment to the extractive sector are often concealed, possibly partially detected only through other research methods using other materials, such as case studies. It is possible that those who benefit from corruption and irregularities perceive the EITI as an opportunity to do some “window dressing” with few concrete consequences, while using the EITI to reap benefits such as FDI, aid, debt relief, or status (Bebbington et al., 2017;

David-Barrett & Okamura, 2016; Öge, 2014, 2016b; Smith & Dorward, 2014; Sovacool & Andrews, 2015; Stuesson & Zobel, 2015). In other cases, the EITI may be a way for a country to signal that it is engaging in genuine reforms. In these cases, the EITI implementation is picking up existing, deeper changes. This, perhaps, was the case with Colombia, where the EITI process became a part of a wider effort after the 2010 presidential election to move to a more open society (Bebbington et al., 2017). The issue of motive – whether it is using EITI membership as a means to an end other than genuinely increasing transparency in resource governance, or using the EITI to signal reforms that would take place anyway – poses an inherent challenge for any study of the EITI’s impact: to what degree can a change (or lack of change) be attributed to the EITI?

The findings presented in this article give ground for some tentative, broader thoughts about the EITI implementation. First, the results support the view that the success of the EITI implementation is affected by both domestic and external factors (Bebbington et al., 2017; Öge, 2014). The potential for external influence is demonstrated by the analysis results showing that development assistance and aid from G7 countries seems to be an important factor influencing whether a country will implement the EITI; by the fact that it is the poor countries that progress fastest, as it is unlikely they would be able to do so without substantial support from outside; and by the finding that countries with major armed conflict – that are more likely to be prone to outside pressures – also are among the faster implementers. Viewing the EITI implementation as a consequence of conditionality, however, can have its limits. Azerbaijan, for example, implemented the EITI to obtain loans, but its interest in fulfilling the requirements set by the Standard started to falter as its revenues from oil production increased (Öge, 2014). As a consequence, Azerbaijan was demoted to a candidate country in 2016 and the country left the EITI in 2017.

Second, the article sheds light on why some countries with large extractive sectors have not joined the EITI, an aspect that has been pointed out as a shortcoming of the EITI (Aaronson, 2011; Poretti, 2015; Rustad et al., 2017). According to analysis presented in this article, the resource-rich countries most unlikely to join the initiative are the middle-income countries with a low score on civil society openness, both high dependency on resource rents and high rate of corruption, limited need for FDI and development assistance, no experience of major armed conflict, and no previous experience of a resource curse. In the dataset used in this article, countries that score high (low) on all or most of these measures are Libya, Turkmenistan, Saudi Arabia, Iran, Algeria, Uzbekistan, Russia, and Venezuela. Common for these countries, besides all being oil and gas producing countries, is the limited need for FDI and development assistance and the restricted space for civil society, implying that there is an absence of both the external and internal forces promoting the EITI.

Third, the article also sheds light on why the EITI in many aspects has not (yet) had the expected transformative impact on natural resource governance and societal outcomes. The EITI is being implemented in many poor countries with low domestic capacity to ensure meaningful implementation and to reap the benefits, and thus, at least in the short run, the expected impacts of the EITI are likely to be small in these countries. The EITI is also being implemented in some of the most developed countries, like Norway and the UK, with good scores on corruption, development, and other outcomes that the EITI is expected to positively influence. In these countries the EITI cannot be expected to have measurable impact on the outcomes because they can hardly be

improved (compared to the larger potential in the more corrupt or lower income countries). Therefore, the scope of measurable impacts is restricted both among the low and high capacity countries, making it more difficult to detect them using systematic studies. Further, the data shows that the EITI implementation process itself can take up to 10 years, and on average over five years, reflecting the challenges faced by the implementing countries. It is likely that, in the light of long implementation times, the changes and impacts of the EITI will only emerge over longer time periods and detectable impacts on measurable outcome indicators may only come years after the Standard has been fully implemented.

The analyses conducted in this article are the first steps for understanding which factors influence the progress of EITI implementation using systematic analysis methods. It provides an overview over likely factors that can influence the EITI implementation process, but more in-depth systematic studies are needed to better understand the process of the EITI implementation. Future research should in particular examine how the characteristics of the resource sector affect the EITI implementation. Anecdotal evidence from the dataset used in this article suggests that the production structure – whether the production is dominated by national or international companies – may be important for EITI uptake. Further, the type of resources may also be crucial, oil potentially being a case apart. Another topic for future systematic studies is the role of civil society that the qualitative research highlights as crucial for the EITI implementation and also as one of the EITI's Achilles heels (Carbonnier, Brugger, & Krause, 2011; Epremian, Lujala, & Bruch, 2016; Furstenberg, 2015; Lujala & Epremian, 2017; Ofori & Lujala, 2015; Öge, 2017; Smith, Shepherd, & Dorward, 2012; Søreide & Truex, 2013). This aspect has so far been included in most systematic studies, including

the present study, using crude measures for the overall openness in the society and institutional quality. Finally, studies that look at the different EITI implementation stages in more detail are needed. It is likely that different factors outlined in this article have different roles in different EITI stages, and it is important to understand what their impact on the duration of the different stages are. These types of studies would give a better basis to form policy advice on how to advance EITI uptake and implementation as they would provide answers to questions of what type of support and incentives are needed and when.

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Conflict of interest

The author has no actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, the work.

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Appendix 1

List of EITI countries included in the analysis, the original event dates, and status in February 2016.

