Exports and FDI entry decision: Evidence from Japanese foreign-affiliated firms*

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Abstract

Why does aggregate Foreign Direct Investments (FDI) fall with distance? To answer this question we examine behavior of Japanese Multinational Enterprises (MNEs). We are interested in FDI entry decision given export experience in foreign markets. We postulate that one of the firms' strategies is learning the foreign market potential by exporting first, followed by establishment of foreign affiliate if expected profitability is high enough. We suggest a theoretical model and test it empirically using firm-level data from two basic surveys of Japanese companies: Basic Survey of Japanese Business Structure and Activities and Basic Survey of Overseas Business Activities for a period of 1995-2013.

JEL Classification Number: F10, F14, F21

Key words: export dynamics, foreign direct investment, multinational enterprises

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Introduction

Aggregate Foreign Direct Investments (FDI) fall with distance, but at slower rate than exports. This empirical regularity has been summarized by Antras and Yeaple (2014) as a common fact for US Multinational Enterprises (MNEs). A similar regularity seems to be true for Japanese MNEs as reported in Matsuura and Sato (2014). Indeed, decaying FDI with distance can be gleaned from the figures 1 and 2 which show association between Japanese FDI flows and distance, and Japanese foreign affiliate sales and distance.
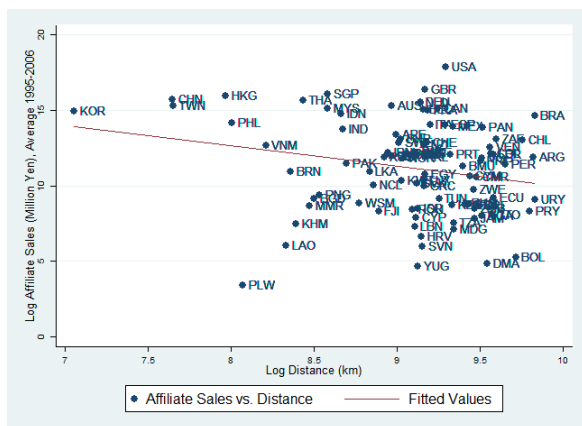

Figure 1: The relationship between Japanese Affiliate sales and Distance. Data sources: 97 countries; Affiliate sales − RIETI FDI Database, RIETI; Distance − CEPII
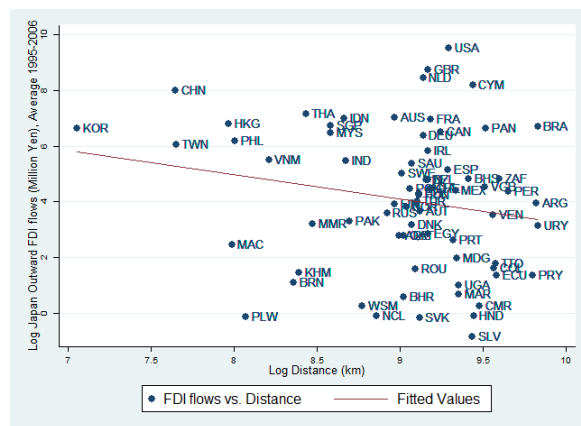
Figure 2: The relationship between FDI flows and Distance. Data sources: 97 countries; Affiliate sales − RIETI FDI Database, RIETI; Distance − CEPII

Why does aggregate FDI fall with distance? This paper attempts to answer this question. We regard distance as a proxy for trade costs. Thus, an increase in trade costs affects negatively FDI flows and foreign affiliate sales. On the other hand, FDI activity increases in exports as we can observe in Figures 3 and 4.

