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Social Competition and Firms′ Location Choices

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Summary

One of the most notable changes OECD countries have experienced over the last decades is the increasing liberalization in international good markets and in the financial area. It has notably induced a globalization of firms' production process, which is now taken on a worldwide basis in a large number of sectors. In industrialized countries, recurrent debates have emerged on the "good" way to deal with the risk of unemployment, that the reorganization of firms on a worldwide basis may induce. Globalization therefore forces policy-makers to re-think the design of labor market policies. The other way round, national labor market institutions *per se* are likely to affect location decisions of firms across alternative countries. If so, this link has to be taken into consideration in the design of labor market policies, so as to assess all their expected effects on the national economy.

The paper takes part to the debate empirically. It focuses on the way labor market institutions (LMI hereafter) affect foreign direct investments (FDI), using a database describing French firms' investments abroad over the period 1992-2002. The estimated equation explains the probability for a French firm to invest in a given country by a set of country- and sector-specific variables. The set of potential determinants used in the regressions is explicitly derived from a model inscribed in the new economic geography literature. Furthermore, we include features borrowed from the labor market literature, so as to explicitly relate labor market institutions to location decisions.

Our results can be summarized as follows. First, the design of labor market institutions does affect the attractiveness of a country from the firm's viewpoint. Stringent employment protection laws, a generous unemployment benefits system, high labor taxes, strong minimum wage constraints, powerful trade unions and a highly-centralized wage-bargaining process significantly reduce the propensity of firms to locate in a country. Second, the estimated effects depend on the sample of countries considered as potential locations. We put into evidence an "OECD country-group" effect. French firms are found to be much more sensitive to the design of labor market institutions when only OECD countries are considered in the country choiceset. This likely reflects an heterogeneity of FDI motives correlated with the spatial distribution of investments.

These results deliver an interesting message with regards to the design of labor market policy. The globalization process at work over the last decades has weakened welfare-state institutions in industrialized countries. The rising competition from low-wage emerging countries strengthens the critics towards highly-regulated labor markets, in particular in European countries. Our results put this view into perspective. They suggest that making labor market reforms to engage in social competition with emerging countries would be little efficient in attracting more FDI. What matters the most to attract investors is less the labor market situation relative to that of emerging countries, than the one relative to other OECD countries: social competition could be a successful strategy in attracting foreign investors that contemplate to settle within OECD

countries. As a corollary, maintaining ambitious welfare-state institutions, notably in Europe, calls for coordination between countries.

ABSTRACT

The paper evaluates the empirical effect of labor market institutions on foreign direct investment (FDI) decisions. To that aim, a firm-level dataset is used, that describes French firms' expansion strategies abroad over the 1992-2002 period. Following Head and Mayer (2004*b*), the determinants of individual FDI decisions are estimated by implementing a discrete choice model on all possible foreign locations. The estimated equation is derived from a partial-equilibrium model combining elements of the new economic geography literature and the labor market literature.

We find that labor market institutions do impact French firms' location decisions. Our overall results suggest that labor market rigidity puts a brake on the host country's attractiveness. More detailed analysis shows that the estimated effects depend on the sample of countries considered as potential locations. French firms are found to be much more sensitive to the design of labor market institutions when FDI decisions take place within the set of industrialized OECD countries.

JEL Classification: F16, F21, J3
Keywords: Labor Market Institutions, Foreign Direct Investment determinants, Firm-level data

CONCURRENCE SOCIALE ET CHOIX DE LOCALISATION DES FIRMES

RÉSUMÉ

La libéralisation croissante des marchés internationaux de biens et de capitaux est un des changements les plus marquants qu'ont connus les pays de l'OCDE au cours des dernières décennies. Elle a notamment induit une globalisation des processus productifs mis en place au sein des entreprises qui, dans de nombreux secteurs, prennent aujourd'hui leurs décisions sur une base mondiale. Dans cette économie globalisée, la pression concurrentielle en provenance des marchés émergents rend de plus en plus sensible la question de la compétitivité internationale des firmes. Dans les pays industrialisés notamment, des débats récurrents ont émergé quant à la "bonne" manière de gérer les problèmes de chômage résultant de la réorganisation de la production sur une base mondiale. La globalisation conduit donc les économistes et les milieux politiques à repenser la question de la régulation du marché du travail. Réciproquement, les politiques sur le marché du travail sont elles-mêmes susceptibles d'influencer les choix de localisation des entreprises. Il est alors nécessaire d'en tenir compte dans l'élaboration des politiques du marché du travail, pour être en mesure d'évaluer l'ensemble de leurs effets sur l'économie nationale.

Cet article prend part à ce débat du point de vue empirique. Il étudie la manière dont les institutions régulant le marché du travail affectent l'investissement direct à l'étranger (IDE). Pour cela, nous utilisons une base de données individuelles décrivant les investissements à l'étranger des firmes françaises sur la période 1992-2002. L'équation estimée explique la probabilité qu'une firme française investisse dans un pays particulier par un ensemble de variables spécifiques au pays et au secteur considérés. Ces déterminants sont obtenus à partir d'un modèle inspiré du courant de la nouvelle économie géographique, auquel nous intégrons des éléments de la littérature sur le fonctionnement du marché du travail. Ceci nous permet de dériver le lien explicite entre institutions sur le marché du travail et choix de localisation.

Nos résultats sont les suivants. D'abord, nous montrons que les interventions publiques sur le marché du travail ont bien un effet sur l'attractivité d'un pays du point de vue des entreprises. Une législation de la protection de l'emploi contraignante, un système généreux d'assurance chômage, une taxation du travail élevée, des contraintes fortes de salaire minimum, des syndicats puissants ou des négociations salariales très centralisées sont autant de caractéristiques qui réduisent la propension des firmes à s'implanter dans un pays. En outre, les effets estimés dépendent de l'échantillon de pays considérés comme lieu d'implantation possible. Nous mettons en évidence un effet "OCDE". Les entreprises françaises sont plus sensibles au fonctionnement du marché du travail dans le sous-groupe des pays de l'OCDE. Ce résultat reflète probablement une hétérogénéité des motifs d'IDE corrélée à la distribution spatiale des investissements : la régulation du marché du travail n'affecte pas de la même manière une firme qui veut investir dans un marché émergent pour réduire ses coûts de production ou une entreprise qui pénètre un marché de l'OCDE pour y augmenter ses ventes.

Ces résultats ont des implications intéressantes concernant les interventions publiques sur le marché du travail. La globalisation en cours depuis quelques dizaines d'années a affaibli les

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systèmes d'"Etat providence" des pays industrialisés. La pression concurrentielle en provenance des pays émergents renforce les critiques envers les systèmes les plus interventionnistes sur le marché du travail, en particulier en Europe. Nos résultats amènent à nuancer ces arguments. Ils suggèrent que réformer le fonctionnement du marché du travail dans le but de s'engager dans une concurrence sociale avec les pays émergents ne serait que de peu d'utilité en termes d'IDE entrants. Ce qui importe si l'on souhaite attirer les investisseurs, n'est pas tant la situation du marché du travail relativement à celle des pays émergents, que la comparaison avec celle prévalant dans les autres pays de l'OCDE. Néanmoins, la concurrence sociale pourrait s'avérer une stratégie efficace pour attirer les investisseurs étrangers qui envisagent de s'implanter au sein des pays de l'OCDE. Comme corollaire, cela implique que le maintien de systèmes d'Etat providence ambitieux, notamment en Europe, passe par la coordination entre pays.

RÉSUMÉ COURT

Cet article étudie l'effet empirique des institutions régulant le marché du travail sur les décisions d'Investissement Direct à l'Etranger (IDE). Pour cela, nous utilisons une base de données individuelles décrivant les stratégies d'expansion à l'étranger des entreprises françaises au cours de la période 1992-2002. Comme dans Head et Mayer (2004*b*), les déterminants des décisions individuelles d'IDE sont estimés à l'aide d'un modèle de choix discret comparant toutes les localisations possibles. L'équation estimée est obtenue à partir d'un modèle d'équilibre partiel combinant des éléments du courant de la nouvelle économie géographique et de la littérature sur le fonctionnement du marché du travail.

Les résultats montrent que les institutions régulant le fonctionnement du marché du travail ont bien un impact sur les choix de localisation des entreprises. Du point de vue des investisseurs, la rigidité sur le marché du travail réduit l'attractivité d'un marché. Une analyse plus fine montre que les effets estimés dépendent notamment de l'échantillon de pays considérés comme lieu d'implantation possible. Les entreprises françaises semblent ainsi plus sensibles au fonctionnement du marché du travail lorsque les décisions d'IDE ont lieu au sein des pays industrialisés de l'OCDE.

Classification *JEL* : F16, F21, J3
Mots-clé : Marché du Travail, Investissement Direct à l'Etranger, Données individuelles

SOCIAL COMPETITION AND FIRMS' LOCATION CHOICES [1]

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1   Introduction

One of the most notable changes OECD countries have experienced over the last decades is the increasing liberalization in international good markets and in the financial area. It has notably induced a globalization of firms' production process, which is now taken on a worldwide basis in a large number of sectors. In industrialized countries, recurrent debates have emerged on the "good" way to deal with the risk of unemployment, that the reorganization of firms on a worldwide basis may induce. Globalization therefore forces policy-makers to re-think the design of labor market policies. The other way round, national labor market institutions *per se* are likely to affect location decisions of firms across alternative countries. If so, this link has to be taken into consideration in the design of labor market policies, so as to assess all their expected effects on the national economy.

The paper takes part to the debate empirically. It focuses on the way labor market institutions (LMI hereafter) affect foreign direct investments (FDI), using a database describing French firms' investments abroad over the 1992-2002 period. The analysis of production patterns and firms' location decisions in an international setting lies at the heart of the new economic geography literature, starting with the seminal paper of Krugman (1991). Despite the growing strand of papers in that literature, the role of labor market institutions has hardly been explored. In the theoretical field, some recent contributions nevertheless suggest that labor market rigidities may reduce the

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incentive to locate in a country.[5] Some papers recently tackle the question empirically as well, using either aggregate, sectoral or firm-level data (see Golub *et al.*, 2003, Betts and Odgers, 1997, Görg, 2005, Dewit *et al.*, 2003, or Javorcik and Spatareanu, 2005, among others). Most papers reach a similar conclusion, that flexible employment protection laws exert a positive influence on inwards FDI flows. Moreover, Betts and Odgers (1997) obtain a negative impact of unionization on FDI, as long as the union share is not too high.[6]

This paper uses a firm-level dataset describing French firms' expansion strategies abroad to study the impact of various dimensions of labor market regulation on FDI flows. Firm-level analysis is of particular interest, as it makes use of heterogeneity of investment decisions across firms and countries, without putting strong weight on the time-variability dimension of the data. In that respect, it is immune from one important caveat of macro-data papers, where identification is mainly based on time variability, which is weak in LMI data. While most related empirical studies capture labor market institutions in the single dimension of employment protection, the originality of the paper is to enlarge analysis to various dimensions of labor market regulations, notably minimum wage legislation and wage bargaining process.

Following Head and Mayer (2004*b*), the determinants of French firms' FDI decisions are estimated by implementing a discrete choice model on all possible foreign locations. This allows explaining the probability for a French firm to invest in a given country by a set of country- and sector-specific variables. The set of potential determinants used in the regressions is explicitly derived from a model inscribed in the new economic geography literature. Furthermore, we include features borrowed from the labor market literature, so as to explicitly relate labor market institutions to location decisions. As Belot and Van Ours (2004), the country-specific wage entering the marginal cost of producing in a given location results from a bargaining process between firms and employees. As a consequence, it can be expressed as a combination of various dimensions of the host country's labor market regulations. The theoretical

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[5]See Haaland, Wooton and Faggio (2002) for a link between the degree of employment protection and location choices and Méjean and Patureau (2007) on minimum wages. Regarding the role of trade unions, Clark (1984) and more recently Munch (2003) and Leahy and Montagna (2000) suggest that powerful trade unions increase the negotiated wage, thereby reducing both firm profits and the appeal to foreign investments. However, the attractiveness loss may be mitigated through indirect mechanisms like improvement in productivity (Clark, 1984) or an aggregate demand effect (Munch, 2003). Last, Haaland and Wooton (2007) study a model of policy competition to attract FDI combining wage bargaining, whether at the national or firm level, and exit costs for multinational firms facing uncertainty on their investment return.

[6]That is, the share of workers that are union members. The threshold value is of 50% for unions share. The authors obtain a slightly positive effect above.

setting therefore delivers useful insights on the direction of the effects of labor market institutions on FDI decisions.

We test the model's predictions using firm-level data covering French firms' FDI in 76 countries over the 1992-2002 period. Our results can be summarized as follows. First, the design of labor market institutions does affect the attractiveness of a country from the firm's viewpoint. Stringent employment protection laws, high labor tax rates, a generous unemployment benefits system, strong minimum wage constraints, powerful trade unions and a highly-centralized wage-bargaining process significantly reduce the propensity of firms to locate in a country. Second, the estimated effects depend on the sample of countries considered as potential locations. French firms are found to be much more sensitive to the design of labor market institutions when only OECD countries are included in the country choiceset.

The "OECD-country group" effect may be interpreted in two ways. First, it is likely that labor market institutions are correlated with other determinants of FDI, notably institutional ones, that are omitted from our regressions while having a potential role in FDI decisions, particularly in less developed countries. Second, the "OECD-country group" effect may be the result of an heterogeneity of FDI motives correlated with the spatial distribution of investments. The robustness of our results to other institutional variables leads us to favor the second interpretation. In a heterogeneous sample, labor market institutions –even though they matter– are dominated by other variables influencing FDI choices (such as market potential or supply access). Within the more homogenous sample of OECD countries, labor market regulation enters with a stronger weight in the location choice function.

