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Pedro Oliveira

University of Porto,
Faculty of Economics,
Portugal

pedro.oliveira@novasbe.pt

Rosa Forte

Corresponding author

University of Porto,
Faculty of Economics;

Center for Economics
and Finance at University Porto,
Portugal

rforte@fep.up.pt

Labour Market Flexibility and FDI Attraction: A Macroeconomic Analysis

Summary: Foreign direct investment is one mode of entry into international markets that can provide important benefits to host economies. For this reason, policymakers have sought to apply policies that attract foreign direct investment. Although there is extensive and relevant literature that explores the determinants of foreign direct investment, few studies exist that focus on the relationship between labour market flexibility and foreign direct investment; furthermore, most of these are firm-level studies and use old data. Thus, this study aims to analyze the influence of labour market flexibility on foreign direct investment based on macroeconomic data for a set of 180 countries and a relatively recent period of analysis (2004-2009). Using econometric techniques with panel data, the results show that labour market flexibility enhances the attraction of foreign direct investment. In particular, the rigidity of working hours is the dimension of labour market regulations that most negatively affects the attraction of foreign direct investment. Based on the control variables used, we found that the economic and financial incentives, trade barriers, the growth and the size of the market and the level of human capital are important determinants in the explanation of foreign direct investment patterns.

Keywords: Foreign direct investment, Location determinants, Labour market flexibility, Labour regulations.

JEL: F21, J80.

Foreign direct investment (FDI) is an important vehicle for host countries' economic growth (e.g., Eduardo Borensztein, Jose De Gregorio, and Jonh-Wha Lee 1998; Xiaoying Li and Xiaming Liu 2005), namely through the introduction of new technologies, capital accumulation and access to new markets (John Mogab, Ruby Kishan, and Diego E. Vacaflores 2013). In addition, FDI promotes the creation of new jobs, generates higher levels of productivity, increases the stock of knowledge, creates new chains of local suppliers and increases the tax revenue of the host economies (Vacaflores 2011). Given the potential benefits of FDI, policy makers tend to adopt policies to increase the attractiveness of their economies to foreign investors (Mogab, Kishan, and Vacaflores 2013). One such policy is related to labour market regulations.

Several authors have focused on the importance of labour market flexibility in the attraction of FDI. Beata S. Javorcik and Mariana Spatareanu (2005) concluded that labour market regulations have an impact either on the location of foreign subsidiaries

or in the size of investment. In turn, Holger Görg (2005) and Gerda Dewit, Görg, and Catia Montagna (2009), showed through a macroeconomic analysis that labour market flexibility has a positive effect on FDI attraction. Recently, several studies (e.g., Mogab, Kishan, and Vacaflores 2013; William W. Olney 2013; Vincent Delbecque, Isabelle Méjean, and Lise Patureau 2014) based on microeconomic data like Javorcik and Spatareanu (2005) highlight that labour market institutions influence FDI inflows. Despite the relevance of these studies, most use microeconomic data and/or focus on small groups of countries. Therefore, to analyse the impact of labour market flexibility on FDI from a macroeconomic point of view and have it based on a large sample (i.e. a sample that captures adequately the differences between countries in terms of labour market regulations) is a useful contribution to the literature and is the purpose of this work. Based on macroeconomic panel data from 180 countries for the period 2004 to 2009 (the last year for which data on labour market regulations is available), we focus on the influence of four labour market indicators based on Doing Business methodology (World Bank 2009): the rigidity of the employment index, the difficulty of hiring index, the rigidity of working hours index and the difficulty of firing index.

The remainder of the article is organized as follows: Section 1 surveys the existing literature on labour market flexibility as a determinant of FDI; Section 2 describes the empirical model and the sample and discusses the data used; Section 3 presents the estimation results and Section 4 draws conclusions.

1. Literature Review

Currently, countries actively compete to attract investment from multinational companies. Thus, governments of host economies tend to implement policies to increase labour market flexibility and by doing so also increase the attractiveness of their countries to foreign investors (Mogab, Kishan, and Vacaflores 2013). Countries with high levels of labour market regulations are characterized by low labour market flexibility. According to Botero et al. (2004), labour market regulations represent a complex set of rules governing the hiring and firing process and have as their main objectives the protection of workers' interests and the guarantee of a certain standard of living for inhabitants. In compliance with Markus Leibrecht and Johann Scharler (2009), economies with rigid labour markets impose adjustment costs of the production level to multinational companies to discourage foreign direct investment.

According to Mogab, Kishan, and Vacaflores (2013), the theoretical basis of the relationship between labour market flexibility and FDI was initially proposed by Jan I. Haaland and Ian Wooton (2002) who through a theoretical model focus on market uncertainty that leads companies to take into account exit costs from a particular country. These authors argue that countries with labour markets featured by reduced firing rules and low exit costs tend to attract higher FDI inflows.

The empirical literature is inconclusive regarding the impact of labour flexibility on foreign direct investment. The various studies analysed used different data and different proxies to measure labour market regulations. These proxies will be more accurately addressed in Section 1.1. In Sections 1.2 and 1.3 we present the main studies that considered labour market flexibility as determinant of foreign direct investment. To clarify the main goal of this article, we divided the empirical studies into two

groups: studies at firm and industry levels and studies at country level (macroeconomic studies).

1.1 Measures of Labour Flexibility

Empirical studies that explore the relationship between labour market flexibility and FDI usually use different variables to measure labour rigidity such as the indexes constructed by the World Economic Forum (WEF), the OECD, the World Bank (Doing Business) and the Fraser Institute.

The indexes of the World Economic Forum are based on surveys of managers from 59 countries and combine the hiring and firing costs on a single indicator of labour market restrictions (Görg 2005). According to this author, an increase in this indicator reflects a greater degree of Labour market flexibility. Thus, a positive relationship between this proxy and FDI is expected. One of the drawbacks to this index is that it is only available for the period between 1986 and 1996. Similarly, the OECD (2013) presents not only a general indicator of labour regulations, but also synthetic indexes that focus on firing regulations (collective and individual) and on the use of temporary contracts. An increase of these indexes means a higher level of labour market rigidity. Wherefore, it is expected that these indexes have a negative impact on FDI. However, this indicator is only available for OECD countries excluding, therefore, many developing countries.

In turn, the Doing Business indexes measure the flexibility of the labour market based on three indicators: difficulty of hiring index, rigidity of working hours index and difficulty of firing index (World Bank 2009). Each of these indicators is calculated based on a wide set of additional variables. An increase in these indexes denotes a greater labour rigidity so they are negatively correlated with FDI (Mogab, Kishan, and Vacaflores 2013). However, such indexes are available only from 2003 to 2009.

Finally, the indexes of the Fraser Institute also cover various dimensions of labour market institutions (James Gwartney, Robert Lawson, and Joshua Hall 2014). The main advantage of this proxy is that it presents a general index of labour regulations and various specific indexes that measure certain dimensions of the labour market (e.g., impact of minimum wage and unemployment benefits). However, these indexes are based on subjective information (Delbecque, Méjean, and Patureau 2014).

