Global Value Chains participation and firm boundaries: evidence from French FDI

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Abstract

The tremendous development of new technologies during the last decades allowed for an increasing interconnection between countries' economies and firms' activities: both commercial and financial linkages along value chains intensified, and also overlapped. As a consequence, Global Value Chains (GVCs) and Foreign Direct Investments (FDI) have dominated the international economics literature as two sides of the same coin. Using French administrative data, this paper studies the relationship between these two topics at the firm level. Trade and investments are found to be complement, with the first increasing the future likelihood of the latter. Using trade in intermediates as a proxy for GVCs participation, we prove that GVCs-related trade drives the effect. Moreover, the level of governance of destination country affects this relationship, with a different impact for backward and forward GVCs participation. A focus on North Africa reveals the peculiarity of this destination for French investors.

Keywords: Global Value Chains, Trade, FDI, Economic Development

JEL codes: F61, F10, F63

1 Introduction

In the last decades, the development of logistic infrastructures and information and communication technology (ICT) has triggered a tremendous growth in the circulation of people, ideas and goods. Globalization has changed the world we live in, and particularly economics has been affected.

Two major phenomena characterised this change in the economic structure. On one hand, the production process was fragmented: most of the products we use daily have been produced and assembled in subsequent phases carried out by different firms all around the world; in other words, value chains became global. These structures account for the majority of traded value, with trade flows mainly composed by intermediate inputs waiting for further processing or assembling. On the other hand, in opposite direction with respect to this fragmentation, firms enlarged their boundaries through Foreign Direct Investments (FDI) as a way to acquire market access or to control key suppliers or buyers. In this context, Multinational Enterprises (MNEs), that are the main actors of both phenomena, gained a leading role in world economy.

In light of these facts, the literature has extensively investigated the reasons of, as well as the consequences from, the increasing cross-country connection between firms. This research, initially focusing on FDI and GVCs separately, has recently started to combine these two phenomena, thus offering a more comprehensive framework to analyse the complexity that characterises international economic relationships (Antràs, 2020).

A strand of this literature focuses on organizational issues along value chains. Antràs and Chor (2013) develop a property rights model to investigate under which conditions final good producers internalise suppliers along the value chain. Supplier relative position and buyer final good demand elasticity determine the pattern of integration such that when elasticity is high relative to input substitutability, buyers find more profitable to integrate downstream and viceversa. Alfaro et al. (2019) generalise this model and highlight the role of input specificity and inter-firm contractibility (Rauch, 1999; Nunn, 2007) in shaping the existent pattern. Del Prete and Rungi

(2017), building upon these contributions, shed light on i) the dynamics of midstream parents, underlining that final good demand elasticity is not the decisive factor in the make or buy dilemma, and on ii) the concept of relative positioning between parent and affiliate along the chain, showing that integration increases with proximity along segments. Along this line, Berlingieri et al. (2019) point out that firm decision on input integration is affected by input cost share.

Another strand of literature has discussed the role of trade relationships, and of GVCs participation, as a determinant of FDI location. Mayer, Méjean, et al. (2010) analyse the role of supply access in FDI location choice. Studying the pattern of French investments, they highlights that firms' probability of investment in a specific country increases with country's supply of intermediate goods to the investor's sector. Conconi et al. (2016), in a firm-level analysis on Belgian firms, point out that the probability of horizontal investments in a country increases in presence of previous exports to that market. More recently, Amendolagine et al. (2019), for 19 Sub-Saharan countries and Vietnam, show that sectoral level GVCs participation and upstream specialization positively affect inward FDI. A sound institutional environment, measured through governance indicators, enlarges this effect. A similar positive association between country-level GVCs participation and inward FDI is found by Martìnez-Galàn and Fontoura (2019) for OECD countries.

Building upon these contributions, we combine these two different strands of literature. First, we investigate whether and to what extent firm-level GVCs participation in a specific country affects the likelihood of FDI in that country. Therefore, we add the geographical dimension to the make or buy dilemma that characterises the literature on value chains organization, as well as, adopting a micro-level focus, we enlarge the literature on the effect of GVCs participation on FDI location choice from the perspective of investors. The approach is thus close to Conconi et al. (2016) with the difference that intermediates' trade is taken into account, to proxy for GVCs participation, and both exports and imports are considered. Therefore, we do not impose any restriction on the type of FDI – horizontal vs vertical. This choice is supported by Baldwin and Okubo (2014), according to which such

differentiation could lead to an inaccurate and inappropriate categorisation.

To deal with the literature studying FDI location determinants, standard gravity variables are included in the empirical model. Moreover, the role of agglomeration forces, that proved to be determinants of French foreign investors choice (Mayer, Méjean, et al., 2010; Procher, 2011), is also investigated[1].

As expected from previous findings in the literature, we find a positive association between trading with a country and the future likelihood of FDI in that country, with GVCs participation pushing the firm to enlarge its boundaries in the same direction of its commercial flows. In particular, this effect holds for both imports and exports, with a significant stronger effect of GVCs-related trade. Quantile decomposition of intermediates' imports and exports provides evidence that the effect of both backward and forward participation is increasing in intensity. Moreover, we confirm the role of relational specificity in shaping organizational issues along the value chains (Nunn, 2007; Del Prete and Rungi, 2017; Alfaro et al., 2019). The results are robust to endogeneity issues: an Instrumental Variable (IV) analysis confirms the baseline OLS estimation. Furthermore, as an enlargement, we highlight a mechanism of complementarity between backward and forward GVCs participation, such that the effect of the first disappear in the case of two-way GVCs participation.

As a second contribution, we investigate the role of governance indicators, as well as their interaction with GVCs integration, in FDI location choice. Shedding light on this issue is crucial since FDI may benefit domestic economies, especially in developing countries, through many channels. Figuring out the governance indicators firms mostly care about is thus fundamental for investments' attracting policies and promotions agencies. We also examine the existence of possible differential effect for North African (NA) countries. The area is struggling to recover after the wave of Arab Spring revolutions and to make the final leap towards a stable development

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[1]More details about variables' construction and the empirical strategy are given in the methodological part.

path. NA countries are still far to be largely involved in the international trade panorama, and are a minor recipient of FDI with respect to other developing regions, such as Asia or Latin America (UNCTAD, 2019). Foreign investments may trigger growth and development, with French contribution, given the cultural and historical linkages with the area, being even more beneficial.

Recent studies have analysed FDI determinants for African countries, many of them paying attention to governance indicators as well as focusing on NA. Mina (2012) points out that improving investors' protection and increasing country stability are the best solutions to enhance FDI attraction: these are pre-requisites for the effectiveness of bilateral investments treaties. Abbas and Mosallamy (2016), using a panel dataset covering the years of the Arab Spring revolution, indicate infrastructures, market openness and human capital as the main drivers of FDI inflows; interestingly, natural resource availability and political stability do not affect the FDI pattern. The limited role of natural resource in FDI attraction is similarly underlined by Okafor et al. (2017), and by Chen et al. (2016). The latter, in their analysis on Chinese FDI, also highlight a prevalence of investments in politically unstable environments.