Country	Commitment	MSG	Candidate	First Report	Valid. Report	Compliant	Status Feb. 2016
Afghanistan	Mar-2009	Oct-2009	Feb-2010	Aug-2012	Feb-2013		Candidate
Albania	Jan-2009	Mar-2009	May-2009	Mar-2011	Aug-2011	May-2013	Compliant
Azerbaijan	Jun-2003	Nov-2005	Sep-2007	Feb-2005	Feb-2009	Feb-2009	Candidate ¹
Burkina Faso	Jun-2007	Dec-2008	May-2009	Apr-2011	Sep-2011	Feb-2013	Compliant
Cameroon	Feb-2005	May-2005	Sep-2007	Oct-2006	Jul-2010	Oct-2013	Compliant
Central African Republic	Sep-2007	Jul-2008	Nov-2008	Feb-2009	Nov-2010	Mar-2011	Suspended
Chad	Sep-2007	Feb-2010	Apr-2010	Oct-2012	May-2013	Oct-2014	Compliant
Colombia	May-2013	Feb-2014	Oct-2014				Candidate
Côte d'Ivoire	May-2007	Feb-2008	May-2008	Jan-2010	Nov-2010	May-2013	Compliant
Dem. Rep. of the Congo	Jan-2005	Oct-2005	Oct-2008	Nov-2009	Sep-2010	Jul-2014	Compliant
Dominican Republic	May-2011	Dec-2015	Feb-2016				Candidate
Timor-Leste	Apr-2007	Apr-2007	Feb-2008	Oct-2009	Mar-2010	Jul-2010	Compliant
Equatorial Guinea	Jan-2005	Jul-2007	Feb-2008				No longer member ²
Ethiopia	Jul-2009	Jun-2009	Mar-2014	May-2015			Candidate
France	May-2013						Committed
Gabon	May-2004	Jul-2005	Sep-2007	Dec-2005	Sep-2010		No longer member ²
Germany	Jul-2014	Mar-2015	Feb-2016				Candidate
Ghana	May-2003	Jan-2005	Sep-2007	Sep-2007	Jun-2010	Oct-2010	Compliant
Guatemala	Jun-2010	May-2012	Mar-2011	Apr-2013	Nov-2013	Mar-2014	Compliant

Appendix 1 (continued)

Country	Commitment	MSG	Candidate	First Report	Valid. Report	Compliant	Status Feb. 2016
Guinea	Mar-2005	Apr-2005	Sep-2007	Jul-2007	Aug-2012	Jul-2014	Compliant
Guyana	May-2010						Committed
Honduras	Nov-2012	Dec-2012	May-2013	May-2015			Candidate
Indonesia	Dec-2008	Jun-2010	Oct-2010	May-2013	Jul-2013	Oct-2014	Compliant
Iraq	Mar-2009	Aug-2010	Feb-2010	Nov-2011	Aug-2012	Dec-2012	Compliant
Kazakhstan	Jun-2005	Apr-2005	Sep-2007	Nov-2007	Aug-2010	Oct-2013	Compliant
Kyrgyzstan	Apr-2004	Jun-2008	Sep-2007	Nov-2009	Apr-2010	Mar-2011	Compliant
Liberia	Mar-2007	Apr-2007	Sep-2008	Jan-2009	Jul-2009	Oct-2009	Compliant
Madagascar	Mar-2007	Jan-2008	Feb-2008	May-2011	Sep-2011		Candidate
Malawi	Jun-2014	Mar-2015	Oct-2015				Candidate
Mali	Aug-2006	Jun-2007	Sep-2007	Nov-2009	Sep-2010	Aug-2011	Compliant
Mauritania	Oct-2005	Dec-2006	Sep-2007	Feb-2007	Sep-2010	Feb-2012	Compliant
Mongolia	Mar-2006	Jan-2006	Sep-2007	Dec-2007	Feb-2010	Oct-2010	Compliant
Mozambique	May-2008	Apr-2009	May-2009	Jan-2011	May-2011	Oct-2012	Compliant
Myanmar	Dec-2012	Jan-2014	Jul-2014	Dec-2015			Candidate
Niger	Mar-2005	Jul-2005	Sep-2007	Sep-2009	Aug-2010	Mar-2011	Compliant
Nigeria	Nov-2003	Dec-2003	Sep-2007	Oct-2006	Jun-2010	Mar-2011	Compliant
Norway	Sep-2007	Jun-2009	Feb-2009	Nov-2009	Nov-2010	Mar-2011	Compliant
Papua New Guinea	Apr-2013	Nov-2013	Mar-2014	Feb-2016			Candidate
Peru	Apr-2005	May-2006	Sep-2007	Oct-2009	Sep-2010	Feb-2012	Compliant
Philippines	Jul-2012	Jan-2013	May-2013	Dec-2014			Candidate
Republic of the Congo	Jun-2004	Sep-2006	Sep-2007	Aug-2008	Sep-2010	Feb-2013	Compliant
Senegal	Feb-2012	Feb-2013	Oct-2013	Dec-2015			Candidate
Sierra Leone	May-2006	Jun-2007	Feb-2008	Feb-2010	Jul-2010	Apr-2014	Compliant
Solomon Islands	Aug-2011	Jan-2012	Jun-2012	Jun-2014			Candidate
Tajikistan	Aug-2012	Aug-2012	Feb-2013	Oct-2015			Candidate
Tanzania	Nov-2008	Feb-2009	Nov-2009	Jan-2011	May-2011	Dec-2012	Compliant
Togo	Dec-2009	Apr-2010	Oct-2010	Feb-2012	Apr-2013	May-2013	Compliant
Trinidad and Tobago	Jul-2010	Jul-2010	Mar-2011	Sep-2013	May-2014	Jan-2015	Compliant
Ukraine	Oct-2009	Oct-2012	Oct-2013	Nov-2015			Candidate
United Kingdom	May-2013	Jul-2013	Oct-2014				Candidate
United States	Sep-2011	Dec-2012	Mar-2014	Dec-2015			Candidate
Yemen	Feb-2007	Aug-2007	Sep-2007	Sep-2010	Jan-2011	Mar-2011	Suspended
Zambia	Jul-2008	Jul-2008	May-2009	Jan-2011	May-2011	Sep-2012	Compliant

1. Azerbaijan was downgraded in 2015.

2. Equatorial Guinea and Gabon lost their status as EITI Candidate in 2010 and 2013, respectively, because they failed to submit validation report in time.