1.2 Studies at Firm and Industry Levels

Regarding studies at firm and industry levels, the literature is practically unanimous about the positive impact of labour market flexibility on foreign direct investment. As can be seen in Table 1, which is organized according to the proxy used to measure labour market flexibility, the majority of studies reviewed (e.g. Haaland, Wooton, and Giulia Faggio 2003; Javorcik and Spatareanu 2005; Delbecque, Méjean, and Patureau 2014) support the hypothesis that the rigidity of the labour market has a negative impact on the attractiveness of host economies, i. e., countries with more flexible labour markets tend to attract higher levels of FDI. However, there are few exceptions. Jing-Lin Duanmu (2014) used the indexes constructed by the WEF and did not obtain unanimous findings. Based on the investment made by the multinationals from Brazil,

Russia, India and China (BRIC), Duanmu (2014) found that labour market regulations have a negative effect on FDI received by developed countries, but in the case of developing countries this effect is not statiscally significant. Duanmu (2014) argues that such results are due mainly to the fact that developed countries present a high similarity at the level of economic and institutional environments and have a greater number of labour regulationsthat introduce information asymmetries for foreign firms. Therefore, firms from BRIC are at disadvantage in comparison to local firms in developed countries. In addition, Duanmu (2014) also conclude that capital mobility at the industry level exacerbates the negative impact of labour market regulations on FDI while the existence of economic relations between the countries involved has the opposite effect.

Table 1 Synthesis of the Studies at Firm and Industry Levels

Author(s) (year)	Time span	Countries	Econometric method	Dependent variable	Labour flexibility	Result
Haaland, Wooton, and Faggio (2003)	1994-1997	Western countries investment in Bulgaria, Poland and Romania	Logit	Location decision	Excess job reallocation rate	(+)
Javorcik and Spatareanu (2005)	1998-2001	Investment performed by 19 European economies	Logit + Tobit	Location decision + FDI stock	Indexes of Juan C. Botero (2004) and the World Economic Forum	(+)
Duanmu (2014)	2003-2010	Investment performed by the BRIC countries	Logit	Location decision	Indexes from Botero et al. (2004) and the World Economic Forum	(+) / (0)
Azémar and Desbordes (2010)	1982-1994	U.S. investment in 43 countries	Panel data	Subsidiaries sales	Doing Business indexes	(+) / (-)
Mogab, Kishan, and Vacaflores (2013)	2004-2008	Investment performed by European firms in Europe	Logit + Tobit	Location decision + FDI stock	Doing Business indexes	(+) / (-)
Dominique Gross and Michael Ryan (2008)	1985-1990 1995-2000	Japanese investment in Western Europe	Panel data + Tobit	Employment generated by FDI + Location decision	OECD indexes	(+)
Christian Bellak and Leibrecht (2011)[a]	1995-2005	Investment in the main 11 host countries	Panel data	FDI stock	OECD indexes	(+)
Olney (2013)	1985-2007	U.S. investment in 26 OECD countries	Panel data	Subsidiaries sales	OECD indexes	(+)
Delbecque, Méjean, and Patureau (2014)	1992-2002	French investment in 18 OECD countries	Logit	Location decision	OECD and Fraser Institute indexes	(+)
Christian Arndt, Claudia Buch, and Anselm Mattes (2012)	2004-2006	German firms	Heckman selection regression (two steps)	Probability of investing abroad (dummy variable)	Labour market frictions	(-) / (0)
Veronika Hecht (2015)	2010	Czech firms with a German owner	Nested logit	Probability that region j is chosen	Labour market features	(-) / (0)

Notes: [a] study at industry level. +, - and 0 designate, respectively, a positive, a negative and a non-statistically significant relationship between labour market flexibility and FDI.

Source: Own elaboration.

In turn, Celine Azémar and Rudolph Desbordes (2010) considered the impact of the difficulty of hiring and the difficulty of firing workers on U.S. FDI. The authors consider three types of FDI: horizontal (driven by the search for new markets), vertical (motivated by the search for lower production costs) and export-platform FDI (when the production is carried out in low-cost countries and subsequently exported to other location). The authors observed that only the vertical FDI and the export-platform FDI are negatively affected by an increase in the difficulty of hiring. The horizontal FDI is influenced positively by labour market regulations since increased barriers to employment can reduce domestic competition which, in turn, attracts multinational companies through the existence of supernormal profits. In terms of the difficulty of firing, Azémar and Desbordes (2010) concluded that this variable has a negative impact on all types of FDI.

Within the literature reviewed Mogab, Kishan, and Vacaflores (2013) and Duanmu (2014) used the most recent time span. Contrary to what was expected, the results of Mogab, Kishan, and Vacaflores (2013) indicate that the positive relationship between labour market flexibility and FDI does not verify for all indicators (e.g., difficulty of hiring) nor for all the years and types of host countries considered (e.g., transition economies, economies of European Union). Mogab, Kishan, and Vacaflores (2013) observed that in transition economies the received FDI is positively affected by the rigidity of working hours in two of the years analyzed. Regarding the difficulty of hiring, the authors, taking into account the total sample, found that an increase of labour market rigidity enhances FDI inflows. Mogab, Kishan, and Vacaflores (2013) argue that this situation may possibly be associated with the different types of FDI (horizontal, vertical and export-platform). Therefore, foreign investors may not respond identically to changes in labour market institutions. For example, such a relationship did not occur when Mogab, Kishan, and Vacaflores (2013) considered only the economies in transition or the economies that belong to the European Union.

Similarly, Gross and Ryan (2008) studied the effect of labour legislation on the FDI of Japanese companies in Western Europe. The two authors observed a negative and statistically significant relationship between labour rigidity and FDI. Additionally, Gross and Ryan (2008) concluded that labour legislation that focuses on regular employment has a clear negative impact on the size and location of investment of Japanese multinationals in Europe. The labour legislation that emphasises temporary employment affects the attraction of FDI more modestly. On the same line and following the theoretical model proposed by Haaland and Wooton (2002), Bellak and Leibrecht (2011) argue through an analysis at the industry level that rigid labour markets impose high exit costs and thus negatively affect the attraction of FDI due to a reduction in profits. From these authors' perspectives the impact of labour legislation on FDI differs depending on the level of labour skills in the industry. In this sense, Bellak and Leibrecht (2011) concluded that labour legislation that focuses on regular employment has a direct negative impact on the stock of FDI and find a non-statistically significant relationship in regard to legislation that protects temporary employment. In addition, the authors point out that the effect of labour restrictions is more pronounced in unskilled labour intensive industries.

In turn, Olney (2013) confirmed the positive relationship between labour market flexibility and FDI. Furthermore, just as Azémar and Desbordes (2010) did, Olney (2013) found the effect varies with the type of FDI which suggests labour legislation has a small impact when the FDI is horizontal and a substantial effect when the investment is made for reasons of economic efficency (vertical FDI). The export-platform FDI is moderately influenced by labour flexibility. Olney (2013) also shows that there is competition between countries in terms of labour market regulations.

