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**Centre d'Analyse Théorique et de  
Traitement des données économiques**

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**CATT WP No. 6  
March 2012**

**FDI TO JAPAN  
AND TRADE FLOWS:  
A COMPARISON OF BRICS,  
ASIAN TIGERS  
AND DEVELOPED COUNTRIES**

Jacques Jaussaud  
Serge Rey

# *FDI to Japan and Trade Flows: A Comparison of BRICs, Asian Tigers and Developed Countries*

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March 2012

## **Abstract**

Although still dominated by firms from developed countries, foreign direct investment (FDI) flows from developing nations have increased significantly. As academic literature reveals, FDI from developed versus developing countries follow different rationales. The strategies of these investors thereby differ, such that they also could have unique influences on the external trade of the host country. To test the link between FDI and trade, according to the level of development of the country of the investor, this study considers FDI to Japan from three groups of countries: the BRICs, the Asian Tigers (Korea, Singapore, Hong Kong and Taiwan) and developed countries (United States, Germany, United Kingdom, France, Netherlands and Switzerland). An econometric analysis of panel data, using a gravity model and an imperfect substitute goods model of trade, confirms that FDI affects the external trade of Japan, both exports and imports, depending on the type of country from which it originates.

**Key words:** FDI, Japan, Gravity model, Panel, Developing countries, MNCs

## 1. Introduction

The globalisation process has entered a new stage, as firms from developing countries begin to play increasing roles. Traditionally, foreign direct investments (FDI) came from developed countries and entered developed and developing countries. But in the past few decades, we find a new process, whereby firms from developing countries invest in both other developing countries, as well as developed ones. These strategies bring several questions to light:

1. What are the FDI objectives of firms from developing countries? When they invest in more developed countries, is their goal to enter new markets or produce more capital-intensive goods? If oriented toward other developing countries, are they searching for lower production costs for labour-intensive goods, as firms from developed economies have long done?
2. Does FDI influence trade flows between investor and host countries? For example, firms from some developed countries disaggregate their production processes to produce intermediate goods with lower labour costs. German companies have engaged in “outsourcing and offshoring, i.e., purchasing intermediate products from foreign suppliers and setting up their own manufacturing plants abroad,” which has enabled these firms to “make use of the low-wage regions that were created by the collapse of communism” (Sinn 2006, p. 1159). In other cases, host countries provide an assembly base for final products that are then exported, which would affect external trade.

More broadly, this research considers whether there are any differences between the strategies adopted by firms from developed and developing countries, as far as FDI is concerned. Narula and Wakelin (1998) argue that firm-specific advantages are less influential than country-specific ones in comparisons of developing and developed ones, such that external trade might be affected differently, depending on the level of development of the investor’s country.

Therefore, we analyse and compare the strategies of firms from the BRIC nations (Brazil, Russia, India and China), Asian countries (Korea, Singapore, Taiwan and Hong Kong) and traditional developed countries (United States, Germany, France, Netherlands, United Kingdom and Switzerland) when they target their FDI toward Japan. We estimate trade equations between Japan (i.e. host country) and its investors’ countries to determine the extent to which FDI determines exports and imports, as well as how this bilateral trade relation might reflect the development level of the investor’s country of origin. Because FDI into Japan rose strikingly around the middle of the 1990s, we analyse these relationships during the 1996–2010 period. For this era, we estimate Japanese export and import equations, using panel methods that reflect the three groups of investor countries.

The remainder of this paper is organised as follows: In Section 2 we provide an overview of FDI and trade in Japan. We then develop our methodology in Section 3 and present our econometric results and discussion in Section 4. Section 5 concludes.

## 2. An overview of FDI and trade for Japan

### 2.1. Japanese trade

In recent decades, Japanese foreign trade and FDI (outward and inward) have exhibited different phases in various economic contexts. For example, with regard to foreign trade, Japan emerged as a major exporter in the 1970s and accumulated huge surpluses at the beginning of the 1980s (see Figure 1). Trade frictions intensified between Japan and the United States and, to a lesser extent, between Japan and Europe. Various mechanisms, usually established through negotiation, attempted to manage trade between Japan and her partners during that period.

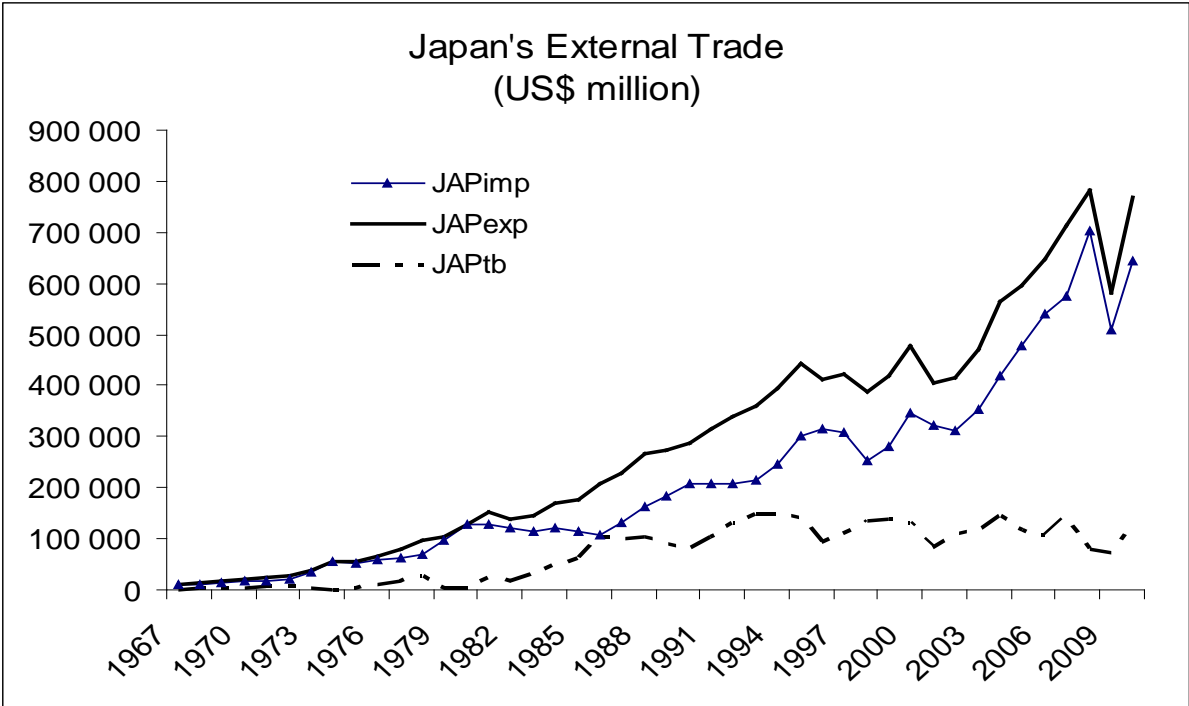


Figure 1: Japanese trade balance, 1986–2010

Source: Chelem.