Appendix 2

EITI progress, all stages, using alternative measures for ODA. EITI and non-EITI countries, 2003–2016.

	All countries		Resource rich countries			
			1% cut-off		4% cut-off	
Extractive rents (ln)	1.16***	1.16***	1.09	1.09	1.32***	1.31***
	(3.59)	(3.59)	(1.41)	(1.38)	(3.66)	(3.67)
Resource curse	0.000	0.000	0.157	0.169	0.000	0.000
	1.40	1.43*	1.48*	1.52**	1.38	1.40*
	(1.64)	(1.74)	(1.86)	(1.96)	(1.62)	(1.66)
FDI (asinh)	0.101	0.082	0.063	0.050	0.105	0.096
	1.15**	1.16**	1.13**	1.14**	1.14**	1.15**
	(2.34)	(2.50)	(2.02)	(2.16)	(2.03)	(2.15)
	0.019	0.013	0.044	0.031	0.042	0.031

(continued on next page)

Appendix 2 (continued)

	All countries		Resource rich countries			
			1% cut-off		4% cut-off	
Corruption	1.25 (1.37)	1.27 (1.49)	1.41** (2.02)	1.44** (2.20)	2.15*** (2.93)	2.19*** (2.96)
Extractive rents * Corruption	0.170 0.95 (-1.09)	0.137 0.95 (-1.10)	0.044 0.96 (-0.54)	0.028 0.96 (-0.57)	0.003 0.83** (-2.15)	0.003 0.83** (-2.13)
Per capita income	0.276 0.76** (-2.18)	0.270 0.75** (-2.22)	0.590 0.78* (-1.87)	0.571 0.78* (-1.90)	0.032 0.81 (-1.51)	0.033 0.81 (-1.49)
Per capita income SQ	0.029 1.02* (1.66)	0.027 1.02* (1.73)	0.061 1.02 (1.51)	0.058 1.02 (1.55)	0.131 1.01 (0.77)	0.137 1.01 (0.79)
Voice & Accountability	0.096 1.52*** (2.70)	0.084 1.55*** (2.82)	0.131 1.71*** (3.17)	0.120 1.75*** (3.27)	0.443 2.14*** (3.99)	0.427 2.16*** (3.96)
Debt (ln)	0.007 1.00 (0.016)	0.005 1.02 (0.19)	0.002 0.96 (-0.46)	0.001 0.97 (-0.29)	0.000 0.96 (-0.33)	0.000 0.97 (-0.28)
Major war	0.988 1.93* (1.76)	0.853 1.94* (1.78)	0.648 1.94* (1.65)	0.772 1.95* (1.66)	0.739 2.21* (1.69)	0.780 2.23* (1.71)
ODA DAC countries	0.079 1.01*** (2.58)	0.075	0.099 1.01** (2.17)	0.096	0.091 1.01*** (2.65)	0.088
ODA all countries	0.010	1.00 (1.26)	0.030	1.00 (0.87)	0.008	1.01* (1.89)
Number of countries	156	156	104	104	74	74
Number of failures	242	242	229	229	186	186
Pseudo R2	0.044	0.043	0.032	0.031	0.049	0.047
Log likelihood	-555	-556	-505	-505	-373	-373

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are shown in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix 3

EITI progress, all stages, using alternative measures for Voice & Accountability. EITI and non-EITI countries, 2003–2016.

