U.S. Greenfield Investments and M&A location: impact of American continental integration and Insider vs. Outsider position[*]

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Abstract

This study examines the effects of economic integration on Greenfield Investments and cross-border Acquisitions locations. First, we present a simple theoretical three countries Insider – Outsider model framework highlighting differences between the two modes of entry. In a second part, we use panel data on U.S. FDI in NAFTA and MERCOSUR members from 1989 to 1998. Economic integration is captured through bilateral tariff barriers and dummy variables (date of implementation of treaties). We pool data to distinguish between the two agreements. We also control for traditional macroeconomic determinants. It is found that economic integration certainly played a major role on U.S. firms' location patterns. The U.S. position regarding to the two agreements–insiders vs. outsider- seemed to matter. Moreover, both our empirical study and our theoretical model underline the relevance of separating entry modes when studying FDI. Entry mode reactions to changes in macroeconomic host country environment are likely to be differentiated by their location of origin.

I. Introduction

Over the last decade, we attended a dramatic surge in outward U.S. FDI (Foreign Direct Investment) within the American continent. The U.S. FDI rose from 119 311 million

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U.S. dollars in 1988 to 294 955 in 1998[1]. U.S. firms mainly invested in four main countries: Canada, Mexico, Argentina and Brazil. These four countries accounted for more than a half of this growth. In the same period, two major regional areas - the MERCOSUR (Mercado Comun del Sur) in 1991 and the NAFTA (North America Free trade agreement) a few years later in 1994 - emerged.

At first sight, an interesting parallel between this expansion of U.S. companies and the official signature of these two treaties could be drawn. However, stylised facts give no clear evidence of a link between economic integration and U.S. companies' location choices. FDI in Mexico and Canada[2] seem to have considerably increased before the signature of the NAFTA although U.S. outward FDI flows in Mexico[3] reached their highest point after 1994 (Blomström and Kokko (1997)). Besides, a boom in U.S. FDI occurred after the MERCOSUR signature (a rise by 10% in Argentina and Brazil in 1991). But inward FDI flows towards the MERCOSUR countries had already increased before the implementation of the treaty.

Many other host country characteristics such as market size, factors costs, exchange rate or for example research and development expenditures can explain FDI location choices. However, the economic integration process can theoretically alter location activity patterns and industrial structures (Barrell and Pain (1996), (1999)). Several empirical studies confirm such influence. For instance, at macroeconomic level, Clegg and Scott-Green (1999a; see also 1998 and 1999b) put forward the role of European integration as a main determinant of Japanese and U.S. FDI among EU members[4].

Thus, as a first step, our econometric analysis aims to separate the effects of economic integration from other macroeconomic parameters influencing U.S. FDI location in Canada, Mexico, Argentina and Brazil over the years 1989-1998. We apply fixed effect (within) regression estimator to deal with panel data. Different measures are used with a view to capture economic integration: transaction costs (bilateral tariff barriers) and dummy variables referring to the date of implementation of the MERCOSUR and the NAFTA.

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[1] These figures are evaluated on a historical-cost basis (BEA). They include Canada, Latin America and other Western Hemisphere.

[2] Canada and the U.S. were deeply integrated in 1988 when they decided to sign for CUSFTA (Canada – United States Free Trade Agreement).

[3] First reforms promoting inward FDI in Mexico took place in the middle of the eighties.

[4] See also appendix C for further location choices literature.

Furthermore, the regional integration impact on bilateral FDI also depends on whether the source country is a member of the integrated regional area (insider) or not (outsider). There is no reason to think that the NAFTA and the MERCOSUR have the same impact since in the former case, the U.S. is an insider whereas in the latter one, it is an outsider. Strategic reactions of insiders and outsiders can be contrasted[5]. Moreover, institutionalised agreements can entail discriminatory measures against outsiders. By introducing NAFTA and MERCOSUR dummies, we indicate if belonging to the NAFTA, and not to the MERCOSUR, modifies U.S. location decisions. Besides, data are pooled in such a way that MERCOSUR and NAFTA differences are investigated. U.S. investors could be differently influenced by macroeconomic determinants in each trade area.

Assessing the role of regional integration in FDI location is an increasingly relevant issue: all American continent countries are currently under negotiations to constitute progressively a free trade area from Alaska to Tierra del Fuego. It is especially true for American continental emerging countries, U.S. FDI being a major source of foreign financing. The FTAA (Free Trade Agreement of the Americas) should be signed by the year 2005.

Nevertheless, it would be insufficient to only analyse aggregate FDI flows. Indeed, Greenfield Investments (G.I.)[6] and cross-border Mergers & Acquisitions (M&A) are two distinct ways of entering a foreign market. Some authors have examined the determinants of the G.I. vs. cross-border M&A trade-off. The first major study[7] on such a trade-off goes back to Caves and Mehra in 1986. The related literature usually deals with industry and firm-specific determinants. Other authors[8] such as Balwin and Gorecki (1987) have evaluated separately and then compare the effects of some economic factors on each mode of entry.

Almost none of the previous studies has clearly tackled the issue of M&A and G.I. locations apart from O'Huallachain and Reid in 1997 (Japanese companies' location in U.S.