The fact that FDI fall with distance is not obvious from the theoretical point of view. There are several competing theoretical mechanisms that relate FDI to distance. First, within traditional proximity-concentration framework (Helpman, Melitz, Yeaple, 2004) FDI and trade are substitutes. The least productive firms do not engage in any foreign activity. Firms that are more productive participate in trade. Most productive firms do FDI. Thus, one would expect that aggregate FDI decreases in exports and increases in distance. Second, FDI and trade can work as compliments if the parent company exports intermediate inputs to foreign affiliate (Boler, Moznes and Ulltveit-Moe 2015). Thus, distance affects negatively both FDI and exports. Third, Conconi, Sapir and Zanardi (2016), which is the closest work to ours, suggest that an uncertainty in foreign market demand
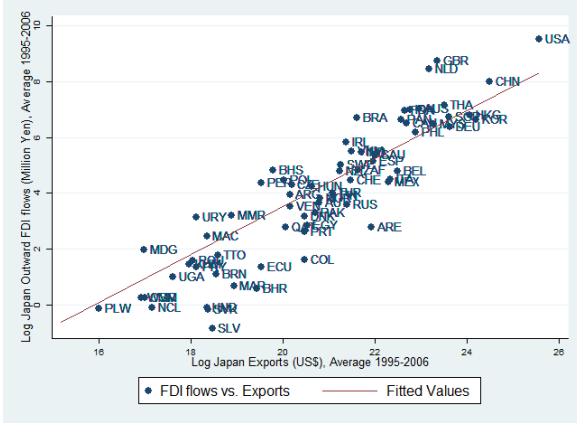
Figure 3: The relationship between FDI flows and Japans exports. Data sources: Data sources: 68 countries; FDI flows − OECD FDI Database, OECD; Exports − UN Comtrade
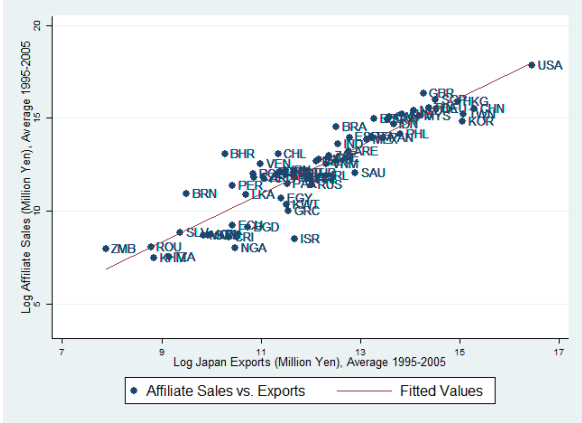

Figure 4: The relationship between Affiliate sales and Japans exports. Data sources: Data sources: 70 countries; Affiliate sales − RIETI FDI Database, RIETI; Exports − Historical Statistics of Japan, Statistics Bureau

and local regulations and legal requirements induce firms to engage in a gradual internalization process. First, firms reveal market uncertainty via exports, and then they engage in FDI if their expected profitability is high enough. Thus, if trade costs are high then FDI falls with distance because an experimentation with exports in the foreign market becomes costly. However, their theoretical model doesn't explain why FDI may fall with distance conditional on export activity. Finally, one may consider FDI activity without its relation to exports. Thus, FDI may fall because it is just too costly to engage in internationalization process due to Ownership, Localization and Internalization (OLI) factors (Dunning, 1992).

Our paper attempts to explain an FDI entry decision conditional on export experience in the foreign market both theoretically and empirically. In particular, our goal is to emphasize the role of learning by exporting mechanism and to assess empirically the role of this mechanism. We believe that it plays an important role in shaping the outward FDI activity distribution by Japanese MNEs. We postulate that one of the firms' strategies consists in learning the foreign market potential by exporting first, followed by establishment of foreign affiliate if expected profitability is high enough. We suggest a theoretical model and test it empirically using firm-level data from two basic surveys of Japanese companies: Basic Survey of Japanese Business Structure and Activities and Basic Survey of Overseas Business Activities for a period of 1995-2013.

We examine the behavior of manufacturing firms. Our preliminary results show that FDI entry with previous exports in the region arises in 72% of cases. We confirm that distance has a negative effect on the probability of FDI entry decision. Empirical results imply that a 1% increase in distance decreases the probability of FDI entry by about 5-11%.

Behavior of Japanese MNEs and exporters has been extensively studied in a number of previous

works (e.g. Kimura and Kiyota 2006, Kiyota, Matsuura, Urata and Wei 2008, Hayakawa and Matsuura 2011, Matsuura and Sato 2014). In comparison to these works our study attempts to examine the dynamics of Japanese firms' FDI and export activity for a period of 1995-2013.