	All countries					Resource rich countries, 1% cut-off					Resource rich countries, 4% cut-off				
Extractive rents (ln)	1.16*** (3.56)	1.16*** (3.58)	1.16*** (3.63)	1.16*** (3.76)	1.16*** (3.71)	1.09 (1.54)	1.09 (1.32)	1.09 (1.48)	1.11* (1.83)	1.11* (1.75)	1.29*** (3.40)	1.27*** (3.31)	1.26*** (3.17)	1.26*** (3.39)	1.24*** (2.95)
	0.000	0.000	0.000	0.000	0.000	0.123	0.185	0.140	0.067	0.080	0.001	0.001	0.002	0.001	0.003
Resource curse	1.35 (1.46)	1.47* (1.85)	1.45* (1.75)	1.51* (1.86)	1.28 (1.25)	1.42* (1.69)	1.55** (2.06)	1.53** (1.98)	1.60** (2.10)	1.31 (1.38)	1.30 (1.30)	1.47* (1.86)	1.43* (1.69)	1.44* (1.68)	1.19 (0.97)
	0.145	0.064	0.080	0.062	0.211	0.092	0.040	0.048	0.035	0.168	0.195	0.063	0.092	0.094	0.332
FDI (asinh)	1.16** (2.49)	1.15** (2.30)	1.14** (2.22)	1.16** (2.45)	1.16** (2.41)	1.14** (2.15)	1.13* (1.96)	1.13* (1.83)	1.15** (2.13)	1.14** (2.03)	1.16** (2.22)	1.13* (1.79)	1.13* (1.76)	1.16** (2.11)	1.15* (1.95)
	0.013	0.021	0.026	0.014	0.016	0.031	0.050	0.067	0.034	0.043	0.026	0.073	0.079	0.035	0.051
Corruption	1.10 (0.63)	1.10 (0.66)	1.19 (1.14)	0.97 (-0.19)	0.89 (-0.91)	1.25 (1.38)	1.19 (1.17)	1.29* (1.69)	1.05 (0.33)	0.91 (-0.65)	1.84** (2.35)	1.54* (1.90)	1.70** (2.13)	1.18 (0.71)	0.98 (-0.073)
Extractive rents * Corruption	0.530 (-1.26)	0.510 (-1.11)	0.252 (-1.07)	0.845 (-1.25)	0.363 (-1.31)	0.168 (-1.07)	0.240 (-0.50)	0.090 (-0.51)	0.741 (-0.85)	0.518 (-0.86)	0.019 (-2.56)	0.057 (-1.94)	0.033 (-1.68)	0.479 (-1.91)	0.942 (-1.78)
	0.94	0.95	0.95	0.94	0.94	0.93	0.96	0.96	0.94	0.94	0.80**	0.85*	0.86*	0.85*	0.85*
	0.208	0.269	0.285	0.211	0.191	0.285	0.615	0.609	0.397	0.390	0.011	0.052	0.094	0.057	0.075
Per capita income	0.76** (-2.18)	0.75** (-2.26)	0.76** (-2.15)	0.71*** (-2.66)	0.73** (-2.41)	0.79* (-1.76)	0.76* (-1.96)	0.78* (-1.84)	0.72** (-2.41)	0.74** (-2.22)	0.83 (-1.36)	0.79* (-1.69)	0.81 (-1.45)	0.71** (-2.44)	0.70** (-2.53)
	0.030	0.024	0.031	0.008	0.016	0.078	0.051	0.066	0.016	0.026	0.175	0.092	0.148	0.015	0.011
Per capita income SQ	1.02 (1.51)	1.02* (1.77)	1.02* (1.74)	1.03** (2.03)	1.02 (1.58)	1.02 (1.20)	1.02 (1.59)	1.02 (1.56)	1.03* (1.92)	1.02 (1.42)	1.00 (0.35)	1.01 (0.93)	1.01 (0.94)	1.02 (1.45)	1.02 (1.18)
	0.131	0.077	0.081	0.042	0.115	0.231	0.112	0.119	0.055	0.154	0.730	0.350	0.347	0.148	0.239
Debt (ln)	0.99 (-0.14)	1.01 (0.057)	1.01 (0.071)	0.97 (-0.29)	1.00 (-0.011)	0.94 (-0.70)	0.96 (-0.39)	0.96 (-0.39)	0.92 (-0.78)	0.96 (-0.48)	0.92 (-0.83)	0.96 (-0.36)	0.96 (-0.36)	0.91 (-0.83)	0.91 (-0.92)
	0.891	0.954	0.944	0.770	0.991	0.483	0.694	0.700	0.433	0.628	0.406	0.718	0.718	0.409	0.356
ODA	1.02*** (3.12)	1.01** (2.06)	1.02*** (2.81)	1.01** (2.33)	1.02*** (2.88)	1.02*** (2.79)	1.01 (1.41)	1.01** (2.44)	1.01* (1.80)	1.02*** (2.59)	1.02*** (3.49)	1.01* (1.88)	1.02*** (3.02)	1.02** (2.24)	1.02*** (3.09)
	0.002	0.040	0.005	0.020	0.004	0.005	0.160	0.015	0.072	0.009	0.000	0.060	0.003	0.025	0.002
Major war	1.91* (1.73)	1.92* (1.79)	2.12** (2.06)	1.48 (0.88)	2.02* (1.90)	1.99* (1.71)	1.92* (1.68)	2.20** (2.05)	1.46 (0.82)	2.13* (1.95)	2.30* (1.77)	2.27* (1.83)	2.67** (2.21)	1.81 (1.12)	2.53** (2.06)
	0.084	0.073	0.039	0.379	0.057	0.086	0.092	0.041	0.411	0.051	0.076	0.068	0.027	0.265	0.040
Press freedom	1.01** (2.36)					1.01** (2.71)					1.02*** (3.49)				
	0.018					0.007					0.000				
Political rights		1.14*** (2.61)							1.18*** (2.92)				1.24*** (3.35)		
		0.009							0.003				0.001		
Civil rights			1.23*** (2.96)						1.28*** (3.31)				1.40*** (3.91)		
			0.003						0.001				0.000		

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	All countries					Resource rich countries, 1% cut-off					Resource rich countries, 4% cut-off				
Regime type	1.04* (1.86) 0.062					1.04** (2.27) 0.023					1.05** (2.01) 0.045				
Regime change	1.03 (0.16) 0.875					1.00 (0.025) 0.980					1.13 (0.61) 0.545				
Number of countries	155	156	156	155	156	104	104	104	103	104	74	74	74	74	74
Number of failures	242	242	242	239	242	229	229	229	226	229	186	186	186	183	186
Pseudo R2	0.042	0.043	0.044	0.041	0.039	0.029	0.030	0.031	0.028	0.023	0.046	0.045	0.048	0.039	0.034
Log likelihood	-556	-556	-555	-548	-558	-506	-506	-505	-499	-509	-374	-374	-373	-370	-378

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are shown in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix 4

EITI progress, all stages, using alternative measures for ODA. EITI countries, 2003–2016.