Additionally, Arndt, Buch, and Mattes (2012) and Hecht (2015) resort to different measures related to the labour market. Arndt, Buch, and Mattes (2012) include dummy variables that assume the value 1 if a firm indicates "labour market frictions" and 0 otherwise. Labour market frictions are related with "Wage cost problems, Personnel shortage, Works council, Collective bargaining, Worker protection laws, and Unskilled employees". Arndt, Buch, and Mattes (2012) show results that indicate only the friction associated with "collective bargaining" negatively affects FDI. Results concerning the other frictions are not statistically significant. In turn, Hecht (2015) use two measures of labour market features: labour costs and the regional unemployment rate. The author concludes that the influence of these features differs according to the characteristics of the investment. For instance, wage costs negatively affect the attractiveness of the region only in the case of medium-sized investments. In addition, "the regional unemployment rate is not a main factor in the location choice process. Only in some subsamples does the regional unemployment rate have a significantly negative impact on the location choice" (Hecht 2015, p. 35).

Finally, note that although Delbecque, Méjean, and Patureau (2014) confirmed the hypothesis that a flexible labour market positively affects the attraction of FDI, the magnitude of the impact is small when compared to other determinants (e.g., market potential and suppliers access).

1.3 Macroeconomic Studies

Unlike the works covered in the previous section, the country-level studies show some ambiguity regarding the impact of labour market flexibility on FDI. As can be seen in Table 2, two of eight studies found a non-statistically significant relationship between labour market flexibility and FDI. One obtained mixed results and the remaining studies confirmed the expected positive sign.

In general, most of the studies use econometric techniques with panel data and the stock of FDI as a dependent variable. Note that only Leibrecht and Scharler (2009) measured FDI through flows. The authors also used different proxies to measure labour market flexibility, those referred to in Section 2.1 (e.g., OECD and WEF indexes).

As in the case of the studies at firm and industry levels, macroeconomic studies also tend to focus on a set of old data. Görg (2005) and Dewit, Görg, and Montagna (2009) found in various econometric specifications that the rigidity of the labour market has a negative effect on FDI attraction, supporting the hypothesis Haaland and Wooton (2002) proposed. Of particular note Dewit, Görg, and Montagna (2009) also found that a high level of employment protection in the home economies discourages its outward FDI mainly due to the high exit costs. In turn, Agnès Bénassy-Quéré, Maylis Coupet, and Thierry Mayer (2007) studied the impact of various institutional

variables on FDI. Through the use of several indicators (e.g., existence and implementation of labour laws, difficulties in hiring and firing) the authors found that labour market flexibility boosts foreign direct investment.

Table 2 Synthesis of Macroeconomic Studies

Author(s) (year)	Time span	Countries	Econometric method	Dependent variable	Labour flexibility	Result
Görg (2005)	1986-1996	U.S. investment in 33 host countries	Panel data	FDI stock	World Economic Forum index	(+)
Bénassy-Quéré, Coupet, and Mayer (2007)	1985-2000	Investment of 52 countries	Cross section + Panel data	FDI stock	Institutional profiles indexes	(+)
Dewit, Görg, and Montagna (2009)	1986-1995	Investment performed in the OECD countries	Panel data	FDI stock	World Economic Forum index	(+)
Bénassy-Quéré, Gobalraja, and Trannoy (2007)	1994-2003	U.S. investment in 18 European countries	Panel data	FDI stock	Fraser Institute index	(0)
Leibrecht and Scharler (2009)	1995-2004	Investment performed in the Central and Eastern European countries	Panel data	FDI flows	OECD indexes	(0)
Geoffrey Wood et al. (2016)	2003-2011	SEE countries	Panel data	FDI inflows	Doing Business indexes	(-)
Paul, Popovici, and Calin (2014)	2007-2010	10 EU countries in CEE	Technique for Order Preference by Similarity to Ideal Solution (TOPSIS)	FDI inflows	Labour freedom	(+)
Villaverde and Mazo (2015)	2000-2006	260 EU NUTS2 regions	OLS	FDI to GDP ratio	Labour market characteristics Labour market regulation	(+) (0)

Notes: +, - and 0 designate, respectively, a positive, a negative and a non-statistically significant relationship between labour market flexibility and FDI.

Source: Own elaboration.

Finally, studies that obtained non-statistically significant results are those that used the most recent time spans. On the one hand, Bénassy-Quéré, Nicolas Gobalraja, and Alaim Trannoy (2007), although not specifically analysing the problem, found weak evidence regarding the impact of labour market flexibility over FDI. On the other hand, Leibrecht and Scharler (2009) empirically investigated the importance of labour market conditions and particularly the role of labour legislation as determinants of FDI. The two authors found that labour legislation has no significant impact on FDI flows. In these authors' perspective the rigidity of the labour market in transition economies is not high enough to place barriers to multinational investment decisions. Therefore, the level of FDI realized in these economies is mainly determined by low production costs. Also, José Villaverde and Adolfo Mazo (2015)'s results concerning labour regulation are statistically non significant even after performing a robustness check. However, labour market characteristics (employment/unemployment rates, activity rate) are important. Additionaly, Andreea Paul, Oana Cristina Popovici, and Cantemir Adrian Calin (2014) resort to the TOPSIS method to rank countries in terms of their

attractiveness to FDI with respect to their public policies, such as, for example, in terms of the labour market, and conclude thus that to increase attractiveness, countries should promote flexibility of the labour market.

Unlike most studies, the conclusions of Wood et al. (2016) indicate that countries presenting strong employment rights (lower flexibility) tend to attract higher FDI inflows. Concerning the three subindexes, the only dimension that seems to negatively affect FDI is the difficulty of hiring. Briefly, despite the relevance of existing literature, most studies (11 of 19) (see Tables 1 and 2) analyse the impact of labour market flexibility on FDI at firm and industry levels and focus on a set of old data. Likewise, the few studies (8 of 19) that carry out a macroeconomic analysis also use old data and consider a small number of countries. For instance, Görg (2005) and Bénassy-Quéré, Gobalraja, and Trannoy (2007) only considered the investment made by the U.S., while Leibrecht and Scharler (2009) only studied the effect of labour market rigidity on the FDI in the economies of Central and Eastern Europe. Bénassy-Quéré, Gobalraja, and Trannoy (2007) not only analysed a sample composed mostly of developing countries but also did not include any proxy for labour costs, so the indicators related to the rigidity of the labour market may reflect this lack. In turn, Dewit, Görg, and Montagna (2009) focused exclusively on FDI in OECD economies. Therefore, this study differs from the existing literature since we thoroughly apply recent macroeconomic data (2004-2009) and use a sample composed of 180 countries.

2. Empirical Model and Data

2.1 The Empirical Model

The main aim of this study is to verify if countries with more flexible labour markets tend to receive more FDI. We seek to highlight the nature of the relationship between labour flexibility and FDI based on a sample of 180 countries and macroeconomic data between 2004 and 2009. Besides being distinguished by the number of countries included in the sample and by the time span and level of analysis, this study also differs from existing ones by using the Doing Business indicators as a proxy for labour flexibility. Note that both the number of countries and the time span were defined on the basis of the availability of the indicators mentioned above.