The results deliver an interesting message with regards to the design of labor market policy, notably for OECD policy makers. The globalization process at work over the last decades has weakened welfare-state institutions in industrialized countries. The rising competition from low-wage emerging countries strengthens the critics towards highly-regulated labor markets, in particular in European countries. Our results put this view into perspective. They suggest that making labor market reforms to engage in social competition with emerging countries would be little efficient in attracting more FDI. What matters the most to attract investors is less the labor market situation relative to that of emerging countries, than the one relative to other OECD countries. However, social competition could be a successful strategy in attracting foreign investors that contemplate to settle within OECD countries. As a corollary, maintaining ambitious welfare-state institutions, notably in Europe, calls for coordination between countries.

The rest of the paper is organized as follows. Section 2 derives the equation at the root of the estimation using tools of the new economic geography and the labor market liter-

atures. Section 3 presents our dataset and the variables used to proxy the determinants of location choices underlined in Section 2. Section 4 presents estimation results. Last, Section 5 concludes.

2 The estimated equation

2.1 Main assumptions

To derive the equation explaining the determinants of location choices, we follow Head and Mayer (2004*b*) and adopt a new economic geography framework *à la* Krugman (1991). Conditional on investing abroad (a decision which is taken as granted here), each French firm decides the country where to settle its affiliate among multiple location alternatives. In that decision process, the only relevant information is the ordering of profits between the various countries of the choiceset. Assuming that the fixed cost of investing abroad is not destination-specific, the firm thus chooses location i with the highest operating profit among all possible locations. Calling π_i^{op} the operating function in country i, the probability for country i to be chosen as location is:

$$P(\pi_i^{op} > \pi_j^{op}) \quad \forall j \neq i \tag{1}$$

The new economic geography literature proposes two major determinants of relative operating profits: relative producing costs and relative aggregate demands. In its reduced form, the (log of the) operating profit function in country i can be written as:

$$\ln \pi_i^{op} = a + b \ln MC_i + c \ln RMP_i + \varepsilon_i \tag{2}$$

where a, b and c are coefficients to be estimated. MC_i is the marginal cost of production in country i, that depends on local factor costs. Higher marginal costs negatively affect the firm's operating profit, hence the probability for country i to be chosen as location. Operating profits are also positively influenced by country i's "real market potential", denoted RMP_i in Equation (2). In the new economic geography literature, this variable summarizes the potential demand addressed to the firm that decides to locate in country i. According to Krugman's (1992) definition, it sums national real demands over all countries attainable from i, weighted by accessibility from country i. Last, ε_i in Equation (2) is a random term capturing the effect of unobserved components of marginal cost or market potential, that are specific to location i.

In the following, Equation (1) is estimated using a discrete choice model, with a univariate extreme value marginal distribution of the ε_i errors. Investment decisions are assumed to be independent from one another in this setting. This allows using the

conditional logit model to derive the probability for each potential location within the country set to receive the French firm's investment. The estimation strategy assumes a structure of errors correlation that is specific to each affiliate and identifies coefficients using the cross-country variability for each considered investment. Multiple investment decisions made by the same French firm are thus treated as independent from one another. As this is probably a strong assumption, we make sure that the possible dependence between investments made by the same firm does not give rise to bias in our estimations. We consequently run regressions imposing that residuals are clustered by firms, hence allowing for correlation within firms (while assuming independence between them). Standard errors are thus robust to this possible within-subject dependence.

The representation of firms' location choices based on Equation (2) is commonly used in the literature that estimates the determinants of FDI decisions using individual data (Head and Mayer (2004*a*) among others). The originality of the paper lies in the introduction of a sub-set of explicative variables related to the labor market functioning. In what follows, we accordingly focus on that aspect. This requires a detailed modelling of the determinants of marginal costs.

2.2   Determinants of marginal costs

The modelling of production costs is guided by several concerns. First, as underlined by Dolado, Felgueroso and Jimeno (2000) and Dickens, Machin and Manning (1999), minimum wages are an important feature of a large number of national labor markets. Further, Picard and Toulemonde (2004) and Méjean and Patureau (2007) obtain contrasted theoretical results when they investigate location decisions in a new economic geography framework with minimum wage. These elements lead us to investigate its role empirically. To that aim, production in country i is assumed to use workers paid at the minimum wage level $\underline{w}_i$ (say, unskilled workers). Second, we want to enlarge the set of labor market institutions beyond minimum wage. In this regard, referring to the labor market literature (Cahuc and Zylberberg, 2004, Belot and Van Ours, 2004 among others), we assume that production also requires another type of labor (say, skilled labor). The skilled equilibrium wage w_i^q results from a negotiation between firms and unions. As such, it is notably affected by the set of labor market institutions in place. Third, previous empirical papers have put forward other cost determinants susceptible to influence firms' location choices, notably the price of intermediate goods incorporated in the production process (Amiti and Javorcik, 2005) and various transaction costs (Head and Mayer, 2004*b*). Such elements are taken into account by including a third production factor, whose price z_i is proxied by several indicators detailed in

Section 3.

The three elements of marginal costs are modelled as follows. Once settled in country i, the French firm is assumed to produce using a Cobb-Douglas technology combining both types of labor and the third production factor. Total cost minimization under some given production constraint yields the following equation for the expected optimal marginal cost faced by firms in country i (see details in Appendix A):

$$MC_i = \frac{1}{\alpha^\alpha \chi^\chi \gamma^\gamma} A_i^{-1} [w_i^q]^\alpha [\underline{w}_i]^\chi [1 + \tau_i + \rho f_i]^{\alpha + \chi} [z_i]^\gamma \tag{3}$$

α, χ and γ denote the share of each factor in the total value added. They are defined over the interval $[0; 1]$, with $\chi = 0$ in countries that do not legislate on minimum wages. Equation (3) is derived under the assumption of constant returns to scale in the production technology (*i.e.*, $\alpha + \gamma + \chi = 1$). Unit labor costs are made of the skilled and unskilled wages, w_i^q and $\underline{w}_i$, plus other labor costs detailed below. z_i is the price of the third factor. Last, A_i is the global productivity of factors in country i.

Employment protection is introduced through firing costs (f_i in Equation (3)). As in Haaland and Wooton (2007), firms are assumed to face a catastrophic shock with probability ρ, that results in a plant's closure and all workers being fired. Should the firm be forced to close down its factory, it has to pay compensation to each worker.[7] Besides, firms face various taxes on labor (such as social security payments or payroll taxes), which are captured by the inclusion of the labor tax rate τ_i in Equation (3).[8]

In Equation (3), w_i^q is the negotiated wage for skilled workers, that results from a Nash-bargaining process. We retain Belot and Van Ours's (2004) version of the right-to-manage model of wage bargaining, that we adapt in a setting with multiple production factors (see details in Appendix A). Wages are set by a Nash-bargaining process between unions and firms, so as to maximize the relative surplus of both players. Firms are assumed to be in monopolistic competition on the good-market side. In that setting, when negotiations are fully centralized (that is, Nash-bargaining takes place at the aggregate national level), the equilibrium negotiated wage of skilled workers can be expressed as:

$$w_i^q = \left[1 + \frac{\mu \beta_i}{1 - \mu}\right] \frac{b_i}{1 + \rho f_i} \tag{4}$$

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[7]In Haaland and Wooton (2007), the firing cost is discounted and it is its present value that enters the cost of employment. We assume here without loss of generality that the discount rate is equal to one.

[8]As shown in Equation (3), we suppose identical labor tax rates on both types of labor. This assumption is done to be consistent with our empirical analysis, given the absence of any available data on the specific labor tax rates paid by firms for each type of workers in the various countries in the choiceset.

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Equation (4) delivers an expression of skilled-labor wage as a function of the labor market institutions in place in country i. b_i denotes unemployment benefit, that intervenes in the worker's outside option, f_i denotes firing costs and β_i the union's bargaining power ($0 < \beta_i < 1$). $\mu = 1 - \alpha\frac{\sigma-1}{\sigma}$ is interpreted by Belot and Van Ours (2004) as the effective degree of firms' monopoly power, with $\sigma > 1$ the price-elasticity of demand in the monopolistic setting.

According to Equation (4), an increase in the union's bargaining power (β_i) or unemployment benefits (b_i) raises the negotiated wage, while an increase in firing costs (f_i) reduces it. All three elements thus affect labor costs paid by the affiliate in country i and are likely to intervene in the French firm's investment decision. While high values of b_i and β_i always increase marginal costs, the effect of firing costs f_i is ambiguous. On the one hand, high firing costs reduce the negotiated net wage w_q^i (Equation (4)). On the other hand, they exert an upward pressure on the skilled labor cost (Equation (3)). The final effect on marginal costs, and location decisions, is thus uncertain. Last, heavy labor taxes (τ_i) raise the marginal cost of production, as reported in Equation (3). As a consequence, high social taxes reduce the firm's propensity to settle in.

Equation (4) is obtained under the assumption of fully centralized bargaining. However, the labor market literature extensively discusses the link between the degree of bargaining centralization, wages and employment performances. Calmfors and Drifill's (1988) seminal paper suggests a non-linear relationship between the centralization degree and the negotiated wage. In their setting, either fully centralized (national-level) or fully decentralized (firm-level) bargaining lead to a lower wage and a higher employment level, than semi-centralized negotiations (industry-level). However, the robustness of the inverse "U-shape" is far from being the object of a consensus. A review of the labor market literature, in both empirics and theory, does not yield some clear-cut result on the "good" level of (de)centralization with regards to labor market performances.[9] Our contribution on that point slightly differs, as the impact of the wage bargaining centralization degree in one country is not only analyzed in terms of wage and employment performances, but from the point of view of foreign firms contemplating to settle in.

Incorporating the log-linearized version of Equations (3) and (4) into the operating profit function (2) leaves us with a model explaining firms' location choices by *i)* the real market potential in each location, *ii)* the cost of immobile factors and *iii)* various aspects of the labor market functioning. The next section describes the way these

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[9]Calmfors (2001) makes a review on the empirical literature covering the question. Over the 10 papers reviewed, only 3 strictly confirm the non-monotonic relation. See also Driffill (2006) or Cahuc and Zylberberg (2004).

determinants are measured empirically.

3 Data description

3.1 French firms' FDI decisions

The dataset describing French firms' foreign expansion strategies comes from two different sources.

- We use data from *"LIFI"*, which is a survey by the French official statistics institute (the INSEE). The dataset describes the creation of foreign affiliates by French firms, including the location of the new production unit and the year of investment over the 1985-2004 period,

- We merge it with the *"Enquête Annuelle d'Entreprises"* also conducted by the INSEE, available to us over the 1984-2002 period. The survey complements the previous dataset with information on investing firms (sector of activity, number of employees, etc.)

After merging the datasets, we have at our disposal a single table containing detailed information about 18,115 French investments (foreign affiliates). The analysis is restricted to firms that operate in the manufacturing sector over the 1992-2002 period, and we eliminate islands as a geographical zone of settlement.

At this stage, the dataset covers 3,936 investments in 76 foreign countries. Consistently with the logit methodology, the next step consists in generating the set of alternatives each decision maker (i.e. each French firm) faces. As a result, each observation of our dataset is duplicated for the whole set of countries. We then build an indicator variable equal to one if subsidiary s is located in the corresponding country and zero otherwise:

$$fdi_{ijs} = \begin{cases} 1 & \text{if } j = i \\ 0 & \text{if } j \neq i \end{cases}$$

3.2 The set of explanatory variables

The dependent variable fdi_{ijs} equals 1 if the database mentions the opening of a subsidiary s in country i. We evaluate the determinants of such a decision, relying on the theoretical FDI motives included in Equation (2). Strictly speaking, firms' location decision should be related to a cross-country comparison of *expected* profits. Nevertheless, the determinants of FDI decisions are considered the year of investment.

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This assumption is usually retained in the literature, as it prevents from putting more constraints on the formation of firms' expectations. Moreover, as the identification of parameters mainly uses the cross-country variability, it is sufficient to assume that determinants observed the year of investment are correlated with the variables entering the expectation function.

3.2.1 Real market potential

Several market potential indicators can be found in the empirical literature. We retain the structural measure proposed by Redding and Venables (2004), so as to be the closest to Krugman's (1992) definition of the market potential.[10] We thus build a "real market potential" variable based on the following definition:

$$RMP_{it} = \sum_{j} I_{jt} P_{jt}^{\sigma-1} \phi_{ijt} \qquad (5)$$

I_{jt} is the nominal expenditure in country j (for all j countries attainable from i), P_{jt} is the aggregate price level that reflects the extent of competition[11] and ϕ_{ijt} is a measure of the "free-ness" of trade between i and j. It increases from zero to one when trade becomes easier (Baldwin *et al.*, 2005). In accordance with Krugman's definition, this expression for country i's market potential takes into account aggregate demand in each country j attainable from i, as well as the degree of competition captured by the price index and the remoteness of each location.

As in Redding and Venables (2004), the model estimated to get the market potential variable is a gravity-type equation explaining bilateral trade between country i and j (X_{ij}) by exporter- and importer-specific fixed effects (respectively called $\mu_i cty_i$ and $\lambda_j ptn_j$ in what follows) and various measures of bilateral trade barriers (vector Φ_{ij}):

$$\ln X_{ij} = \theta + \mu_i cty_i + \lambda_j ptn_j + \delta \Phi_{ij} + \epsilon_{ij} \qquad (6)$$

As detailed in Redding and Venables (2004), the gravity Equation (6) is derived from a new economic geography framework. Its explanatory variables can thus be related

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[10]We would like to thank Thierry Mayer for giving us the Stata programs, used in Head and Mayer (2006) to compute market potential in a related way. Details are provided in Appendix B.

