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FDI and Institutional Reform in Portugal

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September 13, 2011

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1 Introduction

The purpose of this article is twofold. Firstly, it analyzes the effects of economic and institutional factors, including some business regulations, on bilateral inward Foreign Direct Investment (FDI) into Europe. To obtain a full characterization of the institutional environment, we use 3 distinct databases: the Index of Economic Freedom (IEF), the political risk rating from the International Country Risk Guide (ICRG), and the Doing Business (DB) database. Secondly, it evaluates the benefits of reforming Portuguese institutions to the European Union (EU) average level—both *viz-à-viz* the EU-15 and the EU-27. The conclusions enable the formulation some policy recommendations as to the institutional areas in which a reform should be prioritized.

Since the 1990s, FDI has become increasingly important in a globalized economy, both for developed and developing countries. According to the UNCTAD, FDI in developing economies went up to around 28% of GDP in 2009, from 13% in 1990, while in developed economies it has gone up to 31% from 9% of GDP in the same time period. When registered in millions of dollars, this trend resulted in a worldwide fivefold increase in FDI, at a yearly growth rate of 8.6% between 1990 and 2009. However, developed economies are hosts of almost three quarters of these inflows, of which more than half is targeted to the EU.

A large fraction of this trend can be explained by the increasing internationalization of multinational firms. Horstmann and Markusen (1992) and Brainard (1997) developed a proximity-concentration model to explain multi-plant multinationals and two-way horizontal FDI, which arise when the access to markets becomes relatively less expensive in comparison with exporting. Helpman et al. (2004) consider that firms rationally decide whether of serve foreign costumers, and whether they should do so through exports or through outbound FDI. They conclude that only the efficient firms choose to serve foreign costumers, and only the most efficient ones do so through FDI.¹ Whereas a firm deciding to export its products is able to concentrate production in one place, benefiting from scale economies, it may have to incur in large transaction costs, namely those associated with transporting and licensing a product abroad, in order to successfully sell its products in the foreign market. FDI may lessen these transaction costs, but also brings new ones, namely communication costs, training costs for personnel, language barriers, and unfamiliarity with local business and government practices. On the other hand, FDI may allow a multinational firm to access cheap or qualified labor, natural resources and strategic assets, and better regulations and business practices (*e.g.* Dunning, 2008). Obviously, a corporation should engage in FDI only when the net benefits of exporting a product to a given market are outweighed by the net benefits of producing the product locally.

From the viewpoint of host countries, FDI also brings several advantages besides its di-

¹Bhattacharya et al. (2010) extend this idea to the tradable services sector, by considering a setup where transport costs are zero, but serving the foreign market through exports induces risk in the consumer utility function. They conclude that, in this case, the least productive firms are the ones that engage in FDI.

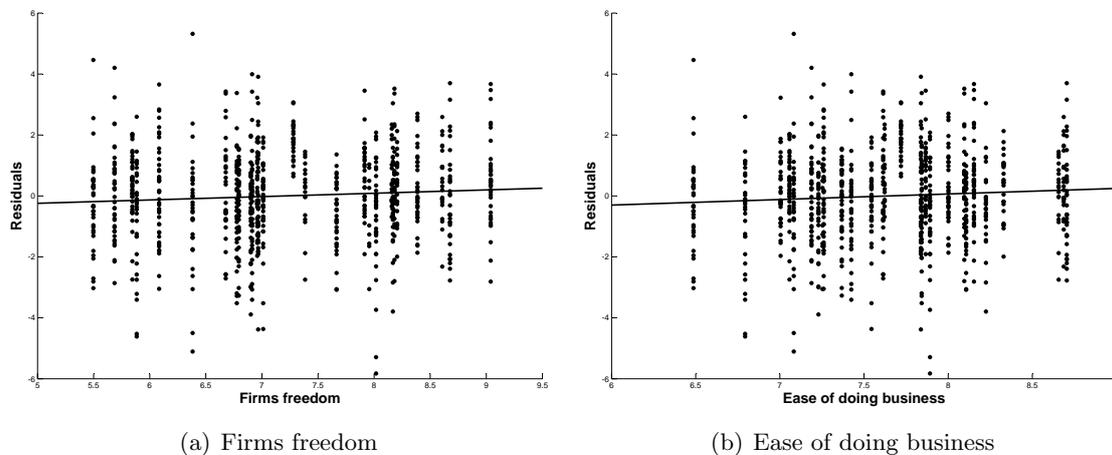


Figure 1: *FDI stocks and institutions.*

rect effects on investment and employment. Since FDI may be associated with technology transfer, with the introduction of management skills, or even with improvements in the productive structure of a country, it is more conducive to long-run growth and to development than other forms of capital inflows (Borensztein et al., 1998; Barrell and Pain, 1997). FDI may also have a positive impact on the balance of payments, since multinational firms have a greater propensity to export than domestic firms.

It is therefore not surprising that a lot of research has been devoted to examine and explore the determinants of FDI. A first wave of research articles focused solely on economic and geographic determinants, such as market size, growth, openness, or the distance between countries. However, more recently, some articles concluded that institutional and political risk factors also explain a large fraction of inward FDI. There are several reasons why good institutions may promote FDI. First, good governance is associated with higher economic growth, itself an important driving effect of FDI. Second, good institutions prevent corruption and therefore decrease the cost of investing abroad. Finally, good institutions foster political stability and decrease political uncertainty (Walsh and Yu, 2010). Figure 1 displays the relationship between the residuals from regressing the logarithm of bilateral FDI stocks on several geographic and economic variables, and two institutional indicators used herein—firms freedom, and the ease of doing business. The slope coefficients are significant at 5%, suggesting that positive residuals tend to be associated with better institutions. Thus, geographic and economic factors alone do not explain all the variance of bilateral FDI.

FDI is expected to flow to countries with a stable economic environment and strong institutions, and where running a business is usually easier, *ceteris paribus*. In the first part of this article, we show that good institutions favoring economic freedom and the ease of doing business are key driving forces of FDI. In particular, institutions favoring

the absence of corruption, the independence of the financial system, and efficient business regulations—mainly those related with starting a business and cross-border trade—tend to foster inward FDI. Political risk, on the other hand, presents a less robust effect on FDI, a fact that may result from the set of countries used herein.

This approach obviously leaves unanswered the question of which areas are most promising for reform. In the second part of this article, we use three indicators to measure the effects of reforming Portuguese institutions and business regulations to the EU-15 and to the EU-27 levels, namely: the effect of the reform on FDI, the required reform effort, and the efficiency of the reform. We find that, for those areas in which Portugal is lagging behind the EU average, the most promising reforms consist in increasing the independence of the financial system, lowering the levels of corruption, and improving property rights and some business regulations—mainly by decreasing the bureaucracy associated with starting a business. Increasing labor market flexibility to the EU level has also a large impact on inward FDI; however, reforming this area requires a comparatively higher effort.

This article is organized as follows. The next section reviews the literature. Section 3 presents the data used in the empirical analysis. Section 4 introduces the econometric methodology. Section 5 discusses the results. Section 6 deals with institutional reform in Portugal. Section 7 concludes.

2 Literature Review

The empirical literature on FDI was initially focused on economic factors.² The market size or market potential—usually a GDP measure, population, or economic growth—are among the most extensively discussed economic determinants of FDI. Billington (1999) and Scaperlanda and Balough (1983) find that market size and growth have a statistically significant impact on FDI locations. Using a simultaneous equation model, Tsai (1994) also shows that domestic market size is a key determinant of FDI, but the role of growth is dubious. Janicki and Wunnava (2004) show that GDP positively affected FDI for EU accession candidates. Many other studies found similar relationships between market variables and FDI—*e.g.* Kravis and Lipsey (1982), Culem (1988), Wheeler and Mody (1992), Barrell and Pain (1996), Love and Lage-Hidalgo (2000).

Taxes are also a key determinant of FDI. The empirical analysis of the effects of taxation on FDI dates back, at least, to Hartman (1984, 1985), who had suggested a negative relationship between these variables. Using a panel approach, Cassou (1997) also finds that host country corporate tax rates have a significant negative impact on investment flows. Related conclusions are also shared by Grubert and Mutti (1991), who show that real investment responds to the host country effective tax rates, by Devereux and Griffith (1998), who show that average effective tax rates influence firm location choices, and by

²See Caves (2007) and Blonigen (2005) for a survey of the literature.

Hines (1996), who finds that state taxes significantly influenced the FDI pattern in the United States (US). However, contrary evidence is found in Swenson (1994), who argues that greater average tax rates increase FDI.³

There are other economic determinants which are less consensual. For instance, it is expected that labor costs present a negative impact on inward FDI, *ceteris paribus*. This is shown to be true by Culem (1988), Barrell and Pain (1996), Bevan and Estrin (2004) and Janicki and Wunnava (2004), but other authors—*e.g.* Tsai (1994), Wheeler and Mody (1992), Kravis and Lipsey (1982)—have found insignificant or opposite relationships. This mixed evidence can be explained by the role of labor productivity in FDI, which is highly correlated with labor costs. The degree of openness has been studied, *inter alia*, by Bajo-Rubio and Sosvilla-Rivero (1994) and Culem (1988). The former analyzes the determinants of FDI in Spain, whereas the latter analyzes bilateral FDI inflows among 6 industrialized countries. Both conclude that the degree of openness has a positive effect on FDI. Wheeler and Mody (1992) and Schmitz and Bieri (1972), on the other hand, find no statistically significant relationship between these variables.⁴ Education is considered by Walsh and Yu (2010), who find that it has a negligible or a slightly counter-intuitive negative effect on FDI, depending on whether one considers FDI in the secondary sector or in services. Altomonte and Guagliano (2003), on the other hand, find that education has a negative effect on a multinational's probability to invest in Central and Eastern European or in Mediterranean countries if that investment is made on traditional industries, whilst has a positive and significant impact on that probability if the investment is made in the services sector in Mediterranean countries.⁵

Since the mid 1990s the role of institutional determinants has become increasingly important. Their relevance originated in the context of regional integration agreements, where governments implemented business facilitation measures in order to provide firms

³An extensive survey of this literature is provided by de Mooij and Ederveen (2003).