Dynamics of FDI and exports has been examined recently in a number of studies for Norway, French, German and Belgium firms (e.g. Gumpert, Moxnes, Ramondo and Tintlnot 2016, Conconi, Sapir and Zanardi 2016). Our work addresses Japanese firms' behavior. In addition, we attempt to emphasize the learning by exporting mechanism, and to explain the trade costs effect on FDI entry decision.

This is a preliminary version of our draft. It is still highly preliminary. We welcome any comments that find inconsistencies and missing points in our research.

The remainder of the paper is organized as follows. Section 1 presents theoretical model (not in this version yet). Section 2 describes our data and variables. Our empirical analysis is given in section 3. Robustness checks (not in this version yet) are presented in section 4. Section 5 summarizes our findings.

1   Theoretical model

2   Data

2.1   Database description.

We use two micro-level confidential databases that are compiled annually by Research and Statistics Department of the Ministry of Economy, Trade and Industry (METI). First, the Kigyou Katsudou Kihon Chousa Houkokusyo (Basic Survey of Japanese Business Structure and Activities: basic survey hereinafter) provides information on various business and strategic activities of Japanese companies. This survey is compulsory for firms with over 50 employees and for firms with capital of more than 30 million yen.[1] We have access to the data that cover a period of 1994-2013 years from which we can identify export activities of Japanese firms in seven regions, namely North America, South America, Asia, Middle East, Europe, Oceania and Africa.

Second, the Kaigai Jigyou Katsudou Kihon Chousa Houkokusyo (Basic Survey of Overseas Business Activities: FDI survey hereinafter) provides information on foreign affiliates that are established by Japanese parent companies. A foreign affiliate is defined as a company abroad in which Japanese parent holds at least 10% share of the capital, or a subsidiary of foreign affiliate

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[1] However, the available data sample is reduced (to around XXX% Add later) since some of the questionnaires are not completed correctly. We assume that such cases occur randomly and thus do not create endogenous sample selection bias.

abroad in which it holds at least 50% share of the capital. We have access to the data that cover a period of 1995-2013 years from which we can identify Japanese MNEs' FDI activities. The FDI survey provides information of an affiliate's year of establishment and the country where it is located. We can identify regional distribution of foreign affiliates using the correspondence of countries and regions defined in the survey.[2]

In order to analyze the FDI and export dynamics of Japanese firms we merge the information from basic survey and from FDI survey using a converter prepared at the Research Institute of Economy, Trade and Industry (RIETI). This converter provides a matching of the unique identifiers from both surveys for each year. However there are several complications related to this converter. First, not all firms from FDI survey could be matched using the converter. We suspect that the nonmatched firms do not appear in the basic survey for random reasons. Second, for some of the FDI survey identifiers there may exist more than one unique identifier in the basic survey. In order to maximize the matching we create a panel of all identifiers and match all possible combinations of unique identifier-year that exist in FDI survey, Converter and Basic survey. After this procedure we are remained with 6949 parent companies with 40156 affiliates.

We focus only on the manufacturing parent companies. Our theoretical model suggest that the foreign market demand uncertainty is revealed by the learning by exporting mechanism. We are interested in firms that aim at serving the foreign market demand. Thus, it is important that parent company belongs to manufacturing industry. However, we do not restrict our attention only to manufacturing affiliates. We assume that for a manufacturing parent it is likely that non-manufacturing foreign affiliate is wholesale or some other type of distribution-oriented FDI. In such a case reveling foreign market demand uncertainty is equally important for production-oriented FDI and distribution-oriented FDI. In sum, we focus our attention on 4550 manufacturing parent companies and 24321 affiliates.[3]

Some of such affiliates may be vertical FDI, i.e., aimed at serving Japanese market. The foreign market demand uncertainty is of lower importance for such FDI. As argued in Conconi et al (2016) and reported in other recent literature (Ramondo et al., 2013) the relative number of vertical type FDI is lower compared to horizontal or platform-type FDI. We follow Conconi et al (2016) definition of vertical FDI i.e. "if in any of the years following FDI entry exports to the parent