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[5] For a discussion, see for instance Buckley and al. (1999) in international business or Norman and Motta (1993, 1996) for more formalized game theory analysis.

[6] We can define Greenfield Investment as the establishment of a new production facility in contrast to cross-border Merger & Acquisition where a firm purchases shares of an existing foreign firm.

[7] See also: Kogut and Singh (1988), Hennart and Park (1993) or e.g. Andersson and Swensson (1996).

[8] See also e.g. Froot and Stein (1991) or above all Girma (2001). He assesses the impact of the European Internal Market programme on the determinants of non-European companies locating in the United Kingdom.

counties). However, analysing these two entry modes location decisions has become a central question in the last decade since in most cases, countries struggle for attracting FDI.

At the opposite, the FDI location literature in international economics traditionally assumes that FDI can be viewed as G.I. As Lipsey (2000) rightly points out, M&A should be better considered to understand the industrial globalization process occurring in developed and developing countries. Indeed, cross-border M&A represent almost 85% of worldwide FDI transactions value in 2000. The total number of cross-border M&A has grown very quickly over the period 1991-1998. It has gone up from 4 149 transactions in 1991 to 5 373 transactions in 1998 (with a peak of 6 310 in 1995). Besides, from a theoretical point of view, M&A and G.I. should not respond similarly to traditional investment determinants.

In this article we relax both empirically and theoretically this traditional assumption by examining separately G.I. and cross border M&A. Again, such a distinction may imply important consequences in terms of economic policy. G.I. and M&A are intended to induce different impacts on host country welfare, at least in short term (see WIR (2000)).

The paper proceeds as following: in the section II, we present a simple theoretical framework stressing the difference between G.I and M&A according to the Insider vs. Outsider position. Then, section III reports the econometric method and the variables used. Finally, before concluding, section IV discusses the empirical findings.

II. The model

This section does not provide a full model of FDI locations. It only aims to provide theoretical evidence concerning the hypothesis that horizontal[9] M&A and G.I may not be sensible to traditional FDI location determinants identically. We also show formally that entry mode incentives depend on the insider vs. outsider position.

In such a context, we adopt a modified version of the Norman and Motta's partial equilibrium model framework (1996) introducing cross-border M&A strategies. We consider three countries noted H (host country), I (insider country) and O (outsider country). These three countries contain respectively n_H, n_I and n_O existing firms. We respectively note I and O parent companies in insider and outsider countries

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[9] In 1999, 70% of cross-border M&A value corresponded to horizontal FDI. Vertical M&A never exceeded 10% of total M&A.

Countries H and I are involved in a regional agreement. The country O is described as an outsider. We distinguish intra-regional transaction costs u_1 from extra-regional transaction costs u_2 (see figure 1) by setting $u_2 > u_1$. Transaction costs include not only tariff and non tariff barriers to trade but also transport costs.

Figure 1: An insider/outsider three country Model
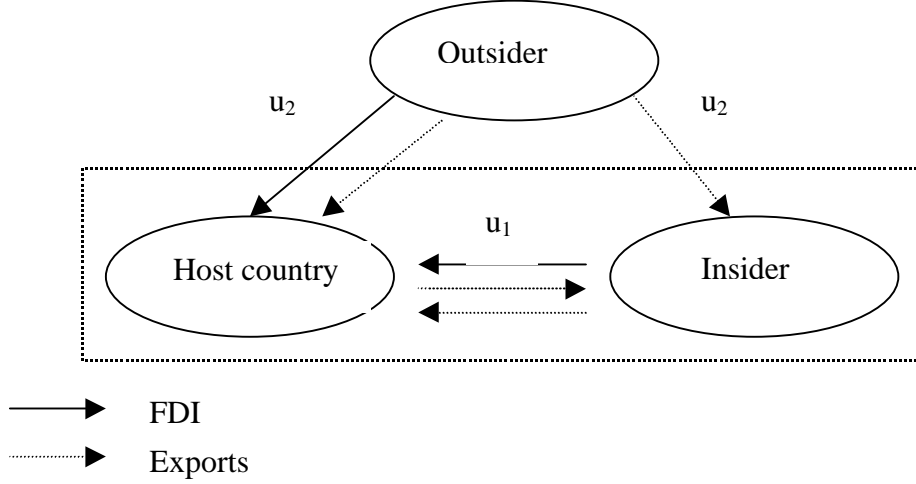
In a country h (with $h = \{H, I, O\}$), the inverse demand for homogeneous goods is linear and is written: $p^h = a^h - q_i^h$ where q_i^h is the production sold by a firm i in the market h. a^h represents its market size. The marginal production cost c^h in country h is constant. We suppose Cournot competition takes place when firms meet each others in a market[10].

We only pay attention to the effect on FDI location of a change in host country market characteristics. Without loss of generality[11], we do not take into account sales in market O. We normalize country I and country O parameters by setting $a^I = 1, c^I = c^O = 0$ and $n^I = n^O = 1$. We also abstract any investment strategic interaction from our model to strictly focus on FDI incentives intrinsic to host country characteristics. Only the firm located in O or I can invest abroad. Host country firms in H cannot engage in foreign investment. Finally, to simplify notation, we note $a^H = a$, $c^H = c$ and $n^H = n$.