[11]Following Head and Mayer (2006), we thus use the term "real" for the market potential measure, to underline the importance of discounting expenditures by the aggregate price level that reflects the extent of competition. As noted by Head and Mayer (2006), unlike nominal market potential (which would be given by $\sum_{j} I_{jt} \phi_{ijt}$), real market potential integrates the notion that a large market that is well-served by existing firms may offer less potential profits for an entering firm, than a smaller market with fewer competitors.

to theoretical ones. Exporter-specific fixed effects (cty_i) account for the number of producers in country i as well as their price competitiveness, called by Redding and Venables the "supply capacity" of country i. Secondly, importer fixed effects (ptn_j) capture the $I_j P_j^{\sigma-1}$ term entering the real market potential expression, i.e. the size of each market. The real market potential RMP_i is the sum of these "market capacities" weighted by the ease of access. From the estimation of Equation (6), one can thus restore a measure of real market potential (expressed in current US dollars) as:

$$\widehat{RMP}_i = \sum_j \left(exp(ptn_j) \right)^{\hat{\lambda}_j} \left(exp(\Phi_{ij}) \right)^{\hat{\delta}}$$

This variable is built annually between 1992 and 2002. Following Head and Mayer (2006), the variables entering Φ_{ij} are the distance between both countries and a set of binary variables specific to the country-pair, that indicate the existence of a common border, past colonial links, the use of a common language and their involvement into trade agreements and monetary unions. In the conditional logit, the variable is taken in logarithm and denoted "ln market potential". According to Equation (2), we expect a positive sign for the coefficient associated with it.

3.2.2 Labor costs

In our theoretical framework, the labor cost variable is made up of four elements, the minimum wage $\underline{w}_i$ remunerating low-skilled workers in country i, the negotiated wage w_i^q paid to skilled workers, firing costs f_i and social taxes τ_i. Moreover, the equilibrium wage resulting from the Nash-bargaining process itself depends on the union's bargaining power β_i, unemployment benefits b_i, the firing cost f_i and the degree of centralization of the wage-bargaining process. These various dimensions of labor market regulation thereby affect the operating profit expected from country i, hence location decisions.

As our dataset covers a large sample of 76 countries, we do not necessarily dispose of a unique and sufficiently detailed source of information. Labor market institutions variables are accordingly captured using different sources.

With regard to the whole sample of countries. We use information respectively provided by the World Bank *Doing Business* database (DB for short), the *Economic Freedom* database (EF) provided by the Fraser Institute (Gwartney and Lawson, 2006) and the *Institutional Profiles* database (IP) built in the French Ministry of Finance. Labor market institutions variables provided by *Doing Business* and *Institutional Profiles* have no time dimension; they are 2005 or 2006 values. On the contrary, LMI variables

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coming from the Fraser Institute are yearly values. From an econometric point of view, the use of explanatory variables in place the same year or even after location decisions took place, may arguably give rise to simultaneity issues. We do not view this as a serious concern here. As we consider individual binary choices of investment from a single country (France), there is little chance that endogeneity emerges between labor market institutions, which are long-run and low time-variant indicators, and location decisions occurring at the firm level.

Given these three datasets, we are able to capture the labor market institutions intervening in the model as follows (see Appendix B for further details).

- The *Economic Freedom* database provides us with a synthetic index of labor market regulations. It takes values over $[0; 100]$, increasing with the degree of labor market flexibility. As detailed in Appendix B, it sums up the following dimensions of the labor market functioning: *1°)* the hiring and firings practices, *2°)* the degree of centralization of wage bargaining, *3°)* the unemployment benefits system, *4°)* the minimum wage legislation, and *5°)* the use of conscripts to obtain military personnel. Except for the last dimension, these are precisely the labor market institutions we are interested in. As such, using the "Synthetic LMI Index, EF" (as denoted in the tables) in the regressions helps evaluating the effects of the overall degree of labor market flexibility on FDI decisions.

  We then investigate the role of each particular dimension of the labor market institutions, which is encompassed in the synthetic index. To that aim, we rely on the following labor market variables.

- Firing costs (f_i) are approximated by the Difficulty of Firing Index provided by *Doing Business*, which is defined over $[0; 100]$ and increases with the difficulty of firing. The indicator is denoted "Diff. of firing index, DB" in the tables. We also use the Hiring and Firing Practices index provided by *Economic Freedom*. It is defined over $[0; 100]$, decreasing with the difficulty of hiring and firing workers. It is denoted "Hir. & Fir. Index, EF" in the tables. Last, the *Institutional Profiles* database provides us with an alternative measure of the degree of labor contract protection (LCP for short). It is a discrete indicator taking values between 1 and 4, 1 being the degree of strongest protection. It is used to build 3 level-specific binary variables indicating a low, medium and strong degree of employment protection.

- The degree of centralization of the wage bargaining process is captured using the "Bargaining level for blue-collar workers" variable coming from the *Institutional Profiles* database. This index takes discrete values decreasing from 4 to 1 when

the degree of centralization of wage bargaining increases. This information is used to construct level-specific binary variables introduced in the regressions. They are denoted "Bargaining level=i, IP", with i= $1, 2, 3$ or 4.

- The generosity of the unemployment benefit system is captured by the "Unemployment Benefits" variable provided by *Economic Freedom*. It measures the extent to which the unemployment benefit system preserves the incentive to work. As such, it does not strictly match the unemployment benefit level (b_i). A low value of the indicator can be interpreted as capturing a generous unemployment benefits system. By raising the worker's outside option in the Nash-bargaining, this exerts an upward pressure on the negotiated wage. Since the variable is scaled over the [0;100], it can be interpreted as a ratio comparing the actual generosity of the unemployment benefit system relative to a theoretical one featured by no unemployment indemnity.

- The minimum wage legislation is captured by the "Minimum wage impact" provided by the *Economic Freedom* database. This variable evaluates the impact of minimum wage policy on wages. It is thus considered as a proxy for $\underline{w}_i$. The variable takes values over the range $[0; 100]$, decreasing with the strictness of the minimum wage legislation (i.e. with the magnitude of its impact and the strength of enforcement). It is denoted "Min. Wage Impact, EF" in the tables.

- The extent of mandatory contributions (τ_i) is measured using the "Non wage labor costs" variable of *Doing Business*. The indicator measures all social security payments (including retirement fund; sickness, maternity and health insurance; workplace injury; family allowance; and other obligatory contributions) and payroll taxes associated with hiring an employee. The cost is expressed as a percentage of the worker's salary. The variable introduced in regressions is the logarithm of one plus non-wage labor costs. This variable is denoted "ln(1+labor tax), DB" in the tables.

Depending on the labor market variable considered, this dataset covers 54 to 76 countries. We complement the database with labor market indicators provided by the OECD.

With regard to OECD countries. Labor market institutions intervening in FDI decisions are also captured by the following variables, taken from the OECD's *Labor Statistics* database, completed with data provided by Nickell (2006).

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- The gross benefit replacement rate captures the generosity of the unemployment system (b_i). It is expressed in percentage points and denoted "Ben. repl. ratio (%), OECD" in the following tables.

- The employment protection legislation index (EPL) is used to approximate firing costs (f_i). We consider the degree of employment protection for all workers.[12] This variable is defined over the $[0; 100]$ interval and denoted "EPL, OECD".

- The unions' bargaining power (β_i) is captured by two variables, union density and union coverage. Union density is defined as the share of labor force which is member of a labor union. Union coverage is the share of labor force covered by collective agreements. Depending on national legislations, it may be the case that workers that are not union members nevertheless benefit from collective agreements signed by unions (as in France for instance). As a result, a low share of workers that are union-members is not necessarily the sign of a low bargaining power for unions. Union density only tells one part of the story, leading us to consider union coverage as our preferred measure of bargaining power. The variables are respectively denoted "Union Density (%), OECD" and "Union Coverage (%), OECD" in the regression tables.

- We alternatively use the "Degree of centralization" and the "Degree of coordination" of wage bargaining, to get information about the organization of the bargaining process. As they take discrete values in the OECD database, they are introduced through binary variables in the following tables. Both indices are increasing in the degree of centralization and coordination.

- We use the ratio of minimum over median wage to approximate $\underline{w}_i$. Beyond minimum wage *per se*, it can be considered as measuring the degree of constraint that the minimum wage legislation introduces. It is denoted "Min. wage ratio (%), OECD".[13]

Depending on the LMI variable considered, this dataset covers between 20 and 27 OECD countries. Details on the construction of the LMI variables are provided in Appendix B. Table B.1 in Appendix B sums up the list of countries in each database.

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[12]As robustness checks we also considered the degree of employment protection for regular and for temporary workers respectively. Results, available upon request, were not very different from those obtained with the EPL index for all workers.

[13]The OECD database is restricted to countries fixing a minimum wage at the national level. For countries with branch-specific minimum wages, we use data provided by the International Labor Organization from the United Nations. See Appendix B for details.

3.2.3 Other production costs

The other elements affecting the firm's marginal cost are captured using the following additional variables.

Supply access: Following Amiti and Javorcik (2008), the empirical literature has reached the conclusion that intermediates are a key element of location choices, and all the more in the current decades as productive processes are becoming more fragmented. The inclusion of intermediate goods in the production function creates an incentive for firms to locate where they are the cheapest, *i.e.* near intermediate good suppliers. As Amiti and Javorcik (2008), we capture intermediate goods availability by a so-called "supply access" variable, that measures the access to intermediates that investing in country i gives to a firm operating in sector k. We build the corresponding country- and sector-specific variable using information about the actual matrix of inter-industry linkages. The rationale behind its construction is the following. The incentive for a firm in sector k to locate in i increases in *i)* country i's supply of intermediate goods, relative to the rest of the world, and *ii)* sector k's use of intermediate inputs. We capture these two dimensions of the supply access as follows, relying on several assumptions. First, intermediate goods are assumed to be either locally produced (in country i) or imported from neighbor countries from i (the country set *adj* hereafter). Second, we identify the intermediate goods supply using the information on French affiliates. From this, we get the geographical distribution of French suppliers of inputs. We then assume this distribution to be representative of the world distribution of the production in each sector k. This is obviously a strong assumption, that is however convenient given the lack of data on production at the disaggregated level. Third, an affiliate abroad is assumed to use intermediate inputs in the same proportion as firms in the same industry operating in France. This allows us using the French Input/Output tables to obtain the technical coefficients (denoted θ_{kt} and a_{klt} in what follows).

Based on these assumptions, the "supply access" measure for a firm operating in sector k, locating its affiliate in country i, is calculated according to the following formula:

$$SA_{ikt} = \theta_{kt} \sum_l a_{klt} \sum_{j \in adj} \frac{empl_{lt}^j}{empl_{lt}^{world}} \frac{1}{dist_{ij}}$$

where θ_{kt} is the share of intermediate goods in the production of sector k, a_{klt} is a technical coefficient that measures the factor intensity in input l of the production of sector k. The employment level of industry l in country j ($empl_{lt}^j$) is used as a proxy for output of sector l in country j. Consequently, $\frac{empl_{lt}^j}{empl_{lt}^{world}}$ represents the share of

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country j in the world-wide production of intermediate good l. As it is weighted by distance between i and j, it takes into account the degree of accessibility for an affiliate (i, k) to intermediate suppliers located in country j. To avoid simultaneity bias, we use the lag value of the variable (taken in log and denoted "ln (supply access -1)"). We expect a positive sign associated with, since a better access to intermediate suppliers is supposed to reduce the price of inputs for the subsidiary.

Other controls: As standard in the related literature, we control for transaction costs linked to various determinants of the "easiness" for investing in a specific country. First, we control for information and communication costs using the distance between France and the host country (taken in log and denoted "ln distance"). We expect a negative sign associated with distance from France.

Second, we consider that the affiliate's productivity level may be affected by positive spillovers due to past investment decisions taken by French firms of the same industry. Head and Mayer (2004*a*) notably point out the importance of mimetic behaviors of investors as a determinant of FDI decisions. Investors are more likely to agglomerate in countries where other affiliates in the same sector already settled. The spillover effects are approximated by a variable measuring the cumulated number of French subsidiaries of the same industry that have settled in the past in country i (in log, denoted "ln(# of same ind. firms -1)"). This variable may capture some country-specific characteristics that have been influencing location decisions both in the past and nowadays. In any case, we expect a positive sign of the coefficient associated with in the regressions.

Last, we also control for country i's current GDP per capita (converted at nominal exchange rate in US Dollars and taken in log). This variable is commonly used in the empirical literature on FDI determinants. As underlined by Javorcik and Spatareanu (2005) or Bénassy-Quéré, Coupet and Mayer (2007), it notably captures high labor costs in the host country. In our setting, it is aimed to capture the various elements of wage costs beyond labor market institutions. We thus expect a negative sign associated with this variable. Besides, including this control is of particular interest when willing to properly identify the effect of institutional variables on FDI, since they are likely correlated with GDP per capita (Bénassy-Quéré *et al.*, 2007).[14]

3.2.4   Robustness analysis

The aim of the paper is to empirically evaluate the role of labor market institutions in location decisions, while also taking into account the FDI determinants captured by

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[14]Table C.2 in Appendix B however reports the correlation between GDP per capita and all labor market institutions we consider.

the previous set of variables. However, one may question the robustness of our results to the inclusion of other FDI determinants omitted in our regressions, and primarily institutional ones. Labor market institutions may indeed capture the influence of other institutional variables such as tax policy or the quality of governance, whose role in FDI decisions may be of particular importance in developing countries. Consequently, we check that our results are robust to the following variables.