We enlarges this set of studies in two main directions: first, by using the six dimensions of governance developed by the Worldwide Governance Indicators (WGI) project (Kaufmann et al., 2010), we provide evidence that French investors are attracted by low levels of governance for 4 out of 6 indicators; second, by interacting governance with GVCs participation, we find that, in the presence of low levels of governance, forward GVCs participation serves as a substitute of FDI, while backward participation role remains unaffected. On the contrary, for NA the interaction between low governance and both forward and backward GVCs participation has a positive and significant impact on FDI.

The paper is organised as follows: Section 2 outlines the data used and the empirical strategy. Section 3 provides some descriptive statistics on French FDI and investors. Section 4 reports the results. Section 5 concludes.

2 Data and Empirical Strategy

The analysis is conducted on French administrative data provided by INSEE.

Dataset observations are identified by the triple i, j, t that respectively indicate firm, FDI destination country and year. The set I comprises all the manufacturing French firms that, in the time span $T =$ 2012-2016, have at least a foreign affiliate. The set J comprises all countries that in the time span T receive at least an investment by any firm i. For each existing couple it, we take into account all possible j destinations, thus ending up with a squared structure in the final sample (with a maximum length equal to I x T x J). We exclude from the analysis domestic investments ties, and thus merely domestic investors.

Data on investments come from the $LiFi$ dataset, an administrative source that comprises all the existing ownership ties involving French firms. We construct the variable FDI_{ijt} as a dummy equal to 1 if firm i has at least an affiliate in destination country j at time t, or 0 otherwise. Exploiting the fact that $LiFi$ also contains information on the share of ownership detained by parent firms, we create an alternative variable identifying control investments, $FDI_{Control}$, as a dummy equal to 1 if $FDI = 1$ and ownership share is higher than 50%. This is done to exclude portfolio or financial investments that are eventually uncorrelated with the productive activity of the firm, and thus unrelated to its commercial linkages. Finally, from the $LiFi$ dataset we calculate a measure of country agglomeration, counting the number of French investments in each country in each year.

Trade variables derive from French custom administrative data, that collect all imports and exports, with respectively origin and destination country, for all French firms at the 6 digits level. This allows to estimate firm total inward and outward trade flows with all possible partners, and, by using the Broad Economic Category (BEC) classification, also to decompose between final and intermediate goods. We use trade in intermediates to proxy for GVCs participation. Quantiles of intermediates' imports and exports are also calculated. As a first attempt to tackle reverse causality issues, we use 3-years lagged trade variables.

For the relevance that the issue has in the make or buy dilemma literature (Nunn, 2007; Nunn and Trefler, 2013; Del Prete and Rungi, 2017; Alfaro et al., 2019), we consider inputs' specificity. Goods are classified as relational specific using the Rauch (1999) classification. The variable *Specificity* is constructed as a dummy equal to 1 if firm i amount of trade in relational specific goods at time t with country j is higher than the median, and 0 otherwise.

Gravity variables, such as countries' macroeconomic indicators, as well as geographical, cultural, trade facilitation and institutional factors are sourced from the *Dynamic Gravity Dataset* (Gurevich and Herman, 2018). Due to limited coverage on GDP per capita, WB estimates are used for this variable.

Baseline equation is the following:

$$FDI_{ijt} = \beta_0 + \beta_1 Trade_{ijt-3} + \beta_2 Trade_{ijt-3} * Specificity_{ijt-3} + GRAVITY + \gamma_{it} + \epsilon_{ijt}$$

(1)

where FDI may be either FDI or $FDI_{Control}$; $Trade$ is disentangled in many forms from total trade up to intermediates' imports' and exports' quantile decomposition; *Specificity* is the above defined dummy; $GRAVITY$ comprises the set of gravity controls; and γ_{it} are firm-year fixed effects.

Finally, for the second contribution of this work, we use data on institutional quality and governance provided by the Worldwide Governance Indicators (WGI) project (Kaufmann et al., 2010), that, by combining and harmonising a wide array of data sources, provides six different dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption. Per each WGI, we create a dummy equal to 1 if a country has an index under the median, denoting low governance level. Including WGIs, the baseline equation is enlarged:

$$FDI_{ijt} = \beta_0 + \beta_1 Trade_{ijt-3} + \beta_2 Trade_{ijt-3} * Specificity_{ijt-3} + GRAVITY + \beta_3 WGI_{jt-1} +$$
$$\beta_4 WGI_{jt-1} * NA + \beta_5 WGI_{jt-1} * Trade_{ijt-3}^{GVC} + \beta_6 WGI_{jt-1} * Trade_{ijt-3}^{GVC} * NA + \gamma_{it} + \epsilon_{ijt}$$

(2)

Estimation is conducted per each WGI to detect the effect of the specific indicator. The interaction between WGI and the different measures of $Trade^{GVC}$ allows to detect possible differential impacts of the two variables on investors' behaviour. Further interaction with NA, a dummy variable indicating if the partner country is in North Africa, provides estimates of the effect on the specific area.

3   Descriptive Statistics

A total of 3289 French manufacturing firms have foreign investments in the time span 2012-2016. FDI projects increase after 2012, with a total of more than 9500 FDI over 2013-2015, reducing back by 1000 ties in 2016, Table 1. The vast majority of these ties is characterized by direct control on the affiliate (85%), thus suggesting productive rather than financial reasons as the main driver for the willingness of the parent to enlarge its boundaries. This appear to be a first hint about the interconnection between FDI and GVCs.

Looking at per firm FDI, French investors have about 1.5 affiliates per country, for a total of almost 4 affiliates per year. The average number of destination countries per firm is more than the double, 8.41. Therefore, there exists high variability in term of firms' types within the investors' group: a small group of huge multinationals reaching dozens of countries seems to counterbalance a multitude of investors with just one affiliate in one country. These data might suggest the existence of an elite club of "Happ*ier* few" (Mayer and Ottaviano, 2008) inside the already high performance class of investors.

As far as FDI destinations are concerned (Figure 1), one on two FDI is directed to Europe, Panel (a); North America and East Asia & Pacific combine for almost the 30%, while MENA, Latin America, Sub-Saharan Africa and South Asia do not even reach the 10%. Panel (b) shows top 2016 receivers countries: USA are by far the country in which French multinationals invest more, attracting one tenth of investments and almost one fourth of investors (Table 11, Appendix). Behind USA, as expected from Panel (a),

Table 1: French FDI, 2012-2016

	2012	2013	2014	2015	2016	Average
FDI	8752	9653	9517	9625	8656	9240.60
% of Control FDI	84%	87%	84%	85%	85%	85%
Investors	2340	2412	2515	2435	2387	2417.80
Av. # of FDI per firm	3.74	4.00	3.78	3.95	3.63	3.82
Av. # of FDI per firm per country	1.40	1.47	1.42	1.48	1.37	1.43
Av. # of country per firm	8.38	8.85	8.27	8.32	8.23	8.41

there are mostly European countries: Germany leads the group, followed by Spain, UK, Italy and Belgium. However, in the time span considered, almost all of these countries experienced a reduction of inward FDI that have been redirected mainly out of Europe, towards USA, but also China, Brazil and Tunisia.