Like the macroeconomic studies that focus on the relationship between labour market flexibility and FDI (e.g., Görg 2005; Dewit, Görg, and Montagna 2009; Leibrecht and Scharler 2009) (see Tables 1 and 2), the present work uses econometric techniques with panel data to evaluate the influence of labour market flexibility on the attraction of FDI. Given that our focus in this study is the flexibility of the labour market, we only control the main determinants reported in the literature. Thus, we estimate the following regression model:

$$FDI\ Stock_{i,t} = \alpha_{i,t} + \beta_1 LR_{i,t} + \beta_2 EFI_{i,t} + \beta_3 TB_{i,t} + \beta_4 MG_{i.t} + \beta_5 MS_{i,t} + \beta_6 ES_{i,t} + \beta_7 PC_{i,t} + \beta_8 INF_{i,t} + \beta_9 HC_{i,t} + \varepsilon_{i,t}. \quad (1)$$

The dependent variable ($FDI\ Stock_{i,t}$) denotes the stock of foreign direct investment of the host country *i* at time (year) *t*. In turn, the independent variables $LR_{i,t}$, $EFI_{i,t}$, and $TB_{i,t}$indicate the institutional determinants and particularly the level of

labour regulation, the economic and financial incentives and the trade barriers of the host country i in the year t. The variables $MG_{i,t}$,$MS_{i,t}$, $ES_{i,t}$ and $PC_{i.t}$ correspond to the economic determinants, meaning respectively market growth, market size, economic stability and the production costs of country i in the year t. $INF_{i,t}$ and $HC_{i,t}$ are the determinants related to the country's own resources, namely the quality of infrastructures and human capital of country i in the year t. Finally, $\varepsilon_{i,t}$ is the disturbance term of country i in the year t.

Within the independent variables (see Table 3) it is important to mention the control variables used in the econometric model (Equation (1)). In the extensive literature of the determinants of foreign direct investment, we find a large group of variables capable of influencing the attraction of FDI. These determinants can be grouped into three main classes. Firstly, we have the institutional determinants which cover factors such as politic instability (e.g., Friedrich Schneider and Bruno S. Frey 1985), institutional quality (e.g., Romita Biswas 2002), level of corruption (e.g., Emmanuel Cleeve 2008), economic and financial incentives (e.g., Franklin R. Root and Ahmed A. Ahmed 1978) and trade barriers (e.g., Elizabeth Asiedu 2006). Note that labour market regulations fall into this class of determinants. We only control the economic and financial incentives and trade barriers since these are the most used institutional determinants in the literature. Secondly, we have the economic determinants such as market growth (e.g., Narayanamurthy Vijayakumar, Perumal Sridharan, and Kode C. S. Rao 2010), market size (e.g., Cleeve 2008), economic stability (e.g., Bellak, Leibrecht, and Aleksandra Riedl 2008) and the production costs (e.g., Kai Carstensen and Farid Toubal 2004). Given that these determinants are often used in the literature, we consider all. Finally, there is the group of determinants related to the country's own resources such as the level of infrastructures (e.g., Bellak, Leibrecht, and Joze P. Damijan 2009), human capital (e.g., Farhad Noorbakhsh, Alberto Paloni, and Ali Youssef 2001) and natural resources (e.g., Wasseem Mina 2007). Within this class, we only consider the first two determinants.

Table 3 Independent Variables

Independent variables	Abbreviation	Proxy	Source	Expected effect
Labour regulations	REI	Rigidity of employment index	Doing Business	-
	DHI	Difficulty of hiring index		
	RHI	Rigidity of working hours index		
	DFI	Difficulty of firing index		
Economic and financial incentives	EFI	Total tax rate (in % of commercial profits)	Doing Business	-
Trade barriers	TB	Openness degree	World Bank	+
Market growth	MG	Annual growth rate of real GDP	UNCTAD	+
Market size	MS	Nominal GDP	UNCTAD	+
Economic stability	ES	Inflation rate	World Bank	-
Production costs	PC	Annual wage per worker	OECD	-
Infrastructures	INF	Number of telephone lines per 100 people	World Bank	+
Human capital	HC	Educational index	UNDP	+

Notes: + and - designate, respectively, a positive and a negative relationship.

Source: Own elaboration.

2.2 Data

As in most macroeconomic studies (e.g., Görg 2005; Dewit, Görg, and Montagna 2009), we chose to measure FDI (dependent variable) through stocks. The choice of measurement through stocks instead of flows is related to the fact that the latter register high fluctuations. According to United Nations Conference on Trade and Development (UNCTAD 2005), flows correspond to value of the investment made during a year, while stocks are defined as the accounting value of the companies and asssets held by non-residents at a given time. Given that labour regulations only tend to adjust in the medium/long term, the measurement of FDI through stocks tend to more accurately reflect the differences between countries with regard to labour flexibility (Dewit, Görg, and Montagna 2009).

Regarding the independent variables (see Table 3), this study uses the Doing Business indexes as proxy for labour market regulations. Doing Business indicators have provided since 2003 a wide range of quantitative information on existing regulations in the various economies with particular emphasis on the creation of new businesses, investor protection, the attainment of building permits, electricity and credit, property registration, payment of taxes, international trade, execution of contracts, firm insolvency and the labour market.

The preference of this database is because it presents the best conditions for achieving the main objective of this work. First, the use of OECD indexes, for instance, would sharply limit the size of the sample. Second, in terms of labour regulations, the Doing Business indicators, besides having a synthetic indicator (rigidity of employment index), emphasize three particular dimensions: difficulty of hiring, rigidity of working hours and difficulty of firing (World Bank 2009) (see Table 3). Each one of these indexes varies between 0 and 100 and is calculated through a set of secondary variables, which result from a detailed survey of a larger group of firms.

The difficulty of hiring index not only measures the applicability and the maximum duration of fixed-term contracts but also considers the minimum wage for a worker hired for the first time. In turn, the difficulty of firing index assesses the requirements for individual and collective dismissal, the obligation to rehire and the priority rules that must be followed in a firing process. Additionally, the rigidity of the working hours index measures the restrictions and the maximum length of night and weekend work and also considers the holiday days paid yearly. Finally, the rigidity of employment index is the average of the three indexes described above (World Bank 2009). Also noteworthy is that an increase in these indexes denotes a higher level of labour market rigidity. So, we expect a negative relationship between these indexes and FDI. Despite having been available since 2003, these indicators could only be used empirically after 2004 since the same methodology was not followed. Furthermore, the Doing Business indicators related to labour market regulations have only been available in quantitative form since 2009, after which we have only qualitative information.

With regard to institutional determinants and as proxy for the economic and financial incentives, we use, like Carstensen and Toubal (2004), the total tax rate (in % of commercial profits). In turn, the trade barriers, as in the majority of the studies

(e.g., Cleeve 2008; Miguel E. Sánchez-Martín, Rafael de Arce, and Gonzalo Escribano 2014), are measured by the openness degree (the share of exports and imports in GDP).

On the other hand, regarding economic determinants, and as the studies that focus on the relationship between labour market flexibility and FDI (e.g., Leibrecht and Scharler 2009) indicate, the market growth is measured by the annual growth rate of real GDP while the market size is measured by nominal GDP. In turn, the economic stability is measured by the inflation rate. Note that this proxy is an indicator of economic instability, since higher inflation rates induce a lower degree of stability. Finally, similar to most analysed studies (e.g., Klimis Vogiatzoglou 2007), production costs are measured by annual wage per worker.

Within the determinants related to the country's own resources, as the studies reviewed show (e.g., Asiedu 2006; Sánchez-Martín, Arce, and Escribano 2014), the level of infrastructure is measured by the number of telephone lines per 100 inhabitants. The choice of this proxy is simply because it is the only variable available nearest the most used (number of telephone lines per 1000 inhabitants). Finally, given the fact that traditional proxies (e.g., literacy rate) do not cover a large number of countries, it was considered appropriate to measure human capital through the educational index developed by the United Nations. This index is calculated using the average and the expected number of years in school and is used in the calculation of the Human Development Index.