- We control for the impact of taxation on FDI location choices. Extending the theoretical model of Section 2, one would get that the higher the corporate tax rate, the lower *post-tax* profit, hence the lower the incentive to locate. The link between tax policy and international capital flows has been largely studied in the literature, as surveyed by Devereux (2007). One notable difficulty is to obtain series of effective tax rates with a sufficient country coverage given our sample size. We use the average effective tax rate series used in Devereux, Griffith and Klemm (2002) and provided on the IFS website. The rate is the base case rate assuming investment in plants and machinery and financed by equity or retained earnings. The dataset is only available on a sub-sample of 18 OECD countries. We take the log of 1 minus the tax rate in the regressions (denoted "ln(1-tax rate), DG" in the tables), and we expect a positive sign associated with this variable.

- We control for the quality of governance on FDI decisions. As underlined by Moskalev (2007), there is no unique way of defining governance. Wei (2000) and Javorcik and Wei (2000) focus on the role of corruption, while Daude and Stein (2007) and Moskalev (2007) study a wider range of governance indicators (competence of the bureaucracy, quality of contract enforcement, etc.). Moskalev (2007) uses the governance indicators provided by Kaufmann, Kraay and Mastruzzi (2005) (denoted KKM hereafter). Daude and Stein (2007) capture governance using data coming from the *World Bank Environment Survey* (denoted WBES hereafter). The robustness analysis is made using information from both sources. As in Moskalev (2007), information provided by the six indicators proposed by Kaufmann, Kraay and Mastruzzi (2005) is aggregated in an average indicator (denoted "Quality of governance, KKM" in the tables). As well, we build a synthetic quality of governance index as the mean value of the five indicators used by Daude and Stein (2007), coming from WBES data (denoted "Quality of governance, WBES" in the tables). Both indicators take values between 0 and 100. The KKM index is increasing with the quality of governance, while the WBES index is decreasing with. Details are given in Appendix B. One notable difference between the two governance indicators is related to their country coverage. The governance indicator built using WBES data only covers

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36 countries of our sample, while we get information for all the 76 countries with the KKM variable. Accordingly, the KKM indicator is our favorite measure of the quality of governance. We nevertheless refer to the WBES indicator as a robustness check, as detailed later. Wei (2000) and Javorcik and Wei (2000) obtain that increased corruption reduces FDI inwards. This is consistent with Moskalev's (2007) result, that an improvement in the host country's governance regime is associated with larger FDI inflows. In light of these results, we expect a positive sign associated with the KKM variable, and a negative one with the WBES governance indicator respectively.

3.3 Summary statistics

Do cross-country differences in labor market institutions affect French firms' FDI decisions? Before turning to the econometric analysis of this question, it is necessary to check that there is some heterogeneity in labor market institutions data. Table 1 reports a summary of the cross-country distribution of our measures of labor market regulation (covering a different number of countries depending on the source of data). It confirms a substantial degree of heterogeneity in the labor market institutions, as shown by the strong dispersion around the mean for each LMI variable.

Given this cross-sectional variance, next section investigates how these discrepancies in national labor market institutions affect the propensity of French firms to settle in.

4 Estimation

This section estimates the role of labor market institutions on French firms' FDI decisions. We proceed as follows. In a first step, we estimate the baseline specification, focusing on the impact of a standard set of explanatory variables found in the related literature and excluding labor market variables. This allows us to check the consistency of our data. In a second step, labor market institutions are included in the estimated equation. All estimations include time and regional dummies (see details in Appendix B for more details).

4.1 Baseline specifications

Table 2 reports the results of the conditional logit, in the baseline specification absent labor market institutions. Results provided in column (A) are obtained on the large sample of countries, while columns (B) and (C) report regression results when the country choiceset is restricted to the sub-sample of OECD countries. We then evaluate

Table 1: Cross-country dispersion of LMI variables

Variable	Nb countries	Year	Mean	Std dev.	Min	Max
Doing Business database						
Diff. of firing index	73	2005	35.62	25.91	0	100
Non-wage labor costs	76	2006	20.16	10.68	1	55
Institutional Profiles database						
Labor Contract Protection	59	2006	2.58	0.80	1	4
Bargaining Level	59	2006	2.66	0.91	1	4
Economic Freedom database						
Hirings & Firings Index	64	2002	40.57	15.61	10	76.66
Centralization Index	64	2002	61.26	17	18.33	86.67
Unemployment benefits	50	2002	48.58	14.47	16.54	85.23
Min. wage impact Index	54	2002	39.78	7.47	19	51
Synthetic LMI Index	64	2002	48.83	11.64	23.88	72.76
OECD database						
Employment protection	27	2002	38.77	16.70	4.16	74.51
Union density	26	2002	32	19.22	11.32	79.42
Union coverage	18	2000	65.78	28.11	14	98
Centr. degree	21	2002	2.29	1.16	1	5
Coord. degree	21	2002	2.92	1.40	1	5
Min. wage ratio	23	2002	0.43	0.11	0.19	0.70
Benefit repl. Ratio	20	2002	30.23	12	8.5	53

Note: In the case of time-varying variables, statistics are calculated using 2002-values.

the role of governance on FDI decisions, including the KKM governance variable in the regression, run on both large and restricted samples (columns (D) and (E)). In column (F), the WBES indicator is alternatively used in the regression, over a sub-sample of 36 countries (OECD and non-OECD countries). Last, column (G) reports regression results when including the average effective tax rate (on the OECD sample).

As expected, the market potential variable enters with a positive sign in the regression, whatever the country sample: firms are attracted by large markets with high purchasing power. A 10% increase in market potential increases the probability of attracting French investors by around 5%.[15] The magnitude of the effect is sizeable, and in line with usual findings in the literature.

With regards to variables capturing production costs, results are also consistent with the literature. The incentive to invest in a given country is negatively correlated with

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[15] As detailed by Train (2003), with variables taken in logs (and a large number of location choices), the coefficient on each variable is very close to the elasticity of the mean probability of choosing a country with respect to the explicative variable.

Table 2: Benchmark regressions

Model :	Dependent Variable: Chosen Country						
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
ln Real Market Potential	0.469^a	0.493^a	0.489^a	0.466^a	0.488^a	0.518^a	0.547^a
	(0.021)	(0.027)	(0.026)	(0.021)	(0.026)	(0.036)	(0.031)
ln distance	-0.196^a	0.054		-0.202^a		-0.164	
	(0.055)	(0.091)		(0.054)		(0.107)	
ln GDP per capita	-0.369^a	-0.526^a	-0.543^a	-0.339^a	-0.466^a	-0.087	-0.783^a
	(0.028)	(0.077)	(0.074)	(0.038)	(0.093)	(0.063)	(0.083)
ln (# same ind. firms -1)	0.336^a	0.134^a	0.135^a	0.334^a	0.133^a	0.169^a	0.092^c
	(0.048)	(0.051)	(0.051)	(0.048)	(0.048)	(0.042)	(0.049)
ln (supply access -1)	0.145^a	0.172^a	0.168^a	0.144^a	0.163^a	0.114^a	0.192^a
	(0.010)	(0.016)	(0.013)	(0.010)	(0.014)	(0.016)	(0.014)
Qlty governance, KKM				-0.003	-0.006		
				(0.002)	(0.004)		
Qlty governance, WBES						-0.011^c	
						(0.006)	
ln(1-eff.tax rate), DG							1.540^a
							(0.330)
Observations	299,136	74,925	74,925	294,910	74,925	87,336	41,256
Countries	76	27	27	76	27	36	18
Sample	All	OECD	OECD	All	OECD	All	OECD
FDI	3,936	2,775	2,775	3,933	2,775	2,426	2,292
R^2	0.133	0.101	0.101	0.131	0.101	0.153	0.106

Note: Observation clustered by firms. Robust standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.

its GDP per capita. Moreover, vertically-linked agglomeration forces are found to have a significant impact on firms' location choices. The positive sign associated with the supply access variable means that firms are more likely to move close to suppliers, as it reduces transportation costs on intermediate inputs. This result holds whatever the sample used.

Distance enters with the expected sign in column (A): The further the host country, the lower the tendency for French firms to invest. However, this effect no longer holds when assessing its impact on OECD countries (column (B)). In column (C), we thus run the same equation without the distance variable. Results on the other variables remain stable. Consequently, the set of control variables included in the subsequent regressions is given by the baseline specification in column (C) for the restricted sample of OECD countries.

In Table 2, the coefficient associated with "ln (# of same ind. firms -1)" is significantly positive. This suggests the presence of externalities among French investors, such as better market knowledge, easier administrative procedures and more broadly, production externalities. However, the magnitude of the spillover effect is sensitive to the country coverage. A 10% increase in the number of same-industry firms raises the propensity to locate in the country by 3.4% when contemplating the large sample of countries. When restricting the sample to OECD countries, the rise is only 1.7%. A possible explanation would be that agglomeration of firms compensates the lack of infrastructure and transparency in business activity in less-developed countries.

Results displayed in Table 2 confirm that most standard results obtained in the literature regarding the determinants of FDI decisions remain relevant in our dataset. Besides, they show that the FDI function is sensitive to the country coverage (whether restricted to OECD or including less-developed countries). While market potential and production costs variables remain major determinants of FDI decisions, transaction costs variables (gravity variables and spillover effects) are found to have a much lesser impact on FDI decisions within OECD countries. In light of this result, further analysis will systematically distinguish the large sample and the sub-sample of OECD countries. Note that 70% of FDI in our dataset are made in direction of OECD countries, which makes results robust even if the sub-sample is reduced to 27 countries. This confirms the widespread view that most FDI flows take place between industrialized countries (Markusen and Maskus, 2002).

Columns (D) to (F) report regression results when controlling for the quality of governance. In columns (D) and (E), governance is captured by the KKM indicator. Whatever the set of countries considered as potential locations, the associated coefficient is estimated insignificant. This *a priori* surprising result is notably tied to the presence of continental dummies in the regression. A deeper investigation on that point indicates that governance is highly correlated to regional dummies.[16] This consequently allows interpreting the inclusion of continental dummies in further regressions as capturing various dimensions of institutional features, notably the quality of governance. This has notable implications regarding the role of labor market institutions on FDI. If they turn out significant despite the presence of continental dummies, we can be confident in the robustness of the link between labor market institutions and FDI to other institutional features, such as the quality of governance.

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[16]For sake of space saving, these results are not reported. They are available upon request to the authors. Besides, the KKM governance variable appears to be highly correlated with GDP per capita (in log), as shown in Table C.2. It is hence not surprising that both variables cannot be simultaneously estimated significant.

Unlike the KKM indicator, the WBES governance variable is found to significantly matter in FDI decisions in spite of the inclusion of continental dummies (see column (F)). The negative sign indicates that better governance exerts a positive effect on the incentive to locate, a result in line with the large bulk of the literature (Daude and Stein (2007) or Javorcik and Wei (2000) among others). In further analysis, we consequently pay attention to the robustness of the link between labor market institutions and FDI to the inclusion of the WBES governance variable as well as continental dummies. However, it is worth noticing that in this case, the country coverage is quite limited, as the WBES indicator covers only 36 countries of our sample.

Column (G) reports regression results when the inverse tax variable is included in the benchmark regression. The estimated coefficient is estimated significantly positive, consistently with expectations. Every thing else equal, a higher average effective tax rate reduces the incentive for firms to locate in the host country.

4.2 Labor market flexibility

We now turn to the analysis of the role of labor market institutions on FDI decisions. Before starting analyzing the results, let us formulate remarks of methodological order. In the following, LMI variables that can be interpreted as a percentage share are introduced in level in the conditional logit. As such, the coefficients are interpretable as semi-elasticities, *i.e.* measuring the effect of a one percentage point increase in the indicator on the probability for the country to be chosen as location. As for discrete LMI indicators (such as those provided by the *Institutional Profiles* database), they are converted into as many dummies as the number of categories of the indicator. In this case, estimated coefficients can be interpreted in relative terms.[17]

We start considering the role of the overall degree of labor market flexibility on FDI decisions. To this aim, we include the synthetic LMI index (*Economic Freedom*) in the regression. Results are reported in Table 3, columns (A) (large sample of countries) and (B) (OECD countries). Two main results emerge. First, labor market flexibility is found to exert a significant positive impact on FDI decisions, in both the large and reduced country samples. With respect to the baseline specification (Table 2), coefficients associated with the other control variables remain of same order and sign. The

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[17]As an example, take the Labor Contract Protection (LCP) indicator provided by the French ministry of Finance. It is converted into three dummies: $LCP = low$ which is equal to 1 if the country as an LCP indicator higher than 3, $LCP = Medium$ for LCP indicators between 2 and 3 and $LCP = High$ for LCP indicators lower than 2. Calling $\hat{\beta}_{low}$ and $\hat{\beta}_{mid}$ the coefficients obtained for the corresponding dummies, the ratio $\exp(\hat{\beta}_{low})/\exp(\hat{\beta}_{mid})$ measures the relative probability that a representative country, featuring mean values for other explicative variables, with a low level of labor contract protection is chosen as location, in comparison with the same country with a medium level of labor contract protection.

Table 3: Synthetic LMI indicator

	Dependent Variable: Chosen Country			
Model :	(A)	(B)	(C)	(D)
ln Real Market Potential	0.435^a	0.481^a	0.416^a	0.503^a
	(0.023)	(0.026)	(0.037)	(0.032)
ln distance	-0.204^a		-0.237^b	
	(0.066)		(0.117)	
ln GDP per capita	-0.399^a	-0.639^a	-0.088	-0.843^a
	(0.030)	(0.077)	(0.061)	(0.094)
ln (# of same ind. firms -1)	0.347^a	0.122^a	0.216^a	0.070
	(0.047)	(0.051)	(0.050)	(0.056)
ln (supply access -1)	0.140^a	0.191^a	0.170^a	0.209^a
	(0.012)	(0.014)	(0.020)	(0.015)
Synthetic LMI indicator, EF	0.003^c	0.011^a	0.012^a	0.013^a
	(0.002)	(0.002)	(0.003)	(0.003)
Quality of governance, WBES			-0.015^b	
			(0.007)	
ln(1-eff.tax rate), DG				0.582
				(0.365)
Observations	172,616	72,990	59,911	41,256
Countries	64	27	34	18
Sample	All	OECD	All	OECD
FDI	3,615	2,761	2,349	2,292
R^2	0.101	0.102	0.120	0.108

Note: Observations clustered by firms. Robust standard errors in parentheses with [a], [b] and [c] respectively denoting significance at the 1%, 5% and 10% levels.

estimated coefficients of the labor market index are quantitatively small, notably relative to the other FDI determinants: a 10% increase in the synthetic LMI indicator raises the probability to be chosen as location by less than 0.1%. This suggests that labor market institutions are not the main FDI determinant, which we do not view neither as a disappointing nor even surprising result.