Figure 1: FDI destinations

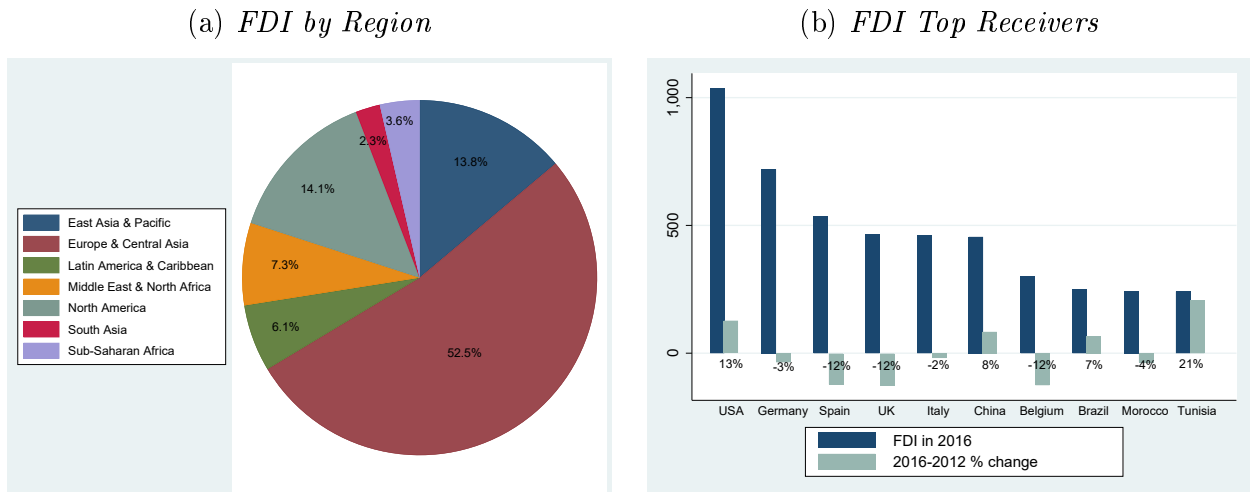(a) *FDI by Region*

(b) *FDI Top Receivers*

Table 2 reports some specific descriptives on NA. The area is a minor recipient of French FDI: at maximum, only the 8% of French firms choose to invest in a NA country – this occurs for Morocco in 2016. Besides, there is large variability between countries: Morocco and Tunisia exhibit the best

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performances, with increasing trends between 2012 and 2016 in both absolute and relative terms; on the contrary, Algeria, Egypt and Libya are much less attractive and with declining trends.

Despite the role that historical linkages as well as national current trade and investments policies certainly have in shaping the depicted pattern, the analysis of governance indicators could offer interesting instruments to comprehend the FDI allocation mechanisms in NA.

Table 2: French investors in NA, 2012-2016

	2012	2013	2014	2015	2016	2016-2012 %Δ
Morocco	181	191	191	194	194	7%
(% on total investors)	7.74%	7.92%	7.59%	7.97%	8.13%	5%
Tunisia	158	160	162	164	167	6%
(% on total investors)	6.75%	6.63%	6.44%	6.74%	7.00%	4%
Algeria	57	63	57	55	54	-5%
(% on total investors)	2.44%	2.61%	2.27%	2.26%	2.26%	-7%
Egypt	13	11	11	8	10	-23%
(% on total investors)	0.56%	0.46%	0.44%	0.33%	0.42%	-25%
Libya	2	2	1	1	1	-50%
(% on total investors)	0.09%	0.08%	0.04%	0.04%	0.04%	-51%

Notes: The figures report the number of firms investing in each country and the share on total investors.

To conclude, we provide some descriptives about investors, Table 3. Many predictions and stylized facts in the literature (Bernard and Jensen, 1999; Melitz, 2003; Helpman et al., 2004; Mayer and Ottaviano, 2008) about investors and internationalising firms are respected. Foreign investors are an absolute minority: they are just the 1% of total manufacturing firms, one fifth of two-way traders and one tenth of traders[2], outperforming all of them in key relevant variables. Foreign investors have more than three times the total production of two-way traders, and almost 6 times that of traders; on average they hire more than 300 workers, 2.8 times two-way traders and 4.7 times traders; also labour productivity is significantly higher; the same is true for the level of imports and exports. Comparing foreign investors with

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[2]Two-way traders are defined as firms that both imports and exports; traders are firms that imports and/or exports.

the rest of manufacturing firms, figures are even more astonishing, with differences of even two order of magnitude for total production, exports and imports.

Table 3: Foreign investors' performances

| | Investors | | | |
	Yes	No	Two-way traders	Traders
% over manufacturing	1.09%	98.91%	5.91%	11.65%
Total production	113,980	1,996	36,021	20,002
Total Employment	332.4	10.5	117.9	69.4
Labour Productivity (ln)	5.9	4.9	5.6	5.4
Exports	41,523	384	13,917	7,138
Imports	25,225	383	10,820	5,608

Notes: Total Production, Exports and Imports are in thousands of €. Labour productivity is calculated as Total Production over Total Employment.

4   Results

4.1   Baseline estimation

Before going into the empirical analysis as described in Section 2, some introductory regressions on the relationships between FDI and trade at firm level open this section, Table 4. As a first empirical exercise for a preliminary evidence, we regress *FDI* against a series of 3-year-lag dummies describing firm trade behaviour. Being a trader with a country is positively correlated with the likelihood of having an affiliate in that country three years later (Column 1), and this appears to be strictly connected to productive activities, since the interaction with *Heaven*, a dummy equal to one if the country is considered a tax heaven, reduces that likelihood by one fourth (Column 2). Moreover, GVCs-related activities drive the correlation of Column 1: the coefficient of $Trade_{t-3}^{Int}$, a dummy indicating if a firm has trade in intermediate with the specific country, has an 8 times higher impact than that of trade in non intermediates (Column 3). The effect in Column 1 holds for both imports and

Table 4: Investments and trade relationship

VARIABLES	Dependent Variable: FDI					
	(1)	(2)	(3)	(4)	(5)	(6)
Trade_{t-3}	0.038***	0.039***				
	(0.002)	(0.002)				
$\text{Trade*Heaven}_{t-3}$		-0.011*				
		(0.006)				
Trade^{Int}_{t-3}			0.049***			
			(0.003)			
$\text{Trade}^{Nint}_{t-3}$			0.006***			
			(0.001)			
Exports_{t-3}				0.036***	0.036***	
				(0.002)	(0.002)	
Imports_{t-3}				0.069***		0.066***
				(0.004)		(0.004)
$\text{Imports}^{Nint}_{t-3}$					0.044***	
					(0.004)	
$\text{Imports}^{Int}_{t-3}$					0.076***	
					(0.005)	
$\text{Exports}^{Nint}_{t-3}$						0.009***
						(0.002)
$\text{Exports}^{Int}_{t-3}$						0.048***
						(0.003)
Observations	1,835,096	1,835,096	1,835,096	1,835,096	1,835,096	1,835,096
R-squared	0.137	0.137	0.140	0.153	0.153	0.155
FEs	it & jt	it & jt	it & jt	it & jt	it & jt	it & jt
Cluster	Firm & jt	Firm & jt	Firm & jt	Firm & jt	Firm & jt	Firm & jt

Notes: Linear Probability Model (LPM) estimation. Constant is included. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. All regressors are dummies.

exports (Column 4): being either an importer or an exporter increases the likelihood of FDI, with an higher effect for the first. Again, GVCs-related imports and exports drive this effect (Column 5 and 6), with imports of intermediate that again provide an higher impact on *FDI*. The higher impact of imports seems thus to suggest the preference of parents for investing in suppliers' countries rather than in buyers'. Such evidence is discussed more in depth below, where trade variables are expressed in continuous terms.

