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Local governance quality and law compliance

The case of Mozambican firms

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Abstract: Using panel data of manufacturing enterprises in Mozambique between 2012 and 2017, we investigate how changes in perceived quality of governance are related to firms' law compliance. Controlling for firm-level unobserved heterogeneity, we look at three aspects of governance and their components: transparency, security, and infrastructure. We examine which of these have the potential to alter firm compliance behaviour. We find that enterprises' perceptions of transparency are key to law abidance. In particular, higher predictability of changes in the law, better access to legal documents, and regular meetings with state officials improve firm compliance rates. Thus, we confirm results showing that more political participation and government openness increase compliance with regulations, even in a non-democratic context. Additionally, we test whether political legitimacy acts as a mediator or a moderator in this governance–compliance relationship, but find no clear evidence of this being the case. However, we do confirm that legitimacy has an independent effect on firms' compliance with regulations in the context of Mozambique.

Key words: governance, transparency, law compliance, firms

JEL classification: D22, D23, K22, P16

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1 Introduction

Improving law compliance is essential for the sustainable development of a country, as low compliance rates impede economic growth and human development (Alstadsæter et al. 2019; Chen 2003). At the firm level, a company's failure to adhere to regulations can lead to negative externalities such as pollution or inhumane working conditions (Malesky and Taussig 2017). If payment of bribes becomes institutionalized, it may exclude certain firms from accessing essential public services, leading to misallocation inefficiencies (Warren 2006). Hence, an important question is whether and how the government can improve enterprises' compliance with the law without deteriorating private initiative. Willingness to comply with the rules is often linked to the effectiveness of government service provision (Glaser and Hildreth 1999). However, the link between government performance and law compliance is underresearched, particularly in an African context. In this paper, we investigate how the quality of local governance as perceived by enterprises has affected the exact same enterprises' compliance with laws and regulations over time. Mozambique represents an interesting case study due to particular political developments in recent years, which may have heterogeneously altered firms' perception of local governance and subsequent compliance with the law.

We acknowledge from the outset that both supply-side and demand-side effects are at play when studying the association between local governance and compliance. First, weak implementation of legislation is a common problem (Cabral and Norfolk 2016; Garrido 2020), and there exists a documented wedge between the de jure and the de facto situation in Mozambique (Hallward-Driemeier and Pritchett 2015). As an example, Berkel (2018) documents that the de jure process of obtaining a business licence should only involve one government authority (one-stop shop), should take only one day, and should cost around US$27. De facto, a new entrepreneur has to engage with several different government institutions, and in practice it took 32 business days and cost about US$100 to obtain a formal operating licence. Second, non-compliance with state legislation is a stronger underlying feature of some societies than others. The same relative penalties for non-compliance may result in very different average compliance rates across different contexts (Feldman 2010; Malesky and Taussig 2017; Tyler 2006). In this paper, we therefore investigate which aspects of local governance other than penalties may change firm behaviour in terms of improving compliance rates.

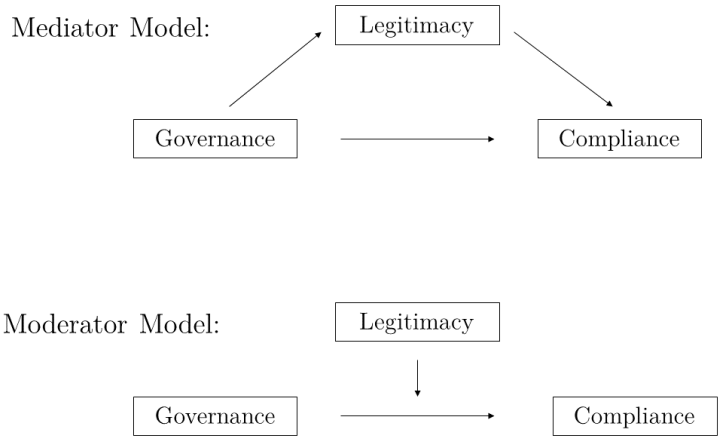
Perception is found to be highly changeable, especially with shifting governments and during economic recession (Whiteley et al. 2016). Both events have occurred in Mozambique in the studied period (2012–17). Further, subjective perceptions are likely to be stronger determinants of citizens' behaviour than more objective measures of governance quality, as the latter usually do not take local variation and de facto government effectiveness into account (Nicoletti and Pryor 2006). Hence, it is highly relevant to examine the outcomes of changes in perceptions of local governance over time.

Differences in local governance/institutions have been associated with disparities in local development within countries (Banerjee and Iyer 2005; Bruhn and Gallego 2012; Chattopadhyay and Duflo 2004). Transparency is one aspect of good governance that is hypothesized to lead to increased law compliance by firms. In a Vietnamese context, Malesky et al. (2015) and Malesky and Taussig (2017, 2019) show that local governments acting transparently, in terms of allowing firms to comment on draft regulations, see improved compliance rates among firms. However, this positive impact only unfolds if the authorities respond to the feedback provided by the firms.

An additional aim of our paper is, therefore, to understand the dynamics underlying the relationship between perceived governance and compliance behaviour. To meet this goal, we test whether political legitimacy acts as a mediator or a moderator between governance and compliance. The path diagrams of Figure 1 illustrate the mediator and moderator mechanisms. Where a mediator explains how or why effects occur, a moderator specifies 'when certain effects will hold' (Baron and Kenny 1986). Specifi-

cally, a variable acts as a mediator when it accounts for the relationship between the explanatory variable and the outcome. Thus, empirically, when legitimacy is added as a control variable to the model and acts as a mediator, it should reduce the relationship between governance and compliance. On the other hand, a moderator affects the direction and/or strength of the relationship between the independent and dependent variable. If legitimacy acts as a moderator, interaction terms between perceived governance quality and legitimacy should be statistically significant.

Figure 1: Mediator and moderator between governance and compliance



Source: authors' illustration based on Baron and Kenny (1986).

How would legitimacy function as a mediator between governance and law compliance? When people and firms observe that local government authorities are acting more competently and fairly, their perceptions of the authorities' legitimacy might improve (Dickson et al. 2017; Murphy 2005; Tyler 2006). People and firms are motivated to obey the law as they perceive the legislation, and its enforcement, to be procedurally just and of high quality (Rothstein 2009; Tyler 2006). This motivation translates into improved trust in the legitimate authority of the regulatory agencies that administer the law rather than evaluating the substance of the law (Nielsen and Parker 2012: 432ff.). As such, when people and firms perceive local governments as politically legitimate, they will increase their intrinsic motivation to abide by the rules voluntarily, which subsequently translates into actual compliance (Dickson et al. 2017; Feldman 2010; Walters and Bolger 2019). More specifically, when firms view public spending as being carried out in a relatively competent and fair manner, their view of the government's legitimacy increases, which positively affects tax morale, subsequently leading to improved compliance with tax regulations (Cummings et al. 2009; Glaeser and Shleifer 2003). Similarly, suppose a firm owner feels ill-treated during inspections by the municipal council or when applying for a business licence, the authority's legitimacy will decrease from the firm owner's perspective, which will reduce the firm's willingness to cooperate and abide by the law (Tyler 2003, 2006). Hence, legitimacy is a likely factor explaining why perceived high quality of governance may translate into high law compliance rates.

How could legitimacy work as a moderator instead of a mediator? While transparency is believed to be an essential aspect of good governance to increase legitimacy and law compliance (de Fine Licht 2014; Levi et al. 2009), other studies have shown that this is not always the case (de Fine Licht 2011; Grimmelikhuijsen 2010). The context and the nature of the political arena seem to moderate the relationship between transparency and legitimacy. For example, in situations where financial concerns outweigh human well-being, increased transparency can be found to be negatively related to legitimacy (at least in the short run) (de Fine Licht 2014). Moreover, in very corrupt countries higher transparency was shown to increase citizens' feelings of resignation—that is, their political inactivity, disinterest, and distrust (Bauhr and Grimes 2014). This negative relationship is explained by the fact that citizens cannot make

use of the released information to hold government officials accountable, which consequently deters their civic engagement. Similarly, initial levels of trust in government seem to influence how people and firms experience transparency (Grimmelikhuijsen and Meijer 2014). Thus, in our paper, the relationship between governance quality as perceived by enterprises and their compliance behaviour might change at different legitimacy values.

We do acknowledge that political legitimacy is a complex and complicated concept to measure. Legitimacy might not only consist of the specific aspects of economic governance that we try to capture in this study. Instead, it is likely for legitimacy also to be a result of governance facets that are not included in our survey. Firm owners are citizens whose legitimacy perceptions might also be affected by, for example, interactions with the police or the quality of treatment in public hospitals. Hence, while legitimacy might act as a driver between governance and compliance, it is also likely to have an independent effect on compliance.

The concepts of good governance, legitimacy, law compliance, and how they relate to one another, have, to our knowledge, not been studied systematically in a developing-country context. In particular, they have not been examined in detail for micro, small, and medium enterprises (MSMEs) in an African context. We aim to overcome these shortcomings by applying panel data information for 361 firms in Mozambique during the period 2012–17 to investigate how changes in firm perceptions of local governance influence compliance rates, controlling for unobserved firm-level heterogeneity. Our results show that perceived improvements in transparency performance positively affect firms' legislation compliance. Interestingly, accessibility to government documents, predictability of changes in laws, and regular interactions with state officials are especially crucial for firms' law abidance. The perceived quality of dispute settlement procedures and the stability of a firm's premises do not seem to influence law compliance. Finally, legitimacy is found to be neither a moderator nor a mediator in the governance–compliance association. Instead, a firm's perception of local political legitimacy is positively associated with its compliance behaviour, independent of governance quality.

In the next section, we outline the Mozambican context and describe our data and methodology in more detail. This is followed by presentations of the obtained results. Finally, we conclude by including a discussion on lessons learned.

2 Context, data, and methodology

In the mid-1990s, the people of Mozambique found themselves at a time of peace after a long and devastating civil war. Since then, the country has undergone a remarkable transformation with an annual economic growth rate of at least 7 per cent until 2015 (Roe 2018). A multiparty system was founded and new legislation was passed to promote prosperity. In a decentralization process, the state has transferred power to provinces, districts, and municipalities (Forquilha 2015). Red tape and regulations have been reduced and streamlined through, for example, establishing one-stop shops and simplified regimes for licences and taxes (GoM 2007a, 2009, 2012, 2017).

However, Mozambique's situation is worsening. Several occurrences over the past decade point towards a deteriorating political system. In 2013, political and military tensions unfolded as the opposition party, the Resistência Nacional Moçambicana (RENAMO), carried out violent attacks in the country's centre. Armed violence worsened with the 2014 general elections when RENAMO won in some of the country's provinces. Despite ceasefire agreements, violent attacks continue today, and the conflict negatively affects people's livelihoods as their safety is threatened and business activities are weakened (Forquilha 2020; Regalia 2017). Further, while decentralization policies are far from finalized, instead of improving the democratic process, disputes and power struggles between the ruling party, the Frente de Libertação

de Moçambique (FRELIMO), and RENAMO are weakening government legitimacy (Forquilha 2020). As a result, the Economist Intelligence Unit reduced Mozambique's democracy score from a 'hybrid regime' to an 'authoritarian regime' in 2018 (EIU 2019). Further, while perceived corruption was falling at the beginning of the decade, it has risen to a record high in 2018 (TI 2019).[1] Lastly, a macroeconomic crisis hit Mozambique in 2015, as the public debt exploded from just 40 per cent of GDP in 2012 to 135 per cent in 2016 (Cruz and Mafambissa 2020; IMF 2019). These developments are likely to have influenced firms' perceptions of governance over time. Hence, Mozambique is an interesting case study that allows causal examination of changing perceptions on law compliance.

2.1 Data and variables

The data used in this paper stems from the Survey of Mozambican Manufacturing Firms (IIM) and covers two waves, 2012 and 2017. The balanced panel consists of 460 enterprises, but we restrict the analyses to only those whose owners and persons of higher management or accountants were interviewed. We therefore end up with a total of 361 firms. Background information about the sampling strategy can be found in the IIM reports (IIM 2012, 2017). The sample is not representative of the Mozambican manufacturing sector as its main goal is to follow the same enterprises' development over time. However, the distribution fits fairly well the overall number of manufacturing firms in the different provinces reported in the enterprise census of 2002 (CEMPRE)—see Appendix Table A1. Yet, they are primarily formal, while the majority of firms in Mozambique operate informally (Jolevski and Ayana Aga 2019). The enterprises are located in 7 of Mozambique's 11 provinces (see Table A1 for more details on the location of enterprises).

Overall, Mozambique's manufacturing sector is neither diverse nor technology-intensive.[2] Following the economic crisis, many firms have reduced their number of employees. Specifically, while only 21 per cent were of micro-size (<5 employees) in 2012, this share increased to 47 per cent in 2017, and the percentage of small enterprises declined from 65 to 41 per cent. Medium and large businesses only shrunk slightly from 10.8 and 3.6 per cent to 8.9 and 3.1 per cent, respectively.

The top part of Table 1 describes our dependent variables, which measure self-reported adherence to mandatory regulations that Mozambican firms have to follow. These are (1) provision of formal contracts to employees, (2) tax registration (NUIT), and (3) social security contributions for workers (INSS). We additionally look at corruption (whether firms pay bribes) as a robustness check. Ultimately, we combine these three (four) compliance indicators to an unweighted compliance index. While we find a small increase in firms providing contracts and paying social insurance for their labour force, the share of firms operating with a tax ID decreased slightly. The incidence of bribe payments almost did not change in the studied period.

In the spirit of Malesky (2018) our explanatory variables use firms' evaluations of their security, infrastructure quality, transparency, and the government's legitimacy to generate a series of standardized sub-indices related to the quality of governance. These sub-indices are then aggregated to an overall local governance index (LGI). A detailed description of each index can be found in Table 1 and Appendices A1 and B.

[1] According to Transparency International's Corruption Perception Index, Mozambique ranked 30 out of 100 (very clean) in 2013. This fell to 26 in 2018 (TI 2019).

[2] See Appendix Table A1 for the sector distribution.

Table 1: Descriptive statistics of dependent and independent variables

		Mean of variables			Std dev.
Dependent variables	Description	2012	2017	Pooled	Pooled
Compliance index		1.407	1.457	1.432	(1.070)
Formal labour	Takes the value 1 if the firm's entire workforce has a formal contract, and 0 otherwise.	0.283	0.316	0.299	(0.458)
Tax registered (NUIT)	Takes the value 1 if the firm has a tax identification number (NUIT) or if the firm is registered with an authority which requires a NUIT to be allowed to register, and 0 otherwise.	0.784	0.751	0.767	(0.423)
Social security	Takes the value 1 if the firm pays social insurance (INSS) for its employees, and 0 otherwise.	0.341	0.391	0.366	(0.482)
Other					
No corruption	Takes the value 1 if the firm replied **zero** to the following: *'How much does a typical firm in your line of business and of similar size typically pay each year in informal payments to public officials?'* and 0 otherwise.	0.548	0.560	0.554	(0.497)
Independent variables					
Legitimacy					
Legitimacy (MT 2017)	Attitude of the GoM (Government of Mozambique) towards the private sector; if the GoM is less regulatory towards firms who contribute to local development; and if officials refer to the rules when extracting rents, as formulated by Malesky and Taussig (2017).	1.323	1.316	1.319	(0.493)
Legitimacy index	To the legitimacy measure by Malesky and Taussig (2017), we add two questions related to whether rules are implemented well and if the firm has noticed any changes when working with state agencies.	1.880	1.993	1.937	(0.736)
Transparency index		0.874	1.135	1.005	(0.632)
Participation	Takes the value 1 if the firm has ever commented on GoM's regulations or policies.	0.161	0.144	0.153	(0.360)
Solicit comments	On a scale from 0 (never) to 4 (always), how frequently does the provincial government meet with you and the private sector to solicit comments on the promulgation or amendments of provincial regulation?	0.319	0.645	0.483	(0.850)
Predictability	On a scale from 0 (never) to 4 (always), how predictable are changes in laws at central level affecting your business?	1.006	1.548	1.277	(0.315)
Accessibility	On a scale from 0 (impossible) to 4 (easy), rate the accessibility of 13 different types of provincial information and documents.	1.321	1.499	1.410	(0.605)
Security index		2.627	2.753	2.690	(0.806)
Dispute	Firms' evaluation of business dispute procedures.	1.544	1.646	1.595	(0.613)
Stability	Firms' evaluation of the stability of their premises and property rights.	1.083	1.106	1.095	(0.477)
Infrastructure index		3.611	3.587	3.599	(0.905)
Hard infra.	On a scale from 0 (very bad) to 5 (very good), rate the quality of: roads, phone connection, electricity, and water.	2.434	2.322	2.378	(0.697)
Soft infra.	On a scale from 0 (very bad) to 5 (very good), rate the quality of: education and training possibilities	1.177	1.264	1.221	(0.387)
Confounders					
Firm size	Total number of employees	16.83	15.24	16.04	(36.49)

Note: all variables are normalized before they are accumulated to the different indices, due to differences in scales. See Tables A3 (compliance variables) and B1 (independent variables) for full descriptions and detailed summary statistics.
Source: authors' calculations based on IIM data.

We aim at testing whether legitimacy is a mediator or a moderator. Suppose legitimacy acts as a mediator between governance and compliance. In that case, it has to meet three criteria: (1) variations in the levels of governance quality significantly account for variations in legitimacy; (2) variations in legitimacy significantly account for variations in compliance; and (3) when governance and legitimacy are included in the regression at the same time, the association between governance and compliance becomes much weaker (Baron and Kenny 1986). If legitimacy acts as a moderator, an interaction term between governance quality and legitimacy will turn out well-determined in compliance regressions. This implies that the relationship between perceived governance quality and law compliance differs at

different values of legitimacy—that is, legitimacy modifies the relationship between the independent and dependent variable.

