

Ensaio

Economic and institutional determinants of FDI: an application to the Portuguese case¹

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1. Introduction

Foreign Direct Investment (FDI) has become increasingly important in a globalized economy, both for developed and developing countries, since the 1980's. 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 an 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 European Union (EU).

Such large amounts of inward FDI can bring several advantages to the host country. For instance, FDI is more conducive to long-run growth and to development than other forms of capital inflows, since it is associated with technology transfer, with the introduction of management skills, or even with improvements in the productive structure of a country (Borensztein et al., 1998; Barrell and Pain, 1997). Additionally, FDI may also have a positive impact on the balance of payments, since multinational firms may have a greater propensity to export than domestic firms. These are very important for a small open economy such as Portugal, where both the lack of investment and the external deficit were, in the recent past, constraints to economic growth.

It is therefore of great importance to understand which factors drive inward FDI, and which areas should policy-makers prioritize for reform in order to tilt FDI into their countries. This article addresses these two issues: the first at the European level, and the second from the perspective of the Portuguese economy. Firstly, we analyze the effects of economic and institutional factors, including business regulations, on bilateral inward Foreign Direct Investment (FDI), from 45 source countries to 29 European countries. 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. And secondly, we evaluate the benefits of reforming Portuguese institutions to the EU average level – both for the EU-15 and for the EU-27 – using 3 complementary indicators: the effect of the reform on FDI, the required reform effort, and the efficiency of the reform.

This article is organized as follows. Section 2 briefly reviews the literature and Section 3 presents the data used in the empirical analysis. Section 4 introduces the econometric methodology. Section 5 discusses the econometric results related with the effects of economic and institutional factors on inward FDI. Section 6 deals with institutional reform in Portugal. Section 7 concludes by underlining the policy implications.

¹ The opinions expressed in this article represent the views of the authors and do not necessarily correspond to those of the Ministry of Economy.

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2. Literature review

The empirical literature on FDI was initially focused on its economic determinants.⁴ 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) finds 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 affects FDI for EU accession candidates. Other studies also find a positive and significant relationship between market variables and FDI (e.g. Love and Lage-Hidalgo, 2000; Wheeler and Mody, 1992; Culem, 1988; Kravis and Lipsey, 1982).

Taxes and agglomeration economics are also believed to be key determinants of FDI. The empirical analysis of the effects of taxation on FDI dates back, at least, to Hartman (1984, 1985), who has suggested a negative relationship between taxes and FDI. Related conclusions are also shared by Cassou (1997), by using a panel approach, Grubert and Mutti (1991), who show that real investment responds to the host country effective tax rates, Devereux and Griffith (1998), who show that average effective tax rates influence firm location choices, and Hines (1996), who finds that state taxes significantly influenced the pattern of foreign direct investment in the United States (US). De Mooij and Ederveen (2003) present an extensive review of this literature. Government promotion through fiscal incentives is also shown to influence FDI flows (Buch et al., 2005). Agglomeration effects are also relevant, as shown by Head et al. (1995), whose conditional logit model suggests that agglomeration economies played an important role in explaining Japanese manufacturing investments in the US, and Wheeler and Mody (1992), who conclude that agglomeration economies influence investors' decisions. Devereux and Griffith (1998) construct 3 measures of agglomeration and, using a nested multinomial logit model, conclude that agglomeration effects influence the location decisions of US firms.

Both the level of infrastructure and host country currency depreciations are also thought to positively influence FDI. Loree and Guisinger (1995) use principal component analysis on 22 infrastructure measures to reduce them to 6 variables, of which only 2 are retained in the empirical specification. These reflect the amount of communication structure and the amount of transportation infrastructure of a country and are shown to have an important role in FDI. Bellak et al. (2007) follow a similar path and use an augmented gravity model setting to show telecommunication and transport infrastructure to play a role in the location decisions made by multinational enterprises. In the case of host country depreciations, several studies relying solely on US data, which limits the scope of analysis, find a positive relationship with FDI. 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) or Swenson (1994).