Lastly, we expect FDI to be positively influenced by the following variables: market growth, market size, economic instability, infrastructures, human capital and trade barriers. In this latter determinant, the expected positive sign derives from being measured by the openness degree. On the other hand, it is expected that production costs, economic and financial incentives and labour regulations negatively affect the attraction of FDI. Note that the expected negative relationship between FDI and economic and financial incentives is due to being measured by the total tax rate.

2.3 Descriptive Statistics and Correlation Matrix

To understand the behaviour of the variables used in the econometric model, it is valuable to analyse their descriptive statistics. In Table 4 we present the mean, minimum, maximum, standard deviation and the number of observations of all variables used in the model.

A preliminary analysis of Table 4 shows a high disparity between countries in all the variables presented. Such a situation occurs mainly because of the high coverage of the sample, which encompasses both developed and developing countries. Furthermore, the large discrepancy between the characteristics of the countries used justifies the elevated standard deviation of most of the variables used.

Table 4 shows that some variables contain missing values, whereby we obtained an unbalanced panel. Several countries have zeros in stock of FDI and in the variables related to labour regulations. However, the number of zeros and missing values is reduced when compared to the sample size, so they should not significantly influence the results of the econometric estimation (Jeffrey M. Wooldridge 2002). Nevertheless, that is not the case for the variable used to measure the production costs. Given the

difficulty in obtaining information on this determinant for a large number of countries, we opted for the estimation of a model with a subsample of 31 countries for which data on production costs are available (usually OECD countries). This model is estimated with and without production costs to evaluate whether the labour market regulations capture its effect or not.

Table 4 Descriptive Statistics

Determinant	Proxy	Observations	Mean	Minimum	Maximum	Standard deviation
FDI stock (millions dollars at current prices)		1075	81,818.54	0	3,551,307	274,124.80
Labour regulations	Rigidity of employment index	991	35.78	0	90	19.41
	Difficulty of hiring index	991	33.13	0	100	27.61
	Difficulty of firing index	991	33.36	0	100	24.19
	Rigidity of working hours index	991	40.58	0	100	24.54
Economic and financial incentives	Total tax rate (in % of commercial profits)	876	51.08	8.40	292.70	42.77
Trade barriers	Openness degree	1064	91.84	22.12	439.66	51.05
Market growth	Annual growth rate of real GDP	1073	4.81	-17.70	134.29	6.92
Market size	Nominal GDP (millions dollars at current prices)	1075	293,950	101.86	14,816,686	1,186,757
Economic stability	Inflation rate	1024	31.86	-18.11	24.41	763.48
Production costs	Annual wage per worker (dollars at current prices)	200	32,987.31	7,503.95	58,987.26	11,593.67
Infrastructures	Number of telephone lines per 100 people	1024	18.82	0.01	71.53	17.85
Human capital	Educational index (0-1)	1043	0.59	0.15	0.92	0.18

Source: Own calculations in Stata.

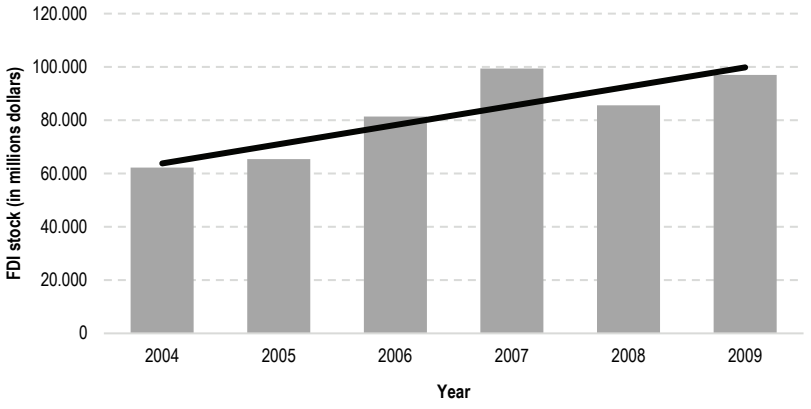
The dependent variable, the stock of FDI, has a high total amplitude, i.e., a marked difference between the minimum value and the maximum value. On the one side, countries like Montenegro and Surinam did not have FDI between 2004 and 2009. On the other side, the U.S. is the country with the highest stock of FDI during the period considered. These outliers have a strong impact on the average value, which stands at 81.82 billions dollars. This high dispersion is also confirmed by the high value of standard deviation.

In terms of labour market regulations, as seen in Table 4, the four variables used to measure this determinant show a similar statistical behaviour. Overall, according to the minimum and maximum of the rigidity of the employment index and taking into account the dimensions covered by itself, there is no country with a completely rigid labour market. There are also economies with extremely flexible labour markets. Such observations correspond essentially to countries with extremely high levels of development, such as, for example, the U.S., Hong Kong and Singapore. On the other hand, countries like Burkina Faso, Niger and the Democratic Republic of Congo have the most rigid labour markets. With regard to the indexes which measure the difficulty of

hiring, the rigidity of working hours and the difficulty of firing exhibit a similar behaviour. The minimum and maximum values of these indexes are identical and indicate there are economies where firing and hiring practices and the regulation of working hours are completely rigid or flexible. As in the rigidity of employment index, the countries with more flexible labour markets are Hong Kong, Singapore and the U.S. On the other hand, Latin American countries (e.g., Venezuela) and African economies have labour markets with more regulations.

In relation to control variables, there is a high dispersion in practically all the cases. Such a situation derives from the coverage of the sample which includes countries with very different institutional and economic characteristics (developed and developing countries). However, that is not true when we analyse the statistics of the variable used to measure the production costs. The lower discrepancy of this variable is justified by the fact that the countries for which we have information on production costs present a high similarity in their economic and institutional environments.

Noticeably, on average, the stock of FDI received by the countries in the sample increased from 2004 to 2009 and only registered a slight fall from 2007 to 2008, as shown in Figure 1. In addition, there is a clear increasing trend of FDI stock.

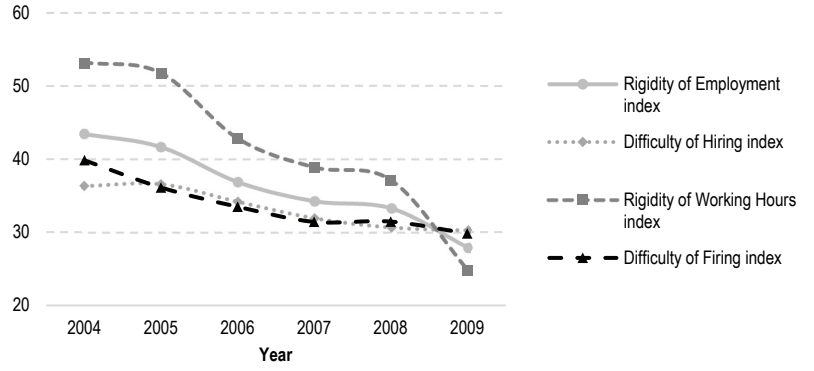


Source: Own elaboration.