⁴Additionally, Culem (1988) and Schmitz and Bieri (1972) analyze the effects of trade barriers on FDI, with contradictory evidence: while the former article reports a negative relationship, the latter posits a positive one. Mixed evidence on the effects of trade barriers on FDI is also found in Grubert and Mutti (1991).

⁵There are other economic factors affecting inward FDI. For instance, Head et al. (1995) use a conditional logit model to show that agglomeration economies played an important role in explaining Japanese manufacturing investments in the US, and Wheeler and Mody (1992) conclude that agglomeration economies influence investors' decisions. The level of infrastructure and host country currency depreciations are also thought to positively influence FDI. For instance, Loree and Guisinger (1995) show that communication structure and the amount of transportation infrastructure of a country have an important role attracting FDI. Biswas (2002) uses main telephone lines per 100 inhabitants and per capita total net installed capacity of electric generating plants, and reach a similar conclusion. In the case of host country depreciations, several studies find a positive relationship with FDI. For instance, Blonigen (1997) supports a positive relationship between real dollar depreciations and Japanese acquisitions in the US, as this induces the acquisition of transferable assets within a firm across markets. Similar results hold in Kogut and Chang (1996), Klein and Rosengren (1994), Swenson (1994) and Froot and Stein (1991). These studies, however, rely solely on US data, which limits the scope of analysis. Government promotion through fiscal incentives can also influence FDI flows (Buch et al., 2005).

with a better environment for their investments. When intra-regional transaction costs are reduced and national policies have some degree of coordination in order to form a level playing field for businesses, as is the case in the EU, national jurisdictions tend to rely more heavily on these measures to differentiate from each other when competing for investment (UNCTAD, 1999). Schneider and Frey (1985) were among the first to empirically address policy and institutional factors by presenting an inverse relation between political instability and other risk factors with incoming investment. More recently, the role of institutional factors and business friendly regulations have fostered the research agenda on FDI.

Biswas (2002) shows that both traditional factors and nontraditional (institutional) factors are important determinants of FDI inflows, and Stevens (2000) and Bénassy-Quéré et al. (2007) present evidence that political and institutional factors explain an important part of FDI, which cannot be explained by economic factors alone. Wei (2000a,b) concludes that corruption reduces inward FDI—firms or individuals may be required to pay bribes to government officials in order to obtain permits, licenses, or other government services in order to run a business in a country, therefore increasing the costs of doing business. Some studies (*e.g.* Lee and Mansfield, 1996; Knack and Keefer, 1995) have shown that the composition of FDI inflows is affected by property rights and by the degree of protection of intellectual property. FDI inflows are also affected by the efficiency of the legal system (Buch et al., 2005) and by the degree of entry barriers (Alesina et al., 2005). The inclusion of policy variables may also greatly reduce the influence of some economic variables on FDI, such as taxation (Hajkova et al., 2006). Several studies were also published in the context of the Doing Business, where the effects of the legal system (Djankov et al., 2002), the regulation of entry of firms (Djankov, 2009), the regulation of labor markets (Botero et al., 2004), investors protection (Djankov et al., 2008) and other institutional variables on investment were addressed.

However, these are not consensual outcomes across the institutional variables range given that other studies were not able to establish a relationship between FDI and institutional risk. In particular, Bevan and Estrin (2004) find no significant impact of institutional risk on FDI into European transition economies, after controlling for other factors. Wheeler and Mody (1992) use several risk factors, but did not find evidence that these factors influenced the location of US foreign affiliates.

3 Data

Our purpose is to explain inward FDI stocks from 45 source countries to 28 European countries (see Table 1) for the 2006–2008 period. The literature has advocated the use of FDI stocks relative to flows, since the former presents several advantages: they are based on past accumulated flows, and hence they are less volatile; they are not as influenced by specific year investments as flows are; they are the relevant decision variable for a firm in the long term; and finally, they are a better measure of capital ownership (Bénassy-Quéré

Table 1: *Host and source countries.*

Host countries	Source Countries
Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom	Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China (except Hong Kong), Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Mexico, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States

et al., 2007). Moreover, stocks are more appropriate to evaluate the long-run effects of an institutional reform on inward FDI than flows.

We explain inward FDI according to an augmented gravity-type model, which states that FDI depends on several types of variables: geographic, economic and institutional. As for geographical factors, we include the physical distance between host and source countries, which can be seen as a proxy for transaction costs (such as transport costs, communication costs, and cultural and language differences), and a border dummy variable, which takes the value of 1 if the source and host countries share a common border and 0 otherwise. A higher distance between source and host countries is expected to have a negative impact on FDI, whereas a common border between source and host countries is expected to increase FDI.

Our key economic variables are the host country’s GDP (a proxy for market size), the GDP growth rate (a proxy for market growth) and labor costs. GDP and GDP growth are expected to have a positive impact on FDI, whereas labor costs should negatively affect FDI. One cannot include per capita GDP and labor costs simultaneously in the same regression, since these variables are highly correlated.⁶ The degree of openness—the share of imports plus exports over GDP—is also expected to influence FDI, as it measures trade flows. These variables were collected from the Eurostat database, except labor costs, which were taken from the AMECO database.

Our baseline model also includes the level of education, measured as the percentage of population aged 25 to 64 having completed secondary education. Some studies (*e.g.* Altomonte and Guagliano, 2003) argue that education has an ambiguous effect on FDI—on the one hand, more education implies higher labor productivity, but, on the other hand, it is associated with a higher wage structure. However, this argument does not apply here, since we control for labor costs. We decided to use secondary education instead of tertiary education in our analysis, since the correlation between the former and our insti-

⁶In our data, the correlation between per capita GDP and labor costs is around 90%.

tutional variables is much lower. We also experimented our model with three different tax measures—the statutory tax rate, the effective marginal tax rate (EMTR), and the effective average tax rate (EATR)—but our baseline model retains only the EATR.⁷ Conclusions do not change substantially if any of the other tax measures is used instead. Education was taken from the Eurostat database, whereas effective tax rates were kindly provided by Michael Overesch (see Overesch and Rincke, 2009). All variables are 2006–2008 averages, in order to smooth extreme events. The exception is the EATR, which is for 2006.

Our first set of institutional variables is based on the IEF, computed by the Heritage Foundation.⁸ The data collected concerns the year 2007, which covers the second half of 2005 and the first half of 2006. As the Heritage Foundation puts on their website, economic freedom is the fundamental right of every citizen to control his or her own labor and property. “In a free society, individuals are free to make their own production and consumption decisions, protected and unconstrained by the state.” Thus, it is not surprising that societies that have better scores in this index are able to attract more FDI, since they offer higher levels of protection to investors, lower tax burdens, less restrictive regulations, less bureaucracy and less corruption. The IEF is composed by 10 different components: business freedom, trade freedom, fiscal freedom, government freedom, monetary freedom, investment freedom, financial freedom, property freedom, corruption freedom, and labor freedom. Each of these indexes was rescaled to the 0–10 range, with higher scores meaning better performances. Our second set of institutional variables is based on the political risk rating from the ICRG. This rating assesses the political risk of the host country, and comprises 12 indicators: government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability and bureaucracy quality. All variables were converted to the 0–10 scale to ease comparisons. The data collected is for 2006.

Finally, our last set of institutional variables assesses the ease of doing business in the host country. The DB database complements the more generic information on business regulations that is reported by the IEF, by measuring the cost of starting, operating, and closing a business, for a medium-sized firm in a given country.⁹ The DB database reports 33 variables, covering 9 different areas—starting a business, dealing with construction permits, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business. For convenience, each of the 33 vari-

⁷The statutory tax rate is the relevant variable for companies seeking to shift income towards low tax countries, whereas the EATR reflects the incentives (such as investment tax credits and accelerated depreciation) that are granted to firms when the investment occurs (Grubert and Mutti, 1991). The EMTR, on the other hand, captures incentives to use new capital once the location choice has been made. Thus, the EATR should be the relevant decision variable for multinationals seeking to invest abroad (Devereux and Griffith, 1998).

⁸This data is available at www.heritage.org/index.

⁹The Doing Business report is a co-publication of the World Bank and the International Finance Corporation, and the data is available at www.doingbusiness.org.

ables were converted to indexes, according to the min-max standardization method. To ease interpretations, this conversion was made such that higher values always mean better performances. The resulting indexes were then summarized into these 9 categories. The data collected respects the 2007 report, which addresses business regulations as of June 1, 2006.