But there are other economic determinants with less consensual results. In the case of labor costs, their negative impact on FDI flows, *ceteris paribus*, is shown by Janicki and Wunnava (2004), Bevan and Estrin (2004) and Culem (1988). However, Tsai (1994), Wheeler and Mody (1992) or Kravis and Lipsey (1982) have found insignificant or opposite relationships. This mixed evidence can be partially explained by the role of labor productivity in FDI, which is highly correlated with labor costs. A higher degree of openness and lower trade barriers are shown to have a positive effect on inward FDI by Culem (1988) and Bellak et al. (2007), although other studies find mixed evidence (Wheeler and Mody, 1992; Grubert and Mutti, 1991). 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, but has a positive and significant impact on that probability if the investment is made in the services sector in the latter case.

⁴ Caves (1996) and Blonigen (2005) survey the FDI literature.

Since the mid 1990's, the role of institutional determinants became increasingly relevant, namely in the context of regional integration agreements where governments implemented business facilitation measures in order to provide firms 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.

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 other studies (Lee and Mansfield, 1996; Knack and Keefer, 1995) have shown that property rights and the protection of intellectual property influence the amount and the composition of FDI. Buch et al. (2005) show a positive relation between an efficient legal system and FDI. Biswas (2002) shows that both traditional factors and nontraditional (institutional) factors are important determinants of FDI inflows, and Stevens (2000) and Benassy-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. Alesina et al. (2005) conclude that lower barriers to entry have a positive impact on investment inflows and Hajkova et al. (2006) show the inclusion of policy variables such as easy-to-comply regulatory procedures to be significant as FDI determinants and to greatly reduce the influence of economic variables such as taxation. 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 labour markets (Djankov et al., 2003), 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 influence the location of US foreign affiliates.

3. Data

Our purpose is to explain inward FDI stocks from 45 source countries to 29 host countries 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 (Benassy-Quéré et al., 2007). Moreover, since institutions are usually stable over time, they are more likely to influence stocks rather than flows. FDI data – totaling 1,144 observations – was collected from the Eurostat database.

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. Our key economic variables are the host country's GDP (a proxy for market size), the GDP growth rate (a proxy for market growth), per capita GDP (which reflects a higher purchasing power or better socioeconomic conditions for the host country), and the degree of openness (which measures trade

flows). Our baseline model also includes the level of education, measured as the percentage of population aged 25 to 64 having completed secondary education, and the Effective Average Tax Rate (EATR). These variables were collected from the Eurostat database, except the EATR, which was 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.⁵ The data collected concerns the year 2007, which covers the second half of 2005 and the first half of 2006. Societies that have better scores in this index should be 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. The variables were also 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 measures the costs of starting, operating, and closing a business, for a medium-sized firm in a given country⁶ and comprises 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 variables was 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 the 9 categories, through a simple average. The data collected respects the 2007 report, which addresses business regulations as of June 1, 2006.

4. Econometric Approach

The gravity model was first developed in the context of international trade (see, for instance, Eaton and Tamura, 1995), but it has also been successfully applied to explain bilateral FDI (e.g. Wei2000a,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 to take 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:

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

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, 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 *per capita* GDP will

⁵The data for the IEF can be found at www.heritage.org/index.

⁶The 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.

enter (1) in logarithmic form, which helps making the error term homoskedastic.⁷ 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 (e.g. 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. 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 202 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 (e.g. 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. Hence, besides estimating (1) by OLS, we also estimate a Tobit model where the assumed threshold is -1.1.⁸

Institutional indicators are highly correlated among them, which may originate problems of near multicollinearity 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 two distinct approaches. In the first, we reduce the dimension of each institutional database by taking the simple average across those indicators that were identified as belonging to the same institutional area. For this purpose, we used the information from the rotated factor loadings matrix (varimax rotation) from a principal component analysis, since this provides a statistical criterion to group highly correlated indicators.⁹ In the second approach, we estimate the model in (1) by adding each institutional variable to the model successively. This methodology 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 FDI while avoiding the problems caused by variance inflation. This approach should be interpreted as an attempt to explore possible correlations between institutional indicators and inward FDI, rather than to explore any link of causality.