In September 1985, the Plaza Agreement among the finance ministers of the Group of 5 industrial nations led to drastic realignments in exchange rates; within a year, the Japanese yen appreciated sharply against the dollar, which helped stabilise the Japanese trade surplus. However, surpluses remained at very high levels: approximately US\$100–150 billion per year throughout the 1980s and 1990s, and US\$50–100 billion per year during 2000–2010. However, in 2011 Japan suffered a series of catastrophes, including the Great East Japan Earthquake, the *tsunami* it provoked, and the Fukushima nuclear accident, leading to a trade deficit as exports decreased due to disorganised production and imports of fuel exploded.

Regardless of the macroeconomic context, Japanese enterprises have continuously succeeded in maintaining competitive advantages over their foreign competitors though. Japanese

exports mainly consist of sophisticated manufactured goods, which seemingly has helped. To address the sharp appreciation of the yen and high production costs in Japan, outward FDI sharply increased starting in the mid-1980s, mainly to the United States, Europe and newly industrialised Asian countries first, and then to China around the mid-1990s.

On the import side, the case of Japan is of great interest. Its trading partners have long emphasised structural barriers; the dismantling of these barriers was the core of the bilateral Japan–U.S. negotiation within the framework of the so-called Structural Impediment Initiative from 1985 to 1990 (Keidanren, 1996). Structural obstacles to trade may have prevented appreciation by the Japanese currency from translating into rapidly growing import flows. A huge liberalisation program in the Japanese market was implemented, mainly under this initiative, between 1985 and 1995. Obstacles to trade and FDI were largely removed, following detailed negotiations, in every industry, not just the most visible sectors of distribution, insurance and finance (Francis, 2003; Keidanren, 1996).

Another notable feature entails the consequences of *keiretsu* relationships for imports and FDI. In this context, *keiretsu* refers to horizontal networks of firms,<sup>1</sup> loosely connected by cross-shareholdings and supported by dedicated financial institutions (i.e., a “main” bank) and general trading companies, the well-known *Sôgô Shôsha* (Gerlach, 1992; Miyashita and Russel, 1994; Young, 1986). The *keiretsu* relationships may limit competition from imports, because *Sôgô Shôsha*, which until at least the beginning of the 1990s dominated import and distribution networks in Japan, were keen to avoid any competition against *keiretsu* members (Jaussaud, 1999). Another consequence of *keiretsu* is the limitation of FDI into Japan, because the horizontal *keiretsu* cross-shareholding relationships in the 1960s were developed specifically to prevent hostile takeovers by the then-stronger foreign competitors. As a consequence, hostile takeovers were almost impossible until the mid-1990s.

The question of how *keiretsu* relationships might bar trade and FDI into Japan was considered during the discussions about the Structural Impediment Initiative but not addressed precisely. The main reason is that *keiretsu* relationships take place mainly at the level of the organization, not legal or political levels, whereas the Structural Impediment Initiative was a project of Japanese and U.S. authorities. Yet collusive strategies among *keiretsu* members, particularly *Sôgô Shôsha* and other enterprises, have grown increasingly difficult to implement, because other barriers to trade have been lessened. Many companies have developed import activities, bypassing the *Sôgô Shôsha*, which no longer dominate imports. Although the lack of import competition throughout the 1980s may have offered some flexibility for importers to increase their margins when the yen appreciated, rather than increasing quantities imported (pass-through effect), they have not been able to do so to the same extent since then.

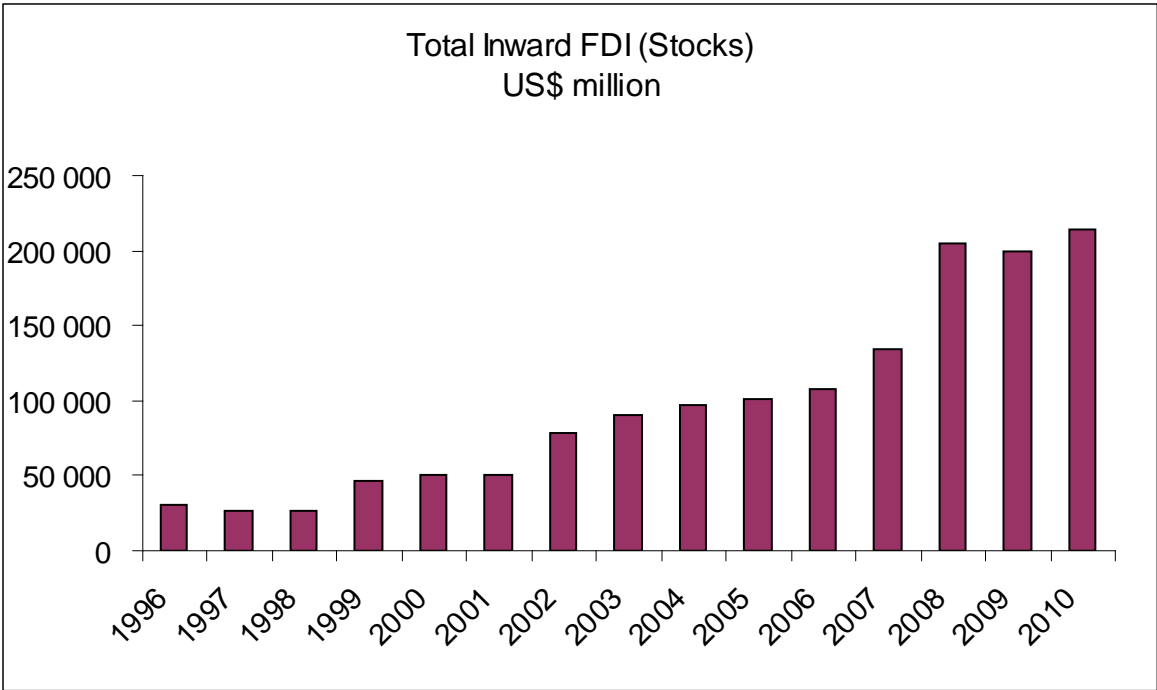
Following very progressive liberalisation of inward FDI in the late twentieth century (Francis, 2003), the main remaining restrictions to FDI in Japan were removed, industry by industry,

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<sup>1</sup> The word *keiretsu* also refers to vertical relations that link two or more layers of suppliers of a given company (e.g., Toyota), such that those suppliers are more or less affiliated with the company.

within the framework of the Structural Impediment Initiative. The 1990s thus saw that arrival of the “lost decade”—a period of tremendous difficulties of Japanese firms following the bursting of the financial and real estate bubbles. Facing lower overall sales growth, sometimes with sharp declines (e.g., automobile industry) and very high production costs in Japan, many Japanese firms considered the option of being taken over by a foreign entity. Nissan was a particularly significant and visible case in 1999.