It is worth noting that institutions tend to change slowly over time. Hence, the institutional indicators for 2006 can be used as proxies for a country’s institutional level in the preceding years. This argument follows Tavares (2004), and is implicitly used in the FDI literature, for instance, in Wei (2000a) and Bénassy-Quéré et al. (2007).¹⁰

4 Econometric approach

The gravity model was first developed in the context of international trade (see Eaton and Tamura, 1995), but it has also been successfully applied to explain bilateral FDI (*e.g.* Wei, 2000a,b). In its simplest formulation, the gravity model states that bilateral FDI depends positively on the economic size of the source and host countries and negatively on the distance between them. Here, we use an augmented version of the gravity model which takes into account other economic and institutional factors that affect FDI. Denoting by j the source country and by i the host country, we estimate the following augmented gravity-type model

$$\log(\text{FDI}_{ij}) = \alpha_1 c_j + \alpha_2 c_r + \beta_1 \text{DISTANCE}_{ij} + \beta_2 \text{ECO}_i + \beta_3 \text{INST}_i + \varepsilon_{ij} \quad (1)$$

Here, FDI_{ij} is the inward FDI stock from country j to country i ; DISTANCE_{ij} is a vector composed by the physical distance between country j and country i and the border dummy variable; ECO_i is a vector containing the host country economic variables—namely GDP, GDP growth, labor costs, the degree of openness, education and the EART—and finally INST_i is a vector of institutional variables for the host country. Besides FDI_{ij} , the distance between source and host countries, GDP and labor costs will enter (1) in logarithmic form, which helps making the error term homoskedastic. Nonetheless, heteroskedasticity consistent standard errors will be reported. Furthermore, a double-log specification displays the best fit to the data, consistently delivering good values for the R^2 and more precise estimates as compared to alternative specifications (Stein and Daude, 2007). We implement a quasi-fixed effects model, *i.e.*, we include source country dummies, represented in (1) by the vector c_j . These dummy variables are meant to capture all specific characteristics of the source country that are relevant to the size of outward FDI, such as the level of GDP, the level of development or the institutional framework. We also include regional dummy variables, denoted by c_r , which are meant to capture patterns of FDI that are specific to

¹⁰Regression results using institutional indicators for 2004 and 2005 are available upon request from the authors. These results do not change the main conclusions of this article.

Northern–Western Europe, Central–Eastern Europe and Southern Europe. Host country dummies are not included, since they would eliminate the possibility of estimating all the coefficients of the model. Finally, ε_{ij} is an i.i.d. error term which is assumed normally distributed.

To estimate the double-log model in equation (1) by OLS, all zero-FDI observations have to be dropped, since the logarithm of zero is not defined. In our case, this corresponds to 193 observations—about 17.5% of our sample. This obviously results in a censored-sample problem, which can lead to inconsistency. A common way to retain these zero observations is to use a Tobit model (Stein and Daude, 2007; Gao, 2005). This approach can be justified by considering that stocks below a certain threshold are incorrectly recorded as zeros, or that the desired level of investment is positive, but the presence of fixed costs of investing abroad leads to observed zero-FDI values when the desired investment is below a certain threshold.¹¹ Hence, besides estimating (1) by OLS, we also estimate a Tobit model, in which the assumed threshold is -1.1 .¹²

Institutional indicators are highly correlated with one another, which may originate problems of near multi-collinearity if several of these variables are simultaneously included in the regressions. In this case, the resulting OLS estimator has a low probability of being close to its true value, due to variance inflation (Hwang and Nettleton, 2003). We tackle the problems caused by correlated institutional variables through three distinct approaches. First, for each institutional database—IEF, ICRG, and DB—we run a Principal Component Analysis (PCA), in order to summarize the information in a smaller set of variables (components).¹³ The resulting components can, in general, be associated with an identifiable institutional area, although the resulting aggregation is usually too broad to extract conclusions about the effects of any particular institutional indicator on inward FDI. Besides reducing the dimension of each database, the resulting score vectors are orthogonal, thus diminishing the correlations between institutional factors in our sample. The PCA is applied to all countries within each institutional database (and not only to the host countries used herein), and is followed by a varimax (orthogonal) rotation. These new variables are then used in (1) to measure the effects of institutions on FDI.

To assess the robustness of these results, we also reduce the dimension of our database through a direct aggregation of variables. In this case, we use the information from the rotated factor loadings matrix to identify those indicators that are highly correlated among

¹¹Desired FDI (the latent variable) is equal to the realized FDI for values above a certain threshold, but is not observed for values below that threshold. Some authors have proposed to use $\log(1 + \text{FDI}_{ij})$ or $\log(a + \text{FDI}_{ij})$ (where a is a parameter to be estimated) instead of $\log \text{FDI}_{ij}$ as the dependent variable in order to estimate (1) while retaining zero-FDI observations. However, this approach is completely *ad hoc*, and the results depend on the measurement unit.

¹²The minimum value of the average of inward FDI stocks for the 2006-2008 period is 1/3 million euros, and $\log(1/3) \approx -1.1$.

¹³This was preceded by the KMO and Bartlett’s test of sphericity, which indicate whether the PCA is appropriate or not.

themselves, and which can therefore be aggregated into a new variable. The aggregation was done by taking the simple average, and the resulting variables can be interpreted as factor-based scores.

The main disadvantage of these approaches is that the resulting aggregation is too broad, because the correlations between institutional variables are high. For instance, the effect of bureaucracy on FDI cannot be disentangled from the effect of corruption, or from the effect of the costs of starting or closing a business, since these variables are highly correlated. To tackle this issue, we estimate the model in (1) by adding each institutional variable successively. This approach is widely followed in the literature (*e.g.* Walsh and Yu, 2010; Chakrabarti, 2001), and to our knowledge, it is the only way to evaluate the effect of individual institutions on inward FDI while avoiding the problems caused by variance inflation. However, this approach should be interpreted with caution, as the coefficient from the institutional variable included in the model may also capture the effects of other omitted institutions on FDI.

5 Results

5.1 Economic determinants of FDI

Table 2 reports the results for the baseline model.¹⁴ No institutional variable is considered here. The coefficients obtained with OLS, reported in columns (1) and (3), do not differ substantially from those in columns (2) and (4), for the Tobit model. This suggests that the censored-sample problem is not serious in our sample. According to Table 2, inward FDI stocks are characterized by strong border effects: the investment of a country in its neighbor is about 81–83% ($e^{0.59} - 1 \approx 0.81$ and $e^{0.60} - 1 \approx 0.83$)¹⁵ higher as compared to the investment in another country with similar characteristics, but with which the source country does not share a common border. Distance is also a key determinant of inward FDI, as an increase of 1% in the number of kilometers between source and host countries reduces FDI between 1.37% and 1.41%. GDP presents a statistically significant impact on FDI, giving support to the market size hypothesis (unless specified otherwise, we use a 5% significance level). The effect of labor costs on FDI is significant and negative, confirming that lower wages foster inward FDI. GDP growth has also a negative impact on FDI. As we show later, the absence of institutional determinants from these regressions can partially explain the negative sign of the coefficient, since better institutions affect growth. GDP growth may also be endogenous, since it has been shown that greater amounts of FDI can have positive repercussions on economic growth (*e.g.* Herzer, 2010, 2008; Borensztein et al.,

¹⁴We have also considered the distance of the capital of each country to Berlin and a dummy variable for the Euro Area. However, as these variables were insignificant in all regressions, they were dropped from the final specification.

¹⁵In this article, we use this formula to compute all marginal effects when the regressor is not in logarithmic form.

Table 2: *Baseline regression results.*

	(1)	(2)	(3)	(4)
	OLS	Tobit	OLS	Tobit
border	0.5928** (0.2339)	0.5946** (0.2313)	0.6018*** (0.2334)	0.6049*** (0.2306)
log distance	-1.3761*** (0.1309)	-1.4008*** (0.1293)	-1.3867*** (0.1310)	-1.4123*** (0.1294)
log gdp	0.9443*** (0.0625)	0.9666*** (0.0630)	0.9796*** (0.0718)	1.0107*** (0.0725)
gdp growth	-0.1169*** (0.0426)	-0.1199*** (0.0426)	-0.0948** (0.0456)	-0.0976** (0.0454)
log labor costs	-1.1976*** (0.1994)	-1.2370*** (0.2013)	-1.0716*** (0.2158)	-1.1005*** (0.2172)
openness	0.0066*** (0.0016)	0.0068*** (0.0016)	0.0065*** (0.0016)	0.0067*** (0.0016)
secondary education			-0.0108 (0.0082)	-0.0109 (0.0082)
eatr			-0.0104 (0.0148)	-0.0134 (0.0145)
adjusted R^2	0.7395	n.a.	0.7397	n.a.

White-robust standard errors in parenthesis. *, ** and *** represent rejections at 10, 5 and 1 percent significance levels, respectively.

1998). However, it is not our purpose to tackle this issue here. Finally, openness is also statistically significant and has the expected sign: an increase in this variable by 1 percentage point (p.p.) fosters inward FDI around 0.7%. Columns (3) and (4) add education and the EATR to the regression, but these coefficients come largely insignificant. One possible explanation for the insignificance of education is that countries are not supply-constrained of workers with average qualification levels; however, this does not mean that education does not affect inward FDI: if countries are supply-constrained of high-ability workers, then higher levels of education can indeed foster FDI. The insignificance of the EATR suggests that taxes play a secondary role in FDI attractiveness in Europe as compared to other factors, such as labor costs, or even specific policies adopted by countries aimed at attracting FDI, which are, to some extent, captured by the regional dummy variables.¹⁶

5.2 Institutional determinants of FDI

We now add the institutional dimension to the model. We undertake 3 different approaches. The first is based on the PCA, whereas the second consists in a factor-based scores approach. These two approaches aggregate the information of several institutional indicators in a few set of variables, which can therefore be simultaneously included in the regressions. The last approach consists in including each institutional indicator successively in the regressions, in

¹⁶These dummy variables are statistically significant. If they are excluded from the regression, the coefficient for the EATR comes significant and negative, suggesting that there is some unobserved heterogeneity that is region-specific and affects the role of taxes on inward FDI.

order to assess the effects of specific institutional indicators on inward FDI while avoiding variance inflation issues.