5. Results

5.1. A factor-based scores approach

We have started by computing the rotated factor loadings matrix (varimax rotation) for each database – the IEF, the ICRG, and the DB databases. We then took the simple average of the indicators loading into the same component to construct a new institutional variable. For the IEF, the rotated factor loadings matrix suggested 2 components. The first component, termed “Firms’ freedom” is composed by the following indicators: business freedom, trade freedom, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, and labor freedom. These components are related with firms’ profitability and with the ease of doing business. The second component (“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 principal component analysis identified 3 components. The first component is interpreted as the “Firms’ political risk,” as it is related

⁷Nonetheless, heteroskedasticity consistent standard errors will be reported.

⁸The minimum value of the average of inward FDI stocks for the 2006-2008 period is 1/3 million euros, and $\log(1/3)$ is approximately -1.1.

⁹We do not use the resulting score vectors from a principal components analysis, since we want to retain the interpretability of the coefficients.

with the political risk factors that may directly influence a firm's performance: socioeconomic 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. 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 comprises government stability and democratic accountability. However, 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). Therefore, we have decided to create a factor-based score only with democratic accountability, since it makes no sense to take the simple average between these two indicators in this case. For the DB database, the principal components analysis identified 2 factors. However factor loadings were difficult to interpret and did not yield any clear conclusion. Hence, we created an overall index of doing business, which is the simple average of the indexes representing the 9 areas of doing business.

The regression results are presented in Table 1. As "Firms' freedom", "Firms' political risk", and the doing business variables are highly correlated, and shared similar indicators, we did not include them simultaneously in the regressions. The coefficients obtained with OLS do not differ substantially from those for the Tobit model. This suggests that the censored-sample problem is not serious in our sample. According to Table 1 inward FDI stocks are characterized by strong border effects: the investment of a country in its neighbour is about 110-116%¹⁰ 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 1.30% and 1.36%. GDP presents a statistically significant impact on inward FDI, giving support to the market size hypothesis.¹¹ The effect of *per capita* GDP is significant, but negative. In fact, a higher *per capita* GDP is associated with higher standards of living and better infrastructures, but also with higher labor costs.¹² The sign of the coefficient suggests that this latter effect dominates the former. GDP growth has also a negative impact on FDI, but not always significant. The negative effect of GDP growth on inward FDI may reflect the endogeneity of this variable, since it has been shown that greater amounts of FDI can have positive repercussions on economic growth (e.g., Herzer, 2008, 2010; Borensztein et al., 1998). However, it is not our purpose to tackle this issue here. Finally, openness is also statistically significant, but the effect is small: an increase in this variable by 1 percentage point increases FDI around 0.4-0.8%. The coefficient for education suggests that this variable has a marginal – and insignificant – impact on FDI, once we control for institutions. The coefficient for the EATR is also insignificant, suggesting that corporate taxes have a secondary role in FDI attractiveness as compared to institutions (in line with Hajkova et al., 2006).

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. For instance, an increase in 1 point in the firms' freedom index (in a 0-10 scale) increases FDI around 80%. The effect is even higher for the ease of doing business, as a 1 point increase in this index more than doubles inward FDI.

Fiscal freedom assesses the fiscal burden of a society, with more freedom being associated with lower taxes. 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,

¹⁰ ($e^{0.74} - 1$ is approximately 1.10, and $e^{0.77} - 1$ is approximately 1.16). In this article we use this formula to compute all marginal effects when the regressor is not in logarithmic form.

¹¹ Unless specified otherwise, we use a 5% significance level.

¹² In our data, the correlation between *per capita* GDP and labor costs is around 90%.

with a higher future fiscal burden or to a lower efficiency in the usage of public resources. This probably explains why public sector freedom does not seem to affect inward FDI. Conflicts and tensions, *per se*, do not have a statistically significant impact on inward FDI, except when firms' political risk is included in the regression. Hence, multinational firms do not seem to 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. A higher democratic accountability, on the other hand, seems to attract more FDI.