We follow Malesky and Taussig (2017) and measure legitimacy along three questions related to the local government's business friendliness (attitude towards the private sector), biased implementation (less regulatory towards firms who contribute to local development), and whether authorities refer to rules when extracting rents. In the IIM surveys, the firms were also asked directly how well the rules are being implemented and if they have noticed any changes when working with state agencies over the years. We add these two questions with equal weight to include more aspects of legitimacy and test the former measure's robustness (see Table 1).

2.2 Methodology

We aim to estimate and identify the effect of firm-level perceptions of local governance quality on law compliance. To be comparable with the previous literature relying on cross-sectional data only, we start by running simple ordinary least squares (OLS) regressions with time, province, and sector dummies. However, since statistical inference is most likely erroneous due to unobserved heterogeneity, we exploit our data's panel nature and control for firm fixed effects. Let C be our outcome of interest, the compliance index or individual compliance indicator variables of firm i at time t, while LGI denotes our aggregated LGI based on the standardized sub-indices described above. Firm-level fixed effects are captured by α_i and time fixed effects by γ_t, while X represents a set of time-varying firm-specific controls:

$$C_{i,t} = \alpha_i + \beta_1 LGI_{i,t} + \beta_2 X_{i,t} + \gamma_t + \varepsilon_{i,t} \tag{1}$$

We aim at understanding which aspects of firms' perceived quality of governance affect their compliance behaviour. Hence, we disaggregate the LGI into three components: T stands for transparency, S for security, and I for infrastructure. A detailed description of each index can be found in Table 1. Following Malesky and Taussig (2017), we also test the legitimacy 'mediator and/or moderator' hypothesis by including the legitimacy index as a control (mediator—Equation 2) or through including interaction terms between legitimacy and the other local governance indices (moderator—Equation 3):

$$C_{i,t} = \alpha_i + \theta L_{i,t} + \beta_{1a} T_{i,t} + \beta_{1b} S_{i,t} + \beta_{1c} I_{i,t} + \beta_2 X_{i,t} + \gamma_t + \varepsilon_{i,t} \tag{2}$$

$$C_{i,t} = \alpha_i + (1 + \theta L_{i,t}) * (\beta_{1a} T_{i,t} + \beta_{1b} S_{i,t} + \beta_{1c} I_{i,t}) + \beta_2 X_{i,t} + \gamma_t + \varepsilon_{i,t} \tag{3}$$

Finally, we further disaggregate the three aspects of governance into more detailed components. Thereby, transparency consists of participation, solicitation of comments, predictability, and accessibility of documents. Security consists of (1) dispute and (2) stability, whereas infrastructure is composed of (1) hard and (2) soft infrastructure. A detailed description of each component can be found in Table 1. The detailed mediator (Equation 4) and moderator (Equation 5) models can therefore be presented as:

$$C_{i,t} = \alpha_i + \theta L_{i,t} + \sum_{k=1}^{4} \beta_{1ak}[T_{ki,t}] + \sum_{m=1}^{2} \beta_{1bm}[S_{mi,t}] + \sum_{n=1}^{2} \beta_{1cn}[I_{ni,t}] + \beta_2 X_{i,t} + \gamma_t + \varepsilon_{i,t} \tag{4}$$

$$C_{i,t} = \alpha_i + (1 + \theta L_{i,t}) * \left[\sum_{k=1}^{4} \beta_{1ak}[T_{ki,t}] + \sum_{m=1}^{2} \beta_{1bm}[S_{mi,t}] + \sum_{n=1}^{2} \beta_{1cn}[I_{ni,t}] \right] + \beta_2 X_{i,t} + \gamma_t + \varepsilon_{i,t} \tag{5}$$

Lastly, we find that the distribution of predicted values and residuals from the above models may be Poisson distributed (see Appendix Figure A5). Wooldridge (2002) and Silva and Tenreyro (2006) show that PPML specifications, in this case, lead to more robust results in the case of strictly positive outcomes and heteroscedastic error terms. As a robustness check, all regressions are therefore also done using a FE Poisson pseudo-maximum likelihood (PPML-FE) specification, which is included in Appendix D.

3 Results

3.1 The aggregated model

The binned scatterplots of Figure 2 depict the association between each governance index and firms' compliance behaviour. Specifically, the plots compare correlations with and without accounting for firm fixed effects for each governance–compliance relationship. When contrasting the simple with the FE specification, the security index becomes negatively associated with compliance when accounting for time-invariant firm fixed factors. The legitimacy and transparency indices both maintain a positive correlation, whereas the infrastructure remains negative when considering firm fixed effects. The plots also indicate that the transparency and infrastructure indices seem to be significantly correlated with compliance, as the grouped means are relatively close to the linear regression line. The security index's coefficient, on the other hand, appears not well-determined. Our subsequent regressions confirm these associations (see Table 2). Interestingly, when looking at legitimacy as constructed by Malesky and Taussig (2017), the direction of the association changes from a negative to a positive when accounting for firm fixed effects, whereas our alternative legitimacy measure indicates a more straightforward and expected positive relationship (see Appendix Figure B1). Overall, the binned scatterplots clearly show that unobserved heterogeneity is important and that accounting for firm-level fixed effects is essential to precisely estimate the association between local governance quality and law compliance.

We start the econometric analysis by looking at the effect of our aggregated LGI on compliance, as specified by Equation 1. Independently of our three model specifications—OLS, OLS-FE, and PPML-FE—we find no statistically significant relationship between the two variables (see columns 1, 7, and 13 of Table 2). Hence, when better governance is composed of many different aspects, it does not seem to affect firms' compliance with regulations. We turn to the role of political legitimacy in the governance–compliance relationship. Although legitimacy is significantly and positively related to compliance, it does not reduce the coefficient estimate on the LGI (columns 2, 8, and 14). Hence, legitimacy does not appear to function as a mediator between governance and compliance. Similarly, it does not seem to moderate the relationship either because none of the interaction terms between compliance and legitimacy are well-determined in any model specification (columns 3, 9, and 15).

Examining instead the effect of the three individual governance indices on compliance, Table 2 shows that the aggregated transparency index correlates strongly and significantly with firms' compliance behaviour, independently of the type of model specification. This implies that the higher a firm's perception of transparency, the more likely it is to comply with the law. However, it should be noted (as expected) that the effect size is substantially smaller when using PPML-FE instead of an OLS specification. Specifically, a 1 SD increase in transparency increases the compliance index by 0.09–0.16 SD, depending on the specification.

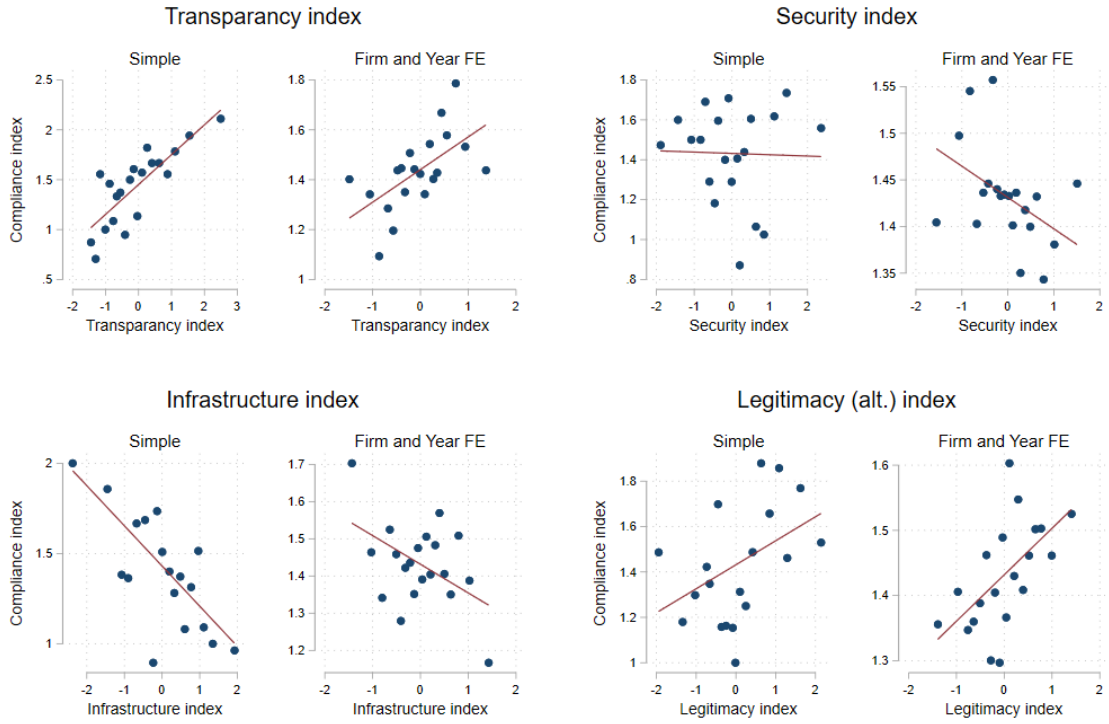
Taking into account other aspects of firms' perceived governance quality, the impact of security is not well-determined in any of the model specifications. Thus, businesses' notion of their premises' security does not appear to affect firm behaviour related to regulation as it is measured in this paper. We also find that enterprises' perceived quality of infrastructure contributes negatively to their compliance rates, although the effect size is relatively small in the PPML-FE model. We elaborate on several reasons for this negative association below.

Enterprises' perception of political legitimacy may dominate the relationship between governance and law compliance. Therefore, we again test whether legitimacy acts as a mediator by adding our legitimacy measure to the models (see columns 5, 11, and 17 of Table 2). Our transparency index's point estimate does not change precision nor effect size when including the legitimacy index. This signals that transparency is only weakly correlated with legitimacy (see also the first stage in Table B2), and

that both legitimacy and transparency play a role for Mozambican firms in terms of their compliance behaviour. Similarly, legitimacy does not appear to mediate the security–compliance or the infrastructure–compliance association either. Robustness checks in Table A4, in which we use two alternative compliance indices, confirm our results.

Lastly, we test whether legitimacy is a moderator, thus interacting legitimacy with each of the three governance indices in columns 6, 12, and 18 of Table 2. None of the three interaction terms significantly correlates with compliance in any model specification. In contrast, each governance index still has the same relation with compliance as in the model without the interaction terms. Hence, different levels of legitimacy do not seem to change the relationship between perceived governance quality and firms' compliance behaviour. As such, political legitimacy (as measured in this paper) does not appear to function as a moderator in the local governance–compliance nexus. However, although political legitimacy may not act as a mediator or a moderator, we find that it influences enterprises' law abidance, independently of other governance quality indicators. Moreover, it should be noted that since there are various ways of measuring political legitimacy (which is not possible to do with the data at hand), the concept may act as a moderator or mediator if measured differently (Weatherford 1992).

Figure 2: Binned scatterplot for the different indices



Note: 'Binned scatterplots provide a non-parametric way of visualizing the relationship between two variables' (Stepner 2013). We group firms in the legitimacy into equal-sized bins, compute the mean of the *x*-axis and *y*-axis variables within each bin, then create a scatterplot of these data points. The alternative legitimacy index is shown, as applied in the regression shown in Table 2.

Source: authors' calculations.

Table 2: Aggregate model: OLS, OLS-FE, and PPML-FE

	Compliance index																	
	OLS						OLS-FE						PPML-FE					
Std indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
LGI	–0.04	–0.04	–0.03				–0.01	–0.02	–0.01				–0.01	–0.01	–0.01			
	(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)				(0.02)	(0.02)	(0.02)			
Transparency				0.18***	0.18***	0.18***				0.16***	0.16***	0.16***				0.09***	0.09***	0.09***
				(0.03)	(0.03)	(0.03)				(0.03)	(0.03)	(0.03)				(0.02)	(0.02)	(0.02)
Security				–0.04	–0.05	–0.04				–0.05	–0.05	–0.04				–0.03	–0.03	–0.03
				(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)				(0.02)	(0.02)	(0.02)
Infrastructure				–0.12***	–0.14***	–0.12***				–0.07*	–0.08**	–0.08*				–0.04	–0.05*	–0.05
				(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)				(0.03)	(0.03)	(0.02)
Legitimacy (alt.)		0.07**			0.09***			0.07*			0.09**			0.05**			0.06**	
		(0.03)			(0.03)			(0.04)			(0.04)			(0.02)			(0.02)	
LGI#Legit.			0.02						–0.02						–0.02			
			(0.02)						(0.03)						(0.02)			
Trans.#Legit.						0.00						–0.03						–0.02
						(0.03)						(0.03)						(0.02)
Security#Legit.						0.00						0.00						0.00
						(0.03)						(0.03)						(0.02)
Infra.#Legit.						0.00						–0.02						–0.01
						(0.02)						(0.04)						(0.02)
Log of size	0.52***	0.52***	0.52***	0.48***	0.47***	0.48***	0.2***	0.19**	0.20***	0.22***	0.20***	0.22***	0.12**	0.11**	0.12**	0.13**	0.12**	0.13***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.08)	(0.07)	(0.08)	(0.08)	(0.07)	(0.08)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Joint sgfnt, int.			0.39			1.00			0.46			0.71			0.41			0.80
Observations	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652
R-squared^{+}	0.4	0.41	0.41	0.45	0.46	0.45	0.03	0.04	0.03	0.09	0.11	0.10	0.18	0.18	0.18	0.18	0.18	0.18

Note: standard errors are reported in parentheses (clustered SE for PPML-FE and FE, robust SE in Poisson). The compliance index is composed of three variables: formal contracts, registration (NUIT), and social insurance (INSS). See more information in Appendix A1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. $^{+}$ Pseudo-R-squared in the case of PPML-FE. The alternative legitimacy index is applied here.

Source: authors' calculations based on IIM data.

3.2 The disaggregated model

Next, we disaggregate the indices into more components to better understand which specific local governance aspects affect law compliance. The regression results are shown in Table 3.

Table 3: Regression results, full specification (OLS-FE)

	Compliance index						
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Transparency:							
Participation	0.02			0.01	0.02	0.02	0.02
	(0.04)			(0.04)	(0.04)	(0.04)	(0.04)
Solicit comments	0.06			0.08**	0.08**	0.07**	0.07**
	(0.04)			(0.04)	(0.04)	(0.04)	(0.04)
Predictability	0.09***			0.10***	0.10***	0.10***	0.09**
	(0.03)			(0.03)	(0.03)	(0.03)	(0.03)
Accessibility	0.10***			0.10***	0.10***	0.10***	0.11***
	(0.04)			(0.04)	(0.04)	(0.04)	(0.04)
Security:							
Dispute		–0.03		–0.05	–0.05	–0.05	–0.05
		(0.04)		(0.04)	(0.04)	(0.04)	(0.04)
Stability		–0.03		–0.03	–0.04	–0.03	–0.03
		(0.04)		(0.04)	(0.04)	(0.04)	(0.04)
Infrastructure:							
Hard infra.			–0.11***	–0.09**	–0.10**	–0.10**	–0.10**
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Soft infra.			0.04	0.02	0.02	0.02	0.01
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Legitimacy:							
Legitimacy (MT)†					0.05		
					(0.04)		
Legitimacy (alt.)						0.09**	
						(0.04)	
Controls:							
Log of size	0.24***	0.21***	0.21***	0.26***	0.26***	0.25***	0.27***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Joint significance test	0.00	0.46	0.04	0.00	0.00	0.00	0.00
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms+	No	No	No	No	No	No	Yes
Joint sgfnt, int.							0.79
Observations	652	652	652	652	652	652	652
R-squared	0.09	0.03	0.05	0.12	0.13	0.14	0.14

Note: clustered (firm) standard errors are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The compliance index is constructed of three variables: formal labour, formality (NUIT), and social insurance (INSS). See more information in Appendix A1. See PPML-FE results in Table D1. † Legitimacy (MT) is fully comparable to the legitimacy variable in Malesky and Taussig (2017). Our legitimacy index captures additional aspects of legitimacy. + Interaction terms are between the independent variables and our alternative legitimacy index. The joint significance test of the interaction terms are highly insignificant.

Source: authors' calculations based on IIM data.

In terms of transparency, we find that three out of four facets influence compliance. The first element of transparency relates to direct political participation—if the firms have ever commented on government regulations. This aspect of transparency is not well-determined in the regressions and even slightly negatively correlated with the provision of formal labour contracts, as depicted by Table 6. This is in line with the results by Malesky and Taussig (2017), which show that firms' participation in the design process of regulations alone does not affect compliance rates measured by the provision of formal labour contracts and can even have a negative effect. However, they do find that those who received a response from the government to their comments are more compliant with the labour law. Malesky and Taussig (2017) argue that if enterprises have the impression that the government takes its feedback seriously

and not as a mere formality, the government's legitimacy increases and, subsequently, the firm is more eager to comply. Adding legitimacy as a mediator, they show that the direct impact of receiving a response becomes weakly significant, while the indirect effect of government response mediated through legitimacy is strongly significant.[3]

In our case of Mozambique, however, legitimacy does not seem to mediate the (insignificant) relationship between soliciting comments and compliance or the significant association between political participation and firms' compliance behaviour (see Table 4). Alternatively, if legitimacy had a moderator effect, the impact of political participation or soliciting comments would change with different values of political legitimacy (expecting a positive interaction term between legitimacy and participation). However, the interaction terms are not well-determined, indicating that political legitimacy does not act as a moderator either. One reason for this difference in findings as compared to Malesky and Taussig (2017) could be explained as follows. The effects may be firm-specific, and by controlling for firm-level fixed effects the moderator and mediator effects disappear altogether. However, the interactions in the pooled OLS model are also insignificant, whereas the direct impact of participation is well-determined, indicating that it cannot be ruled out that the correlation found in Malesky and Taussig (2017) may be caused by unobserved firm-level heterogeneity.

Second, the firms who believe that the provincial government regularly meets with the private sector to solicit comments on the promulgation or amendment of provincial regulations are significantly more compliant with the law. The positive impact of regular meetings between the local government and enterprises to receive comments also confirms previous studies that show that a local government allowing for more consultation by citizens increases compliance, even in non-democracies such as China and Vietnam (Malesky and Taussig 2017; Stromseth et al. 2017).[4] As mentioned in the previous paragraph, political legitimacy does not seem to mediate or moderate the positive association between soliciting comments and law compliance.