The foreign firm i (with $i = \{I, O\}$) can enter the host market H by two ways: G.I. and M&A. We assess the profit gained by the firm i when investing in the country H.

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[10] In economic geographic models, the assumption of numerous firms leads to neglect any form of strategic interaction. We adopt a Cournot competition model to remedy it. Kreps and Sheikman (1983) showed that the capacity commitment followed by price in Bertrand competition yielded the Cournot outcomes.

Case one: Greenfield Investment. An investing firm avoids transaction costs by establishing a plant in the host market but has to incur an exogenous plant-level fixed cost F_i. The insider firm saves transaction cost in H (tariff-jumping argument) whereas the outsider firm benefits from both a better access in H (tariff-jumping argument) and I (export platform motive). The outsider removes higher transaction costs in H. In addition, it now exports to I from H at a lesser transaction cost u_1 since $u_2 > u_1$. By locating in H, it benefits from an improved market access in I (see Neary (2002)). The profit of the investing firm i is written:

- *The outsider firm*

$$\boldsymbol{p}_O = q_O^H \left[a - (q_O^H + \sum_{\substack{j=1 \\ j \neq O}}^{n+2} q_j^H) - c \right] + q_O^I \left[1 - (q_O^I + \sum_{\substack{j=1 \\ j \neq O}}^{n+2} q_j^I) - u_1 \right] - F_O \tag{1}$$

We set $F_O < \overline{F_O}$ where $\overline{F}_O = \left(\dfrac{a - 2c + u_1}{n+3} \right)^2 + \left(\dfrac{1 - 2(c + u_2)}{n+3} \right)^2$.

- *The insider firm*

$$\boldsymbol{p}_I = q_I^H \left[a - (q_I^H + \sum_{\substack{j=1 \\ j \neq I}}^{n+2} q_j^H) - c \right] + q_I^I \left[1 - (q_I^I + \sum_{\substack{j=1 \\ j \neq I}}^{n+2} q_j^I) \right] - F_I \tag{2}$$

We set $F_I < \overline{F_I}$ where $\overline{F}_I = \left(\dfrac{a - 2c + u_2}{n+3} \right)^2 + \left(\dfrac{1 + u_2 + n(c + u_1)}{n+3} \right)^2$.

Case two: Cross-border acquisition. The acquisition of a host country firm allows the investing firm i to benefit both from efficiency gains and a rise in its market power. Firstly, M&A imply rationalization gains[12]. The investing firm can rationalize output across its plants by transferring production from a lesser efficient factory to a more efficient one. Such gains are more important for the outsider firm which can take profit from production rationalization both in market H and I (tariff-jumping and platform motives). Secondly, M&A also reduces competition. It increases its mark-up in market H and I.

But, taking over a local firm incurs an endogenously acquisition price R_i where $i = \{I, O\}$. We model negotiations between a buyer and its seller in a simple way. We assume the "take-or-leave-it" standard hypothesis. The foreign firm i proposes an acquisition price to

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[11] Markets are segmented both at the demand and cost side.

a host country firm[13]. The latter takes or refuses the proposition. The negotiation power of this host firm is then limited. However, it does not accept any price. It claims a minimum price corresponding to the profit it would gain if it refused to be sold. Thus R_i equals to the profit the host firm would get if the foreign company carried on exporting[14]:

$$R_i = \left(\frac{a + u_1 + u_2 - 3c}{n+3} \right)^2 + \left(\frac{1 + u_2 + n(c + u_1)}{n+3} \right)^2 .$$

We further set $c > u_j$ with $j = \{1,2\}$. It is a sufficient but not necessary condition of profitability in markets H and I whatever the status of the foreign firm is. It guarantees a non-prohibitive acquisition price. Let us study for instance the market H. The insider (resp. outsider) is more competitive than a host firm even if it prefers to export, since $c > u_1$ (resp. $c > u_2$). It therefore prevents the local firm from claiming a high compensation price in market H.

The profit of the home country firm in the host country is the following:

- *The outsider firm*

$$\boldsymbol{p}_O = q_O^H \left[a - (q_O^H + \sum_{\substack{j=1 \\ j \neq O}}^{n+1} q_j^H) - c \right] + q_O^I \left[1 - (q_O^I + \sum_{\substack{j=1 \\ j \neq O}}^{n+1} q_j^I) - u_1 \right] - R_O \tag{3}$$

- *The insider firm*

$$\boldsymbol{p}_I = q_I^H \left[a - (q_I^H + \sum_{\substack{j=1 \\ j \neq I}}^{n+1} q_j^H) - c \right] + q_I^I \left[1 - (q_I^I + \sum_{\substack{j=1 \\ j \neq I}}^{n+1} q_j^I) \right] - R_I \tag{4}$$

We set additional constraints on parameters value in order to exclude negative production levels. We calculate market and profit equilibriums. We then derive equations (1), (2), (3) and (4) to the variables a, c, n, u_1 and u_2. The Table 1 summarizes the effect of these factors on FDI location strategy[15]. It can be negative, positive or unspecified.