Table 1: Regression results – Institutional determinants under a factor-based approach

	(1) OLS	(2) Tobit	(3) OLS	(4) Tobit	(5) OLS	(6) Tobit
border	0.7554*** (0.2267)	0.7729*** (0.2242)	0.7507*** (0.2271)	0.7679*** (0.2245)	0.7445*** (0.2274)	0.7614*** (0.2249)
log distance	-1.3413*** (0.1280)	-1.3598*** (0.1261)	-1.2993*** (0.1280)	-1.3192*** (0.1261)	-1.3388*** (0.1275)	-1.3586*** (0.1257)
log gdp	0.9174*** (0.0812)	0.9440*** (0.0810)	0.8774*** (0.0814)	0.9047*** (0.0813)	0.9000*** (0.0808)	0.9272*** (0.0807)
log gdp per capita	-0.9352*** (0.1764)	-0.9498*** (0.1754)	-0.9830*** (0.2215)	-0.9922*** (0.2210)	-0.7393*** (0.1638)	-0.7496*** (0.1627)
gdp growth	-0.0488 (0.0549)	-0.0498 (0.0543)	-0.1339** (0.0537)	-0.1354** (0.0532)	-0.1036* (0.0536)	-0.1047** (0.0531)
openness	0.0042** (0.0017)	0.0044** (0.0017)	0.0060*** (0.0017)	0.0063*** (0.0017)	0.0076*** (0.0016)	0.0079*** (0.0016)
secondary education	0.0003 (0.0049)	0.0003 (0.0048)	0.0065 (0.0048)	0.0065 (0.0047)	0.0074 (0.0047)	0.0073 (0.0046)
eatr	-0.0056 (0.0145)	-0.0076 (0.0142)	-0.0030 (0.0149)	-0.0054 (0.0147)	-0.0040 (0.0149)	-0.0061 (0.0147)
Institutional components						
IEF—firms freedom	0.5861*** (0.0997)	0.5929*** (0.0998)				
IEF—public sector freedom	-0.0156 (0.0492)	-0.0171 (0.0488)	0.1004* (0.0515)	0.0969* (0.0515)	-0.0396 (0.0515)	-0.0412 (0.0509)
ICRG—firms political risk			0.5297*** (0.1312)	0.5297*** (0.1306)		
ICRG—conflicts and tensions	-0.0525 (0.0804)	-0.0588 (0.0796)	-0.2846*** (0.0815)	-0.2903*** (0.0806)	-0.1402* (0.0774)	-0.1470* (0.0557)
ICRG—democratic accountability	0.3206** (0.1263)	0.3293*** (0.1248)	0.2395* (0.1317)	0.2477* (0.1299)	0.2932** (0.1271)	0.2995** (0.1257)
DB—overall					0.7127*** (0.1326)	0.7175*** (0.1331)
adjusted R^2	0.73	n.a.	0.73	n.a.	0.73	n.a.

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

5.2. Institutional analysis – a breakdown

We now re-estimate (1) by successively adding each institutional variable to the model. We omit the indicators related with conflicts and tensions and to public sector freedom from the analysis, since our previous results suggest that these variables have an insignificant 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 with doing business.

The results are presented in Table 2. 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. For the IEF, the results indicate that all variables, except trade freedom, display the expected sign, and all of them, except monetary freedom, are significant at 1%. The sign of the coefficient for trade freedom is somewhat surprising, since one would expect lower tariff barriers in the host country to increase inbound FDI. To check if this result was due to an omitted variable bias, we also experimented to augment the regression with other institutional factors from the IEF, but the negative sign of the coefficient remained quite robust to

these alternative specifications.¹³ However, our database is mostly composed by EU countries, which have a common trade policy. This implies that the variability of the trade freedom indicator in our sample is extremely low, so that our quasi-fixed effects estimator may be highly inefficient in this case. The same holds for monetary freedom. This indicator addresses price stability and the absence of price controls, characteristics which do not vary substantially across EU countries.