Figure 1 Evolution of FDI Stock between 2004 and 2009

Simultaneously, note that overall the level of labour market rigidity decreased from 2004 to 2009 (see Figure 2). Additionally, there has been a reduction in the mean of the indexes that make up the rigidity of the employment index, namely, the difficulty of hiring index, the rigidity of working hours' index and the difficulty of firing index.

This graphical analysis indicates a positive relationship between labour market flexibility and the FDI stock, given the simultaneous increase in these two variables between 2004 and 2009. That is, a decrease in labour market rigidity coincided with an increase in FDI.



Source: Own elaboration.

Figure 2 Evolution of Labour Rigidity Indexes between 2004 and 2009

Finally, it is equally important to comment briefly on the correlation between the variables used in the econometric model. The dependent variable shows the expected relationship with most of the variables included, and the correlation coefficients are statistically significant in almost all cases. In terms of the independent variables, most of the variables do not show high correlation coefficients (see Table A1 in the Appendix).

3. Econometric Estimation

As highlighted above, this study aims to test the impact of labour market flexibility on FDI. In order to obtain more consistent results, we chose to control the main determinants emphasised in the literature likely to influence the attraction of FDI. Therefore, as shown in Equation (1), we included in the regression model proxies for the following determinants: economic and financial incentives, trade barriers, market growth, market size, economic stability, production costs, infrastructures and human capital. Consequently, we used econometric techniques with panel data, which allows us to explore variations of the variables over time and between different individuals and to obtain more complete and efficient results (Wooldridge 2002).

The estimation of Equation (1) can be performed using various econometric models, among which stand out the models with pooled OLS and the models with fixed effects or random effects. The models with pooled OLS presuppose homogeneity among individuals (e.g., countries), considering the same constant term for all observations (Wooldridge 2002). Thus, the exclusive effects of each individual are included in the disturbance term ($\varepsilon_{i,t}$). However, there are several determinants likely to influence the attraction of FDI which are not present in the regression model (e.g., institutional quality and political instability). Therefore, we can assume that these missing variables represent the heterogeneity of individuals (countries). Thus, based on an unbalanced panel, which is characterised by the fact that the amount of temporal data is not the same for all individuals, we estimated the model with random effects, in which the heterogeneity of the individuals is assumed. In this model, the disturbance term

captures the possible existence of heterogeneity between individuals (Wooldridge 2002). In addition, we applied the Hausman test with the purpose of evaluating whether the model was more consistent with fixed effects or with random effects. As the p-value is higher than the usual significance levels (1% and 5%), we rejected the null hypothesis that the differences between the coefficients is not systematic. Hence, the model with random effects is more consistent and efficient than the model with fixed effect. Finally, since the variables are measured in different scales, we logged the monetary variables and multiplied the educational index by 100.

Note that, as mentioned in Section 1, given the difficulty in obtaining information on production costs for many countries, we decided to estimate the model with a subsample of 31 countries for which data for this variable was available. This model is estimated with and without production costs to verify if the variable relative to labour regulations absorbs its effect. Additionally, since the large group of countries can cause outliers, we decided to estimate the model for developed and developing countries to verify if labour regulations have a different impact on FDI according to country's level of development. Thus, the results of our work are presented in two parts: the first contemplates the impact of labour market flexibility on FDI and the second tries to check if this indicator captures the effect of production costs.

3.1 Baseline Model

The results of the estimation of the econometric models with random effects are shown in Table 5. Model (1) differs from model (2) since in the latter the rigidity of the employment index is subdivided into the three dimensions considered.

A preliminary analysis of Table 5 shows that most of the variables used are statistically significant (the rigidity of employment index, rigidity of working hours index, the total tax rate, the openness degree, the growth rate of real GDP and the educational index). In turn, the variables related to economic stability, the level of infrastructure, the difficulty of hiring and the difficulty of firing are not statistically significant.

The results related with labour market regulations indicate that host countries that have labour markets characterised by a high level of labour rigidity tend to have a smaller stock of foreign direct investment (see Table 5). In other words, countries with highly regulated labour markets impose high adjustment costs on the production level of multinational companies, reducing its attractiveness for foreign investors (Leibrecht and Scharler 2009). In brief, labour market flexibility has a positive impact on attracting FDI. These results confirm the expected relationship between labour market flexibility and FDI (see Table 3) and are in accordance with most of the studies that focused on this variable as a potential determinant of FDI (e.g., Görg 2005; Dewit, Görg, and Montagna 2009). Additionally, the rigidity of the working hours index also has a negative impact on the stock of FDI. Thus, economies featured by a strong regulation of working hours will tend to decrease its attractiveness to foreign investors. On the other hand, the difficulty of hiring index and the difficulty of firing index are not relevant factors in the explanation of FDI stock between 2004 and 2009. So, it seems that the rigidity of working hours is the variable that most influenced labour market rigidity.

Table 5 Results of Baseline Econometric Estimation (Random Effects)

Independent variables		(1)	(2)
Institutional determinants	Rigidity of employment index	-0.0068*** (0.0019)	
	Difficulty of hiring index		0.0012 (0.0013)
	Difficulty of firing index		-0.0004 (0.0014)
	Rigidity of working hours index		-0.0054*** (0.0012)
	Total tax rate (in % of commercial profits)	-0.2682* (0.1517)	-0.2293 (0.1515)
	Openness degree	0.5491*** (0.1193)	0.5989*** (0.1195)
Economic determinants	Annual growth rate of real GDP	-1.1474*** (0.3204)	-1.0111*** (0.3214)
	Nominal GDP	0.9501*** (0.0429)	0.9398*** (0.0429)
	Inflation rate	0.0005 (0.0019)	0.0005 (0.0019)
Determinants related with country's own resources	Number of telephone lines per 100 people	0.0002 (0.0062)	-0.0005 (0.0062)
	Educational Index	0.0153* (0.0070)	0.0173* (0.0070)
Hausman test – Chi^2 (p-value)		12.48 (0.1309)	10.94 (0.3625)
N		772	772
R^2		0.8143	0.8172

Notes: Standard deviation in parenthesis; the monetary variables are logged and the educational index is multiplied by 100. ***, ** and * designate, respectively, significance levels of 1%, 5% and 10%.

Source: Own calculations in Stata.

In turn, most of the control variables behave as expected (see Table 5). With regard to institutional determinants, countries that grant more economic and financial incentives, in terms of reduced tax rates, tend to attract greater FDI levels, consistent with the majority of studies that focused on this determinant (e.g., Carstensen and Toubal 2004). As shown in Table 5, the total tax rate (in % of commercial profits) negatively influences the stock of FDI. Trade barriers also have a negative impact on the stock of FDI in accordance with the literature (e.g., Cleeve 2008). As seen in Table 5, the openness degree has a positive effect on FDI, whereby countries whose international trade has a considerable weight in GDP (and, therefore, smaller trade barriers) tend to attract greater FDI levels.

Within economic determinants, we conclude that the size of the host economies positivley positively the stock of FDI, which is consistent with most studies reviewed (e.g., Javorcik and Spatareanu 2005). In fact, countries with high nominal GDP assume a favourable position in attracting FDI. Furthermore, contrary to expectations, the real GDP growth rate has negative effect on the FDI stock. This result may be related to the fact that countries with higher FDI stock exhibit lower growth rates as a result of obtaining a certain level of development.