	All countries		Resource rich EITI countries			
			1% cut-off		4% cut-off	
Extractive rents (ln)	1.17*** (3.31) 0.001	1.16*** (3.28) 0.001	1.16** (2.19) 0.029	1.15** (2.17) 0.030	1.32*** (3.60) 0.000	1.32*** (3.57) 0.000
Resource curse	1.60** (2.23) 0.026	1.63** (2.26) 0.024	1.66** (2.33) 0.020	1.68** (2.33) 0.020	1.44* (1.68) 0.093	1.44 (1.64) 0.102
FDI (asinh)	1.17*** (2.97) 0.003	1.18*** (3.17) 0.002	1.17*** (2.66) 0.008	1.18*** (2.83) 0.005	1.14* (1.83) 0.068	1.15* (1.93) 0.053
Corruption	0.95 (-0.25) 0.800	0.97 (-0.16) 0.870	1.00 (0.019) 0.985	1.02 (0.093) 0.926	0.91 (-0.24) 0.809	0.92 (-0.21) 0.831
Extractive rents * Corruption	0.89** (-2.27) 0.023	0.89** (-2.24) 0.025	0.90 (-1.27) 0.203	0.90 (-1.26) 0.207	0.80** (-2.10) 0.036	0.80** (-2.10) 0.036
Per capita income	0.70* (-1.85) 0.064	0.68* (-1.94) 0.052	0.65** (-2.04) 0.041	0.64** (-2.12) 0.034	0.69 (-1.49) 0.137	0.68 (-1.53) 0.126
Per capita income SQ	1.04 (0.93) 0.350	1.04 (1.04) 0.300	1.05 (1.16) 0.246	1.05 (1.25) 0.211	1.04 (0.70) 0.486	1.04 (0.76) 0.450

Appendix 4 (continued)

	All countries		Resource rich EITI countries			
			1% cut-off		4% cut-off	
Voice & Accountability	1.10 (0.57)	1.13 (0.67)	1.21 (1.01)	1.23 (1.09)	1.12 (0.44)	1.12 (0.42)
Debt (ln)	0.572 0.88 (-1.56)	0.504 0.89 (-1.51)	0.311 0.86* (-1.89)	0.275 0.87* (-1.88)	0.660 0.84** (-2.15)	0.672 0.83** (-2.30)
Major war	0.118 2.18* (1.88)	0.131 2.22* (1.93)	0.059 2.13* (1.77)	0.060 2.17* (1.82)	0.032 2.52* (1.94)	0.021 2.57** (2.01)
ODA DAC countries	0.060 1.01 (0.93)	0.054	0.077 1.01 (0.88)	0.069	0.052 1.01 (1.40)	0.044
ODA all countries	0.353	1.00 (0.36)	0.379	1.00 (0.36)	0.161	1.01 (1.33)
Number of countries	49	49	45	45	35	35
Number of failures	242	242	229	229	186	186
Pseudo R2	0.041	0.041	0.037	0.037	0.047	0.047
Log likelihood	-467	-467	-436	-437	-327	-327

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are shown in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix 5

EITI progress, all stages, using alternative measures for Voice & Accountability. EITI countries, 2003–2016.

	All countries					Resource rich countries, 1% cut-off					Resource rich countries, 4% cut-off				
Extractive rents (ln)	1.17*** (3.54)	1.16*** (3.26)	1.16*** (3.43)	1.17*** (3.41)	1.17*** (3.58)	1.17** (2.36)	1.15** (2.10)	1.16** (2.29)	1.16** (2.37)	1.17** (2.37)	1.32*** (3.26)	1.30*** (3.28)	1.31*** (3.34)	1.30*** (3.01)	1.30*** (3.12)
Resource curse	0.000 1.57** (2.18)	0.001 1.66** (2.33)	0.001 1.68** (2.35)	0.001 1.63* (1.96)	0.000 1.56** (2.16)	0.018 1.58** (2.17)	0.036 1.74** (2.48)	0.022 1.71** (2.34)	0.018 1.75** (2.27)	0.018 1.57** (2.18)	0.001 1.38 (1.54)	0.001 1.57* (1.91)	0.001 1.53* (1.76)	0.003 1.42 (1.31)	0.002 1.39 (1.64)
FDI (asinh)	0.029 1.18*** (3.08)	0.020 1.18*** (2.98)	0.019 1.17*** (2.83)	0.051 1.17*** (2.91)	0.031 1.18*** (3.08)	0.030 1.18*** (2.76)	0.013 1.17*** (2.64)	0.019 1.17** (2.47)	0.023 1.17*** (2.64)	0.029 1.18*** (2.73)	0.124 1.14* (1.88)	0.056 1.13* (1.68)	0.078 1.13* (1.68)	0.190 1.13* (1.76)	0.100 1.15* (1.86)
Corruption	0.002 0.93 (-0.37)	0.003 0.96 (-0.25)	0.005 1.01 (0.064)	0.004 0.91 (-0.54)	0.002 0.85 (-0.99)	0.006 0.92 (-0.36)	0.008 0.97 (-0.13)	0.014 1.00 (0.0086)	0.008 0.92 (-0.44)	0.006 0.82 (-1.01)	0.059 0.80 (-0.55)	0.093 0.94 (-0.20)	0.094 0.97 (-0.086)	0.078 0.79 (-0.65)	0.063 0.74 (-0.89)
Extractive rents * Corruption	0.715 0.89** (-2.44)	0.802 0.90** (-2.16)	0.949 0.90** (-2.15)	0.586 0.89** (-2.27)	0.323 0.89** (-2.39)	0.716 0.88 (-1.45)	0.896 0.91 (-1.14)	0.993 0.90 (-1.22)	0.661 0.90 (-1.22)	0.311 0.89 (-1.29)	0.583 0.80** (-1.97)	0.840 0.82* (-1.85)	0.932 0.81* (-1.89)	0.518 0.83 (-1.61)	0.373 0.82* (-1.74)
	0.015	0.031	0.031	0.023	0.017	0.146	0.256	0.223	0.222	0.199	0.049	0.065	0.059	0.108	0.082