Going more in depth into the empirical analysis, Table 5 reports the estimation of the effect of firm GVCs participation on FDI location choice, conducted using Equation 1.

Estimates are conducted using a Linear Probability Model (LPM). Despite the risk of estimation bias, this model allows to quantitatively interpret and compare the coefficients of different variables and specifications, something not achievable by conducting the estimation using a non linear model,

such as the Logit one. In any case, Logit estimates, confirming the direction and significance of the results, are reported in Appendix, Table 12.

Increasing trade relationships with a country positively affects the likelihood to invest in that country. This effect is heterogeneous in magnitude for different types of trade. Doubling the amount of trade with any country j produces a really small impact, 0.4 pp, on the likelihood of investing there three years later (Column 1) and no particular differences are found by decomposing between intermediates' and non intermediates' trade (Column 2). The latter results change completely when investigating imports and exports separately. First, imports have a stronger impact, however limited to a 1 pp increase (Column 3); second, the impact of intermediates' imports and exports shows up (Columns 4 and 5). Doubling the amount of intermediate imports and exports increases indeed the likelihood of control FDI by respectively 1.5 and 0.9 pp. Columns 6 and 7 report the results with quantile decomposition of intermediate imports and exports: 5th quantile intermediates' importers are 8 pp more likely to invest, with an increasing trend along quantiles; we find similar results for quantiles of intermediates' exports, with 5th quantile firms 9 pp more likely to invest. Therefore, the role of GVCs-related trade is much more important than final good trade in firm FDI location choice.

In this process, the role of relational specificity is fundamental (Columns 8 and 9): it contributes to large increase in the impact on FDI, also in this case with an increasing trend along quantiles.

Looking at standard Gravity controls, GDP is found to have a negative effect: by considering it as a proxy for market access this could suggest that French investors are more likely to invest for cheaper sourcing rather than for demand oriented reasons; supporting this hypothesis, GDP per capita is found negative, probably indicating a negative effect of labour costs on FDI location choice. Interestingly, the governance synthetic indicator comprised in the Dynamic Gravity Dataset, the Polity Index, has a really small impact, and almost no significance: this seems to contrast with the existing literature, thus claiming out the importance of further investigating such relationship.

Looking at relational variables between France and FDI destination coun-

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Table 5: FDI and GVCs

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Dep. Variable $FDI_{Control}$					
$Trade_{t-3}$	0.006***								
	(0.000)								
$Trade^{Int}_{t-3}$		0.005***							
		(0.000)							
$Trade^{Nint}_{t-3}$		0.005***							
		(0.000)							
$Exports_{t-3}$			0.005***	0.005***		0.005***		0.004***	
			(0.000)	(0.000)		(0.000)		(0.000)	
$Imports_{t-3}$			0.008***		0.008***		0.007***		0.007***
			(0.000)		(0.000)		(0.000)		(0.000)
$Imports^{Int}_{t-3}$				0.022***					
				(0.001)					
$Imports^{Nint}_{t-3}$				0.008***		0.007***		0.007***	
				(0.000)		(0.000)		(0.000)	
$Exports^{Int}_{t-3}$					0.013***				
					(0.001)				
$Exports^{Nint}_{t-3}$					0.005***		0.005***		0.005***
					(0.000)		(0.000)		(0.000)
$2^{nd}Q\ Imports^{Int}_{t-3}$						0.030***		0.027***	
						(0.003)		(0.005)	
$3^{rd}Q\ Imports^{Int}_{t-3}$						0.039***		0.023***	
						(0.003)		(0.005)	
$4^{th}Q\ Imports^{Int}_{t-3}$						0.0549***		0.0223***	
						(0.004)		(0.007)	
$5^{th}Q\ Imports^{Int}_{t-3}$						0.082***		0.037***	
						(0.005)		(0.008)	
$2^{nd}Q\ Exports^{Int}_{t-3}$							-0.005**		-0.006*
							(0.002)		(0.004)
$3^{rd}Q\ Exports^{Int}_{t-3}$							0.007***		-0.007*
							(0.002)		(0.003)
$4^{th}Q\ Exports^{Int}_{t-3}$							0.033***		0.011***
							(0.003)		(0.004)
$5^{th}Q\ Exports^{Int}_{t-3}$							0.090***		0.048***
							(0.005)		(0.008)
$2^{nd}Q\ Imports^{Int}_{t-3} * Spec_{t-3}$								0.005	
								(0.006)	
$3^{rd}Q\ Imports^{Int}_{t-3} * Spec_{t-3}$								0.023***	
								(0.006)	
$4^{th}Q\ Imports^{Int}_{t-3} * Spec_{t-3}$								0.043***	
								(0.008)	
$5^{th}Q\ Imports^{Int}_{t-3} * Spec_{t-3}$								0.057***	
								(0.009)	
$2^{nd}Q\ Exports^{Int}_{t-3} * Spec_{t-3}$									0.003
									(0.004)
$3^{rd}Q\ Exports^{Int}_{t-3} * Spec_{t-3}$									0.018***
									(0.004)
$4^{th}Q\ Exports^{Int}_{t-3} * Spec_{t-3}$									0.029***
									(0.005)
$5^{th}Q\ Exports^{Int}_{t-3} * Spec_{t-3}$									0.054***
									(0.009)
GDP	0.000	-0.000	-0.000***	-0.001***	-0.000***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP per capita	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance	-0.015***	-0.012***	-0.007***	-0.006***	-0.007***	-0.006***	-0.007***	-0.006***	-0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Polity Index	0.000	0.000	-0.000	-0.000*	-0.000	-0.000*	-0.000	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Common Language	-0.009***	-0.0090***	-0.009***	-0.009***	-0.009***	-0.009***	-0.008***	-0.009***	-0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade Agreement	-0.005***	-0.006***	-0.005***	-0.005***	-0.006***	-0.005***	-0.005***	-0.005***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
French Colony	-0.003***	-0.001**	0.001	0.002**	0.001	0.002**	0.001	0.002***	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Country Agglomeration	0.009***	0.007***	0.007***	0.006***	0.006***	0.007***	0.006***	0.007***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1,456,656	1,456,632	1,456,656	1,456,617	1,456,601	1,456,617	1,456,601	1,456,617	1,456,601
R-squared	0.124	0.139	0.149	0.154	0.154	0.155	0.162	0.156	0.163
Region Controls	√	√	√	√	√	√	√	√	√
FEs	it	it	it	it	it	it	it	it	it
Cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