Thus various factors helped facilitate FDI into Japan, including deregulation, the collapse of financial and real estate prices and reduced reluctance among Japanese firms to come under the control of a foreign entity. As we show in Figure 2, FDI in Japan, which had been very low at the beginning of the 1990s, increased sharply around the middle of the decade, which marks the start of our focal study period. We recognise though that inward FDI in Japan remains very low in comparison with the United States (Ito and Fukao, 2005) and major European countries.



**Figure 2: Inward FDI to Japan**

Source: JETRO.

**2.2. FDI toward Japan from BRICs, Asian Tigers and developed countries**

The FDI strategies of firms from the BRICs, the so-called Asian Tigers and traditional developed countries likely differ significantly. In the 1990s, firms from developed countries clearly tried to benefit from the more favourable investment context in Japan, so that they could strengthen their market shares and gain a stronger foothold against major Japanese competitors. In some cases, such as when they invested using mergers and acquisitions

(M&A), they sought control over Japanese firms with strong technological or market capabilities, as exemplified by the Renault–Nissan case.

As Ito and Fukao (2005) demonstrate, inward FDI is determined by Japan's comparative advantage or disadvantage in each industry: very low in textiles and apparel but concentrated in the motor vehicles and electrical machinery industries, for example. They also consider required proximity to consumers as a determinant, which matters particularly for motor vehicles, chemicals, drugs and medicines, and electrical machinery. Consistently, Krugman (1991) argues that industry location is determined by market size, transport costs (which largely reflect geographic distance) and fixed investment costs.

The strategic objectives of foreign investors may include strengthening their market shares in Japan or gaining access to crucial resources, such that they benefit from the competitive advantages available in that country. In either case, Dunning's (1981) well-known ownership, localisation, internalisation (OLI) paradigm applies: Foreign investors try to value the ex ante ownership advantages they have by exploiting localisation advantages in Japan (e.g. competitive advantages), because in general there may be internalisation advantages. If their main objective is to strengthen market shares in Japan, imports into Japan might increase, even if some of the products sold get produced there. If production in Japan substitutes for products from the investor's country, imports instead may decrease. For exports, if the main FDI objective is to benefit from the competitive capabilities available in Japan, exports may increase if Japan serves as the production base or decrease if it offers a source of knowledge and capabilities to be exploited elsewhere (whether the investor's home country or another nation). Thus, we consider four possibilities and investigate empirically the relationships between FDI and trade for the case of Japan.

Furthermore, we note that the FDI strategies of firms from developing countries have been relatively less studied and documented. To the best of our knowledge, most extant contributions address only investments in other developing countries (Hiratsuka, 2006; Khanna and Palepu, 2006; Lecraw, 1977; Wells, 1981, 1983). Using localised technological change theory, Lall (1983) explains that firms from developing countries can nurture specific technological advantages that ultimately help them invest in developed countries. Luo and Tung (2007) suggest a potentially rapid process of internationalisation by firms from developing countries, such that within just a few years, they can expand their geographic coverage and gain strong footholds in certain market segments. However, Narula and Wakelin (1998) argue that developing countries' competitive advantages, such as may be derived from cheap labour or abundant natural resources, often matters more than firm-specific ownership advantages, which is not generally the case for firms from developed countries, which usually have had more time to develop unique firm characteristics.

Balcet and Bruschi (2010) study how emerging Indian multinational corporations (MNCs) invest in both developing and developed countries to leverage low labour costs, particularly for skilled labour, and profit from institutional arrangements, such as being organised in conglomerates (due to past legal constraints), often under the aegis of a single family, that encourage knowledge transfers across firms. These emerging Indian MNCs then develop