Third, perceived predictability of the government is significantly and positively correlated with adherence. Thus, the easier it is for enterprises to predict changes in the legal situation or the law's implementation process, the more likely they are to follow the rules. To the authors' knowledge, few studies have examined the relationship between legal certainty and law compliance. Malesky and Taussig (2017) argue that this measurement says something about the firms' regulatory knowledge—their ability to successfully predict the government's regulatory behaviour. Hence, they apply the variable as a mediator and not as an independent variable. We, on the other hand, argue that predictability (and stability) is necessary for citizens to accept government regulation on personal liabilities. It therefore says more about how well the government communicates their intentions and future regulations, and less about firms' ability to receive information. As is the case with participation and soliciting comments, political legitimacy does not drive or moderate the link between predictability and compliance.

Lastly, a better perception of the accessibility of formal state documents increases businesses' law abidance. This is in line with a study showing that government openness reduced corruption in China (Stromseth et al. 2017). Overall, the magnitude of government predictability and accessibility of documents appear to be the biggest, as a 1 SD increase in either of them increases the compliance index by 0.10 SD. Soliciting comments has a slightly lower magnitude. We cannot find any evidence of a mediator or moderator effect of legitimacy in the accessibility–compliance relationship.

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[3] We cannot fully replicate the study by Malesky and Taussig (2017) as we do not know which firms received a government response, if they got any at all. Second, our variable is not as direct as in Malesky and Taussig (2017) because it refers to whether firms, in general, have ever commented on government regulation, while Malesky and Taussig (2017) refer to commenting on one specific law and whether firms received a response from the government.

[4] It should be noted that we get similar results but a slightly lower effect size using a PPML-FE model specification instead of OLS-FE (see Table D1).

Table 4: Moderator model: full specification

	OLS					OLS-FE				
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Transparency:										
Participation	0.07**	0.07**	0.07**	0.07**	0.07**	0.01	0.01	0.01	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Solicit comments	0.02	0.01	0.02	0.02	0.01	0.08**	0.08**	0.08**	0.07**	0.07**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Predictability	0.12***	0.13***	0.13***	0.12***	0.13***	0.10***	0.10***	0.09***	0.09***	0.09***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Accessibility	0.11***	0.12***	0.11***	0.11***	0.12***	0.10***	0.10***	0.10***	0.11***	0.11***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Security:										
Dispute	–0.02	–0.01	–0.02	–0.02	–0.01	–0.05	–0.05	–0.05	–0.05	–0.05
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Stability	–0.05	–0.05	–0.05	–0.05	–0.05	–0.03	–0.03	–0.04	–0.03	–0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Infrastructure:										
Hard infra.	–0.11***	–0.10***	–0.11***	–0.11***	–0.11***	–0.09**	–0.09**	–0.09**	–0.11**	–0.10**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Soft infra.	–0.02	–0.02	–0.02	–0.02	–0.02	0.02	0.02	0.02	0.02	0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Interactions:										
Part.#Legit.		0.00			0.00		–0.04			–0.04
		(0.03)			(0.03)		(0.04)			(0.03)
Solicit#Legit.		0.02			0.03		0.01			0.01
		(0.03)			(0.03)		(0.04)			(0.04)
Predict.#Legit.		0.02			0.02		–0.01			–0.01
		(0.03)			(0.03)		(0.03)			(0.03)
Access.#Legit.		–0.05			–0.05		–0.02			–0.03
		(0.03)			(0.03)		(0.04)			(0.04)
Dispute#Legit.			0.01		0.01			–0.04		–0.03
			(0.03)		(0.03)			(0.03)		(0.03)
Stability#Legit.			–0.02		–0.02			0.03		0.05
			(0.03)		(0.03)			(0.03)		(0.04)
Hard#Legit.				–0.02	–0.03				–0.05	–0.06
				(0.03)	(0.03)				(0.04)	(0.04)
Soft#Legit.				0.02	0.02				0.01	0.01
				(0.02)	(0.02)				(0.03)	(0.03)
Log of size	0.48***	0.48***	0.48***	0.48***	0.48***	0.26***	0.27***	0.27***	0.26***	0.27***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Firm FE	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Joint sgfnt, int.		0.48	0.69	0.66	0.65		0.74	0.37	0.52	0.79
Observations	652	652	652	652	652	652	652	652	652	652
R-squared	0.46	0.46	0.46	0.46	0.46	0.12	0.13	0.13	0.13	0.14

Note: clustered (firm) standard errors are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The compliance index is constructed of three variables: formal labour, formality, and social security. See more information in Appendix A1. See Table A7 for the results of the individual interaction terms on compliance. See the PPML-FE results in Table D1.

Source: authors' calculations based on IIM data.

The security index is disaggregated into firms' perception of formal dispute settlement procedures and their premises' stability. Their notion of formal dispute settlement procedures does not seem to influence their compliance behaviour. This may be explained by the fact that most enterprises do not use the

formal legal system. In 2017, only 17 per cent of the sample reported settling business disputes through the official institutions by either hiring a lawyer or going to court or the police. Hence, formal settlement procedures may not be of much relevance for the majority of enterprises in Mozambique and, therefore, may not affect their compliance behaviour. Similarly, the sample's perception of their premises' stability does not affect their law abidance either.

The negative association between the perception of infrastructure and compliance is driven by the component of hard infrastructure—the higher the firms assess the quality of roads, phone network, electricity, and water, the less likely they are to comply. This unfolds with and without the legitimacy variable in the model. Hence, we can rule out the possibility of legitimacy cancelling out the positive correlation between infrastructure and compliance, as depicted in Table B2. A negative correlation was unexpected, but we can try to explain what may cause this result. First, it may come from the large portion of firms with fewer than five employees, which are, in general, less compliant with the law. These micro-enterprises may rate infrastructure better because it is sufficient for their operations or because they see that infrastructure is improving. Yet, it does not benefit their daily lives and, therefore, better infrastructure actually decreases instead of increases their compliance with regulations. In line with this, Carolini (2017) describes that improvements in the quality of infrastructure in Maputo mostly benefit the rich and larger firms. Second, the OECD Foreign Bribery Report (2014) shows that nearly 60 per cent of foreign bribery cases occurred in four sectors deeply linked to infrastructure: extractives (19 per cent), construction (15 per cent), transport and storage (15 per cent), and information and communication (10 per cent) OECD (2014). Hence, when the government decides to invest in better infrastructure, the projects are likely to involve corruption. Corruption scandals become public and subsequently affect firms' willingness to comply with the law and pay taxes.

Finally, we compare the legitimacy measure by Malesky and Taussig (2017) with our alternative legitimacy measure. While our alternative measure significantly correlates with compliance, the one constructed by Malesky and Taussig (2017) is insignificant in our paper (see Table 3). The reason for this finding may be that the three aspects of the legitimacy measure—the government's attitude towards the private sector, the government's behaviour towards firms that contribute more to local development, and authorities referring to rules when extracting rents—are more relevant for enterprises in Vietnam than in Mozambique. In Mozambique, the government is perceived as being relatively weak, and in informal conversations with firm owners during our quantitative data collection in 2017 many stated that government support is not very useful. If political legitimacy, in general, is low or irrelevant for firms, it may not affect their compliance behaviour. However, the two aspects we add in this paper—firms' attitude about the implementation of regulations and whether the firm has observed any notifiable changes when in contact with state agencies in the past years—can also be seen as legitimacy elements, and are perhaps more pertinent in Mozambique than the other three aspects of legitimacy.

3.3 Heterogeneity

Micro-sized enterprises were found to be very different in a range of characteristics relative to bigger businesses. For example, they are more likely to operate informally, which means that they are unlikely to interact much with formal (government) institutions (Aga et al. 2019). Hence, as a result of their irregular interactions with the formal system, institutional changes such as more transparency might impact the smallest businesses to a lesser extent than bigger enterprises. Moreover, it might be more challenging for the smallest firms to directly make use of and implement improved institutions as they are not used to doing so, or do not have the necessary skills. Consequently, better governance might only be weakly correlated with law compliance of the smallest units. Further, legitimacy might not work as a mediator between firms' perceived governance quality and their compliance with regulations either, as there may not exist a strong relationship between the two (see Table B2). Similarly, political legitimacy might not moderate a relationship between transparency and compliance.

We test if improved governance is less relevant for the smallest enterprises by re-running the analysis for the smallest businesses (fewer than ten employees). The sample is reduced from 361 to 236 firms which employ 1-9 workers. Surprisingly, the association between transparency and compliance becomes stronger in all three aggregated model specifications, as can be seen in Table 5. Accordingly, the higher a firm's perception of transparency, the more likely it is to comply with the law, and this is particularly relevant for the smallest businesses. Specifically, a 1 SD increase in transparency increases the compliance index by 0.17–0.24 SD for the smallest units (0.09–0.16 for the entire sample), depending on the specification.

Regarding legitimacy, we obtain, similarly to the entire sample, no evidence for its role as a mediator. Only when using the legitimacy measure of Malesky and Taussig (2017) do we find a statistically significant association between the governance variables and legitimacy (Table B2(b)). Yet, when adding legitimacy into the regression, the relationship between transparency and compliance is unaltered, implying that legitimacy does not act as a mediator (see Table C2. The association between transparency and legal compliance must be working on different pathways.

However, in terms of legitimacy's moderating effects, we obtain surprising results as these are different from the findings for the whole sample. Specifically, the association between the interaction term transparency#legitimacy and compliance is negative and statistically significant, while it is insignificant and close to zero when analysing the entire sample. The relationship between transparency and compliance seems to become more positive with higher levels of legitimacy in the case of bigger enterprises. The facts that we obtain evidence of a moderator in the case of the smallest entities and the insignificant moderator effects for the entire sample mean that, if we were able to analyse a higher number of bigger enterprises, legitimacy would probably pull in the other direction. This is in line with the findings of Malesky and Taussig (2017) in Vietnam. From this we can postulate that political legitimacy is important, yet in an African context, where middle-sized enterprises are missing, legitimacy may not be as crucial in the relationship between governance and law compliance. As Mozambique develops, the business environment improves and the distribution of firm sizes will go from a bimodal to a more Pareto-like distribution, and we may find a similar mediator effect of legitimacy as in Vietnam.

When using the legitimacy definition of Malesky and Taussig (2017), we similarly find that the interaction term between transparency and legitimacy is negative, yet slightly less significant and smaller in magnitude (–8 vs –13) (see Table C2). We further disaggregate transparency and find that it is the predictability of changes in and implementation of laws as well as the accessibility of provincial documents that negatively affect compliance when legitimacy values are high (see Table C1). Regarding the other two governance aspects, security and infrastructure, we obtain the same results for the smallest businesses as for the entire sample. A firm's perception of security does not correlate with its compliance behaviour. The perceived quality of (hard) infrastructure affects law abidance negatively, and the magnitude of this link is stronger for the smallest enterprises relative to the whole sample (–0.16 vs –0.08 in OLS-FE regressions, including legitimacy). This finding confirms our previous argument from Section 3.2 stating that smaller businesses rate infrastructure better when these improvements do not affect their lives and, thus, do not impact their compliance rates either.

Table 5: Aggregate model: OLS, OLS-FE, and PPML-FE (with smallest firms only)

	Compliance index																	
	OLS						OLS-FE						PPML-FE					
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
LGI	–0.06	–0.06	–0.06				–0.06	–0.06	–0.06				–0.05	–0.05	–0.05			
	(0.04)	(0.04)	(0.04)				(0.05)	(0.05)	(0.05)				(0.05)	(0.05)	(0.05)			
Transparency				0.20***	0.20***	0.20***				0.22***	0.23***	0.24***				0.17***	0.19***	0.19***
				(0.04)	(0.04)	(0.04)				(0.05)	(0.05)	(0.05)				(0.04)	(0.04)	(0.05)
Security				–0.03	–0.03	–0.03				–0.06	–0.07	–0.05				–0.05	–0.06	–0.04
				(0.04)	(0.04)	(0.04)				(0.05)	(0.05)	(0.05)				(0.05)	(0.05)	(0.05)
Infrastructure				–0.15***	–0.16***	–0.15***				–0.15***	–0.16***	–0.15**				–0.14***	–0.14***	–0.14***
				(0.04)	(0.04)	(0.04)				(0.06)	(0.06)	(0.06)				(0.05)	(0.05)	(0.05)
Legitimacy (alt.)		0.08**			0.10**			0.07			0.10**			0.07*			0.10**	
		(0.04)			(0.04)			(0.05)			(0.05)			(0.04)			(0.04)	
LGI#Legit.			0.03						–0.01						0.00			
			(0.03)						(0.05)						(0.04)			
Trans.#Legit.						–0.05						–0.13***						–0.12***
						(0.04)						(0.05)						(0.04)
Security#Legit.						0.04						0.00						0.00
						(0.04)						(0.05)						(0.04)
Infra.#Legit.						–0.01						0.01						0.02
						(0.03)						(0.05)						(0.04)
Small-dummy	0.29***	0.28***	0.29***	0.27***	0.26***	0.27***	0.2	0.2	0.2	0.24*	0.24*	0.21	0.19	0.19	0.19	0.25*	0.26**	0.21*
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.12)	(0.12)	(0.12)	(0.13)	(0.13)	(0.13)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Joint sgfnt, int.			0.31			0.45			0.85			0.05			0.90			0.05
Observations	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408
R-squared^{+}	0.11	0.12	0.12	0.18	0.20	0.19	0.02	0.03	0.02	0.13	0.14	0.15	0.13	0.14	0.13	0.14	0.15	0.15

Note: standard errors are reported in parentheses (clustered SE for PPML-FE and FE, robust SE in Poisson). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. $^{+}$ Pseudo-R-squared in the case of PPML-FE. Small-dummy takes the value 1 if the firm has more than four employees, else 0. The smallest enterprises employ 1–9 workers. The alternative legitimacy index is applied here; see Table C2 for the legitimacy index by Malesky and Taussig (2017).

Source: authors' calculations based on IIM data.

3.4 Individual compliance variables and robustness checks

As a robustness check, we also disaggregate our dependent variable, the compliance index. The regression results on the individual compliance variables are shown in Table 6. Similar to the previous findings, the transparency variables are important. The accessibility of documents appears to be specifically essential for the provision of formal labour contracts and tax registration. Predictability is significantly associated with having an NUIT and contributing to social insurance. Similar results hold for the PPML specification (see Table D2).

We additionally examine the aspect of firms not paying bribes. The conclusion changes dramatically, as the association between not paying bribes and perceived transparency is negative. Specifically, it is the predictability of changes in and implementation of laws that significantly increase bribe payments. The firms that are more informed about their legal situation are perhaps more equipped to take advantage of the information. Subsequently, to lower costs, they find loopholes in the law and pay bribes instead of complying with the regulations. On the other hand, perceived government legitimacy is highly correlated with reductions in bribe payments. Thus, political legitimacy seems to have a powerful impact on compliance with various laws in Mozambique.

As outlined before, we only analysed those 361 firms whose owners or managers were interviewed, because the 99 cases of 'other' interviewed respondents might be unreliable. These other respondents are, for example, a firm's employee or an owner's relative. As a robustness check, we run the same analysis with the fully balanced data set of 460 enterprises, as showcased in Table E2. The results are generally robust to including all firms. The effects of transparency and infrastructure remain significant. However, the security index becomes well-determined and affects compliance negatively. We additionally find that the relationship between our legitimacy variable and compliance decreases in magnitude and becomes insignificant in the aggregated models with fixed effects. This finding again confirms that legitimacy does not act as a mediator. When adding the interaction terms, we also find no changes in the OLS-FE model. However, in the case of PPML-FE (Table E1), the interaction between transparency and legitimacy is negatively significant at the 10 per cent level. This result obtained for all 460 firms is in line with the findings for the smallest entities, suggesting that there may be some moderation effect. As such, the results only differ slightly because the 'other' respondents report significantly higher compliance rates than owners and managers. However, we believe that firm owners' and managers' replies are more reliable than those of employees because employees usually would not decide which regulations their employer should comply with. Further, even if they know of their employer's non-compliance, they might be afraid of telling the truth. Hence, excluding the non-owners from the analysis remains our preferred specification.

When additionally controlling for whether a firm owner or any board member is affiliated to a political party, the results do not change, as illustrated by Table A5. Hence, our findings are not driven by firms with better political connections, which could have been the case in the transparency aspect of regular meetings with the government to provide comments on regulations.

Table 6: OLS-FE regression results: individual compliance variables

	Formal labour contract				Formality				Contribute to social ins.				Do not pay bribes			
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Legitimacy (alt.)		0.04*		0.03		0.02		0.02		0.02		0.02		0.07***		0.07***
		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)		(0.02)
Transparency:																
Participation	–0.03	–0.02	–0.02		0.00	0.01	0.00		0.04*	0.04*	0.04*		0.00	0.01	0.00	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Solicit comments	0.04*	0.03*	0.04*		0.01	0.01	0.01		0.03*	0.03	0.02		0.00	0.00	–0.01	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Predictability	0.02	0.02	0.02		0.05***	0.05***	0.05***		0.03*	0.03*	0.03		–0.04**	–0.04**	–0.04**	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Accessibility	0.04**	0.04**	0.04*		0.05***	0.05***	0.05**		0.01	0.01	0.02		–0.03	–0.03	–0.02	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Security:																
Dispute	–0.01	–0.01	–0.01		–0.03	–0.03	–0.02		–0.02	–0.02	–0.02		0.02	0.01	0.02	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Stability	–0.01	–0.01	–0.01		–0.03	–0.03	–0.02		0.00	0.00	0.00		–0.04	–0.03	–0.03	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Infrastructure:																
Hard infra.	–0.04*	–0.05**	–0.05**		–0.02	–0.02	–0.01		–0.03	–0.03	–0.03		0.04**	0.03	0.04*	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)	
Soft infra.	0.01	0.01	0.01		0.00	0.00	0.00		0.01	0.01	0.01		–0.04	–0.04	–0.05*	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)		(0.03)	(0.03)	(0.03)	
Log of size	0.07	0.06	0.07	0.04	0.15***	0.14***	0.15***	0.12***	0.04	0.04	0.05	0.03	0.00	–0.02	0.00	0.01
	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.05)	(0.05)	(0.05)	(0.05)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No
Joint sgfnt, int.			0.37				0.38				0.25				0.16	
Observations	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652
R-squared	0.06	0.07	0.08	0.02	0.1	0.1	0.12	0.04	0.06	0.07	0.09	0.02	0.05	0.08	0.08	0.03

Note: clustered (firm) standard errors are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The alternative legitimacy index is applied here. See the results of the PPML-FE specification in Table D2.