5.2.1 A principal components analysis

First, we use the PCA to summarize the indicators from the IEF, from the political risk index of the ICRG, and from the DB database, in a set of few variables. We then run the regressions using these newly created variables to represent the institutional framework of a country.

For the IEF, the standard eigenvalue-based criteria, with a cut-off value of 1, identified 2 components, explaining almost 68% of total variance. The rotated factor loading matrix associates the first component score (hereinafter denominated as “firms freedom”) with all the elements that, in some way, influence the firms profitability and the ease of doing business. It includes the following indicators: business freedom, trade freedom, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, and labor freedom. All these variables displayed a factor loading above 0.62 in this component, whereas the correlation between the remaining variables and this component was below 0.2. The second component score (which we call “public sector freedom”) measures the public sector effects on economic freedom—namely fiscal freedom and government freedom.

When applied to the 12 political risk variables from the ICRG, the PCA identifies 3 components, which together explain more than 72% of total variance. The first component is interpreted as the “firms political risk,” as it is related with the political risk factors that may directly affect firms. The rotated factor loadings associate this component with socio-economic conditions, investment profile, corruption, law and order, bureaucracy quality and military in politics. It may seem surprising that the variable military in politics loads in this component, but the fact is that a country with a military regime may have an uneasy environment for foreign businesses, and is more prone to corruption in the long term. The second component represents “conflicts and tensions,” as it is highly correlated with the variables internal conflict, external conflict, religious tensions and ethnic tensions. The last component stands for “democratic responsiveness,” and comprises government stability and democratic accountability. In this component, government stability loads with a negative value, and hence higher values are associated with greater democratic accountability, but with lower government stability. This occurs because a higher government stability is associated with a greater government’s ability to stay in office, and sometimes this is achieved at the expense of a lower democratic accountability (*e.g.* one party states or autocracies).

The standard eigenvalue-based criteria applied to the 9 areas of doing business identified 2 factors; however factor loadings were perplexing and did not allow a clear interpretation of the components. We opted instead to extract only one factor from the DB database, which is interpreted as representing an overall measure of doing business. This component

Table 3: *Regression results—Institutional determinants under a PCA approach.*

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	Tobit	OLS	Tobit	OLS	Tobit
border	0.6308*** (0.2321)	0.6375*** (0.2283)	0.6147*** (0.2330)	0.6202*** (0.2290)	0.6154*** (0.2334)	0.6219*** (0.2296)
log distance	-1.4209*** (0.1313)	-1.4407*** (0.1289)	-1.4031*** (0.1317)	-1.4253*** (0.1292)	-1.4273*** (0.1308)	-1.4485*** (0.1285)
log gdp	1.1178*** (0.0931)	1.1392*** (0.0923)	0.9975*** (0.0866)	1.0240*** (0.0864)	1.0996*** (0.0918)	1.1233*** (0.0913)
gdp growth	-0.0196 (0.0551)	-0.0238 (0.0547)	-0.1137** (0.0501)	-0.1165** (0.0499)	-0.0615 (0.0523)	-0.0643 (0.0520)
log labor costs	-1.1313*** (0.2165)	-1.1676*** (0.2168)	-1.2440*** (0.2304)	-1.2850*** (0.2307)	-1.1278*** (0.2161)	-1.1668*** (0.2167)
openness	0.0041** (0.0018)	0.0044** (0.0018)	0.0053*** (0.0017)	0.0055*** (0.0017)	0.0076*** (0.0016)	0.0078*** (0.0016)
secondary education	-0.0211** (0.0097)	-0.0205** (0.0097)	-0.0125 (0.0090)	-0.0121 (0.0090)	-0.0095 (0.0086)	-0.0090 (0.0086)
eatr	-0.0254 (0.0169)	-0.0284* (0.0167)	-0.0130 (0.0178)	-0.0167 (0.0176)	-0.0306* (0.0171)	-0.0338** (0.0168)
<u>Institutional components</u>						
IEF—firms freedom	0.6749*** (0.1794)	0.6659*** (0.1779)				
IEF—public sector freedom	-0.1602 (0.1143)	-0.1647 (0.1131)	0.1208 (0.1103)	0.1120 (0.1093)	-0.0679 (0.1075)	-0.0749 (0.1064)
ICRG—firms political risk			0.6061** (0.2651)	0.6058** (0.2621)		
ICRG—conflicts and tensions	-0.2345** (0.1190)	-0.2469** (0.1177)	-0.1699 (0.1361)	-0.1817 (0.1350)	-0.3918*** (0.1160)	-0.4045*** (0.1147)
ICRG—democratic responsiveness	-0.2835 (0.1869)	-0.2648 (0.1862)	-0.0146 (0.1881)	0.0006 (0.1885)	-0.2607 (0.1883)	-0.2445 (0.1875)
DB—overall					0.5002*** (0.1528)	0.4980*** (0.1532)
adjusted R^2	0.7456	n.a.	0.7428	n.a.	0.7444	n.a.

White-robust standard errors in parenthesis. *, ** and *** represent rejections at 10, 5 and 1 percent significance levels, respectively.

represents 45% of total variance, and is positively correlated with all the 33 index variables.

The results are presented in Table 3. As firms freedom, firms political risk, and the doing business component are highly correlated, and shared similar indicators, we did not include them simultaneously in the regressions. According to columns (1) and (2), a higher firms freedom has a statistically significant and positive impact on inward FDI at a 1% significance level. Columns (3) to (6) confirm that political risk and the ease of doing business are also key determinants of inward FDI. Public sector freedom has an ambiguous and non-significant impact on FDI. Fiscal freedom assesses the fiscal burden of a society, with more freedom being associated with lower taxes. As it includes the top tax rate on corporate income, *ceteris paribus*, one should expect higher values in fiscal freedom to be associated with more FDI. Government freedom measures the level of government expenditures as a percentage of GDP, with more freedom being associated with lower

expenditures. It is not clear whether this should attract or repel FDI, since higher public expenditures may be associated, on the one hand, with better socioeconomic conditions, higher development, better infrastructures, or greater incentives for FDI, but, on the other hand, with a higher future fiscal burden and fiscal uncertainty, or with a lower efficiency in the usage of public resources. This may help explaining the results. *A priori*, one would expect the conflicts and tensions indicator to be insignificant; however, this indicator seems to have an unexpected negative effect on FDI. One possible explanation is that the coefficient is capturing a casual negative correlation between conflicts and tensions and FDI. In fact, several countries, such as France, Belgium or the United Kingdom, perform poorly in this indicator relative to other European countries, due to several ethnic or external conflicts. However, these countries are also amongst the ones which attract more inward FDI. Multinational firms should not care directly about conflicts and tensions in the host country, as long as their investments are protected by the state, and the economic, legal and democratic environment is conducive to doing business. Finally, democratic responsiveness, *per se*, does not affect inward FDI.

Notice also that, in columns (3) and (4), as in the baseline regression, the coefficient for GDP growth is significant and negative, whereas in the remaining columns, it is insignificant. One possible interpretation for these mixed results is that low growth countries have a higher level of development and hence better institutions, and the variables firms freedom and doing business provide a better control for those institutions that influence the performance of firms. Once we control for this effect, economic growth becomes irrelevant to explain inward FDI. Obviously, the endogeneity problem mentioned earlier may also affect the level of significance. Education tends to be insignificant, except in columns (1) and (2), confirming the results from the baseline specification. The coefficient for the EATR is also insignificant, as before.

5.2.2 A factor-based scores approach

We now use the information from the rotated factor loadings matrix to aggregate the variables which loaded into the same component. This robustness exercise has two advantages. First, it allows us to protect against the fact that factor scores representing a given component always have some residual correlations with other components, which might affect the results. Second, contrary to factor scores, the vectors computed here are interpretable, as the variables are measured in indexes. A potential disadvantage of this approach is that the weights are not optimally computed. The new variables were aggregated by taking the simple average across the indicators that the PCA identified as loading into the same component. The exception is democratic responsiveness, which does not consider government stability. In fact, as this variable is negatively associated with democratic accountability by construction (the indicator loaded in the component with a negative sign), it makes no sense to take the simple average between them to create a factor of democratic responsiveness.

Table 4: *Regression results—Institutional determinants under a factor-based scores approach.*

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	Tobit	OLS	Tobit	OLS	Tobit
border	0.6340*** (0.2324)	0.6404*** (0.2284)	0.6169*** (0.2342)	0.6220*** (0.2304)	0.6183*** (0.2336)	0.6237*** (0.2298)
log distance	-1.4256*** (0.1314)	-1.4458*** (0.1290)	-1.4028*** (0.1321)	-1.4250*** (0.1298)	-1.4255*** (0.1314)	-1.4477*** (0.1290)
log gdp	0.9752*** (0.0872)	1.0009*** (0.0866)	0.9266*** (0.0864)	0.9540*** (0.0858)	0.9547*** (0.0873)	0.9819*** (0.0869)
gdp growth	-0.0385 (0.0567)	-0.0411 (0.0561)	-0.1138** (0.0531)	-0.1162** (0.0526)	-0.0894 (0.0548)	-0.0914* (0.0543)
log labor costs	-1.0313*** (0.2154)	-1.0707*** (0.2161)	-1.1133*** (0.2256)	-1.1529*** (0.2263)	-0.9518*** (0.2167)	-0.9912*** (0.2171)
openness	0.0032* (0.0018)	0.0035** (0.0018)	0.0053*** (0.0017)	0.0056*** (0.0017)	0.0065*** (0.0016)	0.0068*** (0.0016)
secondary education	-0.0217** (0.0101)	-0.0211** (0.0101)	-0.0115 (0.0095)	-0.0109 (0.0095)	-0.0086 (0.0091)	-0.0078 (0.0091)
eatr	-0.0089 (0.0165)	-0.0122 (0.0163)	-0.0104 (0.0168)	-0.0141 (0.0165)	-0.0155 (0.0167)	-0.0190 (0.0164)
<u>Institutional components</u>						
IEF—firms freedom	0.4589*** (0.1159)	0.4605*** (0.1153)				
IEF—public sector freedom	0.0057 (0.0517)	0.0012 (0.0509)	0.0795 (0.0528)	0.0735 (0.0522)	-0.0139 (0.0564)	-0.0188 (0.0556)
ICRG—firms political risk			0.2623* (0.1380)	0.2609* (0.1365)		
ICRG—conflicts and tensions	-0.1103 (0.0883)	-0.1210 (0.0876)	-0.2604*** (0.0965)	-0.2706*** (0.0955)	-0.2067** (0.0866)	-0.2184** (0.0862)
ICRG—democratic responsiveness	0.1147 (0.1367)	0.1208 (0.1343)	0.0639 (0.1422)	0.0702 (0.1396)	0.1039 (0.1375)	0.1091 (0.1351)
DB—overall					0.4639*** (0.1623)	0.4652*** (0.1621)
adjusted R^2	0.7454	n.a.	0.7415	n.a.	0.7429	n.a.