Finally, regarding the determinants related to the country's own resources, only the educational index is statistically significant. Like most of the studies analysed (e.g., Carstensen and Toubal 2004), the results indicate that a high level of human capital positively affects the attraction of FDI. This result derives from the fact that host countries with a high level of human capital exhibit a higher level of productivity and technological innovation, which allows multinational companies to gain a competitive advantage (e.g., Noorbakhsh, Paloni, and Youssef 2001).

3.2 Model with Production Costs

As noted in Section 2, there is a marked difficulty in obtaing information on production costs which encompass many countries. Thus, we decided to estimate the regression model with and without production costs, to assess whether the labour market rigidity captures the effect of production costs. For this reason we used a subsample of 31 countries (usually OECD countries) whose data on production costs is available. Hence, we estimated the models with and without production costs with random effects (see Table 6), according to the results of the Hausman test.

Table 6 Results of Econometric Estimation with Production Costs (Random Effects)

Independent variables		Without production costs		With production costs	
		(1)	(2)	(3)	(4)
Institutional determinants	Rigidity of employment index	-0.0144*** (0.0053)		-0.0146*** (0.0054)	
	Difficulty of hiring index		-0.0011 (0.0032)		-0.0011 (0.0032)
	Difficulty of firing index		-0.0046 (0.0036)		-0.0047 (0.0037)
	Rigidity of working hours index		-0.0082*** (0.0031)		-0.0082*** (0.0031)
	Total tax rate (in % of commercial profits)	1.7232 (0.9405)	1.8044 (0.9558)	1.7257* (0.9439)	1.8090* (0.9644)
	Openness degree	1.0534*** (0.2055)	1.0809*** (0.2085)	0.9793*** (0.2410)	1.0082*** (0.2455)
Economic determinants	Annual growth rate of real GDP	-0.4405 (0.8631)	-0.0787 (0.8965)	-0.1858 (0.9641)	0.1734 (0.9966)
	Nominal GDP	0.8773*** (0.0792)	0.8792*** (0.0798)	0.8364*** (0.1051)	0.8394*** (0.1066)
	Inflation rate	-1.0853 (1.8135)	-0.6226 (1.8560)	-0.9928 (1.8242)	-0.5481 (-1.8658)
	Annual wage per worker			0.2143 (0.3598)	0.2106 (0.3655)
Determinants related with country's own resources	Number of telephone lines per 100 people	0.0027 (0.0082)	-0.0022 (0.0083)	0.0013 (0.0086)	0.0006 (0.0087)
	Educational index	-0.0122 (0.0169)	-0.0131 (0.0171)	-0.0175 (0.0192)	-0.0182 (0.0195)
Hausman test – Chi^2 (*p*-value)		4.53 (0.8061)	4.55 (0.9192)	6.03 (0.7371)	5.52 (0.9035)
N		160	160	160	160
R^2		0.8301	0.8341	0.8320	0.8357

Notes: Standard deviation in parenthesis; the monetary variables are logged and the educational index is multiplied by 100. ***, ** and * designate, respectively, significance levels of 1%, 5% and 10%.

Source: Own calculations in Stata.

As noted in columns 1 and 2 of Table 6, the market size of the host economies and the rigidity of the employment index show the expected relationship, which is consistent with results obtained in the model presented in the previous section. However, some variables lost significance (e.g., market growth). This situation may be associated with lower variability of the characteristics of the countries included in the sample since there is a high degree of similarity between the economic and institutional features of the countries used in the estimation of these models. With the introduction of the annual wage per worker (columns 3 and 4 of Table 6), it appears that most of the variables maintained the relationship and the significance level demonstrated in the model without production costs.

It is significant that with the introduction of production costs only the total tax rate changes its significance level and sign. In the case of the variables of main interest, the rigidity of employment index and the rigidity of working hours index continue to have a negative effect on FDI stock. Thus, we can conclude that labour market regulations do not capture the effect of production costs. These results also suggest that countries should be divided into subgroups given the change of significance of some variables in comparison with the model exposed in the previous section.

3.3 Developed versus Developing Countries

According to Juan J. Durán and Fernando Ubeda (2001), inward and outward FDI is related to the countries' level of economic development. These authors suggest that as economies increase their level of development, the relevance of certain determinants changes. Given the large country group used (180 countries) and following Duanmu's (2014) approach we decided to estimate the model for different levels of development to verify if labour regulations have a different impact on FDI of developed and developing economies. Thus, following the rule used by the World Bank (2017)[1], we divided the sample according to the Gross National Income *per capita* calculated by the Atlas Method. We then applied the criteria shown in Table 7. In line with the World Bank (2017), the first three groups are the developing countries, while the last group encompasses the developed economies. So we obtained two distinct groups: the developed countries and the developing ones.

Table 7 Country Classification Criteria - GNI per capita ($)

Income level	2004	2005	2006	2007	2008	2009
Low income	≤ 825	≤ 875	≤ 905	≤ 935	≤ 975	≤ 995
Mid-low income	826 – 3,255	876 – 3,465	906 – 3,595	936 – 3,705	976 – 3,855	996 – 3,945
Mid-high income	3,256 – 10,065	3,466 – 10,725	3,596 – 11,115	3,706 – 11,455	3,856 – 11,905	3,946 – 12,195
High income	> 10,065	> 10,725	> 11,115	> 11,455	> 11,905	> 12,195

Notes: GNI - Gross National Income.

Source: World Bank (2017).

[1] **World Bank.** 2017. World Development Indicators. https://databank.worldbank.org/source/world-development-indicators (accessed December 02, 2017).

Consequently, we estimated the regression model for the two groups referred to above. The results are shown in Table 8. Note that the option between fixed or random effects was based on the results of the Hausman Test. In general, the results indicate that the impact of labour regulations on FDI is similar for both groups of countries (developed *versus* developing). As we observe in Table 8, the rigidity of employment index is always statistically significant and has a negative effect on FDI attraction. Furthermore, between the three dimensions of labour regulations considered, the rigidity of working hours contributes most to the negative impact of labour regulations on FDI. These results are in accordance with the conclusions exposed in the previous sections.

Table 8 Results of Econometric Estimation for Different Levels of Development (Random Effects)

Independent variables		Developing countries		Developed countries	
		(1)	(2)	(3)	(4)
Institutional determinants	Rigidity of employment index	-0.0062*** (0.0021)		-0.0121*** (0.0043)	
	Difficulty of hiring index		0.0008 (0.0014)		0.0009 (0.0032)
	Difficulty of firing index		-0.0008 (0.0015)		0.0011 (0.0039)
	Rigidity of working hours index		-0.0044*** (0.0013)		-0.0101*** (0.0026)
	Total tax rate (in % of commercial profits)	-0.3409** (0.1584)	-0.3080* (0.1589)	2.2705*** (0.6829)	2.0853*** (0.6781)
	Openness degree	0.4538*** (0.1598)	0.5137*** (0.1614)	0.7909*** (0.1216)	0.7857*** (0.1197)
Economic determinants	Annual growth rate of real GDP	-1.0013*** (0.3705)	-0.9450** (0.3720)	-1.9807** (0.7728)	-1.4381* (0.8033)
	Nominal GDP	0.9764*** (0.0526)	0.9630*** (0.0530)	0.7683*** (0.0532)	0.8083*** (0.0531)
	Inflation rate	0.0006 (0.0019)	0.0006 (0.0019)	0.3096 (1.3574)	0.6175 (1.3470)
Determinants related with country's own resources	Number of telephone lines per 100 people	0.0023 (0.0103)	0.0002 (0.0102)	0.0069 (0.0070)	0.0065 (0.0070)
	Educational index	0.0124 (0.0085)	0.0143* (0.0085)	0.0135 (0.0119)	0.0141 (0.0118)
Hausman test – Chi^2 (*p*-value)		8.20 (0.4140)	8.13 (0.6157)	12.94 (0.1140)	12.28 (0.2666)
N		558	558	201	201
R^2		0.7209	0.7231	0.8396	0.8483

Notes: Standard deviation in parenthesis; the monetary variables are logged and the educational index is multiplied by 100. ***, ** and * designate, respectively, significance levels of 1%, 5% and 10%.