Table 2: Regression results – a breakdown

	(1) OLS	st. dev. OLS	R ²	(2) Tobit	st. dev. Tobit
<u>IEF variables</u>					
financial freedom	0.2439***	0.0424	0.7314	0.2484***	0.0424
freedom from corruption	0.2752***	0.0505	0.7300	0.2765***	0.0505
business freedom	0.3128***	0.0622	0.7287	0.3182***	0.0632
labor freedom	0.1514***	0.0420	0.7254	0.1575***	0.0422
property rights	0.1409***	0.0458	0.7243	0.1415***	0.0459
investment freedom	0.1488***	0.0491	0.7238	0.1427***	0.0486
trade freedom	-0.4289***	0.1631	0.7237	-0.4516***	0.1648
monetary freedom	0.2306	0.1718	0.7219	0.2281	0.1714
<u>ICRG variables</u>					
corruption	0.1635***	0.0430	0.7258	0.1648***	0.0427
law and order	0.2567***	0.0690	0.7253	0.2619***	0.0685
socioeconomic conditions	0.2603***	0.0934	0.7239	0.2639***	0.0942
investment profile	0.2457**	0.0973	0.7236	0.2478**	0.0989
democratic accountability	0.2738**	0.1262	0.7231	0.2818**	0.1253
military in politics	-0.0570	0.0788	0.7216	-0.0610	0.0794
bureaucracy quality	-0.0010	0.0525	0.7214	-0.0063	0.0529
<u>doing business variables</u>					
starting a business	0.7381***	0.1501	0.7291	0.7567***	0.1509
protecting investors	0.2119***	0.0478	0.7280	0.2109***	0.0475
getting credit	0.2320***	0.0541	0.7271	0.2322***	0.0550
construction permits	0.4254***	0.1058	0.7255	0.4369***	0.1073
closing a business	0.1854***	0.0502	0.7250	0.1833***	0.0500
trading across borders	0.4587***	0.1374	0.7251	0.4776***	0.1413
enforcing contracts	0.1856***	0.0698	0.7236	0.1868***	0.0696
registering property	0.0671	0.0590	0.7218	0.0657	0.0594
paying taxes	0.0962	0.1404	0.7215	0.0804	0.1408

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.

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 freedom from corruption. These indicators have a unitary impact on inward FDI of around 28% and 32%, 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. Hence, more freedom at this level means that more financial services are available for multinational firms in the host country. Corruption introduces insecurity and uncertainty into economic relationships, and increases the pecuniary and non-pecuniary costs of operating a business. Business freedom and labor freedom also play an important role in explaining the variance of the dependent variable, and have an important effect on FDI: a one point increase in business freedom leads to an increase in FDI of around 37%, whereas the same score increase in labor freedom has an impact on inbound FDI of around 16-17%. These effects were expected, since business freedom measures the overall burden and government efficiency associated to starting, operating, and closing a business, whereas 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. Finally, property rights – which assesses the ability of

¹³ Only a few variables were considered at a time to avoid multicollinearity issues.

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 2, a unit increase in these indicators leads to an increase in FDI of around 15-16%.

The second set of results in Table 2 confirm the idea that low political risk, supported by good institutions, fosters inbound FDI in the long-run. “Military in politics” and the quality of bureaucracy have a non-significant impact on inward FDI, as expected: “Military in politics” could only affect inward FDI insofar as it is correlated with corruption, but this effect does not seem to be present here; and “Bureaucracy quality” is irrelevant insofar as it only measures the extent to which administrative functions are independent from the political sphere, but does not seem to capture the effects of the bureaucratic burden on firms. From the variables of the ICRG, corruption is the one which contributes the most to explain the variance of the dependent variable, reinforcing our previous conclusion. The effects of the effectiveness, strength and impartiality of the judicial system, of the popular observance of the law (law and order) and of socioeconomic conditions are also significant at 1%, and have the predicted sign: a 1 point increase in any of these variables fosters inward FDI by around 29-30%. Democratic accountability, which measures the ability of the government to be held accountable for its actions, is also significant, although only at 5%. Finally, the effect of the investment profile indicator goes in the same direction of the effect of investment freedom, and confirms the idea that the risks related with expropriations, the restrictions on repatriation of profits and payment delays, can deter foreign investments. All in all, these results indicate that a stable and well-functioning democracy can boost inward FDI.

All the coefficients for the 9 areas of doing business are positive. From these, 2 are insignificant: “Registering property” and “Paying taxes”. Our intuition also suggests that these factors should only influence inward FDI at the margin. The remaining variables are significant at 1%. The most important is starting a business, whose unitary increase fosters FDI by more than 100%. 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 in inward FDI. 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 of around 23-26%. From the remaining, the licensing procedures for some activities (dealing with construction permits) and the necessary procedural requirements for exporting and importing (trading across borders) display a significant effect on inward FDI, over 50% for a unit increase. Finally, a more efficient enforcement of contracts, and a better performance in the time, cost and recovery rate of closing a business, also increase the amount of inward FDI, although to a lesser extent.