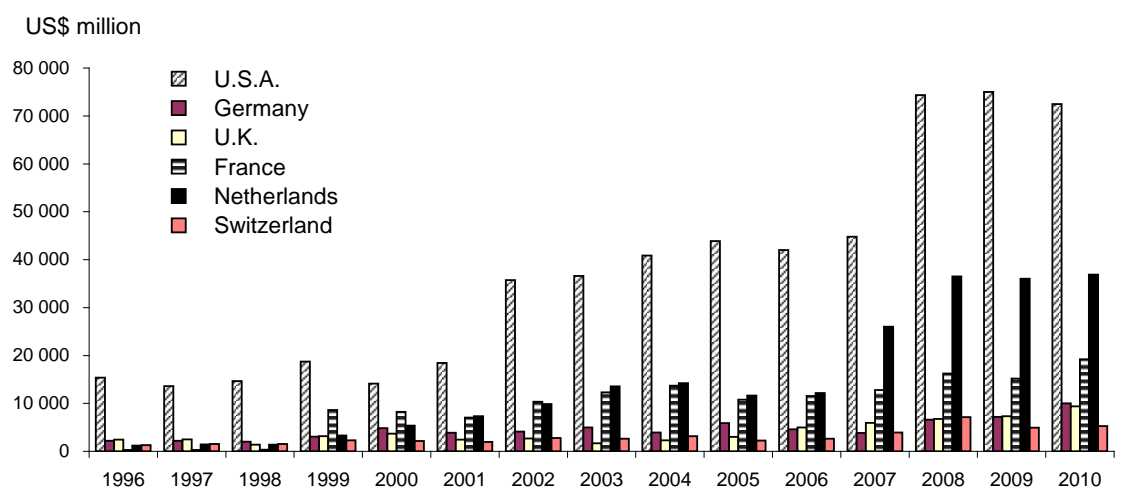
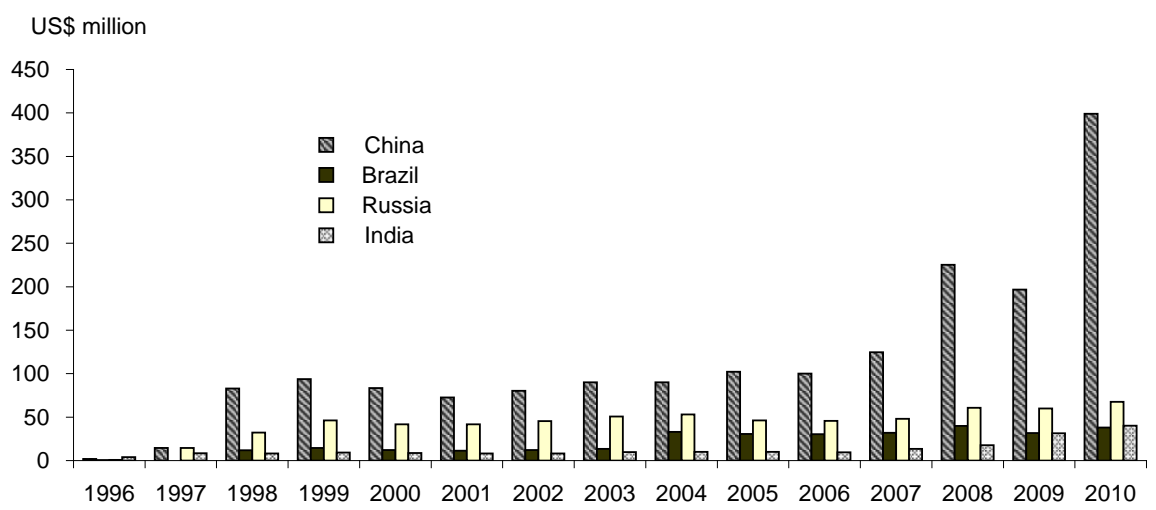
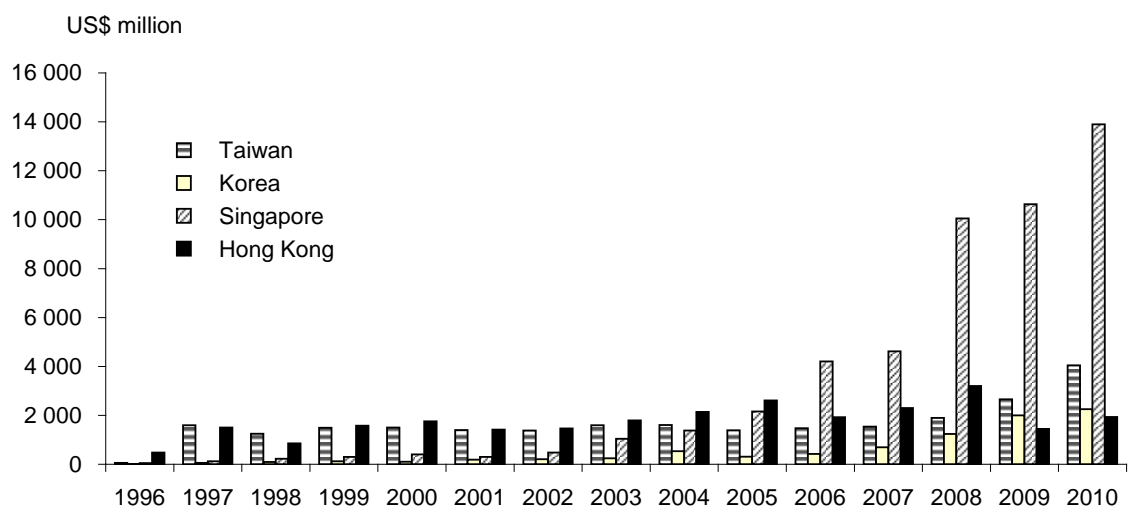
specific capabilities that reflect knowledge learned from their joint ventures and alliances with foreign MNCs; they gain value from such capabilities in both developing and developed markets. This analysis is consistent with Matthews's (2002, 2006) "linkage, leverage, learning" framework, which can characterise MNCs from some developing countries.

Drifte and Jaussaud (2010) instead investigate the development of Chinese firms in Japan and thereby highlight the great diversity of industries in which Chinese firms invest. They identify the main objectives of Chinese firms investing in Japan, ranked as follows: (1) acquisition of technologies, (2) market access, and (3) strengthening positions as an outsourcing partner for the Japanese company. Chinese companies are quite often cash rich and eager to buy distressed Japanese companies at bargain prices.

Thus, when considering Japan and its trading partners, the partner's origin in a developed or a developing country significantly affects comparative advantages and disadvantages. Accordingly, it should particularly affect industries in which foreign firms from both developed and developing countries invest in Japan. Furthermore, MNCs from developed and developing countries may aim to achieve different kinds of capabilities in Japan or profit from different kinds of local resources and advantages. Such goals may affect trade between Japan and the investing countries differently, as we investigate empirically.

The three groups of countries we consider represent traditionally developed ones, recently developed countries and developing countries. Our analysis of firms from these three groups may help shed light on the potential differences in firm strategies, as determined by their development background and geographical positions. Figure 3 depicts the increasing amounts of FDI that these three groups have devoted to Japan from 1996 to 2010. We measure the stock of FDI, which equals accumulated annual flows of FDI, plus reinvested earnings and investments financed locally (Patterson et al., 2004). The trends in the three panels of Figure 3 are parallel, but unsurprisingly, the amounts are greater for developed countries than for the recently developed Asian Tigers, which in turn are greater than for the BRIC nations—in line with the shares of these different groups of countries in total global outward FDI.