Source: authors' calculations based on IIM data.

4 Conclusion

To our knowledge, this study is one of the first papers in an African context to systematically look at the association between governance quality as perceived by enterprises and their law compliance. Focusing on the sub-national level, we test whether legitimacy acts as a mediator and/or a moderator between firms' perceived governance quality and law compliance. Controlling for unobserved firm-level heterogeneity, our results show that an increase in the government's transparency performance positively affects firms' compliance with various business laws. Specifically, the predictability of changes in the law at the central level, accessibility of government documents, and regular meetings with state officials are positively associated with firms' law abidance. Hence, we confirm previous studies showing that government openness and more political participation increase compliance with regulations, even in non-democratic states (Malesky and Taussig 2017; Stromseth et al. 2017). Surprisingly, the quality of dispute settlement procedures and the stability of a firm's premises do not seem to influence law compliance, which we explain by the fact that the formal judicial system is not used by most enterprises.

Further, in Mozambique legitimacy is neither a moderator nor a mediator in the association between governance and compliance. Nevertheless, a firm's perception of political legitimacy correlates with its compliance behaviour, but independently of governance quality. However, when only examining the smallest businesses (1–9 employees) we find slight evidence of legitimacy working as a moderator between transparency and law compliance. Particularly, we find that transparency impacts compliance more negatively with higher legitimacy. As the moderator effect is insignificant for the whole sample, legitimacy would perhaps pull in the other direction if we had more large companies in the sample. Hence, transparency would affect compliance positively with higher levels of legitimacy if we had more firms of larger size, consistent with the findings in Malesky and Taussig (2017).

Overall, the conclusion from our analysis is rather straightforward and contrary to the findings by de Fine Licht (2011) and Grimmelikhuijsen (2010). To increase firm compliance with the law, the government of Mozambique should promote and improve transparency. This could be achieved by improving (online) platforms, as well as using radio and TV channels to better inform enterprises about changes in and implementation of specific laws. Moreover, making formal documents easier to access has been proven useful in other contexts. The mere access to national laws and decrees is challenging, as experienced by the authors themselves when trying to gather information on firms' legal obligations at the Mozambican National Press (Imprensa Nacional de Moçambique). To obtain legal information on, for example, business licences, we had to know the exact number of the Government Gazette (Boletim da República) in which the decree on business licences is published. Many entrepreneurs may not have the necessary skills to do the required work to obtain such legal information. Thus, better dissemination of and easier access to legal decrees could be useful for enterprises. Lastly, our results also indicate that meeting the private sector more regularly through consultations may enhance law compliance. Ultimately, these activities will have the potential to raise government tax income by increasing the number of firms operating legally with a tax identification number.

Regarding political legitimacy, the conclusions and recommendations are more ambiguous. Improvements in governance do not automatically seem to increase legitimacy, as has also been found previously by Bauhr and Grimes (2014) and Cucciniello et al. (2017). Nevertheless, we find that legitimacy positively affects law compliance, although this result is dependent on how legitimacy is defined. This confirms previous research stating that legitimacy is a difficult concept to measure and may also be context-dependent. Hence, further research is needed examining (1) how legitimacy is created, (2) what the mechanisms between legitimacy and compliance are, and (3) what legitimacy means in a Mozambican context.

However, just improving transparency without changing any other institutional voids, might be negative for a country. Higher transparency was shown to decrease citizens' political engagement in highly corrupt countries. Mozambique is one of the world's most corrupt states, such that higher transparency might not only have positive effects (Bauhr and Grimes 2014).

References

Aga, G., F. Campos, A. Conconi, E. Davies, and C. Geginat (2019). 'Informal Firms in Mozambique: Status and Potential'. Report 138991. Washington, DC: World Bank.

Alstadsæter, A., N. Johannesen, and G. Zucman (2019). 'Tax Evasion and Inequality'. *American Economic Review*, 109(6): 2073–103. https://doi.org/10.1257/aer.20172043

Banerjee, A., and L. Iyer (2005). 'History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India'. *American Economic Review*, 95(4): 1190–213. https://doi.org/10.1257/0002828054825574

Baron, R., and D. Kenny (1986). 'The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations'. *Journal of Personality and Social Psychology*, 51: 1173–82. https://doi.org/10.1037/0022-3514.51.6.1173

Bauhr, M., and M. Grimes (2014). 'Indignation or Resignation: The Implications of Transparency for Societal Accountability'. *Governance*, 27(2): 291–320. https://doi.org/10.1111/gove.12033

Berkel, H. (2018). 'The Costs and Benefits of Formalization for Firms: A Mixed-Methods Study on Mozambique'. WIDER Working Paper 2018/159. Helsinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/2018/601-2

Bruhn, M., and F.A. Gallego (2012). 'Good, Bad, and Ugly Colonial Activities: Do They Matter for Economic Development?'. *Review of Economics and Statistics*, 94(2): 433–61. https://doi.org/10.1162/REST_a_00218

Cabral, L., and S. Norfolk (2016). 'Inclusive Land Governance in Mozambique: Good Law, Bad Politics?'. IDS Working Paper 478. Sussex: Institute of Development Studies.

Carolini, G.Y. (2017). 'Sisyphean Dilemmas of Development: Contrasting Urban Infrastructure and Fiscal Policy Trends in Maputo, Mozambique'. *International Journal of Urban and Regional Research*, 41(1): 126–44. https://doi.org/10.1111/1468-2427.12500

Chattopadhyay, R., and E. Duflo (2004). 'Women as Policy Makers: Evidence from a Randomized Policy Experiment in India'. *Econometrica*, 72(5): 1409–43. https://doi.org/10.1111/j.1468-0262.2004.00539.x

Chen, B.-L. (2003). 'Tax Evasion in a Model of Endogenous Growth'. *Review of Economic Dynamics*, 6(2): 381–403. https://doi.org/10.1016/S1094-2025(03)00002-4

Cruz, A.S., and F.J. Mafambissa (2020). 'Economic Development and Institutions in Mozambique'. WIDER Working Paper 2020/133. Helsinki: UNU-WIDER.

Cucciniello, M., G.A. Porumbescu, and S. Grimmelikhuijsen (2017). '25 Years of Transparency Research: Evidence and Future Directions'. *Public Administration Review*, 77(1): 32–44. https://doi.org/10.1111/puar.12685

Cummings, R.G., J. Martinez-Vazquez, M. McKee, and B. Torgler (2009). 'Tax Morale Affects Tax Compliance: Evidence from Surveys and an Artefactual Field Experiment'. *Journal of Economic Behavior & Organization*, 70(3): 447–57. https://doi.org/10.1016/j.jebo.2008.02.010

de Fine Licht, J. (2011). 'Do We Really Want to Know? The Potentially Negative Effect of Transparency in Decision Making on Perceived Legitimacy'. *Scandinavian Political Studies*, 34(3): 183–201. https://doi.org/10.1111/j.1467-9477.2011.00268.x

de Fine Licht, J. (2014). 'Policy Area as a Potential Moderator of Transparency Effects: An Experiment'. *Public Administration Review*, 74(3): 361–71. https://doi.org/10.1111/puar.12194

Dickson, E.S., S.C. Gordon, and G.A. Huber (2017). 'Identifying Legitimacy: Experimental Evidence on Compliance with Authority'. Working Paper. New Haven, CT: Yale University.

EIU (2019). 'Democracy Index 2018: Me Too? Political Participation, Protest and Democracy'. Report. London: The Economist Intelligence Unit.

Feldman, Y. (2010). 'Toward a Behaviorally Responsive Regulation, Empirical Findings and Normative Implications of the Five Models of Compliance Motivation'. In D. Levi Faur and E. Elgar (eds), *Handbook of Politics and Regulation*. Rochester, NY: Elgar Press.

Forquilha, S. (2015). 'Governance and Public Services at District Level: The Involvement of the Private Sector'. In C. Castel-Branco, N. Massingue, and C. Muianga (eds), *Questions on Productive Development in Mozambique*. Maputo: Institute for Social and Economic Studies (IESE).

Forquilha, S. (2020). 'Decentralization Reforms in Mozambique: The Role of Institutions in the Definition of Results'. WIDER Working Paper 132/2020. Helsinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/2020/889-4

Garrido, P.I. (2020). 'Health, Development, and Institutional Factors: The Mozambique Case'. WIDER Working Paper 2020/131. Helsinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/2020/888-7

Glaeser, E., and A. Shleifer (2003). 'The Rise of the Regulatory State'. *Journal of Economic Literature*, 41(2): 401–25. https://doi.org/10.1257/jel.41.2.401

Glaser, M.A., and W.B. Hildreth (1999). 'Service Delivery Satisfaction and Willingness to Pay Taxes: Citizen Recognition of Local Government Performance'. *Public Productivity & Management Review*, 23(1): 48–67. https://doi.org/10.2307/3380792

GoM (Government of Mozambique) (2007a). 'Decreto No 14/2007 De 30 De Maio: Estatuto Orgânico Dos Balcões De Atendimento Único'. Maputo: Government of Mozambique.

GoM (2007b). 'Law Nr. 23/2007 of 1 Augustu 2007'. Maputo: Government of Mozambique.

GoM (2009). 'Lei no 5/2009: Imposto Simplificado Para Pequenos Contribuintes (ISPC)'. Maputo: Government of Mozambique.

GoM (2012). 'Decreto No 5/2012 De 7 De Marco: Regulamento Do Licenciamento Simplificado Para Exercício De Actividades Económicas'. Maputo: Government of Mozambique.

GoM (2017). 'Decreto No. 39/2017 De 28 De Julho: Regime Simplificado Do Licenciamento Para O Exercício De Actividades Económicas'. Maputo: Government of Mozambique.

Grimmelikhuijsen, S.G. (2010). 'Transparency of Public Decision-Making: Towards Trust in Local Government?'. *Policy & Internet*, 2(1): 5–35. https://doi.org/10.2202/1944-2866.1024

Grimmelikhuijsen, S.G., and A.J. Meijer (2014). 'Effects of Transparency on the Perceived Trustworthiness of a Government Organization: Evidence from an Online Experiment'. *Journal of Public Administration Research and Theory*, 24(1): 137–57. https://doi.org/10.1093/jopart/mus048

Hallward-Driemeier, M., and L. Pritchett (2015). 'How Business Is Done in the Developing World: Deals versus Rules'. *Journal of Economic Perspectives*, 29(3): 121–40. https://doi.org/10.1257/jep.29.3.121

IIM (2012). 'Inquérito Às Indústrias Manufactureiras: Survey of Mozambican Manufacturing Firms'. Technical Report. Helsinki, Copenhagen, and Maputo: UNU-WIDER, University of Copenhagen, and University of Eduardo Mondlane.

IIM (2017). 'Inquérito Às Indústrias Manufactureiras: Survey of Mozambican Manufacturing Firms'. Technical Report. Helsinki, Copenhagen, and Maputo: UNU-WIDER, University of Copenhagen, and University of Eduardo Mondlane.

IMF (2019). 'IMF Country Report No. 19/166'. Report. Washington, DC: International Monetary Fund.

Jolevski, F., and G. Ayana Aga (2019). 'Shedding Light on the Informal Economy: A Different Methodology and New Data'. World Bank Blog. Washington, DC: World Bank.

Levi, M., A. Sacks, and T. Tyler (2009). 'Conceptualizing Legitimacy, Measuring Legitimating Beliefs'. *American Behavioral Scientist*, 53(3): 354–75. https://doi.org/10.1177/0002764209338797

Malesky, E. (2018). 'The Vietnam Provincial Competitiveness Index: Measuring Economic Governance for Business Development'. Technical Report. Ho Chi Minh City: Vietnam Chamber of Commerce and Industry and USAID.

Malesky, E., N. McCulloch, and N.D. Nhat (2015). 'The Impact of Governance and Transparency on Firm Investment in Vietnam'. *Economics of Transition*, 23(4): 677–715. https://doi.org/10.1111/ecot.12068

Malesky, E., and M. Taussig (2017). 'The Danger of Not Listening to Firms: Government Responsiveness and the Goal of Regulatory Compliance'. *Academy of Management Journal*, 60(5): 1741–70. https://doi.org/10.5465/amj.2015.0722

Malesky, E., and M. Taussig (2019). 'Participation, Government Legitimacy, and Regulatory Compliance in Emerging Economies: A Firm-Level Field Experiment in Vietnam'. *American Political Science Review*, 113(2): 530–51. https://doi.org/10.1017/S0003055418000849

Murphy, K. (2005). 'Regulating More Effectively: The Relationship Between Procedural Justice, Legitimacy, and Tax Non-compliance'. *Journal of Law and Society*, 32(4): 562–89. https://doi.org/10.1111/j.1467-6478.2005.00338.x

Nicoletti, G., and F.L. Pryor (2006). 'Subjective and Objective Measures of Governmental Regulations in OECD Nations'. *Journal of Economic Behavior & Organization*, 59(3): 433–49. https://doi.org/10.1016/j.jebo.2004.05.003

Nielsen, V.L., and C. Parker (2012). 'Mixed Motives: Economic, Social, and Normative Motivations in Business Compliance'. *Law & Policy*, 34(4): 428–62. https://doi.org/10.1111/j.1467-9930.2012.00369.x

OECD (2014). *OECD Foreign Bribery Report*. Paris: OECD. https://doi.org/10.1787/9789264226616-en

PIGA (2020). 'Tax Compliance Guide for Foreign Investors: Mozambique'. Report. Geneva: Partnership for Investment and Growth in Africa.

Regalia, S. (2017). 'The Resurgence of Conflict in Mozambique. Ghosts from the Past and Brakes to Peaceful Democracy'. Report. Paris: French Institute of International Relations.

Roe, A. (2018). 'Extractive Industries and Development: Lessons from International Experience for Mozambique'. WIDER Working Paper 2018/56. Helsinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/2018/498-8

Rothstein, B. (2009). 'Creating Political Legitimacy: Electoral Democracy versus Quality of Government'. *American Behavioral Scientist*, 53(3): 311–30. https://doi.org/10.1177/0002764209338795

Schou, S., and J. Cardoso (2014). 'How Many Manufacturing Firms Are There in Mozambique?'. WIDER Working Paper 84/2014. Helsinki: UNU-WIDER. https://doi.org/10.35188/UNU-WIDER/2014/805-6

Silva, J.S., and S. Tenreyro (2006). 'The Log of Gravity'. *Review of Economics and Statistics*, 88(4): 641–58. https://doi.org/10.1162/rest.88.4.641

Stepner, M. (2013). 'Binscatter: Stata Module to Generate Binned Scatterplots'. Statistical Software Components S457709. Boston, MA: Boston College Department of Economics.

Stromseth, J.R., E.J. Malesky, D.D. Gueorguiev, L. Hairong, W. Xixin, and C. Brinton (2017). *Transparency and Corruption: Analysis of Variation within China and Hypothesis Testing*. Cambridge: Cambridge University Press.

TI (2019). *Corruption Perception Index 2018*. Berlin: Transparency International.

Tyler, T.R. (2003). 'Procedural Justice, Legitimacy, and the Effective Rule of Law'. *Crime and Justice*, 30: 283–357. https://doi.org/10.1086/652233

Tyler, T.R. (2006). *Why People Obey the Law*. Princeton, NJ: Princeton University Press. https://doi.org/10.1515/9781400828609

Walters, G.D., and P.C. Bolger (2019). 'Procedural Justice Perceptions, Legitimacy Beliefs, and Compliance with the Law: A Meta-Analysis'. *Journal of Experimental Criminology*, 15(3): 341–72. https://doi.org/10.1007/s11292-018-9338-2

Warren, M.E. (2006). 'Political Corruption as Duplicitous Exclusion'. *PS: Political Science and Politics*, 39(4): 803–07. https://doi.org/10.1017/S1049096506060975

Weatherford, M.S. (1992). 'Measuring Political Legitimacy'. *American Political Science Review*, 86(1): 149–166. https://doi.org/10.2307/1964021

Whiteley, P., H.D. Clarke, D. Sanders, and M. Stewart (2016). 'Why Do Voters Lose Trust in Governments? Public Perceptions of Government Honesty and Trustworthiness in Britain 2000–2013'. *British Journal of Politics and International Relations*, 18(1): 234–54. https://doi.org/10.1111/1467-856X.12073

Wooldridge, J.M. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

Appendix A: Data elaboration and dependent variables

We use data from the Survey of Mozambican Manufacturing Firms (IIM), covering two rounds, 2012 and 2017. The balanced panel consists of 460 enterprises, but to assure high quality, we restrict it to cover only those firms whose owners and persons of higher management or accountants were interviewed such that we arrive at a total of 361 firms.

Table A1 provides descriptive statistics of the enterprises' location and manufacturing industries. About 41 per cent operate in Maputo City or Maputo Province, 21 per cent in Sofala, 11 per cent in Nampula and less than 10 per cent in Gaza, Manica, and Tete, respectively. The sample is aggregated into six manufacturing industries along standard ISIC-codes: (1) Processed foodstuffs, beverages, and tobacco (ISIC2 15–16); (2) Textiles, apparel, and leather (ISIC2 17–19); (3) Wood products, paper, and printing (ISIC 20-22); (4) Chemical, petroleum, and non-metallic minerals (ISIC2 23–26); (5) Basic and fabricated metals and machinery (ISIC2 27–29 and 34) and (6) Furniture (ISIC 36). The majority of firms operates in the furniture or wood industry (44 per cent). On the other hand, only 7 per cent are in the higher complex sector of chemicals. Table A2 shows the different size categories—i.e. the number of employees—of the sample. A majority of firms was either of micro or small size in both years. However, there is a decreasing trend in firm size over the 5-year period.