Second, the effect of labor market flexibility is more sizeable, and more significant, when FDI decisions are taken within the set of OECD countries, than over the large sample of 64 countries. The associated coefficient is thus three times larger when estimation is run on the OECD sub-sample than on the whole sample.

Results reported in columns (C) and (D) indicate that the significant role of labor market institutions on FDI is robust to the inclusion of other institutional variables. Neither the quality of governance in the host country nor its corporate tax policy are able to cancel out the impact of labor market institutions on FDI decisions. Quality of governance

measured by the WBES indicator is found to significantly matter as well, the effect being of expected sign.[18] Besides, tax policy is found to be insignificant in explaining FDI decisions, once other determinants are accounted for.

The result that labor market institutions matter in FDI decisions, and matter more within OECD countries, deserves to be investigated into more details. As previously mentioned, the synthetic LMI index encompasses many dimensions of labor market regulations, which do not have necessarily the same importance on FDI decisions. In the following, we go deeper into the analysis and successively study the role of employment protection (Table 4), of the wage bargaining process (Table 5), of minimum wage policy and of unemployment benefits (Table 6), and of the labor tax rate (Table 7).

4.3 Detailed labor market institutions

4.3.1 Employment protection

Table 4 report regression results when the variables capturing employment protection laws are included in the estimated equation.
The first set of sub-indicators refers to employment protection laws. Columns (A) to (C) report regression results over the large sample of countries. Columns (D) to (G) display results when the country choiceset is restricted to OECD countries. Two main results emerge. First, stringent employment protection laws reduce the propensity of French firms to locate in the country. The result is obtained on both samples. Except in column (C), the effect is highly significant. According to our theoretical model, this suggests that the direct upward effect of firing costs on producing costs tends to dominate its indirect downward effect on the negotiated wage, thereby discouraging FDI inflows.

Second, employment protection matters more when FDI decisions are taken within the set of OECD countries. Estimated coefficients associated with OECD specifications are always larger than in the large sample. The effect can be evaluated in quantitative terms, by notably comparing the results obtained with Labor Contract Protection dummies (columns (A) and (D)). The relative probability that a representative country with a low level of labor contract protection is chosen as location, as compared

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[18]However, when introducing the WBES indicator, GDP per capita becomes non significant. This is not necessarily a surprising result, in light of the strong correlation between quality of governance variables and GDP per capita in the data (see Table C.2, Appendix B). The difficulty of obtaining both variables significant simultaneously is confirmed in Table C.3, where the effect of GDP per capita becomes very unstable when introducing the WBES indicator. This result is in line with the literature's findings (Bénassy *et al.*, 2007). This, however does not change the results on the LMI variables.

Table 4: Employment Protection

Model :	(A)	(B)	(C)	(D)	(E)	(F)	(G)
				Dependent Variable: Chosen Country			
ln Real Market Pot.	0.468^a	0.468^a	0.434^a	0.484^a	0.502^a	0.502^a	0.490^a
	(0.026)	(0.022)	(0.023)	(0.037)	(0.027)	(0.027)	(0.025)
ln distance	-0.556^a	-0.185^a	-0.236^a				
	(0.075)	(0.056)	(0.061)				
ln GDP per capita	-0.351^a	-0.405^a	-0.369^a	-0.579^a	-0.641^a	-0.625^a	-0.785^a
	(0.031)	(0.030)	(0.031)	(0.086)	(0.080)	(0.082)	(0.089)
ln (# same ind. firms -1)	0.310^a	0.330^a	0.329^a	0.089^c	0.120^b	0.125^b	0.107^b
	(0.049)	(0.048)	(0.047)	(0.055)	(0.052)	(0.051)	(0.050)
ln (supply access -1)	0.123^a	0.145^a	0.132^a	0.150^a	0.162^a	0.179^a	0.190^a
	(0.010)	(0.010)	(0.011)	(0.015)	(0.014)	(0.014)	(0.014)
LCP=low, IP	0.391^a			0.589^a			
	(0.068)			(0.145)			
LCP=medium, IP	0.308^a			0.363^a			
	(0.063)			(0.137)			
Diff. Firing Index, DB		-0.002^a			-0.004^a		
		(0.001)			(0.001)		
Hir. & Fir. Index, EF			-0.001			0.004^b	
			(0.001)			(0.002)	
EPL, OECD							-0.009^a
							(0.002)
Obs.	192,222	286,452	177,680	40,622	74,925	74,925	74,925
Countries	59	73	64	19	27	27	27
Sample	All	All	All	OECD	OECD	OECD	OECD
FDI	3,258	3,924	3,635	2,138	2,775	2,775	2,775
R^2	0.139	0.129	0.101	0.115	0.101	0.101	0.102

Note: Observations clustered by firms. Robust standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively
denoting significance at the 1%, 5% and 10% levels.
In column (A), the reference dummy is associated with the strongest degree of employment protection.

to the same country with a medium level of employment protection, amounts to 1.09 $(\exp(0.391)/\exp(0.308))$ on the large sample. It rises to 4.96 when only OECD countries are considered as potential location choices. French firms are more responsive to the strictness of employment protection when they contemplate to settle within the restricted set of OECD countries. This is in line with the "OECD-country" group effect obtained with the overall labor market flexibility index (Table 3). We pay a particular attention to the robustness of this result, when coming to analyze the role of other labor market institutions.

4.3.2 Wage Bargaining process

We now turn to the impact of the bargaining process on firms' location choices. Results are displayed in Table 5. We first analyze the role of trade unions' bargaining power. To that aim, we successively include union density and union coverage in the regression. Both variables only cover OECD countries. Results are displayed in columns (A) and (B). In both cases, the coefficient is estimated significantly negative, meaning that a strong bargaining power for unions reduces the firms' incentive to locate in the country. The effect is quantitatively non-negligible, as a one standard deviation shock on the union coverage of the "mean" country reduces its probability to be chosen as location from 5.6 to 4.2%.[19] This result is in line with our theoretical predictions. As a strong bargaining power exerts an upward pressure on the negotiated wage, it reduces firms' incentive to locate in the country. Unfortunately given the lack of data, we cannot test the robustness of this result over the larger set of countries.

Columns (C) to (H) report results regarding the degree of centralization and coordination of wage bargaining. In column (C) and (D), estimation is run on the large sample, while only OECD countries are included in columns (E) to (H). In each case, the reference group is the one with the highest degree of centralization/coordination of wage bargaining. As previously mentioned, the labor market literature devotes a lot of attention to the link between the wage bargaining process and labor market performances. In a seminal contribution, Calmfors and Driffill (1988) obtain a non-linear effect of the degree of centralization on wages and unemployment. As wages monotonically affect marginal costs, hence location decisions, the propensity to settle in a host country may inherit the non-linear relation with respect to the degree of wage bargaining as well. Results reported in Table 5 do not support this view. Rather, our regression results bring up another conclusion: The more centralized the wage bargaining, the less incentives for firms to locate. This result holds strongly and significantly whatever the country coverage. The relative probability to be chosen as location, when the country adopts bargaining procedures at the branch-level ("Bargaining Level, IP=2"), rather than at the national level ("Bargaining Level, IP=1", the reference group) amounts to 1.72 on the large sample (1.80 on the OECD sample). The estimated gain to adopt more decentralized procedures is thus sizeable.

Results reported in Table 5 also supports the existence of an OECD-group effect. The estimated coefficients are larger and more significant when FDI decisions occur within the set of OECD countries. The effect is quantitatively non-negligible. Thus, switch-

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[19]This result relies on simulation exercises. We build an artificial "mean" country, with values of the explicative variables equal to the means of the country sample. We then evaluate the probability to locate in this mean country, before and after the one standard-deviation shock.

Table 5: Bargaining process

Model :	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
				Dependent Variable: Chosen Country				
ln RMP	0.449^a	0.490^a	0.510^a	0.423^a	0.457^a	0.519^a	0.430^a	0.476^a
	(0.026)	(0.028)	(0.029)	(0.023)	(0.036)	(0.027)	(0.031)	(0.030)
ln distance			-0.293^a	-0.236^a				
			(0.086)	(0.062)				
ln GDP per cap.	-0.399^a	-0.995^a	-0.288^a	-0.398^a	-0.122	-0.664^a	-0.967^a	-0.678^a
	(0.073)	(0.089)	(0.033)	(0.030)	(0.081)	(0.076)	(0.101)	(0.102)
ln (# firms -1)	0.142^a	0.021	0.261^a	0.347^a	-0.006	0.112^b	0.027	0.015
	(0.051)	(0.055)	(0.049)	(0.047)	(0.056)	(0.051)	(0.053)	(0.052)
ln (supply ac. -1)	0.160^a	0.194^a	0.138^a	0.137^a	0.155^a	0.193^a	0.206^a	0.215^a
	(0.013)	(0.015)	(0.010)	(0.011)	(0.015)	(0.013)	(0.020)	(0.018)
U.dens. (%), OECD	-0.010^a							
	(0.002)							
U.cov. (%), OECD		-0.011^a						
		(0.001)						
Bargaining=2, IP			0.548^a		0.590^a			
			(0.117)		(0.148)			
Bargaining=3, IP			0.800^a		1.126^a			
			(0.116)		(0.146)			
Bargaining=4, IP			0.137		1.198^a			
			(0.132)		(0.185)			
Centr.Index, EF				0.000		0.015^a		
				(0.002)		(0.002)		
Centr=1, OECD							1.619^a	
							(0.306)	
Centr=2, OECD							0.907^a	
							(0.307)	
Centr=3,OECD							0.798^b	
							(0.310)	
Centr=4, OECD							0.571^c	
							(0.320)	
Coord=1, OECD								1.080^a
								(0.117)
Coord=2, OECD								-0.001
								(0.247)
Coord=3, OECD								0.615^a
								(0.093)
Coord=4, OECD								0.229^a
								(0.079)
Observations	70,304	40,842	192,222	167,815	40,622	72,990	53,697	53,697
Nb of countries	26	18	59	64	19	27	21	21
Sample	OECD	OECD	All	All	OECD	OECD	OECD	OECD
FDI	2,704	2,269	3,258	3,594	2,138	2,761	2,557	2,557
R^2	0.107	0.118	0.144	0.10	0.124	0.104	0.10	0.107

Note: Observations clustered by firms. Robust standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels. In columns (A), (C), (E) and (F), the reference dummy is associated with the higher degree of centralization, *i.e.* 1 for "Bargaining Level, IP" and 5 for the OECD Centralization/Coordination degree variables

ing from the branch-level to the firm-level ("Bargaining Level, IP"=2 to 3) raises the relative probability to be chosen as location from 1.29 in the large sample, to 1.71 within OECD countries. Adopting more decentralized wage bargaining procedures is thus found to have a larger quantitative effect on the propensity to locate within the choiceset restricted to OECD countries.

The result that a highly-centralized wage-bargaining process strongly and significantly reduces the incentive to locate, may be rationalized as follows. A highly centralized setting implies that each individual firm does not have much control on the wage level in place in the country. This may be particularly costly for foreign firms that settle in, as their weight in the bargaining is likely to be overwhelmed by that of national firms. The lack of control on the local workforce's wages may explain the strong aversion that French firms have for highly-centralized bargaining procedures. This relation can be formally obtained in a model with firm-specific risks of failure and a fix cost of exiting the market, like the one in Haaland and Wooton (2007).

4.3.3 Minimum wage legislation and unemployment benefits

Table 6 presents results related to the impact on investment decisions of minimum wage policy (columns (A) to (C)), and of unemployment benefits (columns (D) to (F)). Consider first the role of minimum wage policy. As reported in column (A), minimum wage policy has no significant role on FDI decisions when all countries are considered as potential locations. Conversely, the coefficients associated with minimum wage policy are significant when FDI occurs among OECD countries (columns (C) and (D)). In that case, they have the expected sign: a more stringent minimum wage policy reduces the host country's attractiveness. The effect is quantitatively important: a 10% increase in the minimum to median wage ratio (in log) reduces the probability to be chosen as location by 5.6 percentage points (column (C)).

These results go along the lines of an "OECD-country group" effect. Minimum wage policy is found to have a larger significant effect on FDI decisions within the set of OECD countries, than among the large sample –where it virtually plays no role. This result may sound surprising, notably in light of the consensus view that FDI to low-developed countries are driven by vertical motives in the search of low production costs (Navaretti and Venables, 2004). One might thus expect minimum wage policy to play more role on FDI decisions when low-developed countries, with a large share of unskilled labor force, are included in the country choiceset. Our results show that this is not the case.