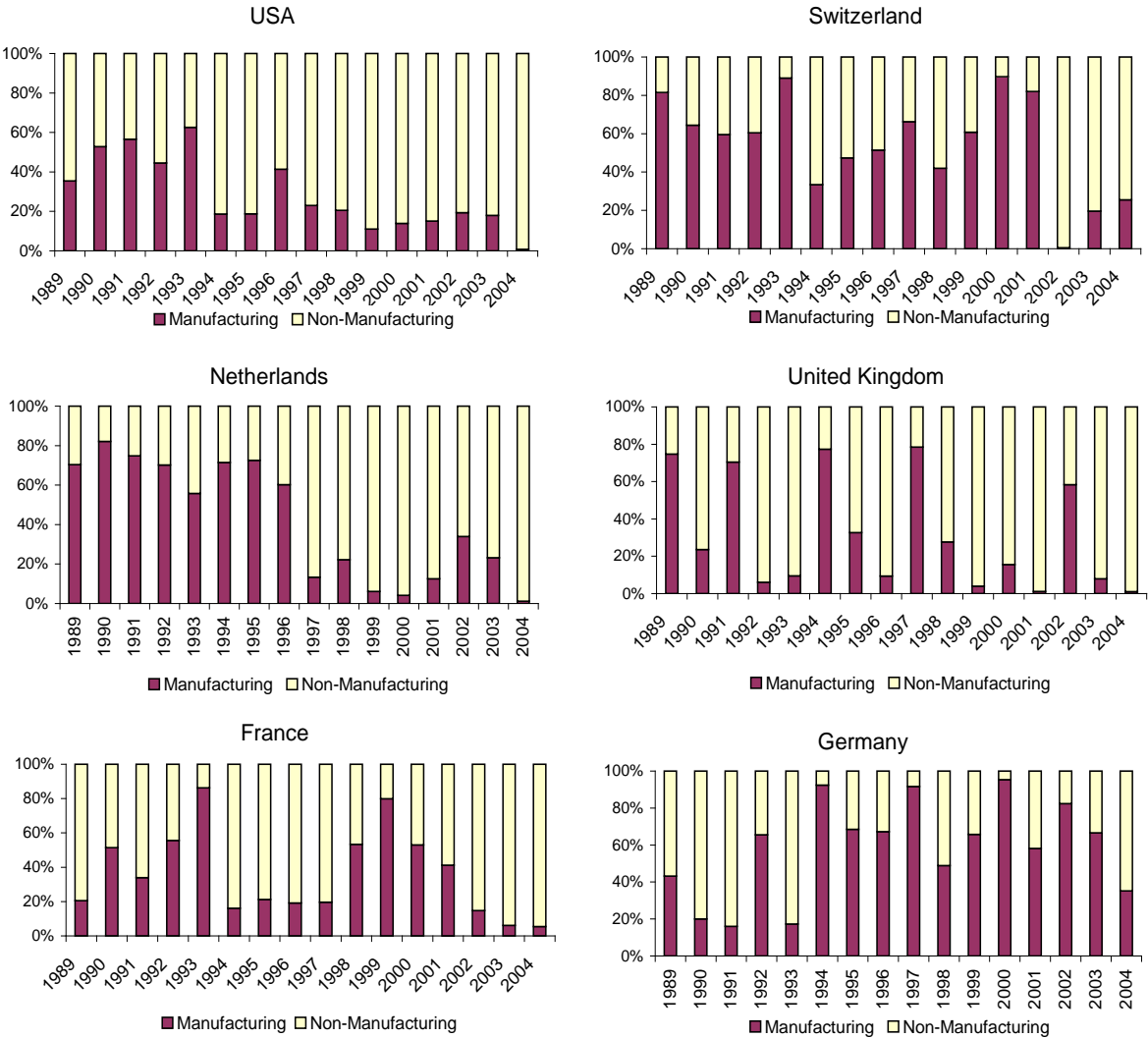
We also find similar patterns across the different countries that constitute each of the three groups. Among developed countries, the United States has invested far more than Germany, the United Kingdom, or France. Among the recently developed countries of Asia, Singapore has invested more, though in many cases, this country serves as an intermediate for investments by MNCs from other nations. Among the BRICs, China is the main investor in Japan, again in line with its overall share of global outward FDI.



**Figure 3: Japan's inward FDI stocks (US\$ million)**

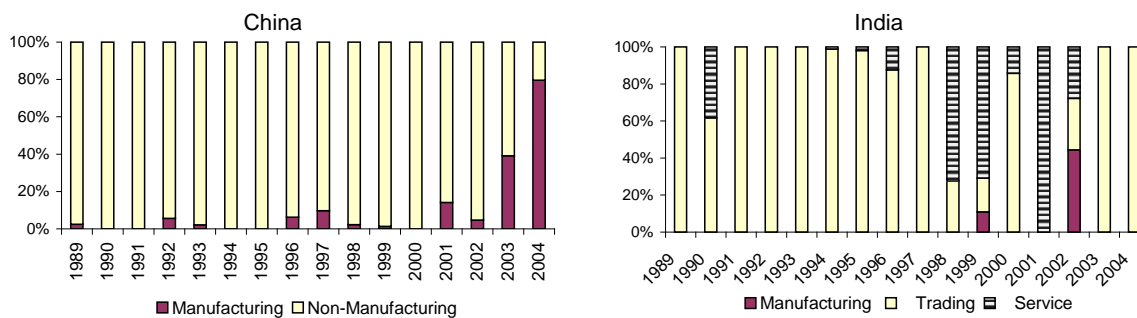
Source: JETRO.

With Figures 4–6, we depict the flows of FDI into Japan for manufacturing versus nonmanufacturing sectors for each of the three groups of countries. The nonmanufacturing sector includes telecommunications, construction, wholesale, retail trade and so on. The significance of manufacturing sectors is higher globally for developed countries, which should be taken into consideration when investigating the effects of FDI on trade. In addition, the share of manufacturing sectors differs greatly from country to country within each group, possibly as a consequence of each country’s economic profile. It also varies for each given country from year to year. The growing share of Chinese FDI in the manufacturing sector is notable.