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[12] We assume no synergy gains. Marginal costs of the new entity are unchanged.

[13] All local target firms are symmetric.

[14] When no FDI takes place, we suppose reciprocal exports between countries H and I. The outsider firm exports to both countries in this regional area (see figure 1).

[15] Further information are available on authors' request.

In the G.I. case, signs of derivatives are clear and conform to intuition[16] except in a very few cases. A rise in c has a compound effect on the insider: once it is located in the host country H, the affiliate profit decreases in market H. However, the profit earned by the parent company in market I goes up.

Table 1: Some expected signs on FDI location choices

Factors	G.I.		M&A	
	Outsider	Insider	Outsider	Insider
a	+	+	+	+
c	-	?	?	?
n	-	-	-	-
u1	?	+	?	?
u2	0	+	-	+

For an outsider, a worsening in market accessibility (a rise in u_1) also has an uncertain outcome. Indeed, it increases its competitiveness in H but reduces it in market I, since it now exports to market I from production base set up in H. Such effects do not play on the insider. A rise in u_1 increases its profit in market I (growth in its competitiveness). However, it does not affect its situation in market H. In H, it is now sheltered from variations in transaction cost u_1.

When external barriers to trade u_2 go up, it does not modify the outsider profit since it is now located in H. At the opposite, it improves the insider profit by worsening the competitiveness of the firm O established outside the regional area.

Consider the cross-border M&A strategy. Signs are more often not definite for M&A than for G.I. To see why, let us examine the consequences of a rise in c on the outsider firm. It decreases not only the gross profit in market H and I but also the acquisition price claimed by a host country firm so that the outcome reveals to be indeterminate. The same mechanism applies to a change in u_1. The situation is still more complicated since the acquisition price variation is unspecified. When the insider or outsider firm exports and no FDI takes place, the profit of a host country firm in market H and I varies with u_1 but in an opposite way.

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[16] The parameter n only plays competition effects. It improves competition in market H and I, which entails a drop in mark-ups. We have ignored agglomeration effects in this paper for tractability purposes.

Furthermore, increasing extra-regional trade barriers u_2 influences only the outsider location. It protects firms in market H from the outsider foreign competition. Thus, it enhances their rents if they refuse to be sold compelling the outsider to serve this market through exports. As a result, the acquisition price grows and the net profit of the outsider decreases. In other words, a decrease in u_2 has a pro-competitive effect on host country companies by intensifying export flows. This increasing competition could encourage firms to merge in order to restore their market power. This search of market power could partly offset lower transaction cost economies. Now, consider the insider once it penetrates the market H. When u_2 goes up, the rise in the acquisition price is overcome by larger profit earned by its production plant both in market H and I.

As this formal analysis suggests, we should expect contrasted FDI reactions to changes in the host country economic environment. Such reactions depend both on entry modes and insider vs. outsider position. In the next section, we will estimate empirically to what extent U.S. aggregated FDI, G.I. and cross-border M&A respond to host country characteristics.

III. Data and methodology

Now, we try to validate empirically some appealing theoretical intuitions we have previously underlined. In this purpose, we analyse the impact of economic integration on both U.S. G.I. and cross-border M&A while controlling for traditional FDI macroeconomic determinants. We also wonder whether U.S Multinational firms react differently to the formation of a trade area according to where they are located within (NAFTA) or outside the trade area (MERCOSUR). As it can be observed in table 2, the NAFTA members attracted the greatest part of U.S. G.I. and M&A among the four countries studied during the last decade.

We analyse U.S. outward FDI towards the NAFTA (Canada and Mexico) and the MERCOSUR (Argentina and Brazil) members over the period 1989-1998. Our dependent variable is the number of new plant transactions in each country (decomposed into G.I. and M&A). We have not searched for U.S. outward FDI data in value. Indeed, we are willing to insist more on determinants of U.S. investors' location choices than factors influencing FDI transaction values in a given country.

Empirical analyses separating G.I. and M&A focus very often on U.S. inward FDI. In this paper, we enlarge the geographic area to the NAFTA and the MERCOSUR countries. Unfortunately, U.S. outward FDI are recorded less exhaustively than U.S. inward FDI. This is why our dataset is restricted in terms of period and countries collected[17].

Table 2: Share of U.S. G.I. and M&A in the MERCOSUR and the NAFTA

	G.I. share in total U.S. G.I. in %				M&A share in total U.S. M&A in %			
	Canada	Mexico	Brazil	Argentina	Canada	Mexico	Brazil	Argentina
1989	66,67	6,67	20,00	6,67	66,67	16,67	13,33	3,33
1990	75,00	4,17	16,67	4,17	71,43	14,29	9,52	4,76
1991	80,00	10,00	5,00	5,00	36,36	45,45	9,09	9,09
1992	50,00	28,57	14,29	7,14	48,00	40,00	8,00	4,00
1993	63,16	26,32	5,26	5,26	25,00	50,00	10,00	15,00
1994	58,33	29,17	4,17	8,33	33,33	27,78	11,11	27,78
1995	55,17	24,14	13,79	6,90	45,00	5,00	20,00	30,00
1996	40,48	33,33	16,67	9,52	37,04	11,11	25,93	25,93
1997	30,30	9,09	39,39	21,21	36,00	10,00	20,00	34,00
1998	36,59	14,63	29,27	19,51	33,33	17,39	30,43	18,84
1989/98	**51,72**	**19,16**	**18,39**	**10,73**	**41,92**	**20,27**	**18,90**	**18,56**

Source: BEA- SCB, CEP. Authors' calculations.