The analysis in this section confirms that countries with better institutions – more specifically with a better economic and business environment and lower bureaucratic load – are able to attract larger amounts of FDI, and its effects are significant and important. More specifically, the number of procedures, the costs and the time required to start and operate a business, the level of corruption, the amount of financial services supplied in the host country, the extent of investors protection, the effectiveness of collateral and bankruptcy laws in facilitating lending, and labor market flexibility are the issues which most contribute to explain inward FDI. However, the number of procedures, the costs and the time required to start a business, the procedures, time and costs related with licensing procedures, and the necessary requirements for exporting and importing are the areas which display the highest effects on inward FDI.

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. 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 have 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-15.¹⁴ 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. That is:

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

where $\text{INST}_{i,k}$ denotes the institutional index of institution k in country i (where EU stands for the EU average and P for Portugal) and $\beta_{3,k}$ is the respective coefficient.¹⁵ 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. To measure this, Tavares (2004) has proposed the following indicator, here adapted to our framework

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

Equation (3) measures the relative distance of the Portuguese institutional index relative to the EU average, i.e., the required institutional change, relative to its current position, that Portugal needs to achieve the EU level. 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.

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.

Tables 3 and 4 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

¹⁴ For the EU-27, the analysis actually comprises only 25 countries, since Cyprus and Malta are not included in our database.

¹⁵ In our computations, we take into account that a change in the Portuguese institutional index also changes the EU average institutional index.

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, that is, when Portugal has better institutions than the EU. Finally, an area without a statistically significant impact on FDI is not considered for reform.

In Table 3 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. Business freedom also displays high reform efficiency, but the overall impact on FDI is small, and hence it should not be considered a top priority for reform. By the same token, reforming investment freedom does not bring relevant gains as compared to the cost of reform. As for the DB variables, the licensing procedures for some activities turns out to be an area with a high reform efficiency, and the impact on FDI – about 29% – 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 40%.¹⁶

Table 3: 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 on FDI (%)	required reform effort	efficiency of reform
<u>Institutional variables</u>							
firms freedom***	6.78	7.34	0.57	0.5861	39.29	8.34	4.71
firms political risk***	8.20	7.96	-0.24	0.5297			
doing business***	7.84	7.68	-0.16	0.7127			
<u>IEF variables</u>							
financial freedom***	5.00	7.08	2.08	0.2439	66.22	41.67	1.59
corruption freedom***	6.50	6.46	-0.04	0.2752			
business freedom***	7.86	8.00	0.14	0.3128	4.53	1.80	2.51
labor freedom***	4.15	6.34	2.19	0.1514	39.38	52.84	0.75
property rights***	7.00	6.96	-0.04	0.1409			
investment freedom***	7.00	7.29	0.29	0.1488	4.44	4.17	1.06
trade freedom***	8.66	8.50	-0.16	-0.4289			
monetary freedom	8.04	8.10	0.06	0.2306	1.33	0.72	1.87
<u>ICRG variables</u>							
corruption***	6.67	5.94	-0.72	0.1635			
law and order***	8.33	8.24	-0.10	0.2567			
socioec. conditions***	6.70	6.60	-0.10	0.2603			
investment profile**	10.00	9.53	-0.47	0.2457			
democratic account.**	10.00	9.62	-0.38	0.2738			
military in politics	10.00	9.40	-0.60	-0.0570			
bureaucracy quality	7.50	8.02	0.52	-0.0010			
<u>doing business variables</u>							
starting a business***	9.12	9.20	0.08	0.7381	5.94	0.86	6.93
protecting investors***	6.08	5.57	-0.51	0.2119			
getting credit***	5.56	4.66	-0.90	0.2320			
construction permits***	8.34	8.94	0.60	0.4254	28.97	7.17	4.04
closing a business***	8.45	7.57	-0.88	0.1854			
trading across borders***	8.84	8.69	-0.15	0.4587			
enforcing contracts***	7.49	7.73	0.24	0.1856	4.64	3.26	1.42
registering property	7.70	8.02	0.32	0.0671	2.17	4.16	0.52
paying taxes	9.01	8.80	-0.21	0.0962			

*, ** 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.