Notes: LPM estimation. Constant is included. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All trade variables are in logs of thousands €. Int- and Nint- refer to intermediate and non intermediate types of goods. The first quantile of intermediate imports and exports comprises all values equal equal to 0. *Spec* is a dummy equal to 1 if firm i amount of intermediate imports (exports) in relational specific goods at time t-3 with country j is higher than the median.

try, it is found that speaking a common language has a negative effect on FDI likelihood, and the same is found for the existence of a trade agreement. More puzzling appears the effect of being a past French colony: a negative impact is found when whole trade is taken into account (Columns 1 and 2), while positive when imports are decomposed between intermediates and final goods (Columns 4, 6 and 8); no impact is found in the case of exports decomposition (Columns 5, 7 and 9). A deeper analysis could shed more light on this relationship, enlarging also the existing literature (Head et al., 2010). Finally, a positive effect on FDI is found for Country Agglomeration, suggesting that French investors choose to locate in countries already experiencing French presence to exploit agglomeration economies (Mayer, Méjean, et al., 2010; Procher, 2011).

Table 6 enlarges the evidence till now proposed. Given that both exports and imports increase the likelihood of FDI, we investigate the existence of a possible mechanism of complementarity between the two. The variable GVC is a dummy equal to 1 if firm i both imports and exports intermediates from and to country j at t-3. For these set of estimations, the sample has been reduced to all firm i that have at least one two-way intermediates' trade relationship with a country j.

Column 1 shows that, despite the reduction in the coefficients with respect to Column 3 of Table 5, an impact of aggregate imports and exports on FDI still exists. Columns 2 and 3 focus on GVCs-related trade. We find a high degree of interdependence between intermediates' imports and exports: if two-way trade of intermediates takes place the impact of $Imports_{t-3}^{Int}$ is no more significant, while that of $Exports_{t-3}^{Int}$ halves. Importing intermediates looks thus important for FDI location if firms re-export intermediates to imports' origin; on the contrary, exports of intermediates appears to have a role for FDI location even if export destination is different from sourcing origin. In general, we highlight the impact of GVC_{t-3}: it has an impact of about 8 pp increase on the likelihood of FDI, comparable to the effect of top intermediates' importers and exporters.

Table 6: Import-Export Complementarity

VARIABLES	Dep. Variable: $\text{FDI}_{Control}$		
	(1)	(2)	(3)
Export_{t-3}	0.004***	0.003***	
	(0.000)	(0.000)	
Import_{t-3}	0.004***		0.004***
	(0.000)		(0.000)
$\text{Imports}_{t-3}^{Int}$		0.001	
		(0.001)	
$\text{Imports}_{t-3}^{Nint}$		0.007***	
		(0.000)	
$\text{Exports}_{t-3}^{Int}$			0.007***
			(0.001)
$\text{Exports}_{t-3}^{Nint}$			0.005***
			(0.000)
GVC_{t-3}	0.083***	0.088***	0.080***
	(0.004)	(0.004)	(0.004)
Observations	1,129,078	1,129,040	1,129,023
R-squared	0.167	0.172	0.172
Gravity Controls	$\checkmark$	$\checkmark$	$\checkmark$
FEs	it	it	it
Cluster	Firm	Firm	Firm

Notes: LPM estimation. Constant is included. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All trade variables are in logs of thousands €. GVC is a dummy equal to 1 if firm i both imports and exports intermediates from and to country j.

4.2 Identification Issues

Baseline estimation provides evidence of the magnitude and of the significance of the relationship between trade and the likelihood of future investments. Using a three year lag of trade variables we also hypothesise a causality from the first to the latter. The underlining idea is that the willingness to internalise suppliers or buyers is not the cause of a three year before increase in commercial linkages with a specific destination, while, on the contrary, it is the consequence. The lag we use is indeed much larger than the average time to set an affiliate (De la Medina Soto and Ghossein, 2013). However, issues of reverse causality may still arise. Firms may indeed target in advance a sector or a specific firm to internalise, and start intensifying exchange with that to assess the profitability of the intended investment. In such a case, the direction of causality between the two variable is no more clear.

A second issue that may affect the results may be the lack in the estimation equation of some key variable correlated with both trade and FDI

Table 7: Fixed Effects regressions

| VARIABLES | Dep. Variable: $\mathrm{FDI}_{Control}$ | | | | |
	(1)	(2)	(3)	(4)	(5)
Trade_{t-3}	0.0001***				
	(0.0000)				
$\mathrm{Trade}^{Int}_{t-3}$		0.0001**			
		(0.0000)			
$\mathrm{Trade}^{Nint}_{t-3}$		0.0001**			
		(0.0000)			
$\mathrm{Exports}_{t-3}$			0.0001***	0.0001***	
			(0.0000)	(0.0000)	
$\mathrm{Imports}_{t-3}$			0.0001		0.0001
			(0.0001)		(0.0001)
$\mathrm{Imports}^{Int}_{t-3}$				0.0002	
				(0.0004)	
$\mathrm{Imports}^{Nint}_{t-3}$				0.0001	
				(0.0001)	
$\mathrm{Exports}^{Int}_{t-3}$					0.0006***
					(0.0002)
$\mathrm{Exports}^{Nint}_{t-3}$					0.0001**
					(0.0000)
Observations	1,558,000	1,557,977	1,558,000	1,557,961	1,557,944
R-squared	0.9041	0.9041	0.9041	0.9041	0.9041
FEs	it jt ij	it jt ij	it jt ij	it jt ij	it jt ij
Cluster	Firm	Firm	Firm	Firm	Firm

Notes: LPM estimation. Constant is included. Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. AAll trade variables are in logs of thousands €.

whose inclusion may change the results. Among them may be very specific firm-country or year-country variables.

To address these identification issues we conduct a set of regressions saturated with fixed effects and an Instrumental Variable (IV) analysis.

Table 7 reports the estimates conducted using all possible couples of fixed effects – firm-year, country-year, firm-country. Despite their introduction, the relationship between trade and FDI is still positive and significant. This occurs for Trade (Column 1) and the for its decomposition between GVCs-related and non trade (Column 2): again we find a higher impact of the first. Column 3-5 reports the decomposition between exports and imports: exports are found to have the same positive and highly significant impact, with a stronger effect of GVCs-related exports; unfortunately the same does not occur for imports, neither aggregate nor decomposed, with positive but not significant coefficients.

Therefore we exclude the possibility that omitted variables may confound the estimation. Nevertheless, to address reverse causality, as well as making clarity on the role of imports, IV analysis comes to be fundamental.