Consider next the role of unemployment benefits (columns (E) to (G)). Column (E) and (F) report estimation results using the Unemployment Benefit variable (from *Eco-*

Table 6: Minimum wage policy and Unemployment benefits

Model :	(A)	(B)	(C)	(D)	(E)	(F)
			Dependent Variable: Chosen Country			
ln Real Market Potential	0.460^a	0.523^a	0.509^a	0.433^a	0.501^a	0.488^a
	(0.023)	(0.027)	(0.029)	(0.023)	(0.026)	(0.027)
ln distance	-0.234^a			-0.272^a		
	(0.064)			(0.064)		
ln GDP per capita	-0.393^a	-0.585^a	-0.419^a	-0.415^a	-0.575^a	-0.686^a
	(0.030)	(0.075)	(0.081)	(0.030)	(0.068)	(0.080)
ln (# of same ind. firms -1)	0.340^a	0.120^b	0.155^a	0.369^a	0.151^a	0.076
	(0.049)	(0.052)	(0.053)	(0.036)	(0.043)	(0.048)
ln (supply access -1)	0.135^a	0.181^a	0.162^a	0.141^a	0.201^a	0.182^a
	(0.012)	(0.014)	(0.014)	(0.012)	(0.014)	(0.013)
Min. wage Impact, EF	0.002	0.005^a				
	(0.002)	(0.002)				
ln Minimum Wage ratio, OECD			-0.567^a			
			(0.103)			
Unemployment benefits, EF				0.007^a	0.013^a	
				(0.002)	(0.002)	
Unempl.Ben.Repl.Ratio (%), OECD						-0.014^a
						(0.002)
Observations	164,971	70,698	60,752	146,070	69,616	46,500
Nb of countries	54	26	23	50	27	20
Sample	All	OECD	OECD	All	OECD	OECD
FDI	3,526	2,728	2,642	3,456	2,720	2,325
R^2	0.106	0.102	0.096	0.093	0.102	0.121

Note: Observations clustered by firms. Robust standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.

nomic Freedom) on the large and the reduced samples respectively. In both cases, the coefficient is significantly positive, meaning that a more generous unemployment benefits system reduces the propensity to locate. Similarly, we get that the unemployment benefit ratio exerts a significant negative impact on FDI decisions among OECD countries (column (G)). The effect may be rationalized using the theoretical framework of Section 2. A generous unemployment benefits system rises the negotiated wage, hence production costs, thereby reducing the incentive to locate for foreign investors. A one standard-deviation negative shock on the unemployment benefit index (EF) of the mean country (*i.e.*, towards a more generous unemployment system) reduces its probability to be chosen as location from 2% to 1.77% considering the large sample of countries. The downward effect is more severe on the sub-set of OECD countries, as the probability to be chosen reduces from 3.7% to 3.1% in that case.

4.3.4 Mandatory contributions

In this section, we evaluate the role of labor taxes on FDI decisions. Results are summarized in Table 7, with column (A) referring to the regression run on the whole sample, column (B) run on the whole sample less China and column (C) run on the OECD sample.

Considering first results on the whole sample (column (A)), we get that the labor tax variable enters significantly but with an unexpected positive sign. This would suggest that firms are more likely to locate where social security payments and payroll taxes are high. However, this result is not robust. As reported in column (B), when deleting China from the sample of potential locations, the impact of non labor costs turns out insignificant.[20] Social security contributions and other payroll taxes are not found to be significant FDI determinants on the large sample of country choiceset. This is no more the case when only OECD countries are considered (column (C)). In this case, the estimated impact of the variable is significant and negative, as expected. This is in line with previous evidence of the OECD group effect. For French firms deciding to create an affiliate in the OECD, high social taxes are viewed as an impediment to FDI.

Overall results reported throughout Section 4 show evidence that labor market institutions do matter in affecting French firms FDI decisions. As previously mentioned, the presence of regional dummies in the regressions makes us confident that these results are robust to the inclusion of governance as an alternative institutional determinant of FDI choices. We investigate this point further by also including the WBES governance indicator in the regression. Results are reported in Table C.3, Appendix C.2. It is worth remembering that in this case, the country coverage is limited. However, the results further confirm the robustness of our results, as the coefficients associated with the various labor market institutions remain significant and of expected sign. We also evaluate their robustness when controlling for tax policy in the OECD sample. Results are reported in Table C.4, Appendix C.2. The role of labor market institutions on FDI decisions is robust to the introduction of the average effective corporate tax rate. In addition, in most specifications the coefficient associated with the tax variable is significantly positive, in line with theoretical predictions and the large bulk of empirical papers covering OECD countries (Devereux, 2007).

Our results also indicate that French firms are more responsive to labor market features within the sub-sample of OECD countries. This result holds for the various dimensions of the labor market regulations considered in the paper. The OECD group effect could

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[20]Further investigation on our database indicates that China is an important recipient of FDI flows (around 6%), while also amongst the countries with the highest labor tax rate. Since this is likely to bias the results, we exclude China from the country choiceset. Results are reported in Table 7, column (B).

Table 7: Mandatory contributions

Model :	Dep. Var.: Chosen Country		
	(A)	(B)	(C)
ln Real Market Potential	0.456^a	0.444^a	0.486^a
	(0.021)	(0.021)	(0.026)
ln distance	-0.149^a	-0.154^a	
	(0.056)	(0.055)	
ln GDP per capita	-0.325^a	-0.247^a	-0.599^a
	(0.029)	(0.031)	(0.077)
ln (# of same ind. firms -1)	0.318^a	0.256^a	0.132^a
	(0.048)	(0.049)	(0.051)
ln (supply access -1)	0.131^a	0.147^a	0.189^a
	(0.011)	(0.011)	(0.015)
ln(1+labor tax), DB	0.986^a	0.211	-0.696^a
	(0.190)	(0.188)	(0.230)
Observations	299,136	278,475	74,925
Countries	76	75	27
Sample	All	All	OECD
FDI	3,936	3,713	2,775
R2	0.134	0.136	0.101

Note: Observations clustered by firm. Robust standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.
In column (B), China is omitted from the country choiceset.

arise from various reasons. Firms may be better informed on the labor market functioning of OECD countries. This could also reveal some hierarchy of FDI determinants, which varies with potential host countries. Labor market institutions may have more impact when the country choiceset is limited to countries that are closer from France with regards to other FDI determinants, like market potential. When FDI decisions are contemplated over the large sample, including developing countries, labor markets regulations may be of lesser importance or correlated with other omitted determinants of location decisions.[21] It may also be the case that location choices obey a two-stage

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[21]This led us to add country fixed effects in the regressions to control for country-specific unobserved determinants of FDI inflows. This amounts to identify the coefficients of the logit estimation using the time variability of explanatory variables only. However, this makes most coefficients to lose their signi-

process, according to which French firms first determine the region where to locate (OECD or non-OECD area), before deciding the precise country where to settle in. Country-specific labor market features are likely to enter in the second step of such a nested decision tree. Labor market institutions would therefore be weakly significant when considering the whole sample of countries, while having a much more significant role conditional on the chosen region.[22]

5 Conclusion

The paper evaluates the empirical effects of labor market institutions on FDI decisions. To that aim, we use a dataset describing French firms expansion strategies abroad over the 1992-2002 period. We study the effects of various dimensions of the labor market regulation onto FDI decisions. Our database includes information regarding employment protection, trade unions' bargaining power, the centralization degree of wage bargaining, the generosity of unemployment benefits and minimum wage legislation, for each country eligible as recipient for French foreign investments.

Following Head and Mayer (2004*b*), we estimate the determinants of French firms FDI decisions using a discrete choice model on all possible foreign locations. This allows us to explain the probability for a French firm to invest in a given country by a set of country- and sector-specific variables. We explicitly derive the set of potential determinants used in the regressions from a theoretical model, combining elements of the new economic geography and the labor market literatures.

Two main results emerge. First, we show that labor market institutions do matter in French firms FDI decisions. Labor market rigidity exerts a negative impact on the country's attractiveness for (French) foreign investors. This conclusion emerges when studying the role of a synthetic index of labor market regulations. It is confirmed and deepened by the use of more disaggregated indicators. Stringent employment protection laws, high labor tax rates, generous unemployment benefits, strong minimum wage constraints, powerful trade unions and a more centralized wage-bargaining process significantly reduce the propensity of firms to locate in the country. These findings

ficativeness. This is not a surprising result given the low volatility of national laws regulating the labor market, as mentioned in the introduction.

[22]One might investigate this interpretation further by running a nested logit, with the first stage consisting in deciding the area to locate, OECD or non-OECD. However, specifying a relevant nested-logit structure is not necessarily an easy task in our case. According to Navaretti and Venables (2004), investments in OECD and less-developed countries are intrinsically different: North-North investments are market-seeking horizontal investments, while North-South investments are cost-seeking vertical investments. The choice between these types of FDI is the most likely intrinsic to the firm and cannot be estimated with a logit structure where identification is made firm by firm.

can be rationalized using predictions of a partial-equilibrium model of firms' location decision. All these elements tend to increase marginal costs, thus reducing expected profits and the probability of investment. We show that these results are robust to other institutional determinants of FDI choices, such as corporate tax policy or the quality of governance.

Second, our results indicate that French firms are more responsive to labor market features conditional on the decision to invest within the sub-sample of OECD countries. This result holds for the various dimensions of labor market regulations considered. In our view, this "OECD group effect" may be interpreted as the outcome of an heterogeneity of FDI motives correlated with the spatial distribution of investments. In a heterogeneous sample, labor market institutions –even though they matter– are dominated by other variables influencing FDI choices (such as market potential or supply access). However, once the firm has decided to locate in an OECD country, labor market regulation enters with a stronger weight in the location choice function.

These results deliver an interesting message with regard to the design of labor market policy. They notably suggest that engaging labor market reforms in order to convince firms to invest in France rather than in emerging markets is misleading. However, the social competition strategy could be successful in attracting foreign investors that seek to locate in OECD countries. As a corollary, maintaining ambitious welfare-state institutions, notably in Europe, calls for increased coordination between countries.

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A The model: elements of derivation

The model underlying Equations (3) and (4) in Section 2 is based on Belot and Van Ours' (2004) version of the right-to-manage model of wage bargaining, that we adapt in a framework with multiple production factors. In many aspects, our modelling of the wage bargaining process is similar to their's. We consequently present here the main building blocks and equations of the model, stressing mostly the differences with Belot and Van Ours's (2004) model. The interested reader can refer to their paper (notably the appendix) for technical details of the program.

In the right-to-manage model, wages are set by a bargaining between firms and trade unions, and employment is determined by firms alone (according to their labor demand) after wages are set. The program is solved by backward induction. In a first step, we determine (for given wages) optimal inputs demand functions and the marginal cost expression. We then solve the Nash-bargaining process that determines the negotiated wage value.

A.1 The firm's program

The production function is assumed to be Cobb-Douglas with constant returns to scale:

$$y_i = A_i k_i^\gamma l_i^\chi h_i^\alpha, \quad \alpha + \gamma + \chi = 1 \tag{A.1}$$

with y_i production of a firm settled in country i, l_i and h_i unskilled and skilled labor, and k_i the third production factor. Equation (3) is derived from a standard program of total cost:

$$\min_{h_i, k_i, l_i} TC_i = (1 + \tau_i + \rho f_i) \left[\underline{w}_i l_i + w_i^q h_i \right] + z_i k_i$$

under technological constraint (Equation (A.1)). Solving this program yields the optimal marginal cost MC_i (Equation (3)), and the optimal demand functions for each production factor:

$$k_i = \frac{\gamma}{z_i} MC_i y_i \tag{A.2}$$

$$l_i = \frac{\chi}{\underline{w}_i (1 + \tau_i + \rho f_i)} MC_i y_i \tag{A.3}$$

$$h_i = \frac{\alpha}{w_i^q (1 + \tau_i + \rho f_i)} MC_i y_i \tag{A.4}$$

Firms in monopolistic competition in the production of differentiated varieties, are distributed over the continuum $[0; 1]$ (within a country). We denote by p_i the price of one variety (in country i), relative the entire bundle of varieties available to consumers.

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The second step of the firm's program is to determine the optimal value of the pair (y_i, p_i), so as to maximize its profit given the demand function it faces:

$$y_i \geq p_i^{-\sigma} \overline{C}_i \tag{A.5}$$

Here, we assume standard CES preferences. $\sigma > 1$ is the elasticity of substitution across varieties, and $\overline{C}_i$ is an exogenous constant term. Solving this program yields the optimal price:

$$p_i = \frac{\sigma}{\sigma - 1} MC_i \tag{A.6}$$

The firm in monopolistic competition sets its sale price by applying a constant mark-up rate over the marginal cost. Combining Equations (A.4) and (A.6) yields the optimal skilled labor demand function:

$$h_i = \left[\frac{(1-\mu)\delta_i^{\frac{\sigma-1}{\sigma}} \overline{C}_i^{\frac{1}{\sigma}}}{w_i^q (1 + \tau_i + \rho f_i)} \right]^{\frac{1}{\mu}} \tag{A.7}$$

with $\delta_i \equiv A_i k_i^{\gamma} l_i^{\chi}$ and $\mu \equiv 1 - \alpha(1 - \frac{1}{\sigma})$.

A.2   The wage bargaining process

We solve the Nash-bargaining process under the assumption of a fully centralized process. Unlike Belot and Van Ours (2004), we explicitly model three production factors, notably skilled and unskilled labor. This drives us to make further assumptions with regard to the wage bargaining set-up. Only the skilled-labor wage is subject to negotiations, in a completely segmented labor market. As a result, the representative trade union only considers the well-being of skilled workers. The total size of skilled workers is normalized to 1.

The union's rent   Following Belot and Van Ours (2004), the rent obtained by the union representative of skilled workers (in country i) is determined by the difference between utilities of skilled workers in case of agreement, and in case of failure. In case of failure of the bargaining process, nobody is hired. All skilled workers perceive the unemployment benefit b_i. The union's rent (denoted UR_i) can be expressed as:

$$UR_i = H_i \left[w_i^q (1 + \rho f_i) - b_i \right] \tag{A.8}$$

where H_i represents the share of skilled workers that is employed.[23] If the job is destroyed (with the probability ρ), workers perceive firing costs in addition to wage $(w_i^q f_i)$.