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	All countries					Resource rich countries, 1% cut-off					Resource rich countries, 4% cut-off				
Per capita income	0.71*	0.68**	0.68**	0.68*	0.68*	0.67**	0.63**	0.64**	0.63**	0.63**	0.68	0.67	0.65	0.69	0.66
	(-1.78)	(-1.98)	(-1.99)	(-1.94)	(-1.95)	(-1.96)	(-2.17)	(-2.16)	(-2.23)	(-2.13)	(-1.54)	(-1.57)	(-1.55)	(-1.39)	(-1.60)
	0.076	0.047	0.047	0.053	0.051	0.050	0.030	0.031	0.026	0.033	0.125	0.115	0.121	0.164	0.110
Per capita income SQ	1.03	1.04	1.04	1.04	1.04	1.04	1.06	1.06	1.06	1.05	1.03	1.05	1.05	1.03	1.04
	(0.83)	(1.08)	(1.10)	(1.01)	(0.95)	(1.01)	(1.33)	(1.27)	(1.33)	(1.15)	(0.66)	(0.86)	(0.84)	(0.64)	(0.73)
	0.406	0.280	0.270	0.314	0.343	0.313	0.184	0.205	0.184	0.250	0.507	0.392	0.400	0.523	0.465
Debt (ln)	0.86*	0.87	0.87	0.87	0.85*	0.83**	0.84**	0.84**	0.83*	0.83**	0.80***	0.81**	0.81**	0.82**	0.79***
	(-1.71)	(-1.59)	(-1.61)	(-1.51)	(-1.90)	(-2.12)	(-1.96)	(-2.00)	(-1.92)	(-2.41)	(-2.58)	(-2.27)	(-2.43)	(-2.00)	(-2.93)
	0.087	0.112	0.108	0.132	0.057	0.034	0.050	0.045	0.055	0.016	0.010	0.023	0.015	0.046	0.003
ODA	1.01*	1.01	1.01	1.01*	1.01*	1.02**	1.01	1.01*	1.01*	1.02**	1.02***	1.02**	1.02***	1.02***	1.02***
	(1.70)	(1.20)	(1.45)	(1.65)	(1.71)	(2.08)	(1.34)	(1.81)	(1.80)	(2.13)	(2.88)	(2.07)	(2.63)	(2.66)	(2.88)
	0.090	0.232	0.148	0.099	0.087	0.037	0.180	0.071	0.072	0.033	0.004	0.039	0.009	0.008	0.004
Major war	2.17*	2.19*	2.26**	2.12	2.09*	2.15*	2.15*	2.23*	2.03	2.07*	2.55**	2.48*	2.62**	2.66*	2.39*
	(1.84)	(1.94)	(2.02)	(1.61)	(1.77)	(1.80)	(1.85)	(1.96)	(1.49)	(1.73)	(1.97)	(1.91)	(2.04)	(1.93)	(1.83)
	0.065	0.052	0.044	0.107	0.077	0.072	0.064	0.050	0.137	0.084	0.048	0.056	0.042	0.054	0.067
Press freedom	1.00					1.00					1.00				
	(0.74)					(0.72)					(0.17)				
	0.457					0.475					0.869				
Political rights		1.06					1.09					1.10			
		(0.94)					(1.33)					(1.15)			
		0.346					0.183					0.250			
Civil rights			1.11					1.12					1.13		
			(1.34)					(1.36)					(1.08)		
			0.180					0.175					0.281		
Regime type				1.01					1.02					1.01	
				(0.62)					(1.21)					(0.38)	
				0.537					0.226					0.704	
Regime change					1.17					1.17					1.19
					(0.82)					(0.72)					(0.79)
					0.410					0.469					0.430
Number of countries	49	49	49	49	49	45	45	45	45	45	35	35	35	35	35
Number of failures	242	242	242	239	242	229	229	229	226	229	186	186	186	183	186
Pseudo R2	0.042	0.042	0.043	0.041	0.042	0.037	0.039	0.039	0.038	0.037	0.049	0.051	0.050	0.048	0.049
Log likelihood	-467	-467	-466	-460	-467	-436	-436	-436	-430	-436	-327	-326	-326	-322	-326

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. Z-statistics are shown in parentheses, clustered in countries. p-Values are under z-stats. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. ***p < 0.01, **p < 0.05, *p < 0.1.

Appendix 6

EITI progress, stages from Candidate to Compliant, using alternative measures for ODA. EITI countries, 2003–2016.