For this purpose, the first key issue is the individuation of a valid set of instruments. Following Mayer, Melitz, et al. (2016) and Aghion et al. (2018), we choose as instruments for firm imports and exports respectively countries' outward and inward trade with all destinations except France weighted for firm basket of traded products. To check robustness, we also tested an alternative set of instruments, constructed as weighted country multilateral resistance terms (Autor et al., 2013): results are in line with preferred instruments.

Data are sourced from the CEPII BACI dataset, that reports trade flows at 6 digits level for all countries: the disaggregation at the product level allows also to distinguish between intermediates and final goods. Given the exclusion of trade flows with France, the instruments are by construction uncorrelated with the dependent variable, thus satisfying the exclusion restriction. Essentially, the instruments measure countries' supply and demand capability for all FDI destinations. In particular, Equation 3, French firm imports (exports) from (to) country j are instrumented through $Supply_{ijt}$ ($Demand_{ijt}$), constructed as time t country j aggregate exports (imports) weighted for the share of 2007 firm i imports (exports) from (to) country j. The weights fixed at time t=2007 prevent from trade basket restructuring that could be correlated with FDI choice. Trade is instrumented through $Openness_{ijt}$, that equals the sum of $Supply_{ijt}$ and $Demand_{ijt}$; the instruments for intermediates' and non trade are constructed accordingly.

$$Supply_{ijt} = w_{ij2007}^m * ln \sum_{d=1}^{D-Fr} X_{jdt} \qquad (3a)$$

$$Demand_{ijt} = w_{ij2007}^x * ln \sum_{o=1}^{O-Fr} M_{jot} \qquad (3b)$$

$$Opennes_{ijt} = Supply_{ijt} + Demand_{ijt} \qquad (3c)$$

Table 8 reports the estimates of IV, Table 13, Appendix, the first stage. When trade variables are decomposed between intermediates and non all

variables are instrumented.

IV estimation confirms the results so far presented, allowing also to detect causality from GVCs to FDI. Estimated coefficients are in line with LPM estimation (Table 5): both imports and exports are found to increase the likelihood of FDI (Column 3), and their effect is driven by GVCs-related trade (Columns 4 and 5). The latter evidence, as in Table 1, Column 2, is not found if *Trade* is taken into account, while it needs the decomposition between imports and exports to be discovered (Column 2).

The results of the baseline estimation are thus robust to omitted variable bias and reverse causality, and a causal impact of trade, especially GVCs-related trade, on FDI location choice is confirmed.

Table 8: IV

VARIABLES	(1)	(2)	(3)	(4)	(5)
			Dep. Variable: $\text{FDI}_{Control}$		
Trade_{t-3}	0.001***				
	(0.000)				
Trade^{Int}_{t-3}		0.006***			
		(0.000)			
$\text{Trade}^{Nint}_{t-3}$		0.009***			
		(0.000)			
Exports_{t-3}			0.005***	0.005***	
			(0.000)	(0.000)	
Imports_{t-3}			0.0010***		0.008***
			(0.000)		(0.000)
$\text{Imports}^{Int}_{t-3}$				0.020***	
				(0.003)	
$\text{Imports}^{Nint}_{t-3}$				0.011***	
				(0.001)	
$\text{Exports}^{Int}_{t-3}$					0.018***
					(0.002)
$\text{Exports}^{Nint}_{t-3}$					0.006***
					(0.000)
Observations	1,611,352	1,611,328	1,611,352	1,611,313	1,611,296
R-squared	-0.002	0.009	0.030	0.033	0.035
FEs	it jt	it jt	it jt	it jt	it jt
Cluster	Firm	Firm	Firm	Firm	Firm
F-test	17500	2654	7452	1173	1779

Notes: 2SLS estimation. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All trade variables are in logs of thousands €.

4.3 The role of governance

A critical factor for FDI location choice is the level of governance of the destination country. However, the literature has provided contrasting results when assessing the impact of different governance indicators. In this paper, a first attempt to measure the role of governance with the synthetic Polity Index indicator, Table 5, does not provide evidence of any impact. For the relevance of the topic, especially for developing countries, we perform a more comprehensive analysis on this issue.

For a deeper understanding of WGI indicator, Table 9 provides the definition of the single WGI (Kaufmann et al., 2010).

Table 9: WGI Definition

Area of Governance	WGI	Definition
Citizens and state respect of the institutions	Control of Corruption (CoC)	Capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.
	Rule of Law (RL)	Capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Effectiveness of policies formulation and implementation	Government Effectiveness (GE)	Capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
	Regulatory Quality (RQ)	Capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
Selection, monitoring and replacement of governments	Political Stability and Absence of Violence/Terrorism (PS&AV)	Capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.
	Voice and Accountability (V&A)	Capturing perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

Source: Kaufmann et al. (2010)

We investigate the role of governance in FDI location choice by using Equation 2. In particular we perform the estimation for each of the 6 WGIs, thus providing evidence of the differences between the effects of single gov-

ernance aspects. For each indicator, also the impact of the interaction with intermediate imports and exports, as well as the specific impact in NA, is assessed. As said, WGIs is a dummy equal to 1 if the country has an under the median WGI, and 0 otherwise. Results are reported in Table 10.

First, not always a low level of WGIs discourages FDI: only scarce CoC and PS&AV decrease the likelihood of FDI (Columns 1-2, 5-16), with an attenuated effect of the latter in NA. Surprisingly, French investors appear attracted by countries with low level of GE, RQ, RoL and V&A (Columns 3-4, 7-12); there are no significant differences for these WGI in NA. Generally, given the natural correlation between low governance and low costs of labour, the average effect may be explained by the willingness to invest in low governance countries for cost-saving reasons. As regards the differences between single WGIs, we suggest that low levels of CoC and PS&AV may be perceived as the biggest threats to FDI profitability, while low level in the other indicators, V&A and GE overall, as a manageable risk or even a source of opportunity, especially for the biggest multinationals, to achieve more favourable investments conditions when dealing with governments and social institutions.

Even more interesting are the interactions between WGI and GVCs-related trade. There is a net difference between the interactions of WGIs with intermediates' imports and exports: low levels of WGI, except for V&A, do not alter the impact of intermediates' imports on FDI, while they do for intermediates' exports. Backward GVCs participation continues indeed to increase the likelihood of FDI also in low WGIs countries, whereas forward participation is found to be a substitute of FDI, with negative and significant coefficients for the interactions with all the WGIs. The underlining mechanism of this pattern may be linked to the concept of trust and to the knowledge of chain dynamics: firms may find less risky to invest in their suppliers' countries rather than in buyers' ones since relationships with suppliers may reveal much more than those with buyers about the ability and the capacity of the trade partner as well as about the environment in which it works. Therefore, direct experience and trust may serve as complements of formal indicators.