This paper only considers host country macroeconomic characteristics. Data per country at sector level are not available. As a result, we implicitly assume that macroeconomic factors account for the structure (intensity and orientation) of FDI flows whereas microeconomic determinants give information on sectors and individual firms engaged in industrial globalization. Descriptive statistics are presented in appendix B.

We proceed to a Breusch and Pagan (1980) Lagrange Multiplier test to select our econometric method. It detects unobservable characteristics between the four recipient countries and checks the existence of heterogeneous individual data. The $\div^2$ statistic informs us on the relevance of panel estimation. FDI data yield a $\div^2$ statistic equals to 0.87. We then reject OLS estimator against random effects estimator[18]. Choosing OLS would have lead to

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[17] Statistical offices in most countries (with the exception of the USA and Argentina) do not record the entry mode. Consequently, the share of FDI flows accounted by G.I. or M&A must be inferred from different statistical sources. Hence, getting very accurate estimation (WIR (2000)) is very difficult.

[18] The $\div^2$ statistics yielded by M&A and G.I. data are respectively 0.55 and 1.30.

biased estimates because of correlations between unobserved country effects and observed independent variables. Besides, we perform a Hausman (1978) test to determine whether a random effect or a fixed effect specification is the more appropriate to estimate panel data. The ÷² statistic is equal to 56.34. It supports the choice of a fixed effect estimator[19].

The estimation with fixed effects requires measuring the actual value for each year less the mean value of all variables over the entire period. This estimation can then capture the influence of the different mean levels across countries, i.e. fixed and unobserved countries characteristics. Consequently, time invariant pair-specific variables such as common border, geographic or cultural distance are subsumed in country pair fixed effects.

The basic full formulation of the log-linear model presented in section 3 is as follows:

$$\text{lfdi}_{it} = \alpha_i + \beta_1 \, \text{lgdp}_{it-1} + \beta_2 \, \text{lagg}_{it} + \beta_3 \, \text{llcost}_{it} + \beta_4 \, \text{ltb}_{it} + \beta_5 \, \text{mercosur} + \beta_6 \, \text{nafta} + u_{it} \quad (5)$$

Where i=1,...,n represents the four recipient countries (Argentina, Brazil, Canada, Mexico). t=1,...,T covers the relevant time period.

We compare the U.S. FDI regression to those of G.I. and M&A. We check if regarding FDI exclusively as a G.I. is relevant or not. We also pool data according to NAFTA and MERCOSUR membership. We detect by applying a Chow test whether the coefficients estimated over one group are equal or not to the coefficients estimated over another one.

Our explanatory variables[20] are the following[21]:

Market size (GDP): the GDP provides us a good proxy of the market size. We use lagged GDP in order to avoid endogeneity effects between FDI and GDP. In economic geography (Krugman (1991)) a huge market size means great local demand and easier outlet. In addition, it allows companies to achieve economies of scale and to reach optimum scale. It also leaves room for new factories and avoids a fall of prices when total industrial productive capacity goes up. Hence, we expect market size to have a positive impact on U.S. FDI.

Agglomeration (AGG): the variable AGG estimates if past FDI (evaluated by the number of U.S. affiliates in host countries in the previous year) lead to a persistence effect. The new theories of international trade and economic geography (Fujita and al. (1999) for instance) have stressed the role of agglomeration effects on firms' location patterns. However,

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[19] The tests results are the same when we separate FDI data into M&A and G.I. The ÷² statistics are equal to 35.11 for M&A and 47.97 for G.I.

[20] The exchange rate variable has been omitted since we converted all our data into U.S. dollar.

[21] Data sources are available in appendix A.

these effects are uncertain[22]. Indeed, a greater number of firms in a given host country exercises two opposite forces: a competition effect and positive externalities. On the one hand, it increases competition between firms which deters them from locating in the host country. On the second hand, it causes positive externalities by improving input markets access (rise in available skilled labour force), strengthening technological spillovers or for instance easing vertical input – output links with other firms (Venables (1996)).

Labour costs (LCOST): LCOST represents labour costs in the host country. Labour costs are measured by nominal worker wages. A rise in labour costs may urge foreign firms to export rather than locate abroad. All things being equal, foreign firms have fewer incentives to locate abroad when host country labour costs increase.