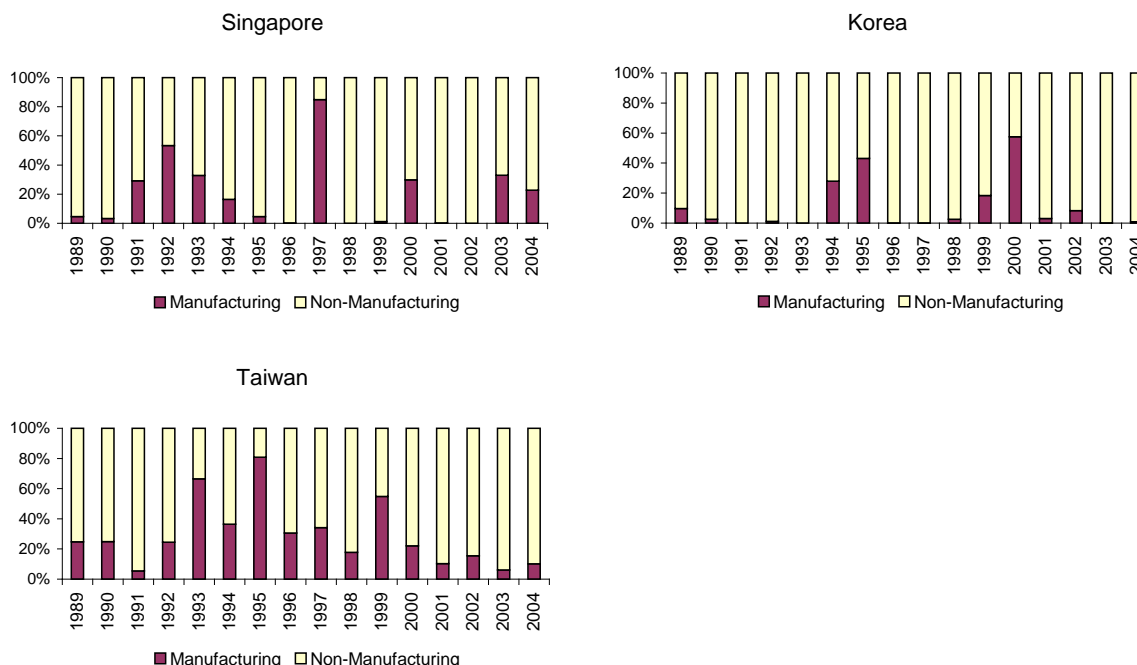
**Figure 4: Japan’s inward FDI by sectors: Developed countries**

Source: JETRO.



**Figure 5: Japan's inward FDI by sectors: China, India**

Source: JETRO (data were not available for Brazil or Russia).



**Figure 6: Japan's inward FDI by sectors: Asian Tigers.**

Source: JETRO (data were not available for Hong Kong).

### 3. Methodology

To estimate the effects of Japan's inward FDI on Japanese trade, we address each group of countries separately. For each group, we retain panel models for Japanese exports and imports. Because our research aim is to study the impact of FDI on Japanese bilateral trade, we estimate two models to confirm that the results are not affected by model choice. Specifically, we analyse bilateral trade using a gravity model, then investigate export and import functions on the basis of the imperfect substitute goods model.

### 3.1. Gravity model

In its basic form, the gravity model assumes that bilateral trade between countries  $i$  and  $j$  depends on their economic sizes, as well as the bilateral geographical distance between them. The conventional measure of economic size uses gross domestic product (GDP, whether nominal, real, or per capita). We use several different measures and also recognise that bilateral trade may be affected by Japan's inward FDI. Therefore, we assume that inward FDIs influence the supply potential of Japan's economy, even though they do not depend on the GDP. As Figures 1–4 show, inward FDI began to increase in the middle of the 1990s and rose strongly during the 2000s, a period when Japanese growth rates were very weak. As Hayashi and Prescott (2002, p. 206) calculate, during 1991–2001, “the average annual growth rate of per capita GDP was 0.5%.”

We adopted a modified version of Anderson and Van Wincoop's (2003) model,<sup>2</sup>

$$Z_{ij} = (T_{ij}/Y_i Y_j) = Z(DIS_{ij}, FDI_{INW}), \quad (1)$$

where  $\frac{\partial Z}{\partial DIS} < 0$ , and  $\frac{\partial Z}{\partial FDI_{INW}} > 0$  or  $< 0$ . Furthermore,  $T_{ij}$  represents the value of trade flows (imports or exports) between country  $i$  (here, Japan) and its  $j$  partners, and  $Y_{i(j)}$  is the nominal GDP of country  $i(j)$ . To measure trade resistance, we use a bilateral distance term ( $DIS_{ij}$ ), and we anticipate that trade depends on Japan's inward FDIs ( $FDI_{INW}$ ).

The stochastic form of the gravity equation is:

$$\ln Z_{ijt} = \ln \left( \frac{T_{ijt}}{Y_{it} Y_{jt}} \right) = a \ln (DIS_{ij}) + b \ln (FDI_{INWijt}) + c + \mu_t + \nu_{ij} + \varepsilon_{ijt}, \quad (2)$$

with  $i, j = 1, \dots, m, i \neq j$ ,  $a < 0, b > 0$  or  $< 0$

where  $\varepsilon_{ijt}$  is an *i.i.d.* log-normal disturbance term;  $c$  is the intercept;  $\mu_t$  is a year  $t$ -specific effect that is common to all pairs of countries and thus captures common shocks;  $\nu_{ij}$  is specific for each pair of countries but common for all years; and  $\ln$  indicates the neperian logarithm.

### 3.2. Imperfect substitute goods model of trade

To analyse the impact of Japan's inward FDI on Japanese imports and exports, we used an imperfect substitute goods model of trade (Jaussaud and Rey, 2012; Rey, 2006).

#### 3.2.1. Export model

Domestic exports and goods produced abroad offer imperfect substitutes. We assume that bilateral exports are determined by supply and demand factors, and we focus on real exports, that is, nominal exports expressed in domestic currency, deflated by export prices. On the demand side, real exports depend on a measure of real foreign economic activity (generally,

<sup>2</sup> For more detail, see Anderson and van Wincoop's (2003, p. 179) equation 20. See also Baier and Bergstrand (2010).

real gross domestic product, or  $GDPR^*$ ) and a measure of the relative price. The relative price or real exchange rate between Japan and a foreign partner is defined as  $R_{ij} = \frac{P_i^x}{P_j^* / N_{ij}}$ , where  $P_i^x$  represents the Japanese export price (or wholesale price, according to availability),  $P_j^*$  is the tradable goods price of partners, and  $N_{ij}$  refers to the nominal exchange rate. An increase in  $N$  ( $R$ ) indicates a nominal (real) appreciation of the yen. An increase in the real GDP of an importing country might result in a greater volume of exports, whereas an increase in relative domestic prices (i.e., real appreciation of the yen) should reduce demand for exports. On the supply side, we retain the export price relative to the domestic price as a determinant.