¹⁶ However, 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 4 yields slightly different conclusions, as several Portuguese indicators are more distant from the EU-15 level than from the EU-27 level. Figure 1 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; however, improving corruption freedom is more efficient, and is able to increase inward FDI in more than 40%. Reforming business freedom leads to a smaller gain in inward FDI – around 27%. However, this benefit comes at a low cost, for which it is also a promising area for reform. Reforming other areas – labor freedom, property rights and investment freedom – can only be done at a very high cost per unit of impact on FDI. The results for the ICRG variables also suggest that corruption could be improved, but the effect of this indicator in inward FDI is much lower as compared to that of the IEF. Bringing the law and order indicator to the EU-15 average, on the other hand, is able to increase FDI by around 20%, and the reform effort is not significantly high. By the same token, socioeconomic conditions could also be considered for reform. 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 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. 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.

Table 4: Reforming institutional factors: Impact on FDI, required reform effort, and efficiency of reform versus the EU-15

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	index	index	(2) – (1)	coefficient	$e^{(4)(3)} - 1$	$ (3)/(1) $	$(5)/(6)$
	Portugal	EU-15	difference		impact on	required	efficiency
					FDI (%)	reform	of reform
						effort	
<u>Institutional variables</u>							
firms freedom***	6.78	7.85	1.07	0.5861	87.40	15.81	5.53
firms political risk***	8.20	8.71	0.51	0.5297	30.96	6.21	4.99
doing business***	7.84	7.92	0.08	0.7127	5.66	0.98	5.75
<u>IEF variables</u>							
financial freedom***	5.00	7.29	2.29	0.2439	74.63	45.71	1.63
corruption freedom***	6.50	7.82	1.32	0.2752	43.86	20.33	2.16
business freedom***	7.86	8.63	0.77	0.3128	27.18	9.78	2.78
labor freedom***	4.15	6.45	2.30	0.1514	41.73	55.51	0.75
property rights***	7.00	8.07	1.07	0.1409	16.30	15.31	1.06
investment freedom***	7.00	7.71	0.71	0.1488	11.21	10.20	1.10
trade freedom***	8.66	8.52	-0.14	-0.4289			
monetary freedom	8.04	8.29	0.25	0.2306	5.99	3.14	1.91
<u>ICRG variables</u>							
corruption***	6.67	7.19	0.52	0.1635	8.89	7.81	1.14
law and order***	8.33	9.05	0.71	0.2567	20.12	8.57	2.35
socioec. conditions***	6.70	7.33	0.63	0.2603	17.82	9.40	1.90
investment profile**	10.00	9.85	-0.15	0.2457			
democratic account.**	10.00	9.85	-0.15	0.2738			
military in politics	10.00	9.64	-0.36	-0.0570			
bureaucracy quality	7.50	9.20	1.70	-0.0010			
<u>doing business variables</u>							
starting a business***	9.12	9.28	0.16	0.7381	12.47	1.75	7.14
protecting investors***	6.08	5.62	-0.46	0.2119			
getting credit***	5.56	4.97	-0.59	0.2320			
construction permits***	8.34	9.21	0.87	0.4254	44.48	10.37	4.29
closing a business***	8.45	8.45	-0.01	0.1854			
trading across borders***	8.84	8.90	0.06	0.4587	2.95	0.72	4.11
enforcing contracts***	7.49	7.88	0.39	0.1856	7.57	5.25	1.44
registering property	7.70	7.96	0.26	0.0671	1.73	3.33	0.52
paying taxes	9.01	9.02	0.01	0.0962	0.08	0.09	0.87

*, ** 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.