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[2]

The response rate of surveyed companies in the FDI survey ranges 60-70% for various years. There are might be a case that a rule exists by which companies decide not to participate in the survey. If it is true then we may face endogeneity problem originating from the sample selection bias. We assume that this is not a case for our main empirical analysis. Although Japanese MNEs may be interconnected it is unlikely that they exhibit a common behavior in their relationship with authorities i.e. METI that conducts the study. Nevertheless, we are planning to conduct a robustness check by relaxing this assumption, and it remains on our working agenda.

[3] Some firms report an industry code that belongs to manufacturing in one year, and belongs to non-manufacturing in another year. We treat such firms as manufacturing in our study.

company exceed one third of the affiliate's sales, we classify the FDI entries as vertical". According to this definition we have 5738 foreign affiliates that are engaged in vertical FDI (24% of total number of foreign affiliates). As a robustness check in our analysis we exclude these vertical FDI activities and confirm that the results are qualitatively the same [TO DO].

2.2 Dynamics of FDI and Export activities

The definition of FDI entry ($FDIentry_{f,r,t}$) in our case is somewhat subtle. The main issue is that our FDI data are at the level of countries, while our export data are at the level of regions. We know each affiliates' year of establishment and country of destination. We are interested in the export experience prior to FDI entry. First, we assume that a new FDI entry occurs when a new affiliate is established in a country (host country) despite there may have been prior FDI entries in the region in another country (regional countries). We argue that such FDI entries do not reveal to a full extent the market uncertainty in the region. Thus a parent company could continue exporting or could start exporting to potential host country although it has already established an affiliate in another country within the region. The incentive for such behavior is market demand uncertainty in the potential host country. In fact, exports to the potential host country could occur from the newly established affiliates, which is the situation often described as platform-type FDI. For instance, Matsuura and Sato (2014) argue that at least in Asia 40% of FDI affiliates are of platform type nature.[4]

The distribution of FDI entries according to our definition by years and regions is given in the Table 1. This table shows that most of new FDI entries by Japanese MNEs occurred in Asia, followed by Europe and North America in the period of 1995-2013.[5]

We identify export entry ($Exportentry_{f,r,t}$) from basic survey for which we have data for the period of 1994-2013. The data from FDI survey allow us to identify year of FDI entry without period restriction since all affiliates report their year of establishment. In order make use of the most of our data and avoid left-censoring problem we identify a new export entry for an exporter if we observe positive exports for current year and zero exports in the previous two years. Several definitions have been used in the literature. For instance, Eaton et al. (2008) used 1 year of

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[4] It is true that we do not know the country of export destination. So we may face a case that an MNE acquire export experience in one country, but it establishes an affiliate in another country where it never exported. Although the constraints of our data do not allow us to identify such cases we believe that such situation is unlikely. Given that most MNEs are risk averse in nature they would prefer to reduce their risks by investing in the markets with less uncertainty which is where they already have some experience. Another possible case is when exports experience is acquired for an FDI host country. Such case will only bias upward the export entry with previous FDI. Although we report this statistics as well we are more interested in the export experience prior to FDI entry. Thus, it doesn't constraint our estimation results.

[5] Note that we have relatively fewer than expected new FDI entries in North America. One possible reason is that Japanese MNEs established more than one affiliate in the US.

Table 1: New FDI entries in a country distributed by region of destination and year

year	North America	South America	Asia	Middle East	Europe	Oceania	Africa
1995	67	18	323	0	60	10	6
1996	64	21	233	3	60	13	9
1997	77	20	194	5	51	10	11
1998	44	16	98	4	43	10	3
1999	25	18	81	3	47	5	2
2000	36	12	87	2	42	5	3
2001	34	10	116	3	47	7	5
2002	33	14	171	3	54	4	3
2003	27	7	192	2	52	5	5
2004	23	12	216	5	53	4	1
2005	29	20	220	2	53	4	3
2006	42	15	212	3	49	8	3
2007	28	21	193	5	47	4	4
2008	18	10	202	8	44	5	6
2009	21	11	134	2	38	10	4
2010	23	20	208	2	43	6	2
2011	21	20	316	4	48	5	4
2012	44	34	428	6	57	5	9
2013	31	43	344	10	35	9	7
Total	687	342	3968	72	923	129	90

no exports, Conconi et al (2016) used 5 years of no exports. We aim at using our joint sample data starting from year 1995. So our least stringent condition for new exports is no exports in two previous years.[6] The distribution of Export entries according to our definition by years and regions is given in the Table 2.[7]