In addition, Japan's real inward  $FDI$  (denoted  $FDIR$ ) refers to both demand and supply sides, because a foreign investor may be willing to buy products or components that have been manufactured in Japan by an invested-in unit (demand side), which would increase the production capacity of this unit and better adapt it for export (supply side). The model for Japanese exports to developed countries, Asian tigers and BRICs then can be written as:

$$Xr = Xr(GDPR^*, R, FDIR), \quad (3)$$

where  $\partial Xr / \partial GDPR^* > 0$ ,  $\partial Xr / \partial R < 0$ ,  $\partial Xr / \partial FDIR > 0$  or  $< 0$ ;  $Xr$  is the volume of Japanese exports;  $GDPR^*$  is the real income of partners;  $R$  is the real exchange rate; and  $FDIR$  is Japan's real inward FDI.

In turn, the econometric model is:

$$\ln(Xr_{ijt}) = \alpha \cdot \ln(GDPR_{jt}^*) + \beta \cdot \ln(R_{ijt}) + \gamma \cdot \ln(FDIR) + c + \mu_t + \nu_{ij} + \varepsilon_{ijt}, \quad (4)$$

where  $\alpha > 0$ ,  $\beta < 0$ ,  $\gamma > 0$  or  $< 0$ ,  $c$  is the intercept, and  $\varepsilon$  offers the random disturbance term with usual classical properties.

### 3.2.2. Import model

We retain an imperfect substitute model for imports (Jaussaud and Rey, 2009), such that imported goods provide imperfect substitutes for those produced and consumed at home. For an  $i$  sector, we derive the long-run specification of import equation (Jaussaud and Rey, 2009):

$$Mr = Mr \left( GDPR\_Jap, \frac{P_M}{P_d}, FDIR \right), \quad (5)$$

where  $Mr$  is the volume of Japanese imports,  $GDPR\_Jap$  is Japanese real income,  $P_M$  is the price (in domestic currency, or yen) paid by the importers (export price of foreign exporters), and  $P_d$  is the Japanese domestic price. The use of a relative price ratio,  $P_M/P_d$ , indicates a real exchange rate instead of two separate price terms, so we must accept an assumption of homogeneity that implies identical signs for the dynamic response patterns of import volume to changes in both prices. Insofar as we are interested in long-run relationships, this assumption is acceptable (Wilson and Tackacs, 1979). The impact of FDI on imports thus may be positive or negative: positive when the investor's main objective is to strengthen

market share in Japan, even if some of the products sold are produced in that country, but negative if production in Japan substitutes for products from the investor's country.

The econometric model is as follows:

$$\text{Ln}(Mr_{ijt}) = \alpha \cdot \text{Ln}(GDPR\_Jap_{it}) + \beta \cdot \text{Ln}(P_{Mit} / P_{dit}) + \gamma \cdot \text{Ln}(FDIR_{ijt}) + c + \mu_t + v_{ij} + \varepsilon_{ijt}, \quad (6)$$

where again,  $\alpha > 0$ ,  $\beta < 0$ ,  $\gamma > 0$  or  $< 0$ ,  $c$  is the intercept, and  $\varepsilon$  represents the random disturbance term with its usual properties.

#### 4. Results

To estimate Equations (2), (4) and (6), we used panel methods (ordinary least squares and fixed effects). We first consider the influence of inward FDI<sup>3</sup> to Japan on Japanese exports to the investing country (bilateral export), and then its influence on imports from that country. Among developed countries for example, inward FDI to Japan has a positive effect on Japanese exports to the investing country (Table 1). This finding implies that the objectives of the investors are not just to gain market share in Japan but also to find access to the competitive advantages available in Japan—particularly, if not only, when the investment occurs through M&A operations. The investing firm uses its new (or increased) Japanese base to export from Japan to its other markets, including the market of its country of origin.

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<sup>3</sup> We also used nominal and real inward FDI (FDI<sub>inw</sub> and FDIR). The estimates for the ratio of FDI to Japanese GDP are not presented, because the results were identical to those we obtained with real FDI.

Table 1: Japanese exports

(A) Gravity model, dependent variable =  $\text{Log}(X_{ij} / Y_i \cdot Y_j)$

(B) Export Model, dependent variable =  $\text{Log}Xr$

Variables (Log)	Developed countries			Asian countries			BRIC		
	A1	A2	B	A1	A2	B	A1	A2	B
	OLS	OLS <sup>a</sup>	C-S FE	OLS <sup>a</sup>	OLS <sup>a</sup>	C-S FE	OLS <sup>a</sup>	OLS <sup>a</sup>	C-S FE
FDInw	0.088* (0.10)			-0.063** (0.00)			-0.138** (0.00)		
FDIR		0.090** (0.00)	0.043** (0.00)		-0.064** (0.00)	-0.075** (0.02)		-0.140* (0.00)	-0.0001 (0.98)
GDPR*			0.876** (0.00)			1.429** (0.00)			0.667** (0.00)
R			-0.358** (0.00)			-0.524** (0.01)			-0.160** (0.00)
DIST	-2.271** (0.00)	-2.276** (0.00)		-2.201** (0.00)	-2.199** (0.00)		-2.261** (0.00)	-2.258** (0.00)	
Intercept			-1.627 (0.62)			-4.697** (0.03)			-7.331** (0.01)
R <sup>2</sup>	0.834	0.828	0.997	0.777	0.773	0.921	0.943	0.942	0.951
Obs.	90	90	90	60	60	60	60	60	60

<sup>a</sup> Cross-section of a seemingly unrelated regression; EViews software estimates a feasible generalised least squares specification that corrects for both cross-sectional heteroskedasticity and contemporaneous correlation.

Notes: Estimates of the gravity model with population variables do not provide convincing results. Therefore, we do not include them in this contribution. OLS = ordinary least squares; C-S FE = cross-section fixed effect.

P-value in parenthesis. \*Significant at the 10% level. \*\*Significant at the 5% level.