The firm's rent Following the same reasoning, the firm's rent is given by the difference in profits in case of agreement and of failure. If no agreement is reached, no skilled worker is hired, hence no production occurs under the Inada conditions of the production function. In case of agreement, the firm's gain is given by its profit expression:

$$\pi_i = p_i A_i k_i^\gamma l_i^\chi h_i^\alpha - z_i k_i - (1 + \tau_i + \rho f_i) \left[\underline{w}_i l_i + w_i^q h_i \right] \tag{A.9}$$

As shown by Equation (A.9), the amounts of unskilled labor l_i and of the third factor k_i affect the expression of the rent, hence potentially the Nash-bargaining process. We discard this dimension of the problem, by simply assuming that the players take the amounts of l_i and k_i as given, and exogenous to the negotiation process. Say otherwise, firms do not take into account the degree of substitutability between skilled labor and the two other factors when bargaining upon the skilled wage. This is obviously a strong assumption, that we nevertheless retain as it substantially simplifies the analytical solving of the problem. Given symmetry across firms, the firms' rent can thus be expressed as:

$$FR_i = p_i \delta_i H_i^\alpha - w_i^q (1 + \tau_i + \rho f_i) H_i \tag{A.10}$$

Sharing the surplus As in Belot and Van Ours (2004), the Nash-bargaining criterion that is solved in the process is given by:

$$\max_{w_i^q} \left[UR_i \right]_i^\beta \left[FR_i \right]^{1-\beta}$$

where $0 < \beta < 1$ is the relative bargaining power of the union (in country i). The first-order condition is given by:

$$\beta \frac{\partial UR_i}{\partial w_i^q} \frac{w_i^q}{UR_i} + (1 - \beta) \frac{\partial FR_i}{\partial w_i^q} \frac{w_i^q}{FR_i} = 0 \tag{A.11}$$

Consider the first term of Equation (A.11). Relying on Equations (A.7) and (A.8), it can be expressed as:

$$\beta \frac{\partial UR_i}{\partial w_i^q} \frac{w_i^q}{UR_i} = -\frac{\beta}{\mu} + \beta \frac{w_i^q (1 + \rho f_i)}{w^q (1 + \rho f_i) - b_i} \tag{A.12}$$

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[23]Since firms are assumed to be symmetric and distributed over $[0; 1]$, it comes that $H_i = h_i$, with h_i the firm's optimal labor demand (Equation (A.7)).

Consider now the second term of Equation (A.11). Making use of Equations (A.4) and (A.6), Equation (A.10) can be expressed as:

$$FR_i = \frac{\mu}{\mu - 1} w_i^q H_i (1 + \tau_i + \rho f_i)$$

The second term of Equation (A.11) can then be expressed as:

$$(1 - \beta) \frac{\partial FR_i}{\partial w_i^q} \frac{w_i^q}{FR_i} = -(1 - \beta) \frac{1 - \mu}{\mu} \tag{A.13}$$

Combining Equations (A.12) and (A.13) with Equation (A.11) yields the value of the negotiated skilled-labor wage in Equation (4).

B Data appendix: definitions and sources

B.1 Labor Market Institutions

B.1.1 From the Doing Business, World Bank database

Data coming from the Doing Business database, provided by the World Bank, are available on the website `http://www.doingbusiness.org`, "Employing Workers" section.

The **Difficulty of firing index** takes values between 0 and 100, with 100 indicating more rigid regulation. Its construction accounts for 8 components of firing practices: *i)* whether redundancy is disallowed as a basis for terminating work; *ii)* whether the employer needs to notify a third party (such as a government agency) to terminate one redundant worker; *iii)* whether the employer needs to notify a third party to terminate a group of more than 20 redundant workers; *iv)* whether it needs approval from a third party to terminate one redundant worker; *v)* whether the employer needs approval from to terminate a group of more than 20 redundant workers; *vi)* whether the law requires the employer to consider retraining options before redundancy termination; *vii)* whether priority rules apply for redundancies; and *viii)* whether rules apply for reemployment. Data are 2005 values and cover 73 to 76 countries of our whole set of 76 countries (see Table B.1).

The **Non wage labor costs** indicator is expressed in percentage of the workers' salary. It measures all social security payments (including retirement fund; sickness, maternity and health insurance; workplace injury; family allowance; and other obligatory contributions) and payroll taxes associated with hiring an employee in fiscal 2006. All 76 countries are covered.

B.1.2   From the Fraser Institute

Data coming from the Fraser Institute are available on the website `http://www.fre` `etheworld.com`. We use the 2005 edition of the *Economic Freedom of the World* Annual report. Original data take values over the range $[0, 10]$ but have been rescaled over $[0, 100]$ before introducing this variable in level in the conditional logit. This allows interpreting coefficients as the probability change attributable to a one percentage point increase in the indicator. Definition of the LMI variables is the following:

- The **Synthetic LMI Index:** it sums up various sub-indices, that are related to different dimensions of the labor market functioning: *1)* the "minimum wage impact", *2)* the "unemployment benefits" variable, *3)* the "Hiring and firing practices" index, *3)* the "Centralization" index, and *4)* an indicator of the use of conscripts to obtain military personnel.

- **Minimum wage impact:** This component is based on two survey responses obtained from the *Global Competitiveness Report* of the World Economic Forum. The first question asks about the overall "impact of the minimum wage". The second question asks about the strength of enforcement of the minimum wage law. Countries receive higher ratings if the survey respondents indicated the minimum wage had a small impact and / or was not strongly enforced. Countries received lower ratings if the impact was deemed to be great and / or if the law was strongly enforced. Countries with no minimum wage were given a rating of 100.

- **Unemployment Benefits:** The indicator is constructed using data from the *World Competitiveness Yearbook* published by the International Institute for Management Development. It indicates whether the unemployment benefits system preserves the incentive to work, with low values meaning that the unemployment benefit system has pernicious effects.

- **Hiring and Firing Practices:** The indicator is constructed using data from the *Global Competitiveness Report* published by the World Economic Forum. It indicates whether hiring and firing practices of companies are determined by private contract, with low values meaning that firing and hiring laws are more constraining.

- **Centralization Index:** The indicator is also constructed using data from the *Global Competitiveness Report*. It measures the share of labor force whose wages are set by centralized collective bargaining.

Note that the interpretation of the coefficients signs associated with these variables is reversed with respect to the difficulty of firing index coming from *Doing Business*. We consider raw data that are given for the years 1990, 1995, 2000, 2001 and 2002, and we rely on interpolation for missing years. The treatment for the "Minimum wage impact" variable slightly differs, as data are not available for 1990. Preliminary treatment relying on interpolation delivering some weird results on particular countries, we discard interpolation. Rather, we assume the 1995-value for the whole 1990-decade. Inspection of raw data comforts us in this choice, as the database reports no temporal variation between 2000 and 2003 for this variable. The country coverage is detailed in Table B.1.

B.1.3 From the Institutional Profiles database, French Ministry of Finance

Data have been taken from the CEPII's website, `www.cepii.fr/ProfilsInstitutionnelsDatabase.htm`. Variables are discrete indicators and are thus introduced in the regressions using dummy variables. The country coverage is detailed in Table B.1.

- The **Labor Contract Protection** (LCP) takes 11 discrete values between 1 and 4, 1 being the degree of strongest protection. As we use dummy variables to account for this indicator in the regressions, it is (somewhat arbitrarily) rescaled into three levels, the low level of labor contract protection corresponding to values higher than three, the medium level is values of LCP between 2 and 3 and the high level corresponds to LCP values lower than 2.

- The **Bargaining Level Index** for non-managerial staff is equal to 1 if negotiations take place at the national level, 2 at the branch-level, 3 at the firm-level, and 4 individually.

B.1.4 From OECD sources

We collect data on various LMI for OECD countries, over the period 1992-2001. The coverage varies between 20 and 27 countries, depending on the LMI variable considered; it is detailed in Table B.1. We focus on the following set of Labor Market Institutions variables:

- **Employment Protection Laws:** We consider the EPL indicator provided by the OECD, for all workers. Data are available on `http://stats.oecd.org/`. The original index takes values in the range [0;5], increasing with strictness of employment protection. We rescale it over [0;100] for its introduction in level in

the conditional logit estimation to be interpretable in terms of a semi-elasticity. Data are given for 1990, 1998 and 2003. They are interpolated over the period 1992-2002 (own calculations).

- **Union Density:** Percentage of union membership in employment, computed as the ratio of the number of unions members over the number of employees. It is calculated using administrative and survey data from the OECD labor market statistics database (`http://www1.oecd.org/`). Data are annual values over the period 1989-2002. We rely on interpolation in case of missing values.

- **Union Coverage:** Union coverage refers to the number of workers covered by collective agreements normalized on employment. Data are annual values over the period 1960-2000. They are taken from the database provided by Nickell (2006). We use the series denoted "uc-oecd" in Nickell's database. We conserve the 2000-value for 2001 and 2002.

- **Centralization Degree of Bargaining:** This is an index of bargaining centralization taken from OECD (2004). It ranges between 1 and 5 and is increasing in the degree of centralization: 1 = Company and plant level predominant, 2 = Combination of industry and company/plant level, with an important share of employees covered by company bargains, 3 = Industry level predominant, 4 = Predominantly industrial bargaining, but also recurrent central-level agreements, 5 = Central-level agreements of overriding importance.

- **Coordination Degree of Bargaining:** This is an index of bargaining coordination taken from OECD (2004). It is increasing in the degree of coordination in the bargaining process on the employers' as well as the unions' side: 1 = Fragmented company/plant bargaining, little or no coordination by upper-level associates, 2 = Fragmented industry and company level bargaining, with little or no pattern-setting, 3 = Industry level bargaining with irregular pattern-setting and moderate coordination among major bargaining actors, 4 = *a)* Informal coordination of industry and firm-level bargaining by peak associations, *b)* Coordinated bargaining by peak confederations, including government-sponsored negotiations or government imposition of wage schedules, *c)* Regular pattern-setting coupled with high union concentration and/or bargaining coordination by large firms, *d)* Government wage arbitration, 5 = *a)* Informal coordination of industry-level bargaining by an encompassing union confederation, *b)* Coordinated bargaining by peak confederations or government imposition of a wage schedule/freeze, with a peace obligation.

For both previous indicators, we get data over a 5-year period, on 1980-84, 1985-89, 1990-1994, 1995-2000. We conserve the most recent value for 2001 and 2002.

- **Benefit Replacement Ratio:** We consider the gross replacement rates provided by the OECD's Social and Welfare Statistics. It is defined as the average of the gross unemployment benefit replacement rates for two earnings levels, three family situations and three durations of unemployment. Raw data are with one observation every two years, starting in 1985. We rely on interpolation for missing years.

- **Minimum Wage Legislation:** The ratio of minimum wage to median wage is taken from the OECD Labor Force Statistics database. Precisely, it corresponds to the minimum relative to median wages for full-time workers. It is available on a yearly frequency for 19 OECD countries.

We complete information using data from ILO Bureau of Statistics, LABORSTA. This database contains legal and negotiated minimum wages in national currency and international US$ in 2003. This information is used to reconstitute series of minimum wages for countries in which minimum wages are negotiated at the sector level, that are not included in OECD data (precisely, Switzerland, Germany, Finland and Italy). For these 4 countries, we build the series of minimum-to-median wage ratio as follows. First, as the ILO data have no time dimension, it has been assumed that negotiated minimum wages only adjust to inflation. Under this assumption, time series can be rebuilt using inflation series, calculated on consumption-price indices obtained from national statistic institutes. Second, we calculate the ratio of minimum to median wages by using OECD Earnings data on gross median wages.

Table B.1: Country coverage for LMI indicators

Country	Data Source								
	DB	EF	IP	OECD					
				EPL	Union density	Union cov.	Centr. Coord.	Min. wage	Unempl. ben. ratio
United Arab Emirates	Yes								
Argentina	Yes	Yes	Yes						
Austria	Yes	Yes		Yes	Yes	Yes	Yes		Yes
Australia	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Belgium	Yes	Yes			Yes	Yes	Yes	Yes	Yes
Burkina Faso	Yes		Yes						
Bulgaria	Yes	Yes	Yes						
									...

Table B.1: Country coverage, continued

Country	Data Source								
	DB	EF	IP	OECD					
				EPL	Union density	Union cov.	Centr. Coord.	Min. wage	Unempl. ben. ratio
Bolivia			Yes						
Brazil	Yes	Yes	Yes						
Belarus	Yes								
Canada	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Central African Republic									
Switzerland	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Ivory Coast	Yes		Yes						
Chile	Yes	Yes	Yes						
Cameroon	Yes	Yes	Yes						
China	Yes	Yes	Yes						
Colombia	Yes	Yes	Yes						
Costa Rica	Yes	Yes							
Czech Republic	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Germany	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Denmark	Yes	Yes		Yes	Yes	Yes	Yes		Yes
Algeria	Yes	Yes	Yes						
Estonia	Yes	Yes	Yes						
Egypt	Yes	Yes	Yes						
Spain	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Finland	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Gabon			Yes						
United-Kingdom	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ghana	Yes	Yes	Yes						
Greece	Yes	Yes	Yes	Yes	Yes			Yes	
Croatia	Yes	Yes							
Hungary	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Indonesia	Yes	Yes	Yes						
Ireland	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Israel	Yes	Yes	Yes						
India	Yes	Yes	Yes						
Italy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Japan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Korea (Rep. of)	Yes	Yes	Yes	Yes	Yes			Yes	
Lebanon	Yes		Yes						
Lithuania	Yes	Yes	Yes						
Latvia	Yes	Yes							
Morocco	Yes	Yes	Yes						
Madagascar	Yes	Yes	Yes						
Mauritius	Yes		Yes						
Mexico	Yes	Yes	Yes	Yes				Yes	
Malaysia	Yes	Yes	Yes						
Nigeria	Yes	Yes	Yes						
Netherlands	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Norway	Yes	Yes	Yes	Yes	Yes	Yes			Yes
New Zealand	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Panama	Yes	Yes							
Peru	Yes	Yes	Yes						
									...