In order to depict the dynamics of FDI and export activities for each firm we compute FDI entry with previous exports and Export entry with previous FDI statistics. The former statistics shows whether FDI entry in a country from the region occurred after a firm has exported for at least one year in this region. The latter shows if export entry occurred in a region in which the firm had established an affiliate in at least one country in the previous years.[8] The main results are presented in Table 3.[9]

As it can be seen from Table 3 FDI entry occurred after some export experience for at least

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[6] We replicate the definition used by Conconi et al. (2016) for benchmark purposes. The results do not change qualitatively.

[7] The question about exports to South America, Oceania and Africa has been removed from the survey since 2009. Thus, we are not able to identify export entry since then. Since we have a total of 189 FDI entries reported for these regions for a period of 2009-2013 we can only expect a downward bias in our estimations of FDI entry with previous exports.

[8] We do not consider cases for which FDI exit occurred.

[9] We report the results starting from year 1995. Since our basic survey data start from year 1994 we can identify whether FDI entry happened after export experience. Nevertheless, note, that for year 1995 there might be some cases that FDI entry happened after export experience prior to 1994. But we cannot identify this situation - this is left-censoring problem. For export entry as well if exports are positive in 1995 and zero in 1994 for a firm although we qualify it as an export entry it could be export continuation if there were exports by this firm in 1993. Thus we will have downward bias for FDI entry with previous exports, and upward bias for export entries in 1995.

Table 2: Export entries distributed by region of destination and year

year	North America	South America	Asia	Middle East	Europe	Oceania	Africa
1994	1972	675	3155	679	1697	890	521
1995	496	250	897	227	437	284	197
1996	266	153	479	135	260	134	85
1997	227	121	393	103	220	126	59
1998	270	141	384	110	227	118	79
1999	291	141	406	127	241	195	94
2000	313	147	528	119	267	158	83
2001	275	136	444	129	247	128	94
2002	259	110	441	128	226	148	95
2003	259	109	441	110	222	137	83
2004	310	163	557	124	326	155	84
2005	260	153	434	120	241	147	91
2006	220	123	406	129	229	134	84
2007	280	170	463	144	257	148	90
2008	272	135	470	135	254	145	74
2009	337	0	488	173	289	0	0
2010	290	0	495	165	278	0	0
2011	272	0	446	132	262	0	0
2012	244	0	425	127	212	0	0
2013	261	0	373	131	235	0	0
Total	7374	2727	12125	3247	6627	3047	1813

Table 3: The dynamics of FDI and export activity

	FDI entry	FDI entry with previous exports	Share of FDI entry with previous exports	Export entry	Export entry with previous FDI	Share of export entry with previous FDI
1995	301	235	0.78	1670	256	0.15
1996	276	210	0.76	1060	135	0.13
1997	247	203	0.82	904	130	0.14
1998	107	94	0.88	916	144	0.16
1999	112	88	0.79	974	164	0.17
2000	122	106	0.87	1063	165	0.16
2001	146	114	0.78	948	90	0.09
2002	158	112	0.71	972	134	0.14
2003	177	134	0.76	916	213	0.23
2004	182	131	0.72	1120	230	0.21
2005	173	118	0.68	966	160	0.17
2006	176	111	0.63	926	159	0.17
2007	162	110	0.68	985	197	0.20
2008	141	105	0.74	955	263	0.28
2009	109	74	0.68	933	312	0.33
2010	165	111	0.67	863	311	0.36
2011	240	153	0.64	817	239	0.29
2012	253	144	0.57	728	293	0.40
2013	167	96	0.57	733	206	0.28
Total	3414	2449	0.72	18449	3801	0.21