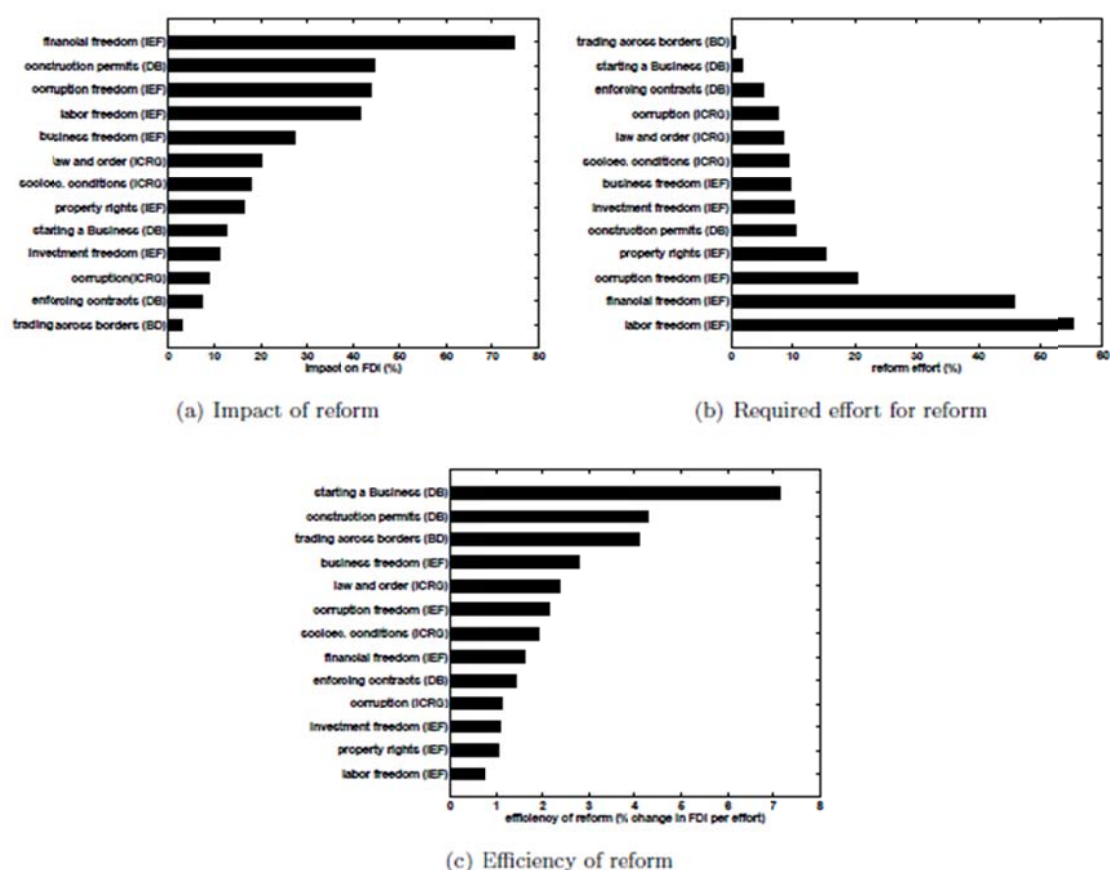


Figure 1: Measuring institutional reform in Portugal.

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. Our conclusions indicate that countries with better economic performances, better policies, and better institutions, are able to attract more FDI. From the economic determinants, market size and per capita GDP display the largest impacts on inward FDI, although the effect of the latter is more related with wages rather than with purchasing power or the level of development. We also conclude that education and corporate taxes play a secondary role in inward FDI relative to institutions. Within the institutional factors, the independence of the financial system, the level of corruption, the flexibility of the labor market, the strength and impartiality of the legal system and the popular observance of the law, and several business regulations – mainly those related with starting a business, investor's protection, getting credit and licensing procedures for some activities – are the ones which contribute the most to explain inward FDI. However, from these factors business regulations displays the highest impact on inward FDI.

However, not all these variables are suited for reform in Portugal because Portugal already has a good performance in some of these indicators and because the marginal effects abstract from the cost of reform. 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 reform areas to put Portuguese institutions at the EU-27 level are related with the independence of the financial system, and with licensing procedures for some activities. 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 the strength and impartiality of the legal system and the popular observance of the law, at developing socioeconomic conditions, and at simplify the necessary procedures to start a business. Increasing labor market flexibility also has a large impact on inward FDI, but the required reform effort makes it unattractive.

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