White-robust standard errors in parenthesis. *, ** and *** represent rejections at 10, 5 and 1 percent significance levels, respectively. In the text, the marginal effects from the institutional indicators are interpreted using the formula $\exp(\hat{\beta}) - 1$, where $\hat{\beta}$ is the estimated parameter.

The results are presented in Table 4. Firms freedom and the ease of doing business have a positive and statistically significant impact on inward FDI, confirming our previous results, but firms political risk is only significant at 10% (again, these components were not considered simultaneously in the regressions). This result is aligned with Bevan and Estrin (2004), who finds no significant impact of institutional risk on FDI into European transition economies, after controlling for other factors. One possible interpretation for this result is that political risk is very low for European countries, at least in the perspective of multinational corporations, and thus they perceive the differences in this indicator as negligible for their investment decisions. Note that the effect of institutions on FDI is also economically meaningful: for instance, an increase in 1 point in the firms freedom index (in

a 0-10 scale) increases FDI around 58%. The effect is similar for the ease of doing business. The effects of public sector freedom and democratic responsiveness remain insignificant, whereas conflicts and tensions display the same negative association with respect to inward FDI. All in all, this analysis confirms that countries with better economic and business environments and lower bureaucratic loads are able to attract larger amounts of FDI, and the effects are significant and important. The effect of political risk at the firm level on FDI is positive, but weak.

5.2.3 Institutional analysis—a breakdown

The previous analysis focused on the effects of institutions on inward FDI at a broad level, but it was silent about the effects of specific institutions. To examine this issue, we now re-estimate (1) by successively adding each institutional variable to the model. We omit the indicators related with conflicts and tensions and with public sector freedom from the analysis, since our previous results suggest that these variables have a dubious impact on FDI. This also accords with our intuition that the key institutional determinants of inward FDI are those which are directly related with the restrictions to economic activity and to doing business.

The results are presented in Table 5. To save space, we omit the coefficients for the control variables, and show only the coefficients for the institutional indicators. The variables are ordered according to their contribution in explaining the variance of the dependent variable (R^2) in the OLS estimation. Recall that all indicators range from 0 to 10, so that the coefficients must be interpreted as the impact on FDI from a change in 1/10 points of the range of the respective index. Higher values always mean better performances. For the IEF, the results indicate that all variables display the expected sign, and all of them, except trade freedom and monetary freedom, are significant. Probably, the low differences across countries in terms of tariffs and tariff barriers (trade freedom), and well as in terms of price stability and price controls (monetary freedom) are driving these results. The most relevant factors affecting inbound FDI, in the sense that they explain a greater fraction of the variance of the dependent variable, are financial freedom and labor freedom. These indicators have a unitary impact on inward FDI around 25% and 14% respectively. Financial freedom measures the independence of financial institutions from state control, which contributes to more competition and to a higher level of services available from financial intermediaries. Labor freedom provides a quantitative measure of labor regulations: the higher the score, the more flexible is the labor market and the less expensive is for multinational corporations to adjust their labor force. Thus, it is not surprising that higher factor scores in these indexes are associated with higher volumes of FDI. Business freedom and corruption freedom also play an important role in explaining the variance of the dependent variable. The former measures the overall burden and government efficiency associated with starting, operating, and closing a business, whereas the latter assesses the level of insecurity

Table 5: *Regression results—a breakdown.*

	(1)	st. dev.		(2)	st. dev.
	OLS	OLS	R ²	Tobit	Tobit
<u>IEF variables</u>					
financial freedom	0.2236***	0.0432	0.7632	0.2281***	0.0430
labor freedom	0.1337***	0.0449	0.7574	0.1398***	0.0447
property rights	0.1339**	0.0527	0.7571	0.1323**	0.0529
freedom from corruption	0.1781**	0.0800	0.7568	0.1755**	0.0802
investment freedom	0.1229**	0.0522	0.7568	0.1152**	0.0515
business freedom	0.1664**	0.0843	0.7564	0.1659*	0.0850
monetary freedom	0.1718	0.1686	0.7555	0.1695	0.1673
trade freedom	0.0638	0.2001	0.7552	0.0508	0.1999
<u>ICRG variables</u>					
socioeconomic conditions	0.2969***	0.0892	0.7588	0.2991***	0.0890
military in politics	-0.3152***	0.1140	0.7575	-0.3247***	0.1143
law and order	0.1228	0.0747	0.7559	0.1293*	0.0740
government stability	-0.0922	0.0761	0.7556	-0.1029	0.0758
corruption	0.0477	0.0532	0.7554	0.0485	0.0528
bureaucracy quality	-0.0380	0.0528	0.7553	-0.0438	0.0530
democratic accountability	0.0690	0.1361	0.7553	0.0755	0.1341
investment profile	0.0527	0.1286	0.7552	0.0465	0.1294
<u>doing business variables</u>					
starting a business	0.6907***	0.2073	0.7588	0.7272***	0.2088
protecting investors	0.1495***	0.0485	0.7580	0.1475***	0.0481
getting credit	0.1488**	0.0609	0.7569	0.1435**	0.0608
trading across borders	0.2837**	0.1342	0.7565	0.2906**	0.1360
registering property	0.1099	0.0696	0.7560	0.1086	0.0694
construction permits	0.2304*	0.1375	0.7559	0.2312*	0.1378
paying taxes	0.2150	0.1500	0.7558	0.1950	0.1496
closing a business	0.0553	0.0615	0.7554	0.0498	0.0610
enforcing contracts	-0.0207	0.0970	0.7552	-0.0215	0.0978

White-robust standard errors in parenthesis. *, ** and *** represent rejections at 10, 5 and 1 percent significance levels, respectively. Coefficients for control variables are omitted to save space. In the text, the marginal effects from the institutional indicators are interpreted using the formula $\exp(\hat{\beta}) - 1$, where $\hat{\beta}$ is the estimated parameter.

and uncertainty into economic relationships, and the pecuniary and non-pecuniary costs of operating a business, originated by corruption. Hence, it is not surprising that higher factor scores in these indexes are associated with higher volumes of FDI: in fact, a one point increase in these indicators leads to an increase in inbound FDI around 18–19%. Finally, property rights—which assesses the ability of individuals to accumulate private property, the extent to which laws protect that property, and the efficiency of the judiciary system to enforce those laws—and investment freedom—which addresses the constraints on capital flows, both in and out specific activities and across borders—also play a role in fostering inward FDI, although to a lesser extent. According to Table 5, a unit increase in these indicators fosters FDI in about 13%.

The second set of results in Table 5 confirms the idea that political risk is not a key determinant of inward FDI for the set of countries considered here. In fact, only socioeconomic conditions—which assesses the pressures that could constraint government action or fuel social dissatisfaction, namely unemployment, consumer confidence and poverty—has a positive effect and is significant at the standard level. Military in politics is also significant, but displays a negative impact on inward FDI. In fact, while military participation in government can fuel corruption, decrease democratic accountability, and lead to social unrest in the long-run, it can also provide stability and reduce business risks in the short term. Moreover, except for a few eastern economies, European countries receive full points in this rating, for which the long-run risks are most certainly insignificant in the perspective of multinational firms. In order to interpret the effects of other indicators, it is important to notice that the ICRG indicators are constructed with the purpose of assessing the political risk of a country, and thus they differ from similar indicators from the IEF, or other databases. For this reason, variables which measure the level of corruption or restrictions to investment, for instance, came significant in the IEF, but insignificant in the ICRG. Most probably, multinational corporations perceive Europe as a stable and secure destination for their investments, and thus differences in political risk across countries can only affect investments at the margin.

All the coefficients for the 9 areas of doing business are positive, except for enforcing contracts. However, only 4 are significant at the standard level. The most relevant factor is starting a business, whose unitary increase is able to double inward FDI. The importance of this indicator was already identified by the business freedom coefficient, although the effect here is much larger. The difference in magnitudes between both variables is most probably explained by the fact that business freedom includes other variables besides those considered in starting a business, with a lower impact on inward FDI. The formulas used to compute both indexes are different also. The strength of investor protection, measured by the protecting investors index, and the credit information registries and the effectiveness of collateral and bankruptcy laws in facilitating lending, measured by the getting credit index, also provide an important contribute to explain the variability of the dependent variable, and have an important impact on FDI: a one point increase in each of these variables leads to an increase in FDI around 15%. From the remaining, the necessary procedural requirements for exporting and importing (trading across borders) also displays a significant effect on inward FDI, around 33% for a unit increase. Licensing procedures for some activities (construction permits) has also a meaningful impact on inward FDI (around 26%), but the effect is only significant at 10%.