Table A1: Number of firms by province (top) and sector (bottom)

	Provinces						
	Maputo	Gaza	Manica	Tete	Sofala	Nampula	Total
IIM2017	149	32	33	33	75	39	361
per cent	41.3	8.9	9.1	9.1	20.8	10.8	100
CEMPRE 2002	1225	222	312	131	615	233	2738
per cent	44.7	8.1	11.4	4.8	22.5	8.5	100

	Sectors^{+}						
	Foodstuffs	Textiles	Wood	Chemicals	Metals	Furniture	Total
IIM2017	49	55	107	22	76	52	361
per cent	13.6	15.2	29.6	6.9	21.1	14.4	100

Note: $^{+}$Processed foodstuffs, beverages, and tobacco (ISIC2 15–16); Textiles, apparel, and leather (ISIC2 17–19); Wood products, paper, and printing (ISIC2 20–22); Chemical, petroleum, and non-metallic minerals (ISIC2 23–26); Basic and fabricated metals and machinery (ISIC2 27–29, 34, 37), and Furniture (ISIC2 36).

Source: authors' calculations based on IIM data and Schou and Cardoso (2014).

Table A2: Number of firms by province

	Size classes*				
	Micro	Small	Medium	Large	Total
IIM 2012	75	234	39	13	361
per cent	20.8	64.8	10.8	3.6	100
IIM 2017	168	150	32	11	361
per cent	46.5	41.5	8.9	3.1	100

Note: *micro (1–4 employees); small (5–24); medium (25–99); large (100+).

Source: authors' calculation based on IIM data.

A1 Measurement of the dependent variables

In this section, we describe the construction of our dependent variables, i.e. how we measure compliance with various mandatory business regulations. Each compliance dummy is composed of firms' self-

reported adherence to a specific rule. We assume that missing observations imply that firms are non-compliant.

Table A3: Descriptive statistics of dependent variables

	Mean of variables			Min	Max	Missing	
Dependent variables	2012	2017	Pooled			2012	2017
Compliance index	1.407	1.457	1.432	0	3		
	(1.045)	(1.095)	(1.070)				
Formal labour	0.283	0.316	0.299	0	1	35	0
	(0.451)	(0.465)	(0.458)			(5.3%)	(0.0%)
Tax registered (NUIT)	0.784	0.751	0.767	0	1	1	0
	(0.412)	(0.433)	(0.423)			(0.1%)	(0.0%)
Social security	0.341	0.391	0.366	0	1	4	0
	(0.475)	(0.489)	(0.482)			(0.6%)	(0.0%)
Corruption	0.548	0.560	0.554	0	1	320	2
	(0.498)	(0.497)	(0.497)			(48.2%)	(0.0%)

Note: missing refers to the individual surveys. In 2012, a total of 664 firms were interviewed, and in 2017 a total of 530 firms.
Source: authors' calculations based on IIM data.

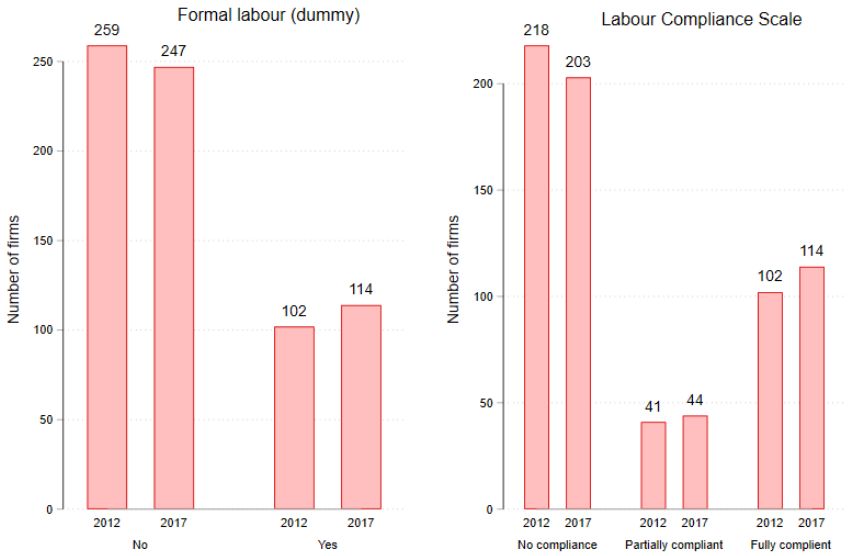
- **Formal contracts:** *What percentage of the full-time labour force has a formal (written down) labour contract?*

First, we create a dummy that takes the value one if the firm is fully compliant with the law, i.e. 100 per cent of its full-time labour force has a written contract, as formulated by the Mozambican Labour Law (GoM 2007b). To be consistent with the other compliance variables, we use this dummy in the main analysis. However, Malesky and Taussig (2017) use a scale instead of a dummy. Further, we identify some noise and a strong skew towards being either fully compliant or non-compliant regarding the provision of formal contracts. Therefore, we also construct a scale variable to see if our results change when using the scale instead of the dummy and facilitate comparisons with the above-mentioned study:

$$LCS_{ft} = \begin{cases} 2 & \text{if fully compliant (all workers have a formal contract)} \\ 1 & \text{if partial compliant (some workers with contract)} \\ 0 & \text{if non compliant (zero workers with formal contract)} \end{cases} \quad (6)$$

Figure A1 shows there is a small trend towards higher provision of formal contracts in 2017 compared to 2012. Similarly, partial compliance also increased slightly between 2012 and 2017.

Figure A1: Formal labour compliance by year



Source: authors' calculations.

In the main analysis, we apply the dummy variable to be consistent with the other indices. Following, on the other hand, Malesky and Taussig (2017) and applying the scale variable, we give the 12 per cent of firms who are partial compliant weight in the analysis. We show in Table A4 that the result does not change significantly in the full specification model when substituting the dummy for the LCS. Yet, we see that the precision of the coefficients change slightly and the size effect from transparency become larger.

- **Firm registration:** *Does your firm have a NUIT (Numero Único de Identificação Tributária)?*

In Mozambique, both individuals and firms are obliged to register for a taxpayer single identification, also known as NUIT (*Número Único de Identificacão Tributária*). Individuals can use their personal NUIT to, for example, pay income tax while an enterprise needs to have a corporate NUIT before being able to register for a business licence, obtain financial services, or import goods. However, Mozambique has two types of corporate income tax regimes. If the corporate entity's annual turnover falls below MZN2,500,000 (approx. USD39,000), the firm is part of the simplified tax regime, in which it can use the owner's personal NUIT when paying taxes. Hence, these firms do not need to have a corporate NUIT in order to comply with the law. The larger firms, on the other hand, are obliged to register the firm as a new legal person and pay 32 per cent corporate tax (PIGA 2020). Our survey question does not specify or distinguish between the two types of NUIT (personal vs. corporate NUIT) and, therefore, it is somewhat deceptive. We try to solve the issue by incorporating questions related to the firm being registered with a handful of government agencies, which require a NUIT to be allowed to register with them. These agencies are the Register of Legal Business Entitites (*Registo das Entidades Legais Comérico*), the Ministry of Industry and Commerce, the Ministry of Agriculture, the Ministry of Mineral Resources, the Ministry of Work, and the National Institute for Social Security (INSS). Our variable NUIT is taking the value one if the firm has replied yes to having a NUIT or being registered with at least one of the authorities outlined above.

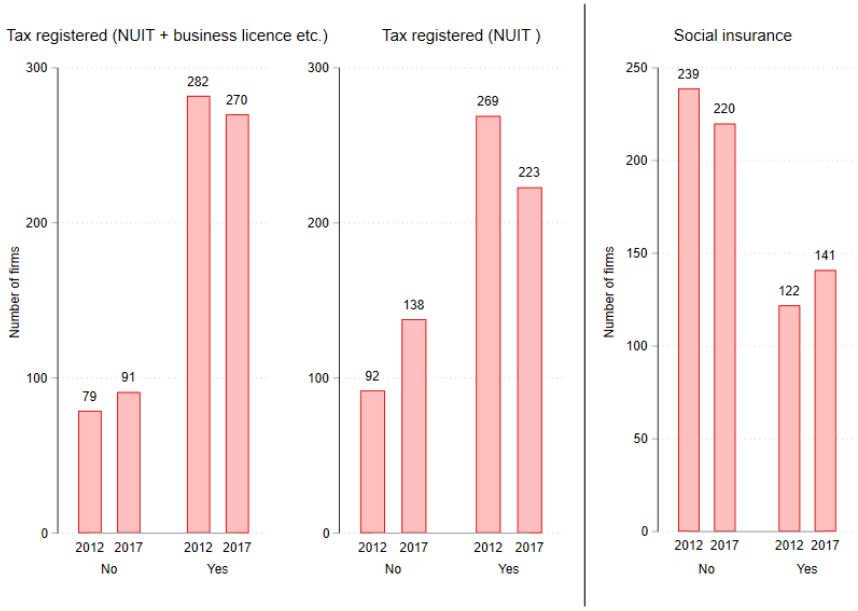
Figure A2 shows that, independently of how we measure a firm's NUIT compliance, fewer enterprises are operating with a tax ID in 2017 than in 2012. This development may be related to the general shrinkage of the manufacturing sector's performance. Some enterprises may be eligible to operate under the simplified instead of the corporate tax regime due to lower annual turnover. We saw from Table 6 that

especially the transparency indices, predictability, and accessibility, are highly significantly correlated with the NUIT variable.

- **Social security:** *Did you pay a contribution to social insurance for your employees in 2011/2016?*

The Mozambican Labour Law mandates firms to contribute to the national social security institute (INSS) for their workers (GoM 2007b). Our dummy takes the value one if the firm replied that it pays social insurance for its workers, and zero otherwise. In our sample, 39 per cent of firms paid social insurance in 2017, which is 5.3 percentage points higher than in 2012 (see A2).

Figure A2: Tax registered (NUIT) (left) and social insurance for workers (right)



Source: authors' calculations.

- **Corruption:** *In the last three years, did you have to make informal payments to a public official to 'get things moving'?*

Empirical studies show that the level of corruption in the form of paying bribes is common in the country of Mozambique. Transparency International (TI 2019) reports that Mozambique is the ninth most corrupt country in sub-Saharan Africa (SSA). In our survey, only 8 per cent of firms replied that they had paid informal payments to public officials. If this were true, Mozambique would rank the second least corrupt country in SSA. We, therefore, combine the direct question above with an indirect question asking what a firm similar to theirs would pay yearly in informal payment:

> *'What would you estimate a typical firm in your line of business and of similar size typically pays each year in informal payments to public officials with respect to issues relating to customs, taxes, licensing, regulations, etc? (ercentage of sales)'*

If the firm gives a positive answer to the indirect question, we report this as non-compliant (see Figure A3). However, another problem arises, as a large portion of firms did not reply to the indirect question in 2012. We solve this issue by assuming that the firms with no response in 2012 have not changed their behaviour over time, i.e. we replace the responses that are missing in 2012 with the firms' answer from 2017. This gives an average non-compliance rate that is very similar in both years. As the variable does not change over time, the missing observations will not influence the fixed effect model.

Figure A3: Measures of informal payment (pay bribes)

*Missing observations equals to 2017

Source: authors' calculations.

A2 Robustness: different compliance indices

We rank a firm's compliance with the law by combining the above dummy variables into an index. As a robustness check, we run the same analysis with different compliance indices. In Table A4, columns (1–3) show the results of the aggregated indices, while columns (4–6) show the fully specified model. Compliance (main ind.) refers to the index applied in the main analysis. In Compliance (w. LCS), we substitute the labour dummy with the labour compliance scale. Compliance (w. corruption) includes the corruption variable.

If we include the corruption variable in the index (column 3 and 6), the effect of transparency almost halves. This is due to the negative association between not paying bribes and the transparency indices, predictability, and accessibility. This indicates that the better the firms are at predicting the government and the more information they can access, the more likely they are to take advantages of this knowledge and pay informal payments to public officers.

We additionally control for whether the firm had any political connections. This is captured by two questions asking if the firms owner is members of a political party or if the firms have any former politicians on its management board. Table A5 shows that we find no effect of political connections on compliance.

We see from Figure A4 that the compliance indices given the local government indices somewhat follows a Poisson distribution. Yet, when adding the corruption variable, the index shifts more towards a normal distribution. From a simple OLS regression with no fixed effects, we see that the distribution of the linear predicted values, however, is close to a Poisson distribution (see Figure A5). Yet, it seems not to be centred on zero throughout the range of the fitted values. There clearly is need for fixed effects to control for heteroskedasticity. Yet, the random errors do seem to produce fairly normally distributed residuals. Finally, we do not find evidence of a multicollinearity problem in the model, cf. Figure A6.

Table A4: OLS-FE results: different compliance indices, etc.

	Aggregated model			Disaggregated model		
Standardized indices:	(1) Compliance (main ind.)	(2) Compliance (w. LCS)	(3) Compliance (w. corruption)	(4) Compliance (main ind.)	(5) Compliance (w. LCS)	(6) Compliance (w. corruption)
Legitimacy (alt.)	0.09**	0.09**	0.16***	0.09**	0.08**	0.15***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)
Transparency	0.16***	0.18***	0.12***			
	(0.03)	(0.04)	(0.04)			
Security	-0.05	-0.05	-0.06			
	(0.04)	(0.04)	(0.04)			
Infrastructure	-0.08**	-0.09**	-0.09**			
	(0.04)	(0.04)	(0.04)			
Transparency:						
Participation				0.02	0.02	0.03
				(0.04)	(0.04)	(0.04)
Solicit comments				0.07**	0.08**	0.07*
				(0.04)	(0.03)	(0.04)
Predictability				0.1***	0.12***	0.06
				(0.03)	(0.03)	(0.04)
Accessibility				0.1***	0.11***	0.07
				(0.04)	(0.04)	(0.04)
Security:						
Dispute				-0.05	-0.06	-0.04
				(0.04)	(0.04)	(0.04)
Stability				-0.03	-0.02	-0.07
				(0.04)	(0.04)	(0.05)
Infrastructure:						
Hard infra.				-0.1**	-0.11***	-0.07
				(0.04)	(0.04)	(0.05)
Soft infra.				0.02	0.02	-0.02
				(0.04)	(0.04)	(0.05)
Log of size	0.20***	0.19***	0.21**	0.25***	0.24***	0.23**
	(0.07)	(0.07)	(0.09)	(0.08)	(0.08)	(0.09)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	652	652	652	652	652	652
R-squared	0.11	0.12	0.10	0.14	0.16	0.11

Note: clustered (firm) standard errors are reported in parentheses, *** p<.01, ** p<.05, * p<.10. Compliance (1) is the main compliance index composed of the labour dummy, NUIT, and social insurance (INSS). Compliance (2) substitutes the labour dummy with the LCS. Compliance (3) includes the corruption variable. The alternative legitimacy index is applied here.
Source: authors' calculations based on IIM data.

Table A5: Full specification (OLS-FE) w. political connection control

	Compliance index						
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Transparency:							
Participation	0.02			0.01	0.02	0.02	0.02
	(0.04)			(0.04)	(0.04)	(0.04)	(0.04)
Solicit comments	0.06			0.08**	0.08**	0.07**	0.07**
	(0.04)			(0.04)	(0.04)	(0.04)	(0.04)
Predictability	0.09***			0.10***	0.10***	0.10***	0.09***
	(0.03)			(0.03)	(0.03)	(0.03)	(0.03)
Accessibility	0.10***			0.10***	0.10***	0.10***	0.11***
	(0.04)			(0.04)	(0.04)	(0.04)	(0.04)
Security:							
Dispute		-0.03		-0.05	-0.05	-0.05	-0.05
		(0.04)		(0.04)	(0.04)	(0.04)	(0.04)
Stability		-0.03		-0.03	-0.04	-0.03	-0.03
		(0.04)		(0.04)	(0.04)	(0.04)	(0.04)
Infrastructure:							
Hard infra.			-0.11**	-0.09**	-0.10**	-0.10**	-0.10**
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Soft infra.			0.04	0.02	0.02	0.02	0.01
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Legitimacy:							
Legitimacy (MT)$^{+}$					0.05		
					(0.04)		
Legitimacy (alt.)						0.09**	
						(0.04)	
Controls:							
Political connections	0.02	0.02	0.03	0.04	0.04	0.02	0.05
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Log of size	0.24***	0.21***	0.21**	0.26***	0.26***	0.24***	0.26***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Joint significance test	0.00	0.45	0.04	0.00	0.00	0.00	0.00
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	No	No	No	No	Yes
Joint significance, int.							0.78
Observations	652	652	652	652	652	652	652
R-squared	0.09	0.03	0.05	0.12	0.13	0.14	0.14

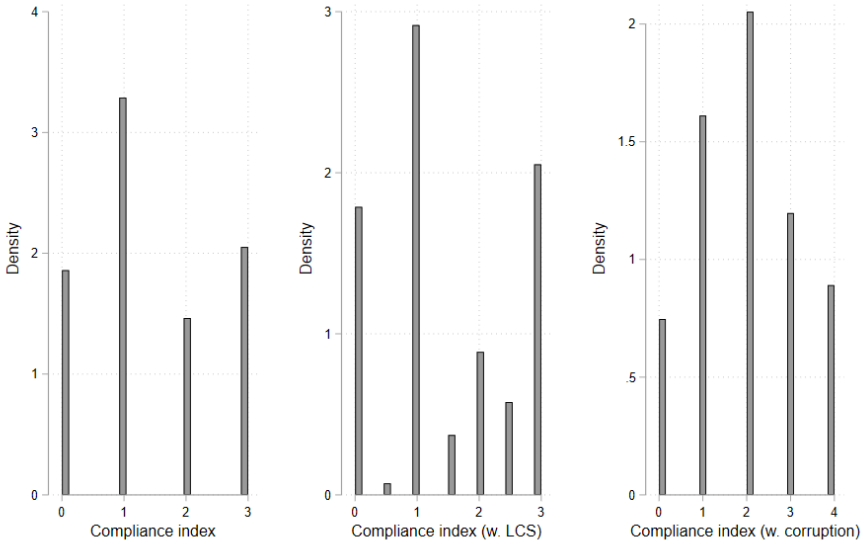
Note: clustered (firm) standard errors are reported in parentheses, *** p<.01, ** p<.05, * p<.10. See PPML-FE results in appendix, Table D1. $^{+}$Legitimacy (MT 2017) is fully comparable to the legitimacy variable in Malesky and Taussig (2017). Our legitimacy index captures more aspects of legitimacy. Interaction terms are between the independent variables and the alternative legitimacy index.
Source: authors' calculations based on IIM data.