72% of cases suggesting that this is an important feature of Japanese MNEs behavior.[10] Thus, the mechanism of learning by exporting seems to play a significant role for Japanese outward FDI activities. Export entry with previous FDI is observed in only 21% of cases in our sample. We infer that these exports represent foreign affiliate sales locally or to a third market.[11]

2.3 Description of Variables

2.3.1 FDI entry, FDI stock and FDI flow

We examine FDI entry behavior of Japanese MNEs given their export experience in the region. Thus, our main variable of interest is the likelihood of FDI entry in a country/region upon exports in this region. According to our definition discussed in section 3.2 FDI entry represents an establishment of a new affiliate in a country where no affiliates were established previously. Thus, an FDI entry by a Japanese MNE can happen several times for a region within one year.

In addition, we conduct some preliminary analysis of the effect of distance on FDI flows and FDI stock. We use financial information about the volume of investment and parent company participation in the foreign affiliate capital. Thus, we infer a level of FDI investment for each parent company in every year. We aggregate this information for each firm by all its affiliates in a given country and year. However, there is a problem of many zero observations for FDI flows and FDI stock dependent variables. In addition, we obtain negative FDI flows for some companies if they decrease their investment. In order to deal with this problem we employ inverse hyperbolic sine transformation (Burbidge, Magee and Robb 1988) and log transform our dependent variable as follows:

$$g(y_t, \theta) = g_t = log(\theta y_t + (\theta^2 y_t^2 + 1)^{1/2})/\theta = sinh^{-1}(\theta y_t)/\theta \qquad (1)$$

Alternatively we transform FDI stock by adding one to zero observations before taking logarithm: log(FDI stock +1).

2.3.2 Export experience

We identify export experience as a number of years after the export entry. It accumulates if the firm continues to export. If it doesn't export for two years consecutively after export entry (in year t) we record export experience as one and two in the years after export entry (t+1 and t+2), and as zero after two consecutive years of no export activity (in year t+3). It is plausible to assume that upon export entry a firm adjusts its expectation about local market demand and local

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[10] This result is lower than the one reported by Conconi et al. (2016) A possible reason is that ????
[11] WE CAN CHECK IT! TO DO!

Table 4: FDI entry and export experience

	FDI entry	With zero export experience	With 1-2 years of export experience	With ≥3 years of export experience
1996	66	66	0	0
1997	247	44	29	174
1998	107	13	9	85
1999	112	24	11	77
2000	122	16	5	101
2001	146	32	9	105
2002	158	46	10	102
2003	177	43	12	122
2004	182	51	20	111
2005	173	55	11	107
2006	176	65	22	89
2007	162	52	7	103
2008	141	36	6	99
2009	109	35	13	61
2010	165	54	15	96
2011	240	87	24	129
2012	253	109	15	129
2013	167	71	12	84
Total	2903	899	230	1774

uncertainty, and this information is not outdated for at least two next consecutive years. Using the data on export experience we identify three separate cases: Experience0 (No export experience), Experience12 (Export experience for one or two years) and Experience3plus (Export experience for three years and more).[12] Table 4 presents the distribution of FDI entries given export experience at the year of foreign affiliate establishment.[13]

Note that the share of FDI entries with three and more years of experience is relatively high. A relatively small number of FDI entries with 1-2 years of experience suggests that it may not be enough to reveal foreign market demand uncertainty for a period of 1-2 years of exports. Japanese MNEs prefer to export for a longer period prior to FDI entry.

Since we are interested in the effect of export experience we focus our analysis on the period 1998-2013 for which we can avoid the left-censoring problem given our definition of export experience.[14]

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[12] Conconi et al (2016) use another range of years for export experience i.e. 1-4 years and more than five years. If we use this definition we need to reduce our sample size due to left-censoring issue. Thus we prefer our definition given that it widely used in the literature (e.g. Eaton et al. 2008). Nevertheless, we estimate the model using Conconi et al (2016) definition as well and confirm the results. TODO

[13] Note that we exclude FDI entries for which we cannot identify export experience due to left censoring problem.