The analysis in this section clearly confirms that institutional factors are an important driving force of foreign investments. In particular, the number of procedures, the costs and the time required to start a business, the procedural requirements for exporting and importing, the amount of financial services provided in the host country, and the level of corruption, are the areas which display the highest effects on inward FDI. Socioeconomic

conditions are also shown to be relevant.

6 Measuring institutional reform in Portugal

If one seeks to understand the impact on Portugal’s inbound FDI originating from an institutional reform that approximates Portuguese institutions to the EU level, the analysis from the previous section provides only an incomplete picture. Firstly, because it does not incorporate the amount of institutional reform needed to achieve the EU level. And secondly, because it does not address the effort required to achieve that level. In this section we evaluate the effects of an institutional reform in Portugal. We follow closely Tavares (2004), who has proposed 3 measures of institutional reform to assess the benefits of reforming Portuguese institutions to the level of the EU on Portuguese economic growth.

For each institutional indicator for which Portugal is lagging behind the EU, we evaluate the impact on Portugal’s inward FDI of reforming that institution to the EU average, the required reform effort and the efficiency of the reform. The analysis is conducted versus the EU-27 and the EU-15.¹⁷ The impact of reforming institution k to the EU level is given by the exponential of the respective coefficient for that institution (computed in the previous section) multiplied by the difference between the institutional index for the EU and for Portugal minus 1. That is

$$\text{Impact on FDI}_k = \exp(\beta_{3,k}(\text{INST}_{EU,k} - \text{INST}_{P,k})) - 1 \quad (2)$$

where $\text{INST}_{i,k}$ denotes the institutional index of institution k in country i , $i = EU, P$ (where EU stands for the EU average and P for Portugal) and $\beta_{3,k}$ is the respective coefficient.¹⁸ Obviously, the higher the value of (2), the more promising is the reform in that area, either because it has a large impact on inbound FDI, or because the Portuguese institutional index is substantially below that of the EU. For this reason, this measure completely abstracts from the “cost of reform,” *i.e.*, from the required effort to bring the Portuguese institutional index closer to that of the EU

$$\text{Required reform effort}_k = \frac{\text{INST}_{EU,k} - \text{INST}_{P,k}}{\text{INST}_{P,k}} \quad (3)$$

Equation (3) measures the relative distance of the Portuguese institutional index relative to the EU average, *i.e.*, the required institutional change that Portugal needs to achieve the EU level, relative to its current position. A higher value means that achieving the EU average requires a higher percentage change in the institutional indicator, and thus more effort has to be put on the reform.

¹⁷For the EU-27, the analysis actually comprises only 25 countries, since Cyprus and Malta are not included in our database.

¹⁸In our computations, we take into account that a change in the Portuguese institutional index also changes EU average institutional index.

Finally, the third measure of institutional reform evaluates the efficiency of the reform, *i.e.*, the impact on FDI for each unit of effort put in the reform. It is computed as the ratio of (2) over (3)

$$\text{Efficiency of reform}_k = \frac{\text{Impact on FDI}_k}{\text{Required reform effort}_k} \quad (4)$$

A value of 1 indicates a 100% increase in inbound FDI for each reform effort of 100%. Hence, the highest the value of (4), the more promising is the reform in that area, and the highest is the increase in FDI for each unit of effort put in the reform.

Table 6: *Reforming institutional factors. Impact on FDI, required reform effort, and efficiency of reform versus the EU-27.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	index	index	(2) – (1)	coefficient	$e^{(4)(3)} - 1$	$ (3)/(1) $	(5)/(6)
	Portugal	EU-27	difference		impact	required	efficiency
					on FDI	reform	of reform
					(%)	effort	
<u>Institutional variables</u>							
firms freedom***	6.78	7.34	0.57	0.4589	29.62	8.34	3.55
firms political risk*	8.20	7.96	-0.24	0.2623			
doing business***	7.84	7.68	-0.16	0.7127			
<u>IEF variables</u>							
financial freedom***	5.00	7.08	2.08	0.2236	59.33	41.67	1.42
labor freedom***	4.15	6.34	2.19	0.1337	34.07	52.84	0.64
property rights**	7.00	6.96	-0.04	0.1339			
corruption freedom**	6.50	6.46	-0.04	0.1781			
investment freedom**	7.00	7.29	0.29	0.1229	3.65	4.17	0.88
business freedom**	7.86	8.00	0.14	0.1664	2.39	1.80	1.32
monetary freedom	8.04	8.10	0.06	0.1718	0.99	0.72	1.39
trade freedom	8.66	8.50	-0.16	0.0638			
<u>ICRG variables</u>							
socioec. conditions***	6.70	6.60	-0.10	0.2969			
military in politics***	10.00	9.40	-0.60	-0.3152			
law and order	8.33	8.24	-0.10	0.1228			
government stability	7.12	6.57	-0.55	-0.0922			
corruption	6.67	5.94	-0.72	0.0477			
bureaucracy quality	7.50	8.02	0.52	-0.0380			
democratic account.	10.00	9.62	-0.38	0.0690			
investment profile**	10.00	9.53	-0.47	0.0527			
<u>doing business variables</u>							
starting a business***	9.12	9.20	0.08	0.6907	5.55	0.86	6.47
protecting investors***	6.08	5.57	-0.51	0.1495			
getting credit**	5.56	4.66	-0.90	0.1488			
trading across borders**	8.84	8.69	-0.15	0.2837			
registering property	7.70	8.02	0.32	0.1099	3.58	4.16	0.86
construction permits*	8.34	8.94	0.60	0.2304	14.77	7.17	2.06
paying taxes	9.01	8.80	-0.21	0.2150			
closing a business	8.45	7.57	-0.88	0.0553			
enforcing contracts	7.49	7.73	0.24	-0.0207			

*, ** and *** represent the variables which are significant at 10, 5 and 1 percent significance levels, respectively. The reform measures are only computed for those variables in which Portugal has an inferior performance relative to the European Union. The index for the EU-27 does not consider Portugal.

Tables 6 and 7 present an evaluation of the reform potential for our selected institutional factors. We do this exercise only for the model estimated by OLS, since the regression coefficients are similar to those from the Tobit model. Furthermore, since it only makes sense to address the reform potential in areas where Portugal is lagging behind the EU level, we do not present the values when the opposite situation occurs, *i.e.* when Portugal has better institutions than the EU. Finally, notice that any area which has not a statistically significant impact in FDI should also not be considered for reform.

In Table 6 we observe that two of the most promising areas for reform are financial freedom and labor freedom, since these are expected to have the largest impact on Portuguese inbound FDI. However, if the effects of an institutional reform are weighted versus the required reform effort, reforming the financial sector comes at a much lower cost per unit of impact on FDI. Reforming any of the remaining IEF variables to the EU-27 level does not bring any advantage, since the overall impact on FDI is small, and hence they should not be considered a top priority for reform. As for the DB variables, the licensing procedures for some activities turns out to be an interesting area for reform, and the impact on FDI—about 15%—is quite relevant. The remaining areas of doing business where Portugal is lagging behind the EU-27—starting a business, enforcing contracts and registering property—do not have a relevant impact on FDI. Portugal is above the EU-27 level in all indicators of the ICRG, as well as in the overall firms political risk and business regulations. As for the firms freedom indicator, Portugal lags behind the EU-27 in about 1/2 a point, and an overall reform at this level is able to increase FDI by almost 30%.¹⁹

Table 7 yields slightly different conclusions, as several Portuguese indicators are more distant from the EU-15 level than from the EU-27 level. Figure 2 provides a graphical perspective of the effects of reforming Portuguese institutions to the EU-15 level. For the IEF indicators, reforming financial freedom still displays the highest impact on inward FDI, and it is one of the most efficient reforms. Improving labor freedom and corruption freedom also lead to a substantial increase in FDI; however, the latter can be achieved with a substantially lower effort as compared to the former. Reforming business freedom leads to a smaller gain in inward FDI—around 14%—however, this benefit comes at a low cost, for which it is also a promising area for reform. Reforming property rights allows for moderate increases in FDI, but requires a larger effort. On the opposite direction, improving investment freedom to the EU-15 level leads to a small increase in FDI. The results for the ICRG indicate that improving the socioeconomic conditions could also lead to substantial gains in inward FDI; however, the performance in this area is to some extent related with the macroeconomic scenario, for which a reform might not be feasible in the short-run. From the doing business indicators, Portugal has a better performance than the EU-15 in protecting investors, getting credit and closing a business, and hence reforms should be discarded in those areas. Of the remaining areas, reforming the regulatory and

¹⁹However, since the overall freedom score is a simple average of all other factor scores, its efficiency cannot be directly compared with that of the other indicators.