Source: Own calculations in Stata.

Also noteworthy regarding the control variables only the total tax rate changes its sign for the group of developed countries compared to the baseline model.

Indeed, the results indicate that for this group of countries higher tax rates tend to increase FDI. Countries such as the United States of America, Japan or Germany have other characteristics that promote FDI attractiveness and also a certain rigidity on capital movements that allows them to increase the tax rate without discouraging foreign investment (OECD 2008).

4. Conclusions

Foreign direct investment is an important tool for economic growth of host economies and allows for the creation of new jobs and the introduction of new technologies. Considering such benefits, policy makers have been implementing various policies to enhance the competitiveness of their economies and increase their attractiveness to foreign investors. Since the deregulation of the labour market is one of these policies, it is useful to analyse its effects on foreign direct investment.

Despite the existence of a vast literature on the determinants of foreign direct investment, there are few studies that explore the impact of labour market flexibility on the attraction of FDI. In addition, most of the existing studies perform an analysis at firm and industry levels and, thus, we find fewer macroeconomic studies. Moreover, most macroeconomic studies focus on a small sample and/or old data and some authors only consider this variable as a control variable.

Consequently, taking into account the existing gaps in the literature, we estimated a regression model based on an unbalanced panel of 180 countries for the period between 2004 and 2009. Overall, the empirical results show that institutional determinants (labour market flexibility, economic and financial incentives and trade barriers), some economic determinants (market growth and market size) and the level of human capital are relevant in the attraction of FDI.

The results obtained in this study are particularly relevant in the case of labour market flexibility. As shown by the results of the various models presented throughout the work, labour market regulations negatively affect the attraction of FDI. Among the three dimensions considered, the rigidity of working hours is the variable that contributes most to the negative impact of labour market regulations. Therefore, we conclude that economies with high labour regulations tend to impose greater adjustment costs of the production level to multinational companies and which, in turn, results in a lower level of investment as suggested by Leibrecht and Scharler (2009). These results confirm the flexibility of the labour market as an effective policy for FDI attraction. Subsequently, based on a subsample of 31 countries, we also found that labour market regulations do not capture the effect of production costs since they were not statistically significant. These results suggest that labour market regulations are more important than production costs in the explanation of FDI.

In addition, we conclude that labour regulations have a clearly negative impact on FDI both in developed and developing countries. The restrictions involving working hours are those that have the sharpest effect on the level of foreign investment.

The results of the present work are particularly important for policy-makers to formulate appropriate policies for attracting FDI. Since the dimension of the labour regulations that most affect FDI is the rigidity of working hours, this indicates that at the labour market level negotiations with trade unions should focus on liberalization of working hours rather than on aspects related to hiring or firing employees.

However, despite their consistency, the results of this study present some limitations. First, either the number of countries included in the sample or the time span considered were heavily influenced by the availability of the Doing Business indicators used to measure labour market regulations. Thus, further research on this topic should analyse whether labour market flexibility maintains the positive sign when

considering a longer time. Second, the proxy used to measure the level of human capital is not the most common so further studies should seek new alternatives. On the other hand, this study showed that labour market regulations do not absorb the impact of production costs for a sample with only 31 countries. Thus, it would be useful to check if labour market regulations do not capture the effect of production costs for a sample encompassing a larger number of countries. Additionally, this study did not consider some relevant determinants highlighted in the literature such as, for instance, institutional quality and politic instability.

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Appendix

Table A1 Correlation Matrix

	FDI	REI	DHI	RHI	DFI	EFI	TB	MG	MS	ES	PC	INF	HC
FDI	1,0000												
(*p*-value)	---												
REI	-0,0820	1,0000											
(*p*-value)	(0,0100)	---											
DHI	-0,0909	0,7919	1,0000										
(*p*-value)	(0,0043)	(0,0000)	---										
RHI	-0,0120	0,7382	0,4057	1,0000									
(*p*-value)	(0,7065)	(0,0000)	(0,0000)	---									
DFI	-0,0765	0,7255	0,3771	0,3333	1,0000								
(*p*-value)	(0,0163)	(0,0000)	(0,0000)	(0,0000)	---								
EFI	-0,2243	0,2620	0,1570	0,2514	0,2091	1,0000							
(*p*-value)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	---							
TB	0,1091	-0,2260	-0,1886	-0,1688	-0,1566	-0,2176	1,0000						
(*p*-value)	(0,0004)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	---						
MG	-0,1377	0,1596	0,0820	0,1390	0,1472	0,0302	0,0531	1,0000					
(*p*-value)	(0,0000)	(0,0000)	(0,0099)	(0,0000)	(0,0000)	(0,3722)	(0,0836)	---					
MS	0,8908	0,0016	-0,0331	0,0599	-0,0172	-0,1410	-0,0866	-0,0720	1,0000				
(*p*-value)	(0,0000)	(0,9593)	(0,2980)	(0,0593)	(0,0000)	(0,0000)	(0,0047)	(0,0184)	---				
ES	-0,0217	-0,0053	-0,0413	-0,0010	0,0368	-0,0015	-0,0055	-0,0380	-0,0214	1,0000			
(*p*-value)	(0,6245)	(0,8716)	(0,2049)	(0,9749)	(0,2585)	(0,9659)	(0,8601)	(0,2253)	(0,4932)	---			
PC	0,5871	-0,2488	-0,1141	-0,2585	-0,2248	-0,0176	-0,0187	-0,4007	0,5218	-0,5250	1,0000		
(*p*-value)	(0,0000)	(0,0005)	(0,1151)	(0,0003)	(0,0017)	(0,8240)	(0,7926)	(0,0000)	(0,0000)	(0,0000)	---		
INF	0,6240	-0,2351	-0,2210	-0,0544	-0,2562	-0,1630	0,2049	-0,2045	0,5333	-0,0329	0,7266	1,0000	
(*p*-value)	(0,0000)	(0,0000)	(0,0000)	(0,0917)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,2979)	(0,0000)	---	
HC	0,6025	-0,3077	-0,3270	-0,1104	-0,2551	-0,2697	0,2005	-0,2350	0,5122	-0,0225	0,4237	0,8213	1,0000
(*p*-value)	(0,0000)	(0,0000)	(0,0000)	(0,0017)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,0000)	(0,5200)	(0,0000)	(0,0000)	---

Source: Authors' calculations.

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