	All countries		Resource rich EITI countries			
			1% cut-off		4% cut-off	
Extractive rents (ln)	1.22 (1.09)	1.23 (1.13)	1.18 (1.00)	1.19 (1.05)	0.72 (-0.66)	0.72 (-0.67)
Resource curse	0.275 2.32** (2.18)	0.258 2.26** (2.12)	0.317 2.49** (2.22)	0.294 2.45** (2.19)	0.509 2.62** (2.10)	0.506 2.59** (2.09)
FDI (asinh)	0.029 1.16 (1.18)	0.034 1.17 (1.23)	0.026 1.17 (1.21)	0.029 1.17 (1.23)	0.036 1.13 (0.81)	0.037 1.13 (0.82)
Corruption	0.238 3.05* (1.67)	0.220 2.93 (1.57)	0.226 2.34 (1.44)	0.218 2.12 (1.27)	0.418 0.66 (-0.41)	0.415 0.60 (-0.50)
Extractive rents * Corruption	0.094 0.60** (-2.14)	0.116 0.60** (-2.03)	0.151 0.72* (-1.68)	0.205 0.74 (-1.61)	0.681 1.10 (0.19)	0.619 1.14 (0.24)
Per capita income	0.033 0.90 (-0.22)	0.042 0.89 (-0.25)	0.093 0.78 (-0.55)	0.107 0.79 (-0.52)	0.852 0.74 (-0.63)	0.810 0.75 (-0.60)
Per capita income SQ	0.828 1.07 (0.83)	0.806 1.07 (0.83)	0.585 1.09 (1.07)	0.606 1.09 (1.02)	0.528 1.06 (0.61)	0.550 1.05 (0.56)
Voice & Accountability	0.407 1.68 (1.10)	0.405 1.66 (1.08)	0.286 2.09 (1.46)	0.307 2.02 (1.40)	0.544 1.67 (1.03)	0.576 1.63 (1.00)
Debt (ln)	0.273 1.39 (1.53)	0.280 1.32 (1.27)	0.144 1.43 (1.62)	0.162 1.35 (1.36)	0.303 1.35 (1.30)	0.318 1.29 (1.10)
Major war	0.125 2.22 (1.01)	0.203 2.25 (1.05)	0.104 1.93 (0.83)	0.174 1.97 (0.88)	0.194 3.36 (1.05)	0.273 3.36 (1.07)
ODA DAC countries	0.310 1.03*** (3.11)	0.294	0.407 1.03*** (3.31)	0.379	0.294 1.03*** (2.90)	0.284
ODA all countries	0.002	1.02*** (2.86)	0.001	1.03*** (4.21)	0.004	1.02*** (3.64)
Number of countries	47	47	44	44	34	34
Number of failures	99	99	96	96	83	83
Pseudo R2	0.11	0.11	0.12	0.12	0.13	0.13
Log likelihood	-219	-219	-209	-208	-166	-166

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are shown in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. ***p < 0.01, **p < 0.05, *p < 0.1.

EITI progress, stages from Candidate to Compliant, using alternative measures for Voice & Accountability. EITI countries, 2003–2016.

	All countries					Resource rich countries, 1% cut-off					Resource rich countries, 4% cut-off				
Extractive rents (ln)	1.30 (1.38)	1.22 (1.18)	1.26 (1.26)	1.32 (1.48)	1.29 (1.43)	1.31 (1.51)	1.20 (1.20)	1.25 (1.36)	1.30 (1.53)	1.30 (1.54)	0.80 (-0.48)	0.78 (-0.54)	0.79 (-0.45)	0.80 (-0.45)	0.80 (-0.46)
Resource curse	0.168 1.91** (1.99)	0.239 2.73** (2.47)	0.209 2.42** (2.19)	0.138 1.86 (1.48)	0.153 1.86** (2.17)	0.132 1.83* (1.86)	0.230 2.87** (2.43)	0.173 2.54** (2.21)	0.126 2.02 (1.60)	0.123 1.82** (2.07)	0.628 2.16** (2.03)	0.587 3.04** (2.22)	0.652 3.14** (2.04)	0.653 2.10 (1.52)	0.646 2.19** (2.13)
FDI (asinh)	0.047 1.17 (1.31)	0.013 1.15 (1.14)	0.029 1.12 (0.95)	0.140 1.19 (1.46)	0.030 1.16 (1.26)	0.063 1.20 (1.46)	0.015 1.17 (1.24)	0.027 1.12 (0.92)	0.110 1.21* (1.66)	0.110 1.19 (1.46)	0.039 1.17 (1.09)	0.042 1.13 (0.89)	0.026 1.07 (0.45)	0.041 1.17 (1.12)	0.128 1.16 (1.04)
Corruption	0.191 2.11 (1.11)	0.252 2.57 (1.64)	0.342 2.95 (1.56)	0.143 1.73 (1.00)	0.206 1.66 (1.04)	0.144 1.17 (0.25)	0.215 1.69 (1.13)	0.357 2.01 (1.17)	0.096 1.15 (0.31)	0.144 1.06 (0.14)	0.275 0.37 (-1.11)	0.374 0.62 (-0.47)	0.656 0.84 (-0.15)	0.263 0.41 (-0.84)	0.299 0.44 (-0.76)
Extractive rents * Corruption	0.266 0.56** (-2.47)	0.101 0.62** (-2.14)	0.119 0.59** (-2.18)	0.317 0.56** (-2.31)	0.300 0.57** (-2.48)	0.804 0.66** (-2.14)	0.261 0.73* (-1.75)	0.243 0.72* (-1.83)	0.759 0.68** (-1.98)	0.892 0.67** (-2.15)	0.266 1.00 (0.0023)	0.641 1.04 (0.082)	0.879 1.05 (0.082)	0.401 0.98 (-0.031)	0.448 0.97 (-0.052)
Per capita income	0.014 0.99 (-0.031)	0.032 0.76 (-0.60)	0.029 0.83 (-0.41)	0.021 0.93 (-0.16)	0.013 0.98 (-0.045)	0.032 0.85 (-0.34)	0.080 0.65 (-0.94)	0.068 0.72 (-0.74)	0.047 0.77 (-0.52)	0.032 0.86 (-0.35)	0.998 0.73 (-0.66)	0.935 0.64 (-0.95)	0.934 0.64 (-0.93)	0.976 0.76 (-0.54)	0.959 0.77 (-0.57)
Per capita income SQ	0.975 1.04 (0.53)	0.546 1.10 (1.20)	0.684 1.09 (1.03)	0.874 1.04 (0.48)	0.964 1.03 (0.48)	0.733 1.05 (0.60)	0.346 1.12 (1.36)	0.461 1.11 (1.22)	0.602 1.06 (0.69)	0.725 1.04 (0.57)	0.511 1.03 (0.35)	0.340 1.09 (0.89)	0.350 1.11 (1.02)	0.587 1.03 (0.28)	0.568 1.03 (0.33)
Debt (ln)	0.598 1.22 (0.93)	0.231 1.28 (1.17)	0.303 1.20 (0.90)	0.633 1.20 (0.84)	0.634 1.26 (0.95)	0.549 1.20 (0.83)	0.173 1.29 (1.18)	0.224 1.17 (0.76)	0.491 1.20 (0.83)	0.566 1.22 (0.81)	0.727 1.18 (0.68)	0.376 1.26 (0.98)	0.310 1.18 (0.72)	0.781 1.18 (0.68)	0.740 1.21 (0.73)
ODA	0.354 1.06*** (4.19)	0.241 1.05*** (3.74)	0.369 1.06*** (4.33)	0.402 1.06*** (3.63)	0.345 1.06*** (3.74)	0.407 1.07*** (4.17)	0.240 1.06*** (4.00)	0.449 1.07*** (4.74)	0.408 1.07*** (3.46)	0.419 1.07*** (3.75)	0.497 1.06*** (3.60)	0.329 1.05*** (3.33)	0.470 1.05*** (3.82)	0.493 1.06*** (3.30)	0.464 1.05*** (3.49)
Major war	0.000 2.57 (1.19)	0.000 2.14 (1.05)	0.000 2.56 (1.37)	0.000 3.01* (1.65)	0.000 3.39* (1.84)	0.000 2.61 (1.25)	0.000 2.01 (0.96)	0.000 2.39 (1.27)	0.001 2.68 (1.49)	0.000 2.98 (1.62)	0.000 4.51 (1.33)	0.001 3.19 (1.04)	0.000 4.41 (1.34)	0.001 4.71 (1.44)	0.000 4.74 (1.51)
Press freedom	0.232 1.01 (0.53)	0.294 1.01 (0.53)	0.172 1.01 (0.53)	0.100 1.01 (0.53)	0.065 1.01 (0.53)	0.213 1.00 (0.22)	0.335 1.00 (0.22)	0.202 1.00 (0.22)	0.135 1.00 (0.22)	0.106 1.00 (0.22)	0.183 1.00 (-0.25)	0.301 1.00 (-0.25)	0.181 1.00 (-0.25)	0.151 1.00 (-0.25)	0.130 1.00 (-0.25)
Political rights		1.24* (1.74)					1.27* (1.90)					1.19 (1.33)			
Civil rights		0.083	1.33 (1.31)				1.46* (1.69)					1.47 (1.45)			
Regime type			0.190	1.00 (0.082)	0.935		0.092	1.02 (0.44)	0.663			0.148		0.99 (-0.11)	0.913