Table 7: *Reforming institutional factors. Impact on FDI, required reform effort, and efficiency of reform versus the EU-15.*

	(1)	(2)	(3) (2) – (1)	(4)	(5) $e^{(4)(3)} - 1$ impact on FDI (%)	(6) $ (3)/(1) $ required reform effort	(7) (5)/(6) efficiency of reform
	index Portugal	index EU-15	difference	coefficient			
<u>Institutional variables</u>							
firms freedom***	6.78	7.85	1.07	0.4589	63.52	15.81	4.02
firms political risk*	8.20	8.71	0.51	0.2623	14.29	6.21	2.30
doing business***	7.84	7.92	0.08	0.4639	3.65	0.98	3.70
<u>IEF variables</u>							
financial freedom***	5.00	7.29	2.29	0.2236	66.71	45.71	1.46
labor freedom***	4.15	6.45	2.30	0.1337	36.07	55.51	0.65
property rights**	7.00	8.07	1.07	0.1339	15.43	15.31	1.01
corruption freedom**	6.50	7.82	1.32	0.1781	26.53	20.33	1.31
investment freedom**	7.00	7.71	0.71	0.1229	9.18	10.20	0.90
business freedom**	7.86	8.63	0.77	0.1664	13.64	9.78	1.40
monetary freedom	8.04	8.29	0.25	0.1718	4.43	3.14	1.41
trade freedom	8.66	8.52	-0.14	0.0638			
<u>ICRG variables</u>							
socioec. conditions***	6.70	7.33	0.63	0.2969	20.57	9.40	2.19
military in politics***	10.00	9.64	-0.36	-0.3152			
law and order	8.33	9.05	0.71	0.1228	9.17	8.57	1.07
government stability	7.12	6.81	-0.31	-0.0922			
corruption	6.67	7.19	0.52	0.0477	2.52	7.81	0.32
bureaucracy quality	7.50	9.20	1.70	-0.0380			
democratic account.	10.00	9.85	-0.15	0.0690			
investment profile	10.00	9.85	-0.15	0.0527			
<u>doing business variables</u>							
starting a business***	9.12	9.28	0.16	0.6907	11.62	1.75	6.66
protecting investors***	6.08	5.62	-0.46	0.1495			
getting credit**	5.56	4.97	-0.59	0.1488			
trading across borders**	8.84	8.90	0.06	0.2837	1.81	0.72	2.53
registering property	7.70	7.96	0.26	0.1099	2.86	3.33	0.86
construction permits*	8.34	9.21	0.87	0.2304	22.06	10.37	2.13
paying taxes	9.01	9.02	0.01	0.2150	0.17	0.09	1.94
closing a business	8.45	8.45	-0.01	0.0553			
enforcing contracts	7.49	7.88	0.39	-0.0207			

*, ** and *** represent the variables which are significant at 10, 5 and 1 percent significance levels, respectively. The reform measures are only computed for those variables in which Portugal has an inferior performance relative to the European Union. The index for the EU-15 does not consider Portugal.

administrative burden required to obtain a construction permit has the highest impact on FDI, and also displays an efficiency index above 1, being a good candidate for reform. However, this impact is only statistically significant at 10%. Improving the necessary bureaucratic steps to start a business is also highly efficient, although the effect is not as high as for other institutional indicators. The reduced impact on FDI of reforming other areas of doing business suggests that they should not be taken as top priorities for reform. Finally, an overall institutional reform that comprises all the areas of the IEF can increase inward FDI up to 64%, whereas a similar reform in business regulations leads only to a marginal increase in FDI, below 4%. Thus, improving economic freedom should be a top

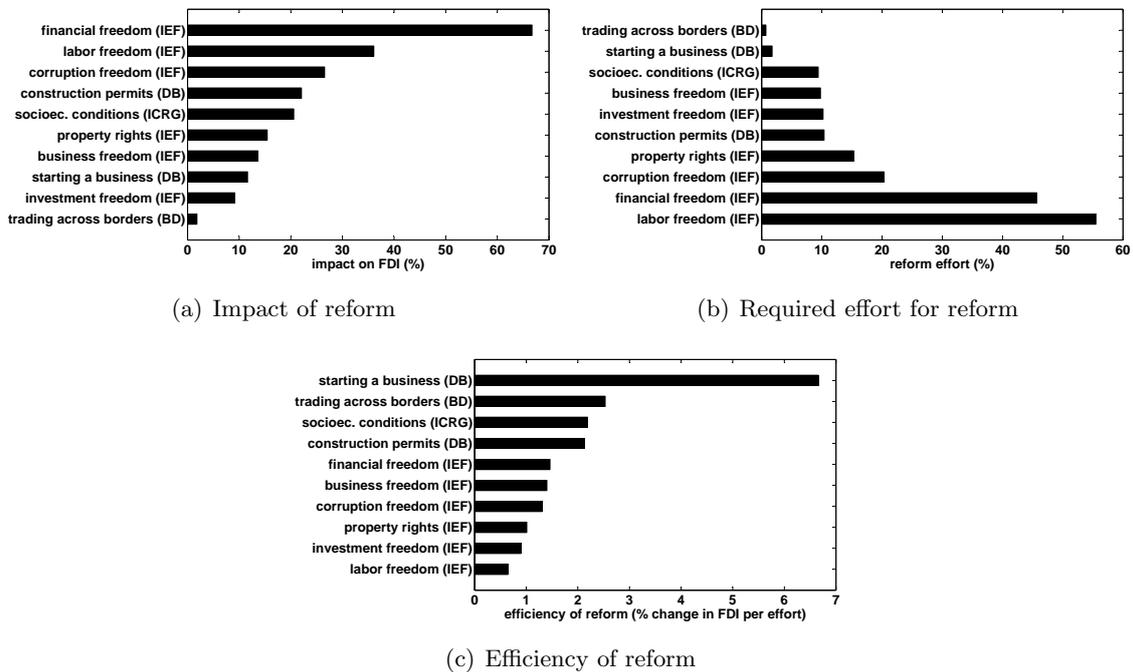


Figure 2: *Measuring institutional reform in Portugal to the EU-15 level.*

priority in terms of policy-making.

7 Concluding remarks and policy implications

The purpose of this article was twofold: to analyze the effects of several economic and institutional factors on bilateral inward FDI for EU countries, and to investigate which determinants, after reform, are most likely to foster inward FDI into Portugal. With this intent, to the traditional determinants of FDI we added three additional sets of institutional variables: the Index of Economic Freedom, the political risk index for the International Country Risk Guide, and the Doing Business. Our conclusions indicate that, in general, countries with better economic performances, better policies and better institutions are able to attract larger amounts of FDI. Geography, market size and labor costs display the largest impacts on inward FDI. Within the institutional factors, the independence of the financial system, the level of corruption, and several business regulations—mainly those related with starting a business, and foreign trade—are the ones which contribute the most to foster inward FDI.

However, not all these variables are suited for reform in Portugal. Firstly, because Portugal may already have good performances in some of these indicators, and secondly, because the marginal effects abstract from the reform effort. Hence, we complement our

analysis by presenting and analyzing 3 measures of institutional reform: the impact of the reform on FDI, the required reform effort, and the efficiency of reform. The results suggest that the most important reforms to put Portuguese institutions at the EU-27 level are related with the independence of the financial system and with labor regulations, although the latter requires a comparatively higher effort. A more ambitious reform plan which puts Portuguese institutions at the EU-15 average level should also consider reforms aimed at decreasing corruption, at improving property rights, and at simplify the necessary procedures to start a business.

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A Data description

A.1 Distance and economic variables

The following variables are used.

FDI stock: Bilateral inward FDI stocks in Millions of Euros. Source: Eurostat.

Border: Dummy variable which takes the value of 1 if the source and host countries share a common border and 0 otherwise.

Distance: Distance, in Kilometers, from the capital of the source country to the capital of the host country, calculated using the great circle distance.

GDP: Gross Domestic Product in Millions of Euros at current market prices. Source: Eurostat.

GDP growth: Real GDP growth rate (percentage) relative to the previous year. Source: Eurostat.

Labor cost: Yearly nominal compensation per employee in thousands of Euros. Source: AMECO.

Openness: Degree of openness, measured by the ratio of exports plus imports over GDP. Source: Eurostat.

Secondary education: Percentage of population aged 25 to 64 having completed secondary education. Source: Eurostat.

EATR: Effective average tax rate in the host country (percentage). The data was kindly provided by Michael Overesch (see Overesch and Rincke, 2009).

A.2 Index of Economic Freedom

The Index of Economic Freedom is computed by the Heritage Foundation, and the data can be found in their website (www.heritage.org/index). The overall index of economic freedom is constructed by taking the simple average across 10 different indexes. The indexes, described below, were rescaled to the 0–10 range to ease the exposition. A higher score means a better performance.

Business Freedom: Measures the ability to start, operate, and close a business, thus representing the overall burden from regulation and government efficiency in the regulatory process. This score is constructed using data on 10 factors from the Doing Business study: number of procedures to start a business, number of days to start a business, cost of starting a business, minimum capital required to start a business, number of procedures to obtain a licence, time in obtaining a licence, cost in obtaining a licence, time to close a business, cost of closing a business, and recovery rate in closing a business.

Trade Freedom: Composite measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services. It is based on the trade-weighted average tariff rate and on non-tariff barriers.

Fiscal Freedom: Measures the tax burden imposed by the government. It includes the direct tax burden on individual and corporate incomes, and tax revenues as a percentage of GDP.

Government Freedom: Assesses the weight of government expenditures on GDP. According to this index, a higher share of government expenditures on GDP is associated with a lower score.

Monetary Freedom: Measures price stability (the weighted average inflation rate for the last 3 years) and price controls. The index is constructed such that inflation and price controls originate lower scores.

Investment Freedom: Evaluates a variety of restrictions imposed on investment, namely restrictions on FDI, transparency and bureaucracy in the foreign investment code, restrictions on land ownership, sectoral investment restrictions, expropriation of investments without fair compensation, foreign exchange controls and capital controls.

Financial Freedom: Measures bank security and the independence of the financial system from government control. This score comprises the extent of government regulation in the financial system, the extent of state intervention in banks, the difficulty of operating financial services, and the government influence on the allocation of credit.

Property Freedom: Assesses the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. Thus, it measures the extent to which laws protect private property, the degree of enforcement of those laws by the government, and the likelihood of expropriation. It also analyzes the independence of the judiciary system, the level of corruption within the judiciary system, and the ability of

individuals and business men to enforce contracts.