DEPENDENT VARIABLE: FDI$_{Control}$

Table 10: FDI, GVCs and WGI

WGI:	CoC		GE		PS&AV		RQ		RoL		V&A	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Imports$^{Int}_{t-3}$	0.021***		0.020***		0.020***		0.019***		0.021***		0.021***	
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Exports$^{Int}_{t-3}$		0.015***		0.015***		0.015***		0.014***		0.015***		0.016***
		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)
WGI$_{low}$	-0.001**	0.001**	0.003***	0.005***	-0.002***	-0.001***	0.003***	0.004***	0.001	0.003***	0.003***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NA * WGI$_{low}$	0.001	0.000	-0.003***	-0.004***	-0.000	-0.002*	-0.002	-0.003***	0.000	-0.001	-0.001	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
WGI$_{low}$ * Imports$^{Int}_{t-3}$	-0.002		-0.001		-0.003		0.004		0.000		-0.006***	
	(0.002)		(0.003)		(0.002)		(0.002)		(0.003)		(0.002)	
NA * WGI$_{low}$ * Imports$^{Int}_{t-3}$	0.021**		0.046***		0.058***		0.052***		0.021**		0.055***	
	(0.008)		(0.007)		(0.007)		(0.007)		(0.008)		(0.007)	
WGI$_{low}$ * Exports$^{Int}_{t-3}$		-0.007***		-0.012***		-0.008***		-0.006***		-0.009***		-0.013***
		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)
NA * WGI$_{low}$ * Exports$^{Int}_{t-3}$		0.006**		0.016***		0.016***		0.015***		0.007***		0.017***
		(0.002)		(0.002)		(0.002)		(0.002)		(0.002)		(0.002)
Observations	1,509,622	1,509,606	1,509,622	1,509,606	1,509,622	1,509,606	1,509,622	1,509,606	1,509,622	1,509,606	1,509,622	1,509,606
R-squared	0.153	0.153	0.153	0.154	0.154	0.153	0.154	0.153	0.153	0.153	0.154	0.154
Gravity Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls	A	B	A	B	A	B	A	B	A	B	A	B
FEs	it	it	it	it	it	it	it	it	it	it	it	it
Cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

Notes: LPM estimation. Constant is included. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Dependent variable is FDI$_{Control}$. Controls "A" refers to Exports$_{t-3}$ and Imports$^{Nint}_{t-3}$; Controls "B" refers to Imports$_{t-3}$ and Exports$^{Nint}_{t-3}$.

Looking at the interaction between WGI and GVCs, NA exhibits net differences with respect to the rest of the world. As far as forward GVCs participation is concerned, the effect is completely counterbalanced: the coefficient for the interaction between WGI, NA and $Exports_{t-3}^{Int}$ are positive and significant for all the WGIs; the same occurs for the interactions with $Imports_{t-3}^{Int}$. Therefore, despite the low levels of WGIs of the area, the relationship between GVCs and FDI is much stronger in NA than in the rest of the world, especially as regards backward GVCs participation: in particular, the likelihood of investing in NA increases by between 3 and 5 pp if a firm doubles its intermediates' imports, and by between 1 and 2.5 pp if it doubles its intermediates' exports. These figures more than double of the average estimates obtained in Table 5 (Columns 4 and 5). The greater impact of intermediates' imports is in line with the specialization of the area as an input supplier and with its GVCs average upstreamness (Del Prete, Giovannetti, et al., 2018).

To conclude, the analysis just performed provides new evidence on the role of WGI on FDI location choice, enlarging the existence literature and also breaking some common feelings. Besides, through the interaction with GVCs related trade, it offers new insights about the dynamics between GVCs and FDI.

5 Conclusions

FDI and GVCs are the most studied topics in the international economics literature in the last decades. The increasing relevance of multinational enterprises has led scholars to study these two topics combined, showing how they can be considered two sides of the same coin.

Introducing the geographic dimension into the make or buy dilemma studies, and a firm level approach in the strand of literature investigating GVCs participation as a determinant of FDI location choice, this paper contributes to both of these literatures. In particular, it provides evidence of a positive impact of trade on firm future investment location choice. GVCs-related trade, measured as trade in intermediates, drives this effect. Backward GVCs

participation appears to have a stronger effect, with the impact largely connected to re-exporting toward sourcing direction.

Moreover, we shed light on the role of governance, breaking some common feelings and enlarging the existing literature. The interaction with GVCs-related trade provides also evidence of a different effect for backward and forward GVCs participation.

Finally, the focus on NA, a minor recipient of FDI, shows a different pattern from the rest of the world: in the area the relationship between GVCs and FDI is stronger, and this holds for both backward and forward GVCs participation.

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Appendix

Table 11: A. Top receiver countries

2012		2013		2014		2015		2016	
Top receivers (% of investors)									
USA	24.2%	USA	24.1%	USA	24.4%	USA	24.1%	USA	24.4%
Germany	22.6%	Germany	23.3%	Germany	23.2%	Germany	22.9%	Germany	21.6%
Spain	21.1%	Spain	20.2%	Spain	19.8%	Spain	19.0%	Spain	17.7%
UK	16.8%	UK	17.9%	UK	16.7%	UK	15.6%	UK	14.8%
Italy	14.8%	Italy	15.7%	Italy	15.1%	Italy	14.8%	Italy	13.9%
Belgium and Luxembourg	11.8%	Belgium and Luxembourg	11.8%	Belgium and Luxembourg	11.8%	China	11.1%	China	11.6%
China	11.2%	China	10.5%	China	10.3%	Belgium and Luxembourg	11.0%	Belgium and Luxembourg	11.2%
Poland	8.6%	Poland	8.9%	Poland	8.3%	Poland	8.2%	Morocco	8.1%
Morocco	7.7%	Morocco	7.9%	Morocco	7.6%	Morocco	8.0%	Poland	8.1%
Tunisia	6.8%	Brazil	6.6%	Switzerland	7.2%	Switzerland	7.4%	Switzerland	7.0%
Top receivers (% of FDI)									
USA	10.5%	USA	10.7%	USA	11.6%	USA	12.1%	USA	12.0%
Germany	8.5%	Germany	9.3%	Germany	8.5%	Germany	8.4%	Germany	8.3%
Spain	6.9%	Spain	7.1%	Spain	6.9%	Italy	6.7%	Spain	6.2%
UK	6.1%	UK	6.8%	UK	6.3%	Spain	6.3%	UK	5.4%
Italy	5.4%	Italy	5.7%	Italy	5.7%	UK	5.1%	Italy	5.3%
China	4.8%	China	4.7%	China	4.7%	China	5.0%	China	5.3%
Belgium and Luxembourg	3.9%	Belgium and Luxembourg	3.7%	Belgium and Luxembourg	3.6%	Belgium and Luxembourg	3.2%	Belgium and Luxembourg	3.5%
Morocco	2.9%	Poland	2.9%	Poland	3.0%	Brazil	3.0%	Brazil	2.9%
Poland	2.8%	Canada	2.5%	Canada	2.8%	Canada	3.0%	Morocco	2.8%
Brazil	2.7%	Morocco	2.5%	Brazil	2.6%	Poland	2.6%	Tunisia	2.8%