Appendix 7 (continued)

	All countries				Resource rich countries, 1% cut-off					Resource rich countries, 4% cut-off					
Regime change					0.73 (-0.82) 0.410					0.85 (-0.40) 0.686					0.84 (-0.47) 0.636
Number of countries	47	47	47	47	47	44	44	44	44	44	34	34	34	34	34
Number of failures	99	99	99	99	99	96	96	96	96	96	83	83	83	83	83
Pseudo R2	0.11	0.12	0.12	0.11	0.11	0.12	0.13	0.13	0.12	0.12	0.13	0.14	0.14	0.13	0.13
Log likelihood	-218	-217	-217	-218	-218	-208	-206	-207	-208	-208	-165	-164	-164	-165	-165

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are shown in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation. *** p < 0.01, ** p < 0.05, * p < 0.1.

Appendix 8

Robustness check for estimations in which the proportional hazards assumption for corruption was violated.

	(1) All countries Model 3, Table 4	(2) Resource rich countries Model 4, Table 4	(3) EITI countries Model 1, Table 6
Extractive rents (ln)	1.14*** (4.18)	1.09** (2.32)	0.98 (-0.14)
Resource curse	0.000 1.40* (1.71)	0.020 1.47** (2.00)	0.885 2.07** (2.33)
FDI (asinh)	0.088 1.16** (2.50)	0.046 1.14** (2.15)	0.020 1.10 (0.86)
Per capita income	0.012 0.68*** (-3.36)	0.032 0.70*** (-3.00)	0.390 0.56* (-1.75)
Per capita income SQ	0.001 1.03** (2.54)	0.003 1.03** (2.33)	0.081 1.13** (2.25)
Voice & Accountability	0.011 1.40*** (2.81)	0.020 1.37*** (2.66)	0.024 1.71** (2.00)
Debt (ln)	0.005 0.99 (-0.10)	0.008 0.98 (-0.21)	0.046 1.18 (0.85)
ODA	0.917 1.02*** (2.68)	0.832 1.01** (2.11)	0.393 1.06*** (4.17)
	0.007	0.035	0.000

(continued on next page)

	(1) All countries Model 3, Table 4	(2) Resource rich countries Model 4, Table 4	(3) EITI countries Model 1, Table 6
Major war	2.01* (1.89)	2.11** (2.01)	2.16 (1.12)
Number of countries	0.058	0.044	0.265
Number of failures	156	130	47
Pseudo R2	242	238	99
Log likelihood	0.041 –556	0.030 –540	0.100 –222

Note: Table shows hazard ratios for Cox survival analyses of ordered multiple failure-time data. z-Statistics are shown in parentheses, clustered in countries. p-Values are under z-values. All models include year and region dummies. All variables have been lagged by one year. Number of failures indicate the total number of completed EITI stages included in the estimation.

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

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