Table A6: Aggregate model w. absolute indices: OLS, OLS-FE, and PMLE-FE

	Compliance index																	
	OLS						OLS-FE						PPML-FE					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
LGI	-0.02	-0.03	-0.04				-0.01	-0.02	-0.03				-0.01	-0.01	-0.02			
	(0.02)	(0.02)	(0.02)				(0.03)	(0.02)	(0.03)				(0.02)	(0.02)	(0.02)			
Transparency				0.02***	0.02***	0.02**				0.02***	0.02***	0.00				0.01***	0.01***	0.01
				(0.00)	(0.00)	(0.01)				(0.00)	(0.00)	(0.01)				(0.00)	(0.00)	(0.01)
Security				-0.02	-0.02	-0.04				-0.02	-0.02*	-0.03				-0.01	-0.02*	-0.02
				(0.01)	(0.01)	(0.03)				(0.01)	(0.01)	(0.04)				(0.01)	(0.01)	(0.03)
Infrastructure				-0.03***	-0.03***	-0.03*				-0.01	-0.02*	-0.01				-0.01	-0.01*	-0.01
				(0.01)	(0.01)	(0.01)				(0.01)	(0.01)	(0.02)				(0.01)	(0.01)	(0.01)
Legitimacy*		0.01			0.03*			0.02			0.03*			0.02			0.03**	
		(0.02)			(0.02)			(0.02)			(0.02)			(0.01)			(0.01)	
LGI#Legit.			0.00												0.00			
			(0.00)						(0.00)						(0.00)			
Trans.#Legit.						0.00						0.00						0.00
						(0.00)						(0.00)						(0.00)
Security#Legit.						0.00						0.00						0.00
						(0.01)						(0.01)						(0.00)
Infra.#Legit.						0.00						0.00						-0.00
						(0.00)						(0.00)						(0.00)
Log of size	0.52***	0.52***	0.52***	0.48***	0.48***	0.48***	0.2**	0.19**	0.19**	0.21***	0.2***	0.2***	0.12**	0.11**	0.11**	0.12**	0.12**	0.12**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.08)	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Joint sgfnt, int.			0.32			0.41			0.29			0.35			0.26			0.23
Observations	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652	652
R-squared^{+}	0.4	0.41	0.41	0.44	0.45	0.45	0.03	0.03	0.03	0.09	0.10	0.10	0.18	0.18	0.18	0.18	0.18	0.18

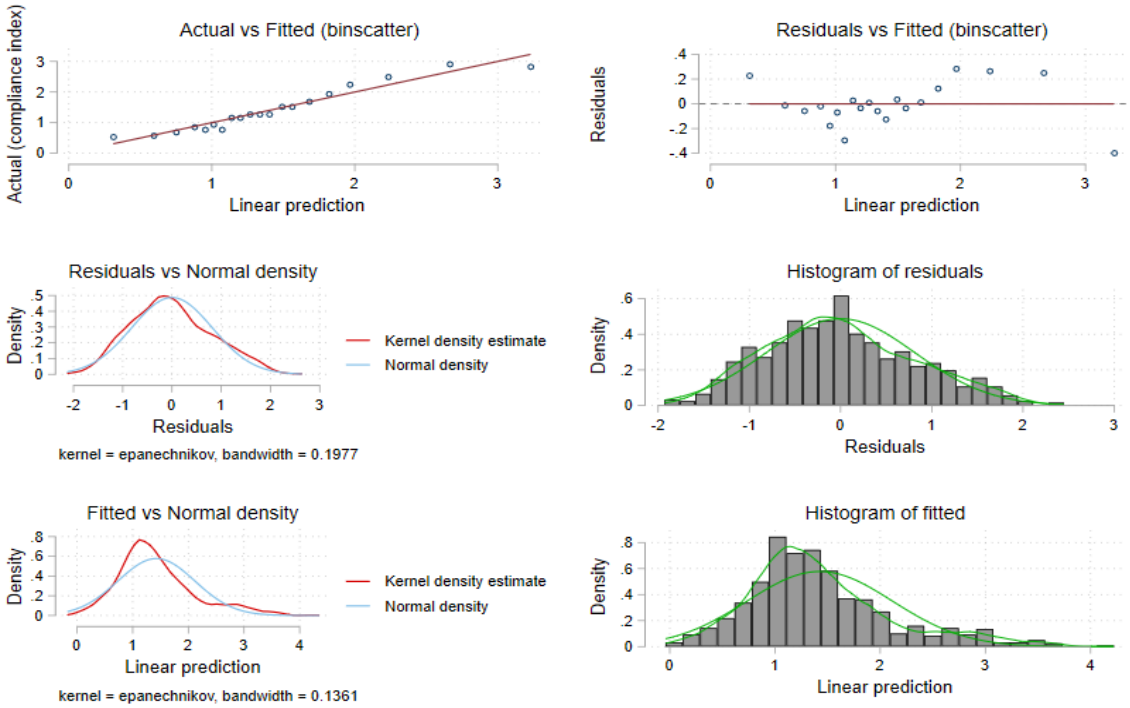
Note: in this table, the indices are made of non-normalized variables and the indices are not standardized. Standard errors are reported in parentheses (clustered SE for PPMLFE and FE, robust SE in Poisson). The compliance index is composed of three variables; formal contracts, registration (NUIT), and social insurance (INSS). *** p$<$.01, ** p$<$.05, * p$<$.10. $^{+}$ Pseudo-R-squared in the case of PPMLFE. * The alternative legitimacy index is applied here.
Source: authors' calculations based on IIM data.

Figure A4: Histogram of compliance indices



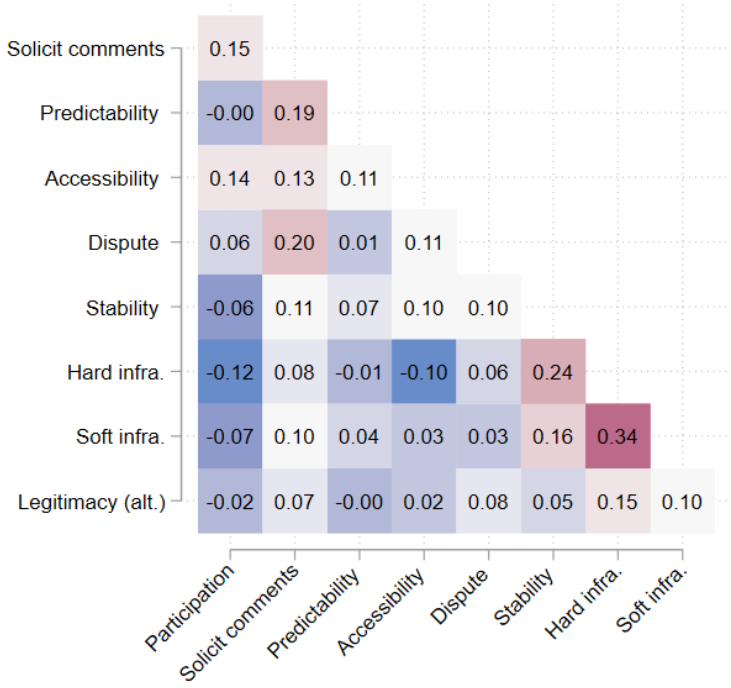
Source: authors' calculations.

Figure A5: Residuals and fitted value plots from running full model specification (OLS)



Source: authors' calculations.

Figure A6: Multicollinearity plot



Source: authors' calculations.

Table A7: Mediation/moderator equations: transparency (a & b), security (c), and infrastructure (d)

(a) Mediation/moderator equations: transparency (1/2)

	OLS						OLS-FE					
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Participation	0.10***	0.10***	0.10***				0.04	0.05	0.04			
	(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)			
Solicit comments				0.04	0.04	0.04				0.09**	0.08**	0.09**
				(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)
Legitimacy (alt.)		0.07**			0.06**			0.07*			0.06*	
		(0.03)			(0.03)			(0.04)			(0.04)	
Interactions:												
Part.#Legit			-0.02						-0.05			
			(0.03)						(0.03)			
Solicit#Legit						0.03						0.00
						(0.03)						(0.03)
Log of size	0.50***	0.50***	0.50***	0.52***	0.51***	0.52***	0.19**	0.18**	0.20***	0.21***	0.20***	0.21***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)	(0.07)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Observations	652	652	652	652	652	652	652	652	652	652	652	652
R-squared	0.41	0.42	0.41	0.41	0.41	0.41	0.03	0.04	0.04	0.04	0.05	0.04

(b) Mediation/moderator equations: transparency (2/2)

	OLS						OLS-FE					
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Predictability	0.13***	0.13***	0.13***				0.12***	0.12***	0.12***			
	(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)			
Accessibility				0.14***	0.14***	0.15***				0.12***	0.12***	0.12***
				(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)
Legitimacy (alt.)		0.06**			0.06**			0.07*			0.07*	
		(0.03)			(0.03)			(0.04)			(0.04)	
Interactions:												
Predict.#Legit.			0.03						0.00			
			(0.03)						(0.03)			
Access.#Legit.						-0.06**						-0.04
						(0.03)						(0.03)
Log of size	0.52***	0.52***	0.52***	0.50***	0.50***	0.50***	0.25***	0.24***	0.25***	0.20***	0.19***	0.21***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)	(0.08)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Observations	652	652	652	652	652	652	652	652	652	652	652	652
R-squared	0.42	0.42	0.42	0.42	0.42	0.42	0.06	0.07	0.06	0.06	0.07	0.06

(c) Mediation/moderator equations: security

	OLS						OLS-FE					
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dispute	-0.02	-0.02	-0.02				-0.04	-0.04	-0.03			
	(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)			
Stability				-0.06*	-0.06*	-0.06*				-0.03	-0.04	-0.03
				(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)
Legitimacy (alt.)		0.07**			0.07**			0.07*			0.07*	
		(0.03)			(0.03)			(0.04)			(0.04)	
Interactions:												
Dispute#Legit.			0.01						-0.04			
			(0.03)						(0.03)			
Stability#Legit.						-0.01						0.03
						(0.03)						(0.04)
Log of size	0.52***	0.52***	0.52***	0.52***	0.52***	0.52***	0.21***	0.20***	0.21***	0.20***	0.19**	0.20***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.08)	(0.07)	(0.08)	(0.08)	(0.07)	(0.08)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Observations	652	652	652	652	652	652	652	652	652	652	652	652
R-squared	0.40	0.41	0.40	0.41	0.41	0.41	0.03	0.04	0.03	0.03	0.04	0.03

(d) Mediation/moderator equations: infrastructure

	OLS						OLS-FE					
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Hard infra.	-0.14***	-0.15***	-0.14***				-0.10***	-0.11***	-0.11***			
	(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)			
Soft infra.				-0.06*	-0.06**	-0.05*				-0.01	-0.01	-0.01
				(0.03)	(0.03)	(0.03)				(0.04)	(0.04)	(0.04)
Legitimacy (alt.)		0.09***			0.07**			0.09**			0.07*	
		(0.03)			(0.03)			(0.04)			(0.04)	
Interactions:												
Hard.#Legit.			0.00						-0.04			
			(0.02)						(0.03)			
Soft.#Legit.						0.03						0.02
						(0.02)						(0.03)
Log of size	0.51***	0.5***	0.51***	0.52***	0.52***	0.52***	0.2***	0.19**	0.20***	0.20***	0.19**	0.20***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.08)	(0.08)	(0.08)	(0.08)	(0.07)	(0.08)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Observations	652	652	652	652	652	652	652	652	652	652	652	652
R-squared	0.42	0.43	0.42	0.41	0.41	0.41	0.05	0.06	0.05	0.03	0.04	0.03

Note: clustered (firm) standard errors, *** p<.01, ** p<.05, * p<.10.
Source: authors' calculations based on IIM data.

Appendix B: The independent and mediating variables

Governance is categorized into five main themes: (i) dispute and reputation, (ii) property rights and stability, (iii) business friendliness, (iv) transparency, and (v) quality of infrastructure. Within each category, one or more indices are constructed of various survey questions. These are listed below and in Figure B1. In all of our independent indices, missing and non-applicable answers are substituted with group averages based on firm size and province. However, there are too few medium and large size enterprises to divide these into each province. Hence, independently of their location, we analyse all large firms as one group and the medium-size firms as two groups—one for the capital (Maputo) and one for the rest of the country.

Table B1: Descriptive statistics of independent variables

	Mean of variables			Min	Max	Missing	
	2012	2017	Pooled			2012	2017
Legitimacy:							
Private sector attitude:	2.047	2.091	2.069	0	4	2	0
	(1.157)	(1.195)	(1.176)			(0.3%)	(0.0%)
Regulatory intentions:	1.371	1.255	1.313	0	3	3	0
	(0.934)	(0.598)	(0.786)			(0.5%)	(0.0%)
Biased implementation:	1.066	1.125	1.096	0	3	3	0
	(0.876)	(0.581)	(0.743)			(0.5%)	(0.0%)
Effective implementation:	1.122	1.042	1.082	0	3	0	0
	(0.867)	(0.569)	(0.734)			(0.0%)	(0.0%)
Positive change:	0.183	0.330	0.256	0	1	540	0
	(0.387)	(0.471)	(0.437)			(81.3%)	(0.0%)
Transparency:							
Participation	0.161	0.144	0.152	0	1	14	0
	(0.368)	(0.352)	(0.360)			(2.1%)	(0.0%)
Solicit comments	0.319	0.645	0.482	0	4	0	
	(0.700)	(0.950)	(0.849)			(0.0%)	(0.0%)
Predictability	1.006	1.548	1.277	0	4	1	0
	(1.125)	(1.331)	(1.261)			(0.1%)	(0.0%)
Accessibility	1.321	1.499	1.410	0	3	4	0
	(0.667)	(0.522)	(0.605)			(0.6%)	(0.0%)
Security:							
Dispute							
Dispute settlement	0.986	1.111	1.048	0	2	16	0
	(0.550)	(0.464)	(0.512)			(2.4%)	(0.0%)
Appeal to court	0.139	0.357	0.248	0	2	22	0
	(0.405)	(0.689)	(0.575)			(3.3%)	(0.0%)
Protect rights	1.756	1.798	1.777	0	3	4	0
	(0.920)	(0.528)	(0.750)			(0.6%)	(0.0%)
Feel I can appeal	1.576	1.252	1.414	0	4	4	0
	(1.287)	(1.106)	(1.210)			(0.6%)	(0.0%)
Stability							
Premises stability	1.025	1.693	1.359	0	4	6	0
	(1.073)	(1.012)	(1.095)			(0.9%)	(0.0%)
Fair compensation	1.532	1.175	1.353	0	4	3	0
	(1.128)	(0.952)	(1.058)			(0.5%)	(0.0%)
Local land prices	1.330	1.169	1.249	0	3	7	0
	(0.989)	(0.621)	(0.829)			(1.1%)	(0.0%)
Infrastructure:							
Hard infra.							
Road	2.338	2.235	2.287	0	5	19	0
	(1.488)	(1.339)	(1.415)			(0.3%)	(0.0%)
Phone connection	3.346	3.285	3.316	0	5	28	0
	(1.062)	(0.963)	(1.013)			(4.2%)	(0.0%)
Electricity	3.152	2.992	3.072	0	5	3	0
	(1.160)	(1.129)	(1.147)			(0.4%)	(0.0%)
Water	3.341	3.100	3.220	0	5	8	0
	(1.119)	(1.119)	(1.125)			(1.2%)	(0.0%)
Soft infra.							
Education	2.864	3.086	2.975	0	5	62	0
	(1.263)	(0.998)	(1.143)			(9.3%)	(0.0%)
Training	3.022	3.235	3.129	0	5	75	0
	(1.123)	(0.914)	(1.029)			(11.3%)	(0.0%)

Note: the absolute values are shown. The variables are normalized before accumulated to the indices as depicted in Table 1. Missing refers to the individual surveys. In 2012, a total of 664 firms were interviewed, and in 2017 a total of 530 firms.

Source: authors' calculations based on IIM data.

B1 Legitimacy

The legitimacy index by Malesky and Taussig (2017) is created from the rating of the following three statements:

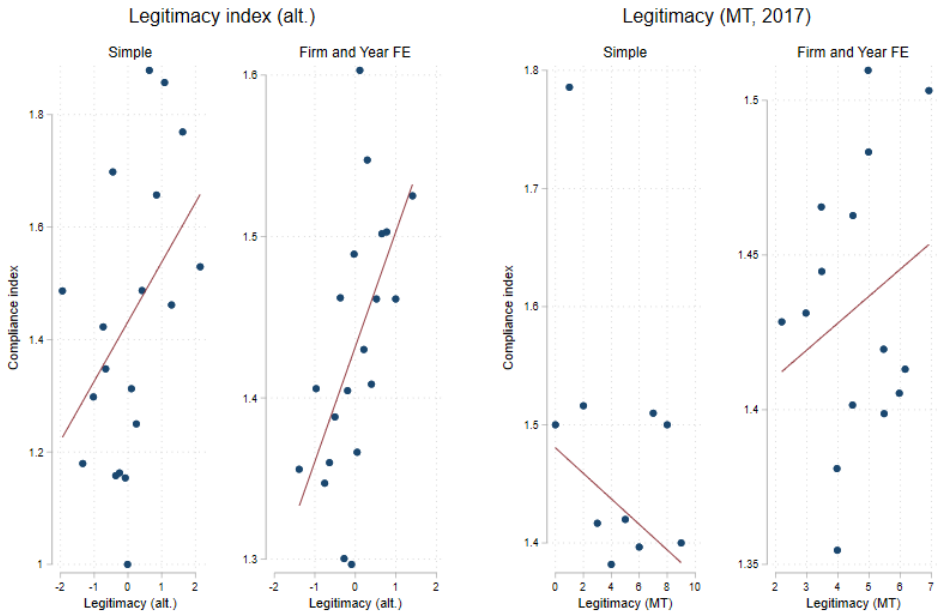
1. Private sector attitude: *'What do you think is the attitude of provincial government officials toward private business?'*
    - Options: *'Positive'* (4) *'Somewhat positive'* (3) *'Neutral'* (2) *'Somewhat negative'* (1) *'Negative'* (0)
2. Regulatory intentions: *'The attitude of the provincial government is less regulatory towards firms that contribute more to local development'*
3. Biased implementation: *'It is quite common that public authorities refer to the rules, such as specification, policy, and standard of law when extracting rents'*
    - Options: *'Strongly disagree'* (3) - *'Disagree'* (2) - *'Agree'* (1) - *'Strongly agree'* (0)

The perception of government and their legitimacy, unlike the other indices, decreased significantly over the 5-year period.