Freedom from Corruption: Measures the degree of corruption within a country.

Labor Freedom: Measures several aspects of the legal and regulatory framework of a country's labor market, such as regulations on the minimum wage, laws inhibiting layoffs, regulatory burdens on hiring, among others.

A.3 International Country Risk Guide—Political Risk Rating

The International Country Risk Guide computes 22 variables in three categories of risk: political, financial, and economic. The political risk rating includes 12 variables, covering political and social attributes. Although some of them are more related with inward FDI than others, all are used in the principal components analysis, as explained in the main text. In order to facilitate the comparison in the magnitude of the coefficients, we convert all indexes to the 0–10 range.

Government stability: Assesses the government's ability to carry out its declared program and the ability to stay in office. It is constructed from 3 subcomponents: government unity, legislative strength and popular support.

Socioeconomic conditions: Assesses the pressures that could constraint government action or fuel social dissatisfaction. It is constructed from 3 subcomponents: unemployment, consumer confidence and poverty.

Investment profile: Assesses the risks to investment that are not covered by other economic, political and financial risk components. It is constructed from 3 subcomponents: contract viability/expropriation, profile repatriation and payment delays.

Internal conflict: Assesses the political violence and its potential impact on governance. It is constructed from 3 subcomponents: civil way/coup threat, terrorism/political violence and civil disorder.

External conflict: Assesses the risk to the government from foreign action, both originating from non-violent pressures (for instance diplomatic pressures, trade restrictions, territorial disputes) and violent pressures (cross-border conflicts and war). It is constructed from 3 subcomponents: war, cross-border conflict and foreign pressures.

Corruption: Assesses corruption in the political system, including bribes, exchange controls and tax assessments, among others.

Military in politics: Measures the involvement of military in politics, which distorts government policy and diminishes democratic accountability.

Religious tensions: Measures the involvement of religious groups in politics. Religious groups often seek to replace civil laws by religious laws, thus distorting and constraining government action.

Law and order: Measures the strength and impartiality of the legal system and the pop-

ular observance of the law.

Ethnic tensions: Measures racial, nationality and language tensions, which originate intolerance and unwillingness to make compromises.

Democratic accountability: Measures the responsiveness of government to its people. The score for this component is based on the following types of governance: alternating democracy, dominating democracy, de-facto one-party state, de jure one-party state and autarchy.

Bureaucracy quality: Measures the institutional strength and quality of the bureaucracy, and the extent to which bureaucracy is autonomous from the political pressure and has a established mechanism for recruitment and training.

A.4 Ease of Doing Business

The World Bank’s Doing Business (DB) database measures business regulations and therefore the cost of a firm operating in a country. More specifically, it provides quantitative assessment for starting a business, dealing with construction permits, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business, in a total of 33 raw factors, described below. For the analysis, these factors were aggregated into 9 indexes ranging from 0 to 10, each summarizing a specific topic of doing business. To compute these indexes, we proceeded as follows. First, we represented each raw factor by an index, ranging from 0 to 10, according to the min-max standardization method,

$$\text{Score}_k = 10 \frac{\text{factor}_k - \text{factor}_{\min}}{\text{factor}_{\max} - \text{factor}_{\min}}$$

if higher factor values imply better performances (*e.g.*, strength of legal rights, recovery rate when closing a business), or

$$\text{Score}_k = 10 - 10 \frac{\text{factor}_k - \text{factor}_{\min}}{\text{factor}_{\max} - \text{factor}_{\min}}$$

if higher factor values imply worst performances (*e.g.*, procedures, time, cost).

This was done for all countries in the DB database. According to these formulas, all scores are organized such that higher values always mean better performances. The topic score is the simple average of all factors that compose that topic. An overall ease of doing business index is created by taking the simple average of the 9 topic scores.

A.4.1 Starting a business

The starting a business index measures all procedures, costs and time that are formally required for an entrepreneur to start up and formally operate an industrial or commercial

business. It includes the following factors:

Procedures: Number of interactions of the company founders with external parties in order to formally start operating a business.

Time: Median duration in calendar days that is necessary to complete a procedure with minimum follow-up with government agencies and no extra payments.

Cost: All official fees and fees for legal or professional services if such services are required by law in order to start operating a business. It is recorded as a percentage of the economy's income per capita.

Minimum Capital: The amount that the entrepreneur needs to deposit in a bank or with a notary before registration and up to 3 months following incorporation in order to start operating a business. It is recorded as a percentage of the economy's income per capita.

A.4.2 Dealing with construction permits

The dealing with construction permits index measures all procedures required for a business in the construction industry to build a standardized warehouse, as well as the costs and time required to complete the procedures. It includes the following factors:

Procedures: Number of procedures required for a business in the construction industry to build a standardized warehouse.

Time: Median duration in calendar days that is necessary to complete the required procedures.

Cost: All fees associated with completing the procedures to legally build a warehouse. The cost is recorded as a percentage of the economy's income per capita.

A.4.3 Registering property

The registering a property index records the necessary procedures that a business man must incur to purchase a property from another business man and to transfer the property title to his name, as well as the associated costs and time. It includes the following factors:

Procedures: Number of procedures that are legally or in practice required for registering a property.

Time: Median duration that property lawyers, notaries or registry officials indicate is necessary to complete the procedures for registering a property.

Cost: All the necessary fees to register a property. This variable is recorded as a percentage of the property value.

A.4.4 Getting credit

The getting credit index measures the legal rights of borrowers and lenders with respect to secured transactions and the sharing of credit information. It includes the following factors:

Strength of legal rights: Index that measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. It ranges from 0 to 10.

Depth of credit information: Index that assesses the rules and practices affecting the coverage, scope and accessibility of credit information, regardless of whether this information is available through a public credit registry or through a private credit bureau. It ranges from 0 to 6.

Public registry coverage: Reports the number of individuals and firms listed in a public credit registry with information on their borrowing history from the past 5 years. It is measured as a percentage of adults aged 15 and above.

Private bureau coverage: Reports the number of individuals and firms listed by a private credit bureau with information on their borrowing history from the past 5 years. The number is expressed as a percentage of the adult population aged 15 and above.

A.4.5 Strength of investor protection

The strength of investor protection index measures the strength of minority shareholder protections against directors misuse of corporate assets for personal gain. It includes the following factors:

Extent of disclosure: Index which assesses who can approve related-party transactions and the requirements for external and internal disclosure in case of related-party transactions. It ranges from 0 to 10.

Extent of director liability: Index which measures the ability of shareholders to hold the interested party and the approving body liable in case of a prejudicial related-party transaction, the availability of legal remedies (damages, repayment of profits, fines, imprisonment and rescission of the transaction) and the ability of shareholders to sue. It ranges from 0 to 10.

Ease of shareholder suits: Index that measures the documents and information available during trial and the access to internal corporate documents. It ranges from 0 to 10.

A.4.6 Paying taxes

The paying taxes index measures the tax burden and mandatory contributions that a medium size company must pay in a given year, as well as the administrative burden of

paying taxes and contributions. It includes the following factors:

Payments: Reflects the total number of taxes and contributions paid, including consumption taxes, as well as the method of payment, the frequency of payment, the frequency of filing, for a company during the second year of operation.

Time: Measures the hours per year a company spends to prepare, file and pay the corporate tax, the value added tax, and social contributions. It includes the time spent to collect information and to compute the amount payable.

Total tax rate: Measures all taxes and contributions (corporate taxes, social contributions, labor taxes, property taxes, and other taxes) paid by firms as a percentage of total profits.

A.4.7 Trading across borders

The trading across borders index measures procedural requirements for exporting and importing a standardized cargo of goods by ocean transport. It includes the following factors:

Documents to export: Number of bank documents, customs clearance documents, port and terminal handling documents and transport documents required for exporting.

Documents to import: Number of bank documents, customs clearance documents, port and terminal handling documents and transport documents required for importing.

Time to export: Time (in calendar days) to obtain all documents required for inland transport and handling, for customs clearance and inspections, and for port and terminal handling, for exporting a standardized cargo.

Time to import: Time (in calendar days) to obtain all documents required for inland transport and handling, for customs clearance and inspections, and for port and terminal handling, for importing a standardized cargo.

Cost to export: Measures the costs (in US dollars per container) of all documentation, inland transport and handling, customs clearance and inspections and port and terminal handling, for exporting a standardized cargo.

Cost to import: Measures the costs (in US dollars per container) of all documentation, inland transport and handling, customs clearance and inspections, and port and terminal handling, for importing a standardized cargo.

A.4.8 Enforcing contracts

The enforcing contracts index measures the efficiency of the judicial system in resolving a commercial dispute. It includes the following factors:

Procedures: Number of procedures resulting from a commercial dispute, either between the parties or between them and the court officer. It comprises the steps to file the case, the steps for trial and judgment and the steps to enforce the judgment.

Time: Number of calendar days, from the moment the lawsuit is filed on court until payment. It includes the necessary time to file and serve the case, the time of the trial, and the time to enforce the judgment.

Cost: Average attorney fees, court costs (including expert fees) and enforcement costs a firm must incur if a commercial dispute goes to trial. It is measured as a percentage of claims.

A.4.9 Closing a business

The closing a business index measures the time, cost and outcome of insolvency proceedings involving domestic entities. It includes the following factors:

Time: Calendar years required for creditors to recover their credit.

Cost: Court fees, fees of insolvency administrators, lawyers' fees, and assessors' and auctioneers' fees required to close a business. It is measured as a percentage of the debtor's estate value.

Recovery rate: Measures the percentage recovered by creditors, *i.e.*, the present value of debt that can be recovered.