Transaction costs proxied by bilateral Tariff Barrier (TB): Blomström and Kokko (1997) underline two opposite consequences of a decrease in tariff barriers. If FDI is motivated by a tariff-jumping argument or/and export platform motives, then regional integration should decrease FDI flows and encourage cheaper exports. However, a reduction in trade barriers could increase FDI if the major motive for internationalization is the exploitation of intangible assets. Moreover, multinational firms try to rationalize their production in the region, locating their plants in different countries to lower costs by exploiting differences in factors endowments. Multinational firms take advantage of process specialization (Buckley and al. (1999)). Furthermore, economic geography teaches us that a fall in transaction costs intensifies the market size effects by raising agglomeration effects[23].

Date of implementation of treaties (MERCOSUR, NAFTA): we include dummy variables to indicate the NAFTA and the MERCOSUR dates of implementation. The variable MERCOSUR (resp. the variable NAFTA) takes the value 1 from 1991 (resp. 1994) to 1998 and 0 otherwise. These variables capture the evolution of rules on trade and investment. Indeed, countries belonging to a regional agreement often make efforts to further reduce transaction costs. They liberalize capital flows, homogenize legal norms, set up institutions handling cross-border disputes, etc. (see Buckley and al. (1999) or for instance Levy-Yeyati and al. (2002)). The impact of such a dummy on FDI partly depends on the insider vs. outsider position.

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[22] Many empirical works have tested agglomeration effects on the location of U.S. companies. At a macroeconomic level, see e.g. Barrell and Pain (1996, 1999) or Wheeler and Mody (1992). At a sectoral level, see Mody and Srinivasan (1998) or Head and al. (1995).

[23] This argument is not contradictory with the tariff jumping argument since the latter does not consider agglomeration phenomena.

IV. Empirical estimation

Table 3 presents estimation outcomes for FDI, M&A and G.I. regressions. Fisher statistics support the global significance of our econometric models despite the weakness of R squared due to our limited number of observations.

Table 3: FDI, G.I. and M&A regressions results over the period 1989-1998

	lfdi			lma			lgi		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
lgdp	6.97***	7.58***	4.16***	7.57***	8.95***	5.85***	6.27***	6.17***	2.77*
	(0.942)	(1.143)	(1.192)	(1.276)	(1.505)	(1.823)	(1.243)	(1.528)	(1.604)
lagg	-0.327	-0.46	-0.38	-0.74	-1.05*	-0.77	-0.05	-0.03	-0.12
	(0.404)	(0.431)	(0.355)	(0.548)	(0.568)	(0.543)	(0.534)	(0.576)	(0.477)
llcost	0.03	0.04	0.02	0.06	0.09	0.06	-0.02	-0.02	-0.03
	(0.048)	(0.050)	(0.043)	(0.066)	(0.066)	(0.065)	(0.064)	(0.067)	(0.057)
ltb	0.42**	0.38*	0.72***	0.49*	0.42	0.68**	0.25	0.26	0.63**
	(0.197)	(0.200)	0.196	(0.267)	(0.264)	(0.300)	(0.260)	(0.268)	(0.264)
mercosur		-0.23			-0.52			0.03	
		(0.241)			(0.317)			(0.322)	
nafta			0.81***			0.49			1.00***
			(0.246)			(0.377)			(0.331)
R² within	0.666	0.675	0.752	0.540	0.577	0.565	0.514	0.514	0.625

Number of countries=4

Number of observations=40

* indicates a 10% level of significance, ** indicates a 5% level of significance,

*** indicates a 1% level of significance.

Data inside brackets are standard deviation.

1. The FDI equation

The variable GDP exhibits a high degree of statistical significance in regression (1), (2) and (3). The GDP coefficients have a positive sign, which is consistent with empirical FDI literature compiled in appendix C. Besides, we notice that the market size coefficient is quiet important relative to other ones.

In contrast, AGG and LCOST are not significant. The negative sign observed for AGG may come from stronger competition effects prevailing over positive externalities. Our

macroeconomic, rather than a sector based perspective, may probably explain it: positive externalities such as for vertical links are better assessed at the sector level.

Although LCOST is not significant, it deserves a further commentary because it records a non-intuitive sign. This sign may reflect an efficiency-seeking strategy. American companies seem to be looking for skilled labour force endowed with higher productivity and therefore higher wage cost locations. In our study, we must not overlook the role of Canada where nominal wages are very high. Indeed, Canada is the major recipient of the U.S. (see table 2).

The consequences of economic integration are not so clear. The variable TB is positive and significant. A decrease in tariff barriers pushes downward U.S. FDI, which confirms tariff-jumping and export platform motives. However, because we have no way to separate the internal trade barriers effect from the external trade barriers one, we cannot conclude that this tariff barrier effect is equally predominant both in the NAFTA and in the MERCOSUR. As dummy variables suggest, the tariff barrier impact is perhaps more relevant for the MERCOSUR than for the NAFTA. Moreover, theoretical arguments could lend further support to this suggestion. The U.S. outsider can benefit from both tariff-jumping and export platform motives by locating in the MERCOSUR. It takes profit of preferential access to other markets within the regional area, which probably makes it more sensible to bilateral U.S.–MERCOSUR trade barriers. But when bilateral U.S.–intra NAFTA trade barriers vary, only the tariff jumping argument plays.