[14] New export entry happens after no export activity for two year. Imagine that we have a firm with reported export entry in 1995 and no exports in 1994 and 1996. Then in 1997 it can have 2, 3 and more years of experience depending on its exports activity prior to 1994.

2.3.3 Distance

In addition to export experience effect on the probability of FDI entry decision we are interested in the effect of trade costs. In this setting we use distance to final destination as a proxy for trade costs. We employ the logarithmic transformation of distance from Japan to the FDI host country. The data come from CEPII (Centre d'Etudes Prospectives et d'Informations Internationales) database.

2.3.4 Other variables

We also use real GDP in constant 2005 US$ as a proxy for market size. The data come from the World Bank Word Development Indicators (WDI) database. It has been often argued that agglomeration effect plays an important role in Japanese MNEs outward FDI decisions. Thus, we compute the total level of FDI stock in a country and year, and use the level of FDI stock in the previous year as a proxy for agglomeration effect.

3 Empirical analysis

3.1 Effect of distance on FDI flows and FDI stock

We estimate the following model:

$$Y_{f,i,t} = \beta_0 + \beta_1 Log(Distance)_i + \beta_2 Log(RealGDP)_{i,t} + \beta_3 FDIAgglomeration_{i,t} + \theta_{f,t} + \gamma_{i,t} + \varepsilon_{f,i,t} \tag{2}$$

where $Y_{f,i,t}$ represents FDI flow or FDI stock. As discussed in the previous section we employ several transformations to deal with zero and negative observations. Our main interest is to identify sign effect of distance on the FDI activity.

We control also for country-time fixed effects to capture the effects that are not included in our explanatory variables. In addition, we include firm-year fixed effects to capture firm level heterogeneity. However, we face a problem of too many dummy variables if we include the fixed effects directly. To overcome this problem we use correlated random effects method i.e. we include mean of explanatory variables (by firm-year and country-year) as additional regressors. According to Wooldridge (2010) such an approach can serve as an alternative to fixed effects estimation. The results are asymptotically identical.

We perform simple OLS estimation as well as Tobit estimation to increase the plausibility of our results. We also separately consider the full sample (which includes all FDI observations) and the sample with only horizontal FDI. The results are presented in Tables 5 and 6.

Table 5: Econometric Results, OLS with Correlated Random Effects

VARIABLES	1	2	3	4	5
	Log(FDI stock+1)	Log transform (FDI stock)	Log transform (FDI flow)	Log(FDI stock+1)	Log transform (FDI stock)
	ALL	ALL	ALL	Horizontal	Horizontal
Log(Dist)	-1.35***	-1.51***	-0.30**	-1.30***	-1.46***
Log(Real GDP)	0.43**	0.48**	0.13***	0.47**	0.51**
FDI agglom	0	0	-0.00**	0	0
Constant	0.81	1.18	-1.21***	-2.49***	-2.54***
Observations	448,002	448,002	448,002	335,024	335,024
Number of no	9,695	9,695	9,695	7,424	7,424
Country-Time FE	YES	YES	YES	YES	YES
Firm-Year FE	YES	YES	YES	YES	YES

VARIABLES	6	7	8	9
	Log transform (FDI flow)	Log(FDI stock+1)	Log transform (FDI stock)	Log transform (FDI flow)
	Horizontal	Only positive	Only positive	Only positive
Log(Dist)	-0.36**	-1.26*	-1.39*	-1.45**
Log(Real GDP)	0.12**	-0.07	-0.07	0.15
FDI agglom	-0.00***	0.00***	0.00***	0
Constant	-1.39***	-1.47**	-0.92	-1.48*
Observations	335,024	177,266	177,266	57,382
Number of no	7,424	9,350	9,350	9,274
Country-Time FE	YES	YES	YES	YES
Firm-Year FE	YES	YES	YES	YES

Note: We report only significance levels. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Econometric Results, Tobit with Correlated Random Effects