In our legitimacy index we add the following two questions:

1. Effective implementation: *'There are good initiatives in the province, but they are not effectively implemented by sectors and departments under the provinces'*
    - Options: *'Strongly disagree'* (3) - *'Disagree'* (2) - *'Agree'* (1) - *'Strongly agree'* (0)
2. Positive change: *Over the last years, does your firm notice any changes when working with state agencies?*
    - Options: *'Government officials have become more friendly and effective in handling affairs'* (1) - *'Your firm does not need to travel many times to obtain required stamps and signatures any more'* (1) - *'Considerably less in paperwork and procedures'* (1) - *'Statutory fees for many procedures have been reduced'* (1) - *'Informal charges have been reduced'* (1) - *'I do not notice any changes'* (0)

Figure B1: Binned scatter plots showing the association between compliance and the two legitimacy indices



Source: authors' calculations.

Table B2: First stage correlation: local governance on legitimacy indices

(a) Dependent variable: alternative legitimacy index

	Smaller firms (below 10 employees)					All firms				
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
LGI	0.05					0.10*				
	(0.07)					(0.05)				
Transparency		-0.05			-0.07		-0.01			-0.02
		(0.08)			(0.08)		(0.05)			(0.05)
Security			0.07		0.06			0.06		0.04
			(0.07)		(0.07)			(0.05)		(0.05)
Infrastructure				0.06	0.05				0.13**	0.12**
				(0.07)	(0.07)				(0.05)	(0.05)
Small-dummy^{+}	0.01	0.02	0.00	0.01	-0.01					
	(0.17)	(0.17)	(0.18)	(0.17)	(0.18)					
Log of size						0.19	0.19	0.18	0.19	0.19
						(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	408	408	408	408	408	652	652	652	652	652
R-squared	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.03	0.03

(b) Dependent variable: legitimacy index by Malesky and Taussig (2017)

	Smaller firms (below 10 employees)					All firms				
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
LGI	0.07					0.10**				
	(0.07)					(0.05)				
Transparency		-0.16*			-0.19**		-0.08			-0.10*
		(0.08)			(0.08)		(0.06)			(0.06)
Security			0.13**		0.14**			0.09*		0.07
			(0.07)		(0.07)			(0.05)		(0.05)
Infrastructure				0.09	0.08				0.15***	0.14**
				(0.07)	(0.07)				(0.05)	(0.06)
Small-dummy^{+}	-0.26	-0.24	-0.29	-0.26	-0.31*					
	(0.18)	(0.18)	(0.19)	(0.18)	(0.18)					
Log of size						0.04	0.03	0.02	0.05	0.03
						(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	408	408	408	408	408	652	652	652	652	652
R-squared	0.02	0.03	0.03	0.02	0.07	0.01	0.01	0.01	0.03	0.04

Note: clustered standard errors are reported in parentheses: *** p<.01, ** p<.05, * p<.10. $^{+}$ The small-dummy takes the value one if the firms is above four employees, else zero.

Source: authors' calculations based on IIM data.

B2 Transparency

From Table B1, we see that despite participation in government regulation, all elements of transparency has increased significantly over the five-year period. The transparency index is based on five questions:

1. Participation: *'Have you ever given comments on the Government's regulations and policies?'*
    - Options: *'Yes'* (1) - *'No'* (0)

2. Solicit comments: *'How often do representatives of the provincial government or assembly meet with you and other private domestic businesses to solicit comments on the promulgation or amendments of provincial regulations?'*

    - Options: *'Always'* (4) - *'Usually'* (3) - *'Sometimes'* (2) - *'Seldom'* (1) - *'Never'* (0)

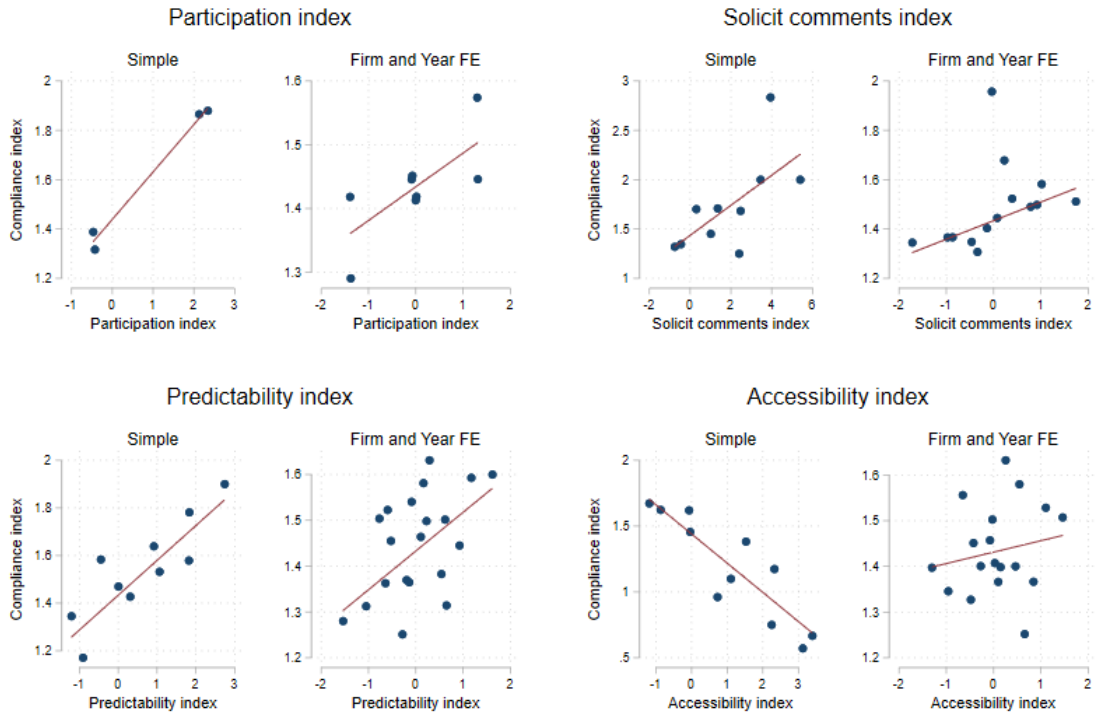
3. Predictability: *'How predictable are changes in laws at central level affecting your business?'*

    - Options: *'Always predictable'* (4) - *'Usually'* (3) - *'Sometimes'* (2) - *'Seldom'* (1) - *'Never predictable'* (0)

4. Accessibility: *'Please rate your accessibility to these provincial documents and information:'*

    - *'Provincial budget and its execution'*
    - *'Provincial socio-economic development plans'*
    - *'Central laws, ordinances, decrees, decisions'*
    - *'Implementing documents of central ministries'*
    - *'Legal documents at the provincial level'*
    - *'Plans for new infrastructure projects'*
    - *'Central investment incentive policies'*
    - *'Land-use allocation plans and maps'*
    - *'Provincial investment incentive policies'*
    - *'Administrative procedures forms'*
    - *'Information on changes in tax regulations'*
    - *'Business registered enterprise data'*
    - *'Official legal documents'*
        - Options: *'Strongly agree'* (3) - *'Agree'* (2) - *Disagree'* (1) - *'Strongly disagree'* (0)

Figure B2: Binned scatter plots showing the association between compliance and the different transparency indices

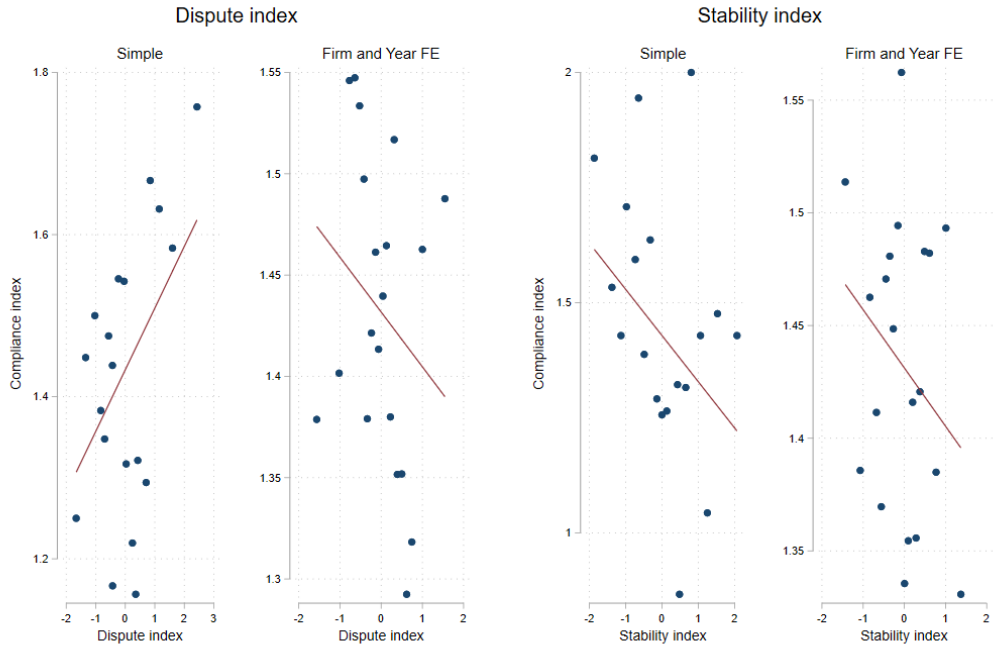


Source: authors' claculations.

B3 Security

The security index is made up of the dispute and stability index. We find that the relationship between dispute and compliance change direction, when controlling for individual characteristics, cf. Figure B3.

Figure B3: Binned scatter plots showing the association between compliance and the dispute and stability index



Source: authors' claculations.

The Dispute index is composed of four elements:

1. Dispute settlement: *'How do you normally settle business disputes/problems?'*
    - Options: *'Use formal institutions (lawyer/court/police)'* (2) - *'Use business-related sanctions'* (1) - *'Other'* (0)
2. Appeal to court: *Reason for not appealing to the court.*
    - Options: *'Did go to court'* (2) - *'Insufficient capacity of court officials'* (1) - *'Other ways are more appropriate'* or *'Offering bribes to solicit favourable judgement is common'* (0)
3. Protect rights: *'The court and enforcement system of the province will protect my contract/property rights in business disputes'*
    - Options: *'Strongly agree'* (3) - *'Agree'* (2) - *'Disagree'* (1) - *'Strongly disagree'* (0)
4. Feel I can appeal: *'I feel I can appeal'*
    - Options: *'Always'* (4) - *'Usually'* (3) - *'Sometimes'* (2) - *'Seldom'* (1) - *'Never'* (0)

The Stability index is based on three questions:

1. Premises stability: *'Evaluate the stability of your business premises (e.g. the risk/possibility)'*
    - Options: *'Very high'* (4) - *'High'* (3) - *'Moderate'* (2) - *'Low'* (1) - *'Very low'* (0)
2. Fair compensation: *'Based on your observations of other cases in your province/city, do you believe firms/individuals receive fair compensation for expropriated land?'*
    - Options: *'Always'* (4) - *'Usually'* (3) - *'Sometimes'* (2) - *'Seldom'* (1) - *'Never'* (0)
3. Local prices: *Do you agree with the following statement: 'Changes in land prices in my province are appropriate to those changes of market prices'?*

- Options: *'Strongly agree'* (3) - *'Agree'* (2) - *'Disagree'* (1) - *'Strongly disagree'* (0)

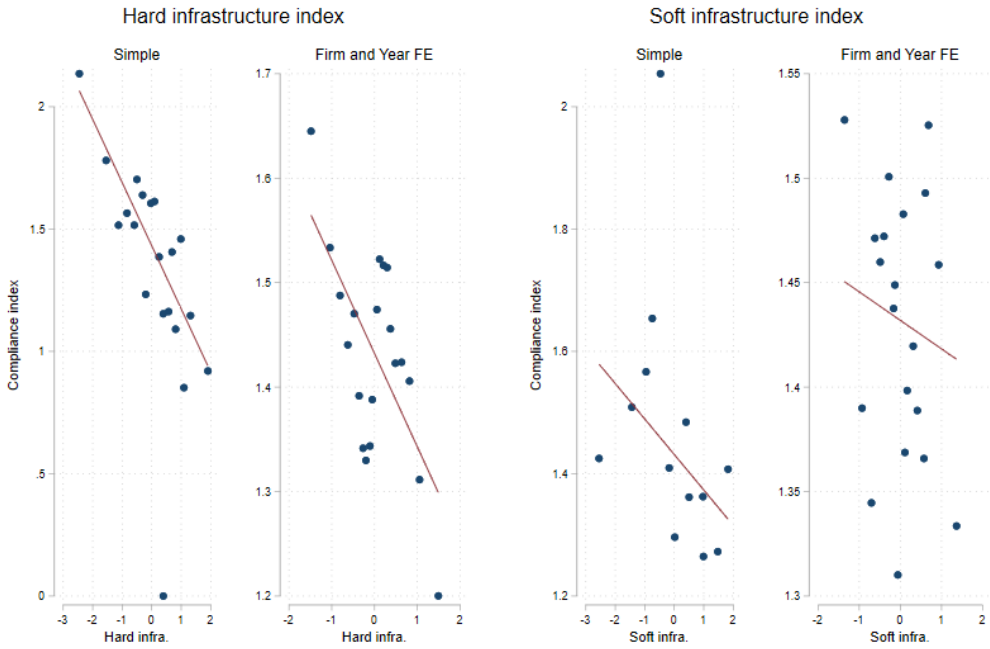
B4 Infrastructure

The infrastructure index is made up of the hard infra. and soft infra. We find a small decrease in the perception of infrastructure over the period (see Table B1). The firm owners were asked the following question: *'How do you rate the overall quality and efficiency of these services delivered by provincial public agencies?'*

1. Hard infrastructure: *'Road'* - *'Phone connection'* - *'Electricity'* - *'Water'*
2. Soft infrastructure: *'Education'* - *'Training'*

- Options: *'Very good'* (5)*'Good'* (4)*'Slightly good'* (3)*'Slightly bad'* (2) *'Bad'* (1) *'Very bad'* (0)

Figure B4: Binned scatter plots showing the association between compliance and the infrastructure indices



Source: authors' claculations.

Appendix C: Heterogeneity

Table C1: Regression results, full specification (OLS-FE) (small firms)

	Compliance index						
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Transparency:							
Participation	0.10			0.11*	0.11*	0.12*	0.12**
	(0.07)			(0.06)	(0.06)	(0.06)	(0.06)
Solicit comments	0.03			0.06	0.07	0.06	0.07
	(0.05)			(0.05)	(0.05)	(0.05)	(0.05)
Predictability	0.08*			0.08*	0.08**	0.09**	0.09*
	(0.04)			(0.04)	(0.04)	(0.04)	(0.04)
Accessibility	0.13***			0.13***	0.13***	0.12***	0.15***
	(0.05)			(0.05)	(0.05)	(0.05)	(0.05)
Security:							
Dispute		-0.04		-0.04	-0.04	-0.04	-0.04
		(0.06)		(0.06)	(0.06)	(0.06)	(0.06)
Stability		-0.05		-0.04	-0.04	-0.04	-0.02
		(0.05)		(0.05)	(0.05)	(0.05)	(0.05)
Infrastructure:							
Hard infra.			-0.23***	-0.21***	-0.21***	-0.22***	-0.21***
			(0.06)	(0.06)	(0.06)	(0.06)	(0.07)
Soft infra.			0.09	0.06	0.06	0.07	0.05
			(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Legitimacy:							
Legitimacy (MT)*					0.03		
					(0.05)		
Legitimacy (alt.)						0.11**	
						(0.04)	
Interactions:							
Part.#Legit							-0.06
							(0.05)
Solicit#Legit							-0.06
							(0.05)
Predict.#Legit							-0.06*
							(0.04)
Access.#Legit							-0.07*
							(0.04)
Dispute#Legit							-0.03
							(0.04)
Stability#Legit							0.07
							(0.05)
Hard#Legit							-0.04
							(0.05)
Soft#Legit							0.00
							(0.04)
Small-dummy	0.2	0.21	0.23	0.25*	0.26*	0.26*	0.23*
	(0.14)	(0.14)	(0.15)	(0.14)	(0.14)	(0.14)	(0.13)
Joint significance test	0.00	0.41	0.00	0.00	0.00	0.00	0.00
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms^{+}	No	No	No	No	No	No	Yes
Joint sgfnt, int.							0.10
Observations	408	408	408	408	408	408	408
R-squared	0.08	0.02	0.09	0.16	0.17	0.18	0.21

Note: clustered (firm) standard errors are reported in parentheses, *** p<.01, ** p<.05, * p<.10. $^{+}$ Interaction terms are between the independent variables and our alternative legitimacy index. Smallest enterprises employ one to nine workers. The small-dummy takes the value one if the firms is above four employees, else zero.
Source: authors' calculations based on IIM data.