Table 2: Japanese imports

(A) Gravity model, dependent variable = $\text{Log}(M_{ij} / Y_i Y_j)$									
(B) Import Model, dependent variable = $\text{LogMr}$									
Variables (Log)	Developed countries			Asian countries			BRIC		
	A1	A2	B	A1	A2	B	A1	A2	B
	OLS <sup>a</sup>	OLS <sup>a</sup>	OLS <sup>a</sup>	OLS <sup>a</sup>	OLS <sup>a</sup>	OLS	Period FE	Period FE	OLS
<i>FDIinw</i>	-0.062** (0.00)			0.252** (0.00)			0.168** (0.01)		
<i>FDIR</i>		-0.140** (0.00)	-0.211** (0.00)		-0.248** (0.00)	-0.168** (0.00)		0.091* (0.06)	0.229** (0.00)
<i>GDPR_Jap</i>			1.143** (0.00)			0.625** (0.03)			0.702** (0.00)
<i>PRM</i>			-1.554** (0.00)			-0.155 (0.86)			0.531 (0.37)
<i>DIST</i>	-2.185** (0.00)	-2.153** (0.00)		-2.231** (0.00)	-2.231** (0.00)		-0.904** (0.00)	-0.948** (0.00)	
<i>Intercept</i>							-12.742** (0.00)	-12.122** (0.00)	
<i>R</i> <sup>2</sup>	0.968	0.879	0.408	0.862	0.856	0.102	0.792	0.753	0.183
<i>Obs.</i>	90	90	90	60	60	60	60	60	60

<sup>a</sup> Cross-section seemingly unrelated regression: EViews software estimates a feasible generalised least squares specification that corrects for both cross-sectional heteroskedasticity and contemporaneous correlation.

Notes: Estimates of the gravity model with population variables do not provide convincing results. Therefore, we do not include them in this contribution. OLS = ordinary least squares; Period FE = year fixed effect.

P-value in parenthesis. \*Significant at the 10% level. \*\*Significant at the 5% level.

For both the Asian Tigers and BRICs though, inward FDI has negative effects on exports from Japan to the investing countries. This finding might reflect the linkage, leverage, learning model (Matthews, 2002, 2006) we presented in Section 3. That is, firms from developing countries strengthen their capabilities through investments in developed countries, which helps them better compete, even at home. For example, large Korean players in the electronics industry have strengthened their capabilities through foreign investment, including in Japan.

Strategies using FDI also may provide a tactic for siding against Japanese competitors in their home market, which could limit those competitors' economies of scales and constrain their price policies abroad (Jaussaud, 1992). If Japanese firms have more difficulty exporting to the countries of investors, the market share of Japanese competitors in that developing country also would shrink.

For the other variables, we obtained expected signs for the coefficients and elasticities of  $GDPR^*$  and  $R$ . On the one hand, an increase in partners' incomes had a positive effect on Japanese exports, and a real appreciation of the yen exerted a negative impact. On the other hand, we note that the price elasticities (absolute values) of between -0.6 and -0.5 were weaker than the income elasticities, which ranged from 0.66 to 1.5.

Regarding the effect of inward FDI in Japan on imports from the investing country (Table 2), it was negative for developed countries and Asian Tigers but positive for the BRICs. Therefore, the investment strategies of the firms from these three groups of countries differed. In the former case, firms from the developed countries and Asian Tigers appear to be grasping market shares through production in Japan, which decreases imports into Japan from their country of origin. The firms from BRIC instead aim to gain market share by importing products from their countries of origin. These strategic differences might relate to the varying competitive advantages of the countries. For example, low labour costs are a much greater advantage for BRICs than for the Asian Tigers and developed countries; however, the latter firms likely have accumulated more technology than even MNCs from BRICs (though that imbalance may change in the coming decade). As Narula and Wakelin (1998) argue, for less developed countries, the competitive advantage of the nation matters more than firm-specific advantages.

In all cases, we noted a positive effect of Japanese demand ( $GDPR\_Jap$ ) on imports. Imports from developed countries appear more sensitive to Japanese GDP (1.1, versus 0.6 and 0.7). The effect of the relative price of imports is more ambiguous: For developed countries, we find a negative coefficient, as expected, and elasticity is relatively strong (-1.5). This variable has also a negative impact for imports from Asian Tigers, but the coefficient is not significant. For BRICs, the coefficient of the relative price is positive but again not significant. Table 3 provides a synthetic view of these main results.

Table 3: Impact of Japan's inward FDI on Japanese bilateral external trade

	Developed countries	Asian Tigers	BRICs
Exports	Positive	Negative	Negative
Imports	Negative	Negative	Positive

## 5. Conclusion

Although still dominated by firms from developed countries, FDI flows from developing ones have increased significantly in the past two decades. As academic literature highlights (Lall, 1983; Luo and Tung, 2007; Matthews, 2002, 2006; Narula and Wakelin, 1998), FDI from developed versus developing countries follow different rationales, because the firms in these groups of countries seek different advantages from their investments abroad. In turn, their strategies differ, so they should have unique influences on the external trade of the host country.

To test this claim in relation to the FDI and trade that arises depending on the level of development of the investor's country, we have studied FDI originating from three groups of countries: BRICs, Asian Tigers (Korea, Singapore, Hong Kong and Taiwan) and developed countries (United States, Germany, United Kingdom, France, Netherlands and Switzerland). We find that FDI affects Japan's external trade, in terms of both export and import, across the three groups of countries.

Specifically, FDI in Japan increases exports to the investing country if it comes from a developed nation, but it decreases exports when the investor represents one of the Asian Tigers or BRICs. Firms from developed countries that invest in Japan not only intend to grasp market share there but also want access to the competitive advantages available in Japan, including firm-specific advantages if they acquire a local enterprise. Then they export from their new, strengthened Japanese base back to their home country. Firms from other nations, such as the Asian Tigers and BRICs, follow a different path. Although they also intend to strengthen their capabilities by investing in Japan, they also want to profit from their initial competitive advantages, which are mostly country based, such as low labour costs or abundant natural resources. Investments in Japan help them compete better eventually, including at home, which decreases Japanese exports into their home markets, as exemplified by Korean electronics firms industry in the 1990s.

In addition, FDI to Japan has a negative influence on Japan's imports from investor countries in the developed and Asian Tiger groups, whereas the influence is positive for the BRICs. The opposing effects summarise the different strategies of the investors. Firms from developed countries and the Asian Tigers aim to gain market share in Japan by moving production to that country, which decreases Japanese imports from the investors' countries. For the BRICs though, the gain in Japanese market shares results from more imports, which again may arise because in less developed countries, firm advantages derive mainly from country-specific

advantages, rather than firm-specific ones (Narula and Wakelin, 1998), at least for the period we studied.

As would any research in this field, this contribution suffers from some limits. For example, we considered FDI and bilateral external trade globally, not at a more precise industry level. Collecting and analysing data at the industry level would shed more light on the relation between FDI and external trade, something that we hope to achieve in an upcoming contribution.

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### **Appendix: Data sources**

FDI: JETRO and Japan Statistical Yearbook (various numbers)

Japanese prices: Bank of Japan

External trade, exchange rate, distance and GDP: Chelem, CEPII and International Financial Statistics.