Now we consider the variable NAFTA. It is significantly positive. Institutional commitment following economic integration, notably for the participation of Mexico in the NAFTA, could give more credibility to government policies towards foreign companies. Thus, it can attract foreign investors looking for stability[24]. The Brady Plan implemented in Mexico in 1989 may also have contributed to the recovery of investors' confidence by improving the credibility of macroeconomic policies (Berthélemy and Girardin, 1993).

In the opposite, the MERCOSUR dummy has a non significant negative impact. It could be certainly too hazardous to conclude that the MERCOSUR has no repercussion on U.S. FDI. Firstly, companies may have anticipated the economic outcomes of institutional integration. Secondly, economic integration could boost FDI indirectly through an increasing

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[24] Political stability constitutes a necessary condition for the international division of labour at the firm level (Blomtröm and Kokko (1997)). It could stimulate vertical FDI.

market size (growing GDP in parallel with greater export flows and economic openness) or better labour productivity (lower internal or X-inefficiency because of increasing competitive pressures).

However, these dissimilar results shed light insider vs. outsider effect. The U.S. distinct position with regard to the two agreements seems to matter. From the U.S. insider perspective, the NAFTA expands the U.S. market by including Canadian and Mexican market. Economic integration is likely to prompt U.S. firms to rationalize and relocate their factory. Indeed, U.S. firms are now able to serve these three markets from one single productive base.

There is also another noteworthy finding. We perform a Chow test. It yields a not significant F statistic equal to 0.517. Splitting sample into two groups (i.e. NAFTA versus MERCOSUR members) over our entire period does not raise the statistical explanatory power of the regression. Our F statistic testing the restricted versus unrestricted model is inferior to the tabled critical value. Then, we may not reject the hypothesis that the coefficient vectors are identical in the two data samples. The MERCOSUR and NAFTA membership partition of dataset does not change the estimated coefficients of U.S. FDI location determinants. Although NAFTA and MERCOSUR dummies show dissimilar impacts, estimating data separately does not significantly modify the FDI sensibility to the different macroeconomic determinants.

2. The Cross-Border M&A versus Greenfield Investment equations

Comparing the results between columns (4) to (9) and columns (1) to (3), FDI, M&A and G.I. clearly response differently to our independent variables. Only the market size is always significant for both entry modes. We find a positive relationship between GDP and the dependant variable.

The AGG variable still remains not significant both for G.I. and M&A except in column (5). International buyers appear to be slightly more sensible to agglomeration effects. Competition effects discourage them from locating in a local market. In constrat, several U.S. investors establish new plants in the Latin American countries to exploit less expensive labour costs. They then get back cheap intermediate goods in the U.S. before re-exporting final goods overseas. Therefore, it should make this kind of G.I. less sensible to agglomeration effects.

A different interpretation could be proposed. Indeed, this AGG variable may also give information on the relative scarcity of purchasable host country firms. When this variable goes up, it could mean that the available pool of local companies, i.e. investment opportunities, shrinks. It may constitute an additional friction factor refraining U.S. companies from buying over local firms (mismatching between local offer and foreign demand, upward pressure on acquisition prices in the market for corporate control, etc.).

In both cases, labour costs coefficients are never significant. Nevertheless, we notice that LCOST shows negative signs for G.I. As a result, our efficiency-seeking strategy assumption pursued by U.S. companies could be only relevant for M&A. For instance, during the 1990s in the Mexican automobile sector, U.S. companies established maquiladoras (G.I.) to achieve an extensive production. They did not really search for skilled workers (no Research and Development expenditures). They just needed sufficiently educated labour force to be productive and able to use machines. However, such a conclusion must be again made with serious caution since labour cost variable is not significant.

Finally, we again investigate the effects of economic integration. First, the TB signs are significant and positive in columns (4), (6) and (9) confirming the results observed for aggregated FDI. They have lesser magnitude for G.I. and are generally more significant in the case of M&A. These results are partly consistent with our theoretical model. Indeed, M&A could be more concerned by tariff barriers. Trade barriers theoretically could alter not only the profit earned by a local firm once acquired, but also the acquisition price level.

Second, the NAFTA dummy has a positive and significant influence only G.I. It indicates that M&A respond less strongly to institutional integration than G.I. Such observation can be regarded as a consequence of Maquiladoras spreading in Mexico in the 1990s. It sheds light on the U.S. interest in enlarging a trade area to the Mexican market. If U.S. and Canada already came to agreements on trade and investment with the CUFSTA in 1989, Mexico adopted a large part of new rules favourable to U.S. affiliates in the NAFTA framework.

In the opposite, the MERCOSUR variable is never significant confirming again an intra versus inter-regional integration contrast. By belonging to a common trade area, a country may give rise to a pulling force of insiders' investments.

Finally, the Chow test[25] indicates again that separating countries into two distinct samples is not relevant in both entry modes.

V. Conclusion

The purpose of our article is twofold. On the one hand, we explore the effects of a deeper American continent integration and the insider vs. outsider position on U.S. FDI location patterns. We control for other traditional macroeconomic determinants prevailing in a host country. On the second hand, we wonder whether G.I. and cross-border M&A respond in a similar way to location determinants.