Table C2: Aggregate model: OLS, OLS-FE, and PMLE-FE (w. smallest firms only)

	Compliance index																	
	OLS						OLS-FE						PPML-FE					
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
LGI	-0.06	-0.06	-0.06				-0.06	-0.06	-0.06				-0.05	-0.05	-0.05			
	(0.04)	(0.04)	(0.04)				(0.05)	(0.05)	(0.05)				(0.05)	(0.04)	(0.05)			
Transparency				0.20***	0.20***	0.19***				0.22***	0.23***	0.23***				0.17***	0.19***	0.18***
				(0.04)	(0.04)	(0.04)				(0.05)	(0.05)	(0.05)				(0.04)	(0.05)	(0.05)
Security				-0.03	-0.03	-0.03				-0.06	-0.07	-0.06				-0.05	-0.06	-0.05
				(0.04)	(0.04)	(0.04)				(0.05)	(0.05)	(0.05)				(0.05)	(0.05)	(0.05)
Infrastructure				-0.15***	-0.15***	-0.15***				-0.15***	-0.16***	-0.15***				-0.14***	-0.14***	-0.13***
				(0.04)	(0.04)	(0.04)				(0.06)	(0.06)	(0.06)				(0.05)	(0.05)	(0.05)
Legitimacy (MT 2017)		-0.01			0.03			-0.02			0.04			-0.01			0.05	
		(0.04)			(0.04)			(0.05)			(0.05)			(0.04)			(0.05)	
LGI#Legit.			0.04						0.00						0.01			
			(0.03)						(0.05)						(0.04)			
Trans.#Legit.						-0.03						-0.08*						-0.07
						(0.04)						(0.05)						(0.04)
Security#Legit.						0.03						-0.04						-0.04
						(0.03)						(0.05)						(0.05)
Infra.#Legit.						0.01						0.03						0.03
						(0.02)						(0.04)						(0.04)
Small-dummy	0.29***	0.29***	0.29***	0.27***	0.27***	0.27***	0.2	0.2	0.21	0.24*	0.26*	0.22	0.19	0.18	0.19	0.25*	0.27**	0.23*
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.12)	(0.13)	(0.12)	(0.13)	(0.13)	(0.13)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Joint sgfnt, int.			0.17			0.53			0.93			0.18			0.88			0.36
Observations	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408	408
R-squared^{+}	0.11	0.11	0.12	0.18	0.18	0.19	0.02	0.02	0.02	0.13	0.13	0.14	0.13	0.13	0.13	0.14	0.14	0.14

Note: standard errors are reported in parentheses (clustered SE for PPMLFE and FE, robust SE in Poisson). *** p<.01, ** p<.05, * p<.10. $^{+}$ Pseudo-R-squared in the case of PPMLFE. The small-dummy takes the value one if the firms is above four employees, else zero. Smallest enterprises employ one to nine workers. The legitimacy index by Malesky and Taussig (2017) is applied here, see Table 5 for the alternative legitimacy.
Source: authors' calculations based on IIM data.

Appendix D: Results when applying the PPML fixed effect specification

Table D1: Regression results, full specification (PPML-FE)

	Compliance index									
Std. indices	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Transparency:										
Participation	0.01			0.00	0.00	0.01	0.00	0.00	0.00	0.00
	(0.02)			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Solicit comments	0.03			0.04*	0.04*	0.04*	0.04*	0.05*	0.04*	0.04*
	(0.02)			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Predictability	0.06***			0.06***	0.07***	0.06***	0.07***	0.06***	0.06***	0.06***
	(0.02)			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Accessibility	0.07**			0.07**	0.07**	0.07***	0.07**	0.07**	0.07**	0.07**
	(0.03)			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Security:										
Dispute		-0.02		-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
		(0.02)		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Stability		-0.02		-0.02	-0.02	-0.02	-0.02	-0.03	-0.02	-0.03
		(0.03)		(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Infrastructure:										
Hard infra.			-0.07**	-0.06*	-0.07**	-0.06**	-0.05*	-0.05*	-0.06**	-0.06*
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Soft infra.			0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Legitimacy:										
Legitimacy (MT)					0.04					
					(0.03)					
Legitimacy (alt.)						0.06**				
						(0.02)				
Interactions:										
Part.#Legit							0.00			0.00
							(0.02)			(0.02)
Solicit#Legit							0.00			0.00
							(0.02)			(0.02)
Predict.#Legit							0.00			0.00
							(0.02)			(0.02)
Access.#Legit							-0.02			-0.02
							(0.03)			(0.03)
Dispute#Legit								-0.01		-0.01
								(0.02)		(0.02)
Stability#Legit								0.02		0.03
								(0.02)		(0.02)
Hard#Legit									-0.02	-0.03
									(0.03)	(0.03)
Soft#Legit									0.01	0.01
									(0.02)	(0.02)
Log of size	0.15***	0.12**	0.13**	0.16***	0.17***	0.15***	0.17***	0.17***	0.16***	0.17***
	(0.05)	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.06)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Joint significance, int.							0.89	0.54	0.66	0.94
Observations	652	652	652	652	652	652	652	652	652	652
Pseudo-R-squared	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18

Note: clustered (firm) standard errors are reported in parentheses, *** p<.01, ** p<.05, * p<.10. The compliance index is constructed of three variables: formal labour, formality (NUIT), and social insurance (INSS). * Legitimacy (MT 2017) is fully comparable to the legitimacy variable in Malesky and Taussig (2017). Our alternative legitimacy index captures more aspects of legitimacy. + Interaction terms are between the independent variables and the alternative legitimacy index. The joint significance test of the interaction terms are highly insignificant.

Source: authors' calculations based on IIM data.

Table D2: PPML-FE regression results: individual compliance variables

	Formal labour contract				Formality (NUIT)				Contribute to social ins.				Do not pay bribes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Legitimacy (alt.)		0.14*		0.11		0.03		0.02		0.08		0.05		0.13***		0.14***
		(0.08)		(0.07)		(0.02)		(0.02)		(0.05)		(0.05)		(0.04)		(0.04)
Transparency:																
Participation	-0.07	-0.05	-0.06		0.00	0.00	0.00		0.06	0.07	0.06		-0.03	-0.01	-0.02	
	(0.06)	(0.06)	(0.06)		(0.02)	(0.02)	(0.02)		(0.04)	(0.04)	(0.04)		(0.04)	(0.04)	(0.04)	
Solicit comments	0.08	0.06	0.1		0.02	0.02	0.02		0.06	0.05	0.06		0.01	0.01	0.01	
	(0.06)	(0.06)	(0.06)		(0.02)	(0.02)	(0.02)		(0.04)	(0.04)	(0.04)		(0.03)	(0.03)	(0.03)	
Predictability	0.08	0.07	0.08		0.05***	0.05***	0.06***		0.08**	0.08**	0.07*		-0.08**	-0.08**	-0.1***	
	(0.07)	(0.07)	(0.07)		(0.02)	(0.02)	(0.02)		(0.04)	(0.04)	(0.04)		(0.03)	(0.03)	(0.04)	
Accessibility	0.14*	0.16**	0.17*		0.07**	0.07**	0.07**		0.04	0.04	0.06		-0.05	-0.05	-0.03	
	(0.07)	(0.08)	(0.09)		(0.03)	(0.03)	(0.03)		(0.06)	(0.06)	(0.06)		(0.04)	(0.04)	(0.04)	
Security:																
Dispute	-0.02	-0.03	-0.02		-0.03	-0.03	-0.03		-0.04	-0.04	-0.04		0.02	0.01	0.02	
	(0.06)	(0.05)	(0.06)		(0.02)	(0.02)	(0.02)		(0.05)	(0.05)	(0.05)		(0.04)	(0.04)	(0.04)	
Stability	-0.05	-0.03	-0.04		-0.03	-0.03	-0.03		0.00	0.00	-0.01		-0.05	-0.05	-0.04	
	(0.07)	(0.07)	(0.07)		(0.02)	(0.03)	(0.03)		(0.05)	(0.05)	(0.06)		(0.04)	(0.04)	(0.05)	
Infrastructure:																
Hard infra.	-0.12*	-0.14**	-0.15**		-0.03	-0.03	-0.01		-0.06	-0.07	-0.07		0.09**	0.08**	0.1**	
	(0.07)	(0.07)	(0.08)		(0.03)	(0.03)	(0.03)		(0.05)	(0.05)	(0.05)		(0.04)	(0.04)	(0.04)	
Soft infra.	0.01	0.00	0.02		0.00	0.00	0.00		0.03	0.02	0.01		-0.09*	-0.09*	-0.1*	
	(0.08)	(0.07)	(0.08)		(0.03)	(0.03)	(0.03)		(0.06)	(0.06)	(0.06)		(0.05)	(0.05)	(0.05)	
Log of size	0.15	0.11	0.10	0.09	0.19***	0.18***	0.20***	0.15***	0.06	0.06	0.06	0.04	0.00	-0.03	-0.01	0.02
	(0.14)	(0.13)	(0.14)	(0.12)	(0.05)	(0.05)	(0.06)	(0.05)	(0.1)	(0.09)	(0.1)	(0.08)	(0.09)	(0.09)	(0.09)	(0.08)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No
Joint sgfnt, int.			0.60				0.52				0.53				0.30	
	302	302	302	302	632	632	632	632	326	326	326	326	492	492	492	492
R-squared	0.06	0.06	0.06	0.05	0.03	0.03	0.04	0.03	0.05	0.05	0.05	0.04	0.04	0.05	0.05	0.04

Note: clustered (firm) standard errors are reported in parentheses, *** p<.01, ** p<.05, * p<.10. The alternative legitimacy index is applied here.

Source: authors' calculations based on IIM data.

Appendix E: Robustness—including the 'other' respondents

Table E1: Aggregate model (all 460 firms): OLS, OLS-FE, and PMLE-FE

	Compliance index																	
	OLS						OLS-FE						PPML-FE					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
LGI	-0.04	-0.05*	-0.04				-0.04	-0.04	-0.04				-0.02	-0.02	-0.02			
	(0.03)	(0.03)	(0.03)				(0.03)	(0.03)	(0.03)				(0.02)	(0.02)	(0.02)			
Transparency				0.17***	0.17***	0.17***				0.15***	0.16***	0.16***				0.08***	0.08***	0.08***
				(0.03)	(0.03)	(0.03)				(0.03)	(0.03)	(0.03)				(0.02)	(0.02)	(0.02)
Security				-0.04	-0.04	-0.04				-0.07**	-0.07**	-0.06*				-0.04**	-0.04**	-0.04*
				(0.03)	(0.03)	(0.03)				(0.03)	(0.03)	(0.03)				(0.02)	(0.02)	(0.02)
Infrastructure				-0.12***	-0.14***	-0.12***				-0.08**	-0.09***	-0.09**				-0.04**	-0.05**	-0.04**
				(0.03)	(0.03)	(0.03)				(0.03)	(0.03)	(0.04)				(0.02)	(0.02)	(0.02)
Legitimacy (alt.)		0.07***			0.09***			0.03			0.05			0.02			0.03*	
		(0.03)			(0.03)			(0.03)			(0.03)			(0.02)			(0.02)	
LGI#Legit.			0.03						-0.03						-0.02			
			(0.02)						(0.03)						(0.02)			
Trans.#Legit.						0.00						-0.04						-0.02
						(0.03)						(0.03)						(0.02)
Security#Legit.						0.00						-0.01						0.00
						(0.03)						(0.03)						(0.02)
Infra.#Legit.						0.00						-0.02						-0.01
						(0.02)						(0.03)						(0.02)
Log of size	0.51***	0.50***	0.50***	0.46***	0.46***	0.46***	0.22***	0.22***	0.23***	0.23***	0.22***	0.23***	0.13***	0.13***	0.13***	0.13***	0.13***	0.13***
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.04)	(0.04)	(0.05)	(0.05)	(0.04)	(0.05)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Firm FE	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Joint sgfnt, int.			0.21			1.00			0.36			0.45			0.32			0.52
Observations	832	832	832	832	832	832	832	832	832	832	832	832	832	832	832	832	832	832
R-squared^{+}	0.41	0.41	0.41	0.45	0.45	0.45	0.03	0.03	0.03	0.1	0.11	0.11	0.17	0.17	0.17	0.18	0.18	0.18

Note: standard errors are reported in parentheses (clustered SE for PPMLFE and FE, robust SE in Poisson). The compliance index is composed of three variables: formal contracts, registration (NUIT), and social insurance (INSS). See more information in the appendix. *** p<.01, ** p<.05, * p<.10. $^{+}$ Pseudo-R-squared in the case of PPMLFE. The alternative legitimacy index is applied here. All 460 firms is included.

Source: authors' calculations based on IIM data.

Table E2: Regression results, full specification (OLS-FE), 460 firms

	Compliance index						
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Transparency:							
Participation	0.04			0.02	0.02	0.02	0.02
	(0.03)			(0.03)	(0.03)	(0.03)	(0.03)
Solicit comments	0.07**			0.09***	0.09***	0.09***	0.09**
	(0.03)			(0.03)	(0.03)	(0.03)	(0.03)
Predictability	0.08**			0.08***	0.08***	0.08***	0.08**
	(0.03)			(0.03)	(0.03)	(0.03)	(0.03)
Accessibility	0.08**			0.09***	0.09***	0.09***	0.1***
	(0.03)			(0.03)	(0.03)	(0.03)	(0.04)
Security:							
Dispute		-0.04		-0.06*	-0.06*	-0.06*	-0.06*
		(0.03)		(0.03)	(0.03)	(0.03)	(0.03)
Stability		-0.05		-0.06*	-0.06*	-0.06*	-0.05
		(0.03)		(0.03)	(0.03)	(0.03)	(0.03)
Infrastructure:							
Hard infra.			-0.13***	-0.10***	-0.11***	-0.11***	-0.11***
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Soft infra.			0.03	0.01	0.01	0.01	0.01
			(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Legitimacy:							
Legitimacy (MT)*					0.02		
					(0.03)		
Legitimacy (alt.)						0.05*	
						(0.03)	
Controls:							
Log of size	0.24***	0.23***	0.22***	0.26***	0.26***	0.25***	0.26***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Joint significance test	0.00	0.07	0.00	0.00	0.00	0.00	0.00
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction terms+	No	No	No	No	No	No	Yes
Joint sgfnt, int.							0.63
Observations	832	832	832	832	832	832	832
R-squared	0.08	0.04	0.06	0.12	0.13	0.13	0.14

Note: clustered (firm) standard errors are reported in parentheses, *** p<.01, ** p<.05, * p<.10. The compliance index is constructed of three variables: formal labour, formality (NUIT), and social insurance (INSS). See more information in appendix.
* Legitimacy (MT) is fully comparable to the legitimacy variable in Malesky and Taussig (2017). Our legitimacy index captures more aspects of legitimacy. + Interaction terms are between the independent variables and the alternative legitimacy index. The joint significance test of the interaction terms are highly insignificant. All 460 firms is included.
Source: authors' calculations based on IIM data.

Table E3: Mediation/moderator model: full specification, 460 firms

	OLS					OLS-FE				
Std. indices:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Transparency:										
Participation	0.07**	0.06**	0.07**	0.07**	0.07**	0.02	0.02	0.02	0.03	0.02
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Solicit comments	0.03	0.02	0.03	0.03	0.02	0.09***	0.09***	0.09**	0.09**	0.09**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Predictability	0.12***	0.12***	0.12***	0.12***	0.12***	0.08***	0.08***	0.08***	0.08***	0.08**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Accessibility	0.10***	0.11***	0.10***	0.10***	0.11***	0.09***	0.09***	0.09***	0.09***	0.10***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Security:										
Dispute	-0.01	-0.01	-0.01	-0.01	-0.01	-0.06*	-0.06*	-0.05	-0.05*	-0.06*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Stability	-0.04	-0.04	-0.04	-0.04	-0.04	-0.06*	-0.05*	-0.06*	-0.06*	-0.05
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Infrastructure:										
Hard infra.	-0.11***	-0.11***	-0.11***	-0.11***	-0.11***	-0.10***	-0.10***	-0.10***	-0.11***	-0.11***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Soft infra.	-0.03	-0.03	-0.03	-0.03	-0.03	0.01	0.01	0.01	0.01	0.01
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Interactions:										
Part.#Legit		0.01			0.01		-0.04			-0.05*
		(0.02)			(0.02)		(0.03)			(0.03)
Solicit#Legit		0.01			0.01		-0.01			0.00
		(0.03)			(0.03)		(0.03)			(0.04)
Predict.#Legit		0.00			0.00		-0.02			-0.02
		(0.03)			(0.03)		(0.03)			(0.03)
Access.#Legit		-0.04			-0.04		0.00			-0.01
		(0.03)			(0.03)		(0.03)			(0.03)
Dispute#Legit			0.00		0.01			-0.04		-0.03
			(0.03)		(0.03)			(0.03)		(0.03)
Stability#Legit			-0.01		0.00			0.02		0.04
			(0.02)		(0.03)			(0.03)		(0.03)
Hard#Legit				-0.02	-0.02				-0.03	-0.04
				(0.02)	(0.03)				(0.03)	(0.03)
Soft#Legit				0.02	0.02				0.00	-0.01
				(0.02)	(0.02)				(0.03)	(0.03)
Log of size	0.46***	0.46***	0.46***	0.46***	0.46***	0.26***	0.26***	0.26***	0.25***	0.26***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Sector FE	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Firm FE	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Interaction terms	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Joint sgfnt, int.		0.72	0.97	0.62	0.89		0.46	0.36	0.68	0.63
Observations	832	832	832	832	832	832	832	832	832	832
R-squared	0.45	0.45	0.45	0.45	0.45	0.12	0.13	0.13	0.13	0.14

Note: clustered (firm) standard errors are reported in parentheses, *** p<.01, ** p<.05, * p<.10. The compliance index is constructed from three variables; formal labour, formality (NUIT), and social security. See more information in appendix. All 460 firms included.

Source: authors' calculations based on IIM data.