Table 12: A. FDI and GVCs - Logit Estimation

				Dep. Variable: FDI$_{Control}$					
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trade$_{t-3}$	1.282***								
	(0.011)								
Trade$^{Int}_{t-3}$		1.161***							
		(0.008)							
Trade$^{Nint}_{t-3}$		1.142***							
		(0.006)							
Export$_{t-3}$			1.244***	1.247***		1.246***		1.246***	
			(0.009)	(0.009)		(0.009)		(0.009)	
Import$_{t-3}$			1.095***		1.090***		1.086***		1.086***
			(0.005)		(0.005)		(0.005)		(0.005)
Imports$^{Int}_{t-3}$				1.282***					
				(0.022)					
Imports$^{Nint}_{t-3}$				1.055***		1.056***		1.056***	
				(0.004)		(0.004)		(0.004)	
Exports$^{Int}_{t-3}$					1.768***				
					(0.052)				
Exports$^{Nint}_{t-3}$					1.153***		1.147***		1.145***
					(0.006)		(0.006)		(0.006)
2ndQ Imports$^{Int}_{t-3}$						1.801***		1.633***	
						(0.072)		(0.121)	
3rdQ Imports$^{Int}_{t-3}$						1.764***		1.556***	
						(0.079)		(0.128)	
4thQ Imports$^{Int}_{t-3}$						1.785***		1.562***	
						(0.094)		(0.155)	
5thQ Imports$^{Int}_{t-3}$						1.914***		2.123***	
						(0.124)		(0.253)	
2ndQ Exports$^{Int}_{t-3}$							2.004***		1.885***
							(0.111)		(0.161)
3rdQ Exports$^{Int}_{t-3}$							2.888***		2.035***
							(0.195)		(0.245)
4thQ Exports$^{Int}_{t-3}$							4.4167***		3.041***
							(0.356)		(0.409)
5thQ Exports$^{Int}_{t-3}$							6.656***		4.951***
							(0.652)		(0.839)
2ndQ Imports$^{Int}_{t-3}$ * Spec$_{t-3}$								1.134*	
								(0.086)	
3rdQ Imports$^{Int}_{t-3}$ * Spec$_{t-3}$								1.167*	
								(0.097)	
4thQ Imports$^{Int}_{t-3}$ * Spec$_{t-3}$								1.167	
								(0.114)	
5thQ Imports$^{Int}_{t-3}$ * Spec$_{t-3}$								0.895	
								(0.106)	
2ndQ Exports$^{Int}_{t-3}$ * Spec$_{t-3}$									1.106
									(0.093)
3rdQ Exports$^{Int}_{t-3}$ * Spec$_{t-3}$									1.536***
									(0.174)
4thQ Exports$^{Int}_{t-3}$ * Spec$_{t-3}$									1.574***
									(0.179)
5thQ Exports$^{Int}_{t-3}$ * Spec$_{t-3}$									1.436***
									(0.195)
GDP	0.877***	0.834***	0.862***	0.850***	0.867***	0.851***	0.863***	0.850***	0.863***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.022)	(0.022)
GDP per capita	1.004	1.012	0.974	0.970	0.982	0.969	0.986	0.968	0.987
	(0.029)	(0.029)	(0.027)	(0.027)	(0.028)	(0.027)	(0.028)	(0.027)	(0.028)
Distance	0.998	1.142*	1.146*	1.167**	1.177**	1.165**	1.167**	1.167**	1.168**
	(0.075)	(0.085)	(0.085)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)	(0.087)
Polity Index	1.002	1.001	1.000	1.003	1.001	1.003	1.002	1.003	1.002
	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Common Language	0.829***	0.793***	0.808***	0.801***	0.798***	0.802***	0.803***	0.802***	0.802***
	(0.034)	(0.033)	(0.034)	(0.034)	(0.034)	(0.034)	(0.035)	(0.034)	(0.035)
Trade Agreement	0.872*	0.877*	0.860*	0.868**	0.874*	0.866**	0.876*	0.866**	0.878*
	(0.063)	(0.062)	(0.061)	(0.061)	(0.061)	(0.061)	(0.062)	(0.061)	(0.061)
French Colony	1.253*	1.271**	1.254**	1.247**	1.267**	1.246**	1.249*	1.245**	1.249*
	(0.145)	(0.145)	(0.140)	(0.138)	(0.143)	(0.138)	(0.138)	(0.138)	(0.142)
Country Agglomeration	2.577***	2.585***	2.484***	2.500***	2.511***	2.500***	2.494***	2.502***	2.492***
	(0.076)	(0.077)	(0.073)	(0.074)	(0.075)	(0.074)	(0.074)	(0.074)	(0.074)
Observations	1,406,644	1,406,621	1,406,644	1,406,470	1,406,187	1,406,470	1,406,187	1,406,470	1,406,187
Region Controls	√	√	√	√	√	√	√	√	√
FEs	it	it	it	it	it	it	it	it	it
Cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

Notes: Odds Ratio are reported. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All trade variables are in thousands of €. The reference category for Quantiles of Imports and Exports comprises all trade relationships equal to 0. $Spec$ is a dummy equal to 1 if firm i amount of trade/exports/imports in relational specific goods at time t-3 with country j is higher than the median.

Table 13: A. First stage IV

VARIABLES	(1) Trade$_{t-3}$	(2) Trade$^{Int}_{t-3}$	(2) Trade$^{Nint}_{t-3}$	(3) Exports$_{t-3}$	(3) Imports$_{t-3}$	(4) Exports$_{t-3}$	(4) Imports$^{Int}_{t-3}$	(4) Imports$^{Nint}_{t-3}$	(5) Imports$_{t-3}$	(5) Exports$^{Int}_{t-3}$	(5) Exports$^{Nint}_{t-3}$
Openness$_{t-3}$	1.956***										
	(0.015)										
Openness$^{Int}_{t-3}$		1.818***	0.343***								
		(0.017)	(0.020)								
Openness$^{Nint}_{t-3}$		0.250***	1.715***								
		(0.015)	(0.015)								
Supply$_{t-3}$				0.450***	2.500***				2.469***	0.071***	0.225***
				(0.020)	(0.023)				(0.023)	(0.004)	(0.017)
Demand$_{t-3}$				2.598***	0.189***	2.596***	0.036***	0.081***			
				(0.022)	(0.010)	(0.022)	(0.002)	(0.007)			
Supply$^{Int}_{t-3}$						0.376***	0.499***	0.612***			
						(0.020)	(0.005)	(0.018)			
Supply$^{Nint}_{t-3}$						0.232***	0.133***	1.935***			
						(0.021)	(0.004)	(0.028)			
Demand$^{Int}_{t-3}$									0.229***	0.540***	0.362***
									(0.012)	(0.005)	(0.020)
Demand$^{Nint}_{t-3}$									0.095***	0.087***	2.280***
									(0.012)	(0.005)	(0.027)
Observations	1,611,352	1,611,328	1,611,328	1,611,352	1,611,352	1,611,313	1,611,313	1,611,313	1,611,296	1,611,296	1,611,296
FEs	it jt	it jt	it jt	it jt	it jt	it jt	it jt	it jt	it jt	it jt	it jt
Cluster	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. (#) refers to first stage of regression (#) in Table 8