Two main findings stand out. Firstly, only the market size and trade barriers have a positive impact on the location of FDI, G.I. and M&A. Multinational firms try to "jump" tariff barriers to avoid too high exporting costs. Export platform motives may also be identified. As for the major role of the market size on FDI location choices, it certainly emphasizes the indirect impact of economic integration. Indeed, the market size grows with the progressive access to other markets. In contrary, in our macroeconomic study, agglomeration and labour costs do not affect significantly FDI flows.

Secondly, the NAFTA dummy sign is significant and positive only for U.S. aggregated FDI and G.I. This variable reveals the influence of NAFTA rules on trade and investment on FDI patterns. It shows to what extent the ensuing institutional commitment has driven foreign investors searching for political and institutional stability to establish domestic affiliates in Canada and Mexico.

However, the MERCOSUR agreement has had no impact. Such a finding puts forward an insider vs. outsider position effect. In the prospect of the formation of a free trade area in the American continent (the FTAA) by 2005, newly insider countries such as Argentina or Brazil could expect to attract U.S. companies. This effect could overcome the opposite tariff jumping effect and/or export platform motives. The FTAA impact is likely to be weaker for the already insider countries such as Canada or Mexico.

However, as Chow tests results point out, the FTAA formation could not modify the sensibility of U.S. location decisions to macroeconomic country parameters.

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[25] The F statistics yielded by M&A and G.I. data are respectively 1.088 and 0.908. None of these statistics are significant.

Finally, both our empirical study and our theoretical Cournot model highlight the need to distinguish G.I. from M&A when studying FDI determinants. We have no reason to see entry modes responding similarly to a change in the host country economic environment. Moreover, such reactions are likely to be differentiated by their location of origin. These distinctions are important because these two entry modes may also exercise different consequences on the host country welfare.

Appendix A: Data description and sources

Number of G.I., M&A and affiliates (Source: BEA-Survey of Current Business, CEP). Our data on the number of majority-owned foreign affiliates (MOFA's)[26] are available for the four countries. Data on the number of G.I. and cross-border M&A are only known for Canada, Brazil and Mexico. We are very grateful to Raymond Mataloni for having given them to us. Data for Argentina has been provided by the CEP[27]

GDP (Source: CHELEM CD-Rom, Cepii): GDP is in million US dollar 1995.

Labour costs (Source: ILO yearbook of labour statistics): they correspond to men and women wages evaluated in US millions per wage earner for one hour (except for Brazil[28]) in economic activity.

Tariff barriers (Source: TRAINS CD-Rom, Cnuced): it consists of bilateral tariff rates for developing and industrial countries.

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[26] MOFA's are foreign affiliates in which the combined ownership of all U.S. parents exceeds 50 percent.

[27] We thank the director of the CEP (Argentina Ministery of Economy), Ricardo Rozemberg, for his help.

Appendix B: Descriptive statistics

Variable	Mean	Standard deviation	Minimum	Maximum
FDI	16	13.46	2	65
M&A	8.22	6.89	1	28
GI	7.77	8.1	1	37
GDP	434039.5	183364.4	188057	747050
AGG	826.6	701.62	148	2072
LCOST	23.58	102.26	0.01	496.98
TB	9.38	4.5	0.56	15.98

Authors'calculations

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[28] In Brazil case, wages are calculated per empployee per month.

Appendix C: Some macroeconomic determinants on FDI in the literature

References	Source countries	Host countries & period	Demand	Labour costs	Agglomeration	Integration	Tariff Barriers
Culem (1988)	6 major countries	6 major countries 1969-82	+	+	n.t.	n.t.	+
Veugelers (1991)	OECD countries	OECD countries 1980	+	n.s.	n.t.	n.t.	n.s.
Molle & Morsink (1992)	EC	EC 1975-83	n.s.	+	n.t.	+	n.t.
Sosvilla-Rivero & Bajo-Rubio (1994)	EC & US	Spain 1964-89	+	n.s.	-	n.t.	+
Barrel & Pain (1996)	US	7 major countries 1970s 1980s	+	-	+	n.t.	n.t.
Mody & Srinivasan (1998)	US	35 countries 1977-92	+	-	+	n.t.	n.t.
	Japan	35 countries 1981-90	n.s.	-	+	n.t.	n.t.
Clegg & Scott-Green (1998)	Japan	EC 1963-1990	+	n.t.	n.t.	+	n.t.
Clegg & Scott-Green (1999)	US	EC 1984-89	n.s.	-	n.t.	n.s	n.s.
	Japan	EC 1984-89	+	+	n.t.	+	n.s.
Clegg & Scott-Green (1999)	US	EC 1951-1990	-	n.t.	n.t.	n.s.	+
Barrel & Pain (1999)	Japan	EC & US 1980-91	n.t.	-	+	+	n.t.
Bevan & Estrin (2000)	EU(14), US, Korea, Japan, Switzerland	CEEC 1994-98	+	-	+	+/n.s.	n.t.

n.s.: not significant variable, n.t.: not tested variable

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