Table B.1: Country coverage, continued

Country	Data Source								
	DB	EF	IP	OECD					
				EPL	Union density	Union cov.	Centr. Coord.	Min. wage	Unempl. ben. ratio
Philippines	Yes	Yes	Yes						
Pakistan	Yes	Yes	Yes						
Poland	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Portugal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Romania	Yes	Yes	Yes						
Russian Federation	Yes	Yes	Yes						
Saudi Arabia	Yes		Yes						
Sweden	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Singapore	Yes	Yes	Yes						
Slovenia	Yes	Yes							
Slovakia	Yes	Yes		Yes	Yes		Yes	Yes	
Senegal	Yes	Yes	Yes						
Chad	Yes		Yes						
Thailand	Yes	Yes	Yes						
Tunisia	Yes	Yes	Yes						
Turkey	Yes	Yes	Yes	Yes	Yes				
Ukraine	Yes	Yes	Yes						
United-States	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Uruguay	Yes	Yes							
Venezuela	Yes	Yes	Yes						
Vietnam	Yes		Yes						
South Africa	Yes	Yes	Yes						
Total	73	64	59	27	26	18	21	23	20

B.2 Other explanatory variables

B.2.1 Data sources

Sources for the other variables included in our sample are the following:

- **The real market potential** variable is constructed as in Redding and Venables (2004), relying on importation data taken from the "*Dots*" database of the IMF and gravity variables taken from the "*Distance*" CEPII database. All details regarding the construction methodology are given in Mayer, Méjean and Nefussi (2007).

- **The GDP per capita** is obtained by dividing current GDP series (converted at nominal exchange rate in US Dollars) by the population level of the country, based on the "*World Developments Indicators*", World Bank.

- **Distance** from France ("ln distance") is built using the CEPII "*Distance*" database.

- **The supply access** variable is built as in Mayer *et al.* (2007) using data from the French *Input/Output Tables* and the *Enquête Annuelle d'Entreprises* for employment data.

- **The average effective tax rate** series are taken from Devereux, Griffith and Klemm (2002), that provide their data on the IFS website (`www.ifs.org.uk/publications.php?publication_id=3210`). Series are yearly values, available over the period 1979-2005. We take the log of 1 minus the tax rate in the regressions ("ln(1-tax rate), DG"). We get data for the 18 following OECD countries: Austria, Australia, Belgium, Canada, Finland, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United-Kingdom, United-States.

- **Governance indicators** are constructed using two sources.

    - We use the governance indicators defined and measured by Kaufmann, Kraay and Mastruzzi (2005). Data are available through the World Bank web site `http://www.govindicators.org`. The indicators measure six dimensions of governance: (1) Voice and Accountability measures political, civil and human rights; (2) Political Instability and Violence measures the likelihood of violent threats to, or changes in, government, including terrorism; (3) Government Effectiveness measures the competence of the bureaucracy and the quality of public service delivery; (4) Regulatory Burden measures the incidence of market-unfriendly policies; (5) Rule of Law measures the quality of contract enforcement, the police and the courts, as well as the likelihood of crime and violence; (6) Control of Corruption measures the exercise of public power for private gain, including both petty and grand corruption as well as state capture.

      Data are available for the years 1996, 1998, 2000 and 2002. All countries in the sample are covered. For the years 1992-1995, we use the same value than in 1996. For the year 1997, 1999 and 2001, we take the average of the two yearly adjacent values, as in Moskalev (2007). All variables are transformed so that they take values between 0 and 100. Similarly as Moskalev (2007), the average indicator is built as a simple arithmetic mean of the 6 dimensions of governance. The larger the variable, the better the quality of governance.

    - We also use the governance indicators provided by the World Business Environment Survey. The survey is administrated by the World Bank to firms in 80 countries, in 2000. From this comprehensive data survey, we

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collect data on governance. Data is available on the following web site `http://info.worldbank.org/governance/wbes/`. We retain the same variables as Daude and Stein (2007) to capture the quality of governance, that are: (1) the overall quality of justice; (2) the overall quality of government; (3) the degree of constraint exerted by corruption; (4) the predictability of changes in regulation; (5) the predictability of changes in economic activity. Each variable is rescaled to take values over $[0; 100]$. A larger value indicates a lower quality of governance. Data is 2000-values. Similarly as for the KKM indicator, we build the synthetic WBES governance variable as the arithmetic average of the 5 pre-cited variables.

B.2.2   Regional dummies

We include continental dummies in our regressions, which take the value 1 if the host country belongs to one of the following zone: Africa, North America, Latin and South America, Asia, Oceania, East Europe. Such zones are defined as follows (considering the whole sample of 76 countries):

- Africa and Middle East: Algeria, Burkina Faso, Central African Republic, Chad, Egypt, Gabon, Ghana, Israel, Ivory Coast, Cameroon, Lebanon, Madagascar, Mauritius, Morocco, Nigeria, Saudi Arabia, Senegal, South Africa, Tunisia, United Arab Emirates;

- North America: Canada, United States;

- Latin and South America: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Mexico, Panama, Peru, Uruguay, Venezuela;

- Asia: China, Japan, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Singapore, Thailand, Vietnam;

- Oceania: Australia, New Zealand;

- East Europe: Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Turkey, Ukraine;

- West Europe: Austria, Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, United-Kingdom, Sweden, Switzerland.

The reference zone is West Europe.

C Robustness checks

C.1 Multicollinearity issue

We check for potential multicollinearity problem, that may arise from a too strong correlation between LMI variables and GDP per capita and between quality of governance and GDP per capita. To that aim, we report in Table C.2 the correlation coefficient between each LMI and ln GDP per capita as well as between quality of governance indicators from WBES and KKM and ln GDP per capita. The low or reasonable value obtained in most cases allows excluding the collinearity issue as a serious concern. One exception is the KKM indicator, which appears highly (negatively) correlated with GDP per capita. This comforts us in our choice of not including it in the estimated equation, as exposed in Section 4.

Table C.2: Correlation with ln GDP per capita

Diff. of firing, DB	-0.3973	Bargaining Level, IP	-0.1000
ln(1+labor tax), DB	-0.040	EPL, OECD	-0.3106
Hiring & Firing Index, EF	0.0229	Union density, OECD	0.1187
Centralization Index, EF	-0.3816	Union coverage, OECD	-0.1357
Unempl. Benefits Index, EF	-0.3971	Centr. Degree, OECD	0.2682
Min. wage Impact, EF	-0.0461	Coord. Degree, OECD	0.5446
Synthetic LMI Index, EF	-0.0829	ln Min. wage ratio, OECD	0.2427
Labor Contract Protection, IP	0.2592	Ben. Repl. Ratio, OECD	0.1151
Quality of governance, KKM	0.8505	Quality of governance, WBES	0.4598

C.2 Robustness to governance

Table C.3 reports regression results when controlling for the quality of governance, as captured by the WBES synthetic indicator. In columns (A) and (B), we evaluate the robustness of variables capturing employment protection laws. In column (C), we do the same exercise with regards to the degree of centralization of wage bargaining process. In columns (D) and (E), we evaluate the robustness of minimum wage policy and that of the generosity of the unemployment benefits system respectively. In column (F), the quality of governance is introduced in the regression asking for the impact of non wage labor costs.

Table C.3: Robustness to governance, WBES indicator

Model :	Dependent Variable: Chosen Country					
	(A)	(B)	(C)	(D)	(E)	(F)
ln Real Market Potential	0.461^a	0.482^a	0.530^a	0.538^a	0.427^a	0.681^a
	(0.032)	(0.033)	(0.032)	(0.042)	(0.037)	(0.039)
ln distance	-0.141	-0.535^a	-0.177	-0.401^a	-0.344^a	-0.314^a
	(0.105)	(0.118)	(0.127)	(0.132)	(0.116)	(0.112)
ln (# of same ind. firms -1)	0.166^a	0.132^a	0.118^a	0.167^a	0.226^a	0.129^a
	(0.049)	(0.049)	(0.049)	(0.053)	(0.052)	(0.050)
ln (supply access -1)	0.138^a	0.111^a	0.119^a	0.153^a	0.151^a	0.061^a
	(0.016)	(0.015)	(0.015)	(0.020)	(0.019)	(0.017)
ln GDP per capita	-0.191^a	0.051	-0.012	-0.178^b	-0.011	-0.070
	(0.058)	(0.061)	(0.062)	(0.070)	(0.065)	(0.055)
Diff. of Firing Index, DB	-0.007^a					
	(0.001)					
LCP=low, IP		0.210^b				
		(0.115)				
LCP=medium, IP		0.318^a				
		(0.108)				
Bargaining level=2, IP			1.124^a			
			(0.367)			
Bargaining level=3, IP			1.412^a			
			(0.359)			
Bargaining level=4, IP			0.929^b			
			(0.375)			
Min. wage Impact, EF				0.009^a		
				(0.002)		
Unemployment benefits, EF					0.010^a	
					(0.003)	
ln(1+labor tax), DB						3.219^a
						(0.425)
Quality of governance, WBES	-0.003	-0.025^a	-0.009	-0.031^a	-0.031^a	-0.032^a
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Observations	84,805	68,904	68,904	54,723	51,019	87,336
Countries	35	29	29	30	29	36
Sample	All	All	All	All	All	All
FDI	2,423	2,376	2,376	2,256	2,273	2,426
R^2	0.155	0.143	0.145	0.130	0.105	0.162

Note: Observations clustered by firms. Robust standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.

In column (B), the reference dummy is associated with the higher degree of labor contract protection.

In column (C), the reference dummy is associated with the most centralized degree of wage bargaining, *i.e.* equal to 1.

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C.3 Robustness to taxation policy

Table C.4 reports regression results when controlling for taxation policy. In columns (A) and (B), we evaluate the robustness of variables capturing employment protection laws. In column (C), we do the same exercise with regards to the trade unions' bargaining power (captured by union density). Column (D) focuses on the degree of centralization of wage bargaining. Note that the reference dummy is associated with the highest degree of centralization of wage bargaining (*i.e.*, equal to 5). In columns (E) and (F), we evaluate the robustness of minimum wage policy to the inclusion of the average effective tax rate, that of the generosity of the unemployment benefits system in columns (G) and (H) and that of the non wage labor costs in column (I).

Results reported in Tables C.3 and C.4 show that the effects of labor market institutions on FDI decisions remain robust to the inclusion of taxation policy and the quality of governance.

Table C.4: Robustness, fiscal policy

Model :	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
				Dependent Variable: Chosen Country					
ln Real Market Potential	0.555^a	0.499^a	0.529^a	0.434^a	0.582^a	0.564^a	0.539^a	0.601^a	0.552^a
	(0.032)	(0.032)	(0.032)	(0.034)	(0.033)	(0.036)	(0.032)	(0.034)	(0.032)
ln GDP per capita	-0.937^a	-1.173^a	-0.690^a	-1.018^a	-0.853^a	-0.767^a	-0.752^a	-0.767^a	-0.898^a
	(0.099)	(0.121)	(0.094)	(0.110)	(0.097)	(0.113)	(0.091)	(0.096)	(0.098)
ln (# of same ind. firms -1)	0.069	0.061	0.086^c	0.003	0.075	0.125^b	0.083^c	0.028	0.080
	(0.056)	(0.055)	(0.055)	(0.056)	(0.057)	(0.059)	(0.056)	(0.054)	(0.055)
ln (supply access -1)	0.179^a	0.222^a	0.188^a	0.207^a	0.209^a	0.191^a	0.222^a	0.221^a	0.229^a
	(0.015)	(0.016)	(0.015)	(0.022)	(0.015)	(0.016)	(0.016)	(0.015)	(0.018)
Diff. of Firing Index, DB	-0.006^a								
	(0.001)								
EPL, OECD		-0.012^a							
		(0.002)							
Union density (%), OECD			-0.006^a						
			(0.002)						
Centr.=1, OECD				1.607^a					
				(0.310)					
Centr.=2, OECD				1.009^a					
				(0.318)					
Centr.=3, OECD				0.871^a					
				(0.315)					
Centr.=4, OECD				0.557^c					
				(0.322)					
Min. wage Impact, EF					0.007^a				
					(0.002)				
ln Min. W. Ratio, OECD						-0.324^a			
						(0.122)			
Unempl. benefits, EF							0.013^a		
							(0.002)		
Unempl. Ben. ratio, OECD								-0.020^a	
								(0.003)	
ln(1+labor tax), DB									-1.124^a
									(0.273)
ln(1-eff.tax rate), DG	1.317^a	0.467	1.476^a	0.460	1.194^a	1.145^a	1.026^a	2.461^a	1.655^a
	(0.313)	(0.358)	(0.305)	(0.341)	(0.341)	(0.384)	(0.323)	(0.315)	(0.298)
Observations	41,256	41,256	41,256	35,888	38,216	32,780	40,693	41,256	41,256
Countries	18	18	18	17	15	18	18	18	18
Sample	OECD	OECD	OECD	OECD	OECD	OECD	OECD	OECD	OECD
FDI	2,292	2,292	2,292	2,243	2,248	2,186	2,287	2,292	2,292
R2	0.107	0.108	0.107	0.101	0.106	0.100	0.107	0.110	0.107

Note: Observations clustered by firms. Robust standard errors in parentheses with ^{a}, ^{b} and ^{c} respectively denoting significance at the 1%, 5% and 10% levels.

In column (D), the reference dummy is associated with the highest degree of centralization, *i;e.* equal to 5.

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