	1	2	3	4
	Tobit	Tobit	Tobit	Tobit
VARIABLES	Log(FDI stock+1)	Log transform (FDI stock)	Log(FDI stock+1)	Log transform (FDI stock)
	ALL	ALL	Horizontal	Horizontal
Log(Dist)	-1.37***	-1.54***	-1.31***	-1.48***
Log(Real GDP)	0.41***	0.46***	0.45***	0.50***
FDI agglom	-0.00***	-0.00***	0	-0.00*
Constant	-7.52***	-9.17***	-9.24***	-10.86***
Observations	448,002	448,002	335,024	335,024
Number of no	9,695	9,695	7,424	7,424
Country-Time FE	YES	YES	YES	YES
Firm-Year FE	YES	YES	YES	YES

Note: We report only significance levels. *** p<0.01, ** p<0.05, * p<0.1

According to the results we observe a negative and consistent effect of distance (i.e., trade costs) on the Japanese MNEs outward FDI activity. Thus, we confirm that distance plays an important role in shaping FDI distribution among countries. Previous research also emphasized this effect. For instance, Matsuura and Sato (2014) found a similar effect of distance on FDI activity using the same survey data for a period 1995-2006.

3.2 Probability of FDI entry and Export experience

We estimate the proportional hazard model (Cox 1972). This is a semiparametric model that assumes a common baseline hazard for all subjects. Thus, the likelihood of FDI entry depends on our variables of interest, and it is not affected by the timing of FDI entry. We estimate two models.

$$h(t) = h_0(t)exp(\beta_1 experience12_{f,r,t} + \beta_2 experience3plus_{f,r,t} + \gamma_i) \tag{3}$$

This model aims at revealing regional export experience effect on the probability of FDI entry in the host country. Given our data constraints, the export experience is identical for all FDI entries in the region. Thus, we focus our attention on the first FDI entry in each region by each firm. Our dataset comprises all exporters and all Japanese MNEs that were active in the period 1998-2013. We estimate the model with and without regional fixed effects.

$$h(t) = h_0(t)exp(\beta_1 experience12_{f,r,t} + \beta_2 experience3plus_{f,r,t} + \alpha Xi + \gamma_i) \tag{4}$$

In this model we would like to focus our attention on the effect of distance on the probability of FDI entry given export experience in the previous years. Thus we examine the first FDI entry in a country. In this case heterogeneity comes from the distance to FDI destination. Our dataset comprises only Japanese MNEs that were active in the period of 1998-2013. We estimate the model with and without regional fixed effects. We include Log(Distance) directly for the model without fixed effects. We include an interaction term of Log(Distance) and Export experience for the model with fixed effects.The main results of our estimation are reported in Table 6.

The results suggest that Export experience has a positive effect on the likelihood of FDI entry. From the model (3) we can infer that export experience of three years and more increases the likelihood of FDI entry at least by 15% (exp(0.14)-1). The estimations in model (1) and (2) imply an even higher effect.

As expected distance has a negative effect on the probability of FDI entry. Model (3) implies that a 1% increase in distance will decrease the probability of FDI entry by around 5% (1-exp(-0.055)). Model (4) suggests that a positive effect export experience for more than three years is reduced by 11% (1-exp(-0.112)).

Thus, these estimations imply that export experience positively affects the probability of FDI entry due to learning by exporting mechanism. The uncertainty of foreign market demand plays an important role in Japanese MNEs outward FDI activity. Trade costs, however, decrease the probability of FDI entry. We infer that one reason is that it becomes costly to experiment in the foreign market by exporting activity. Thus, Japanese companies may exit the market before they

Table 7: Table 6: Proportional Hazard Model estimation.

	(1)	(2)	(3)	(4)
VARIABLES	STCOX	STCOX	STCOX	STCOX
Experience12	2.066***	1.456***	0.122**	-0.559
	(0.064)	(0.068)	(0.058)	(0.637)
Experience3+	2.524***	1.837***	0.140***	1.105***
	(0.053)	(0.061)	(0.040)	(0.375)
Log(Dist)			-0.055**	
			(0.025)	
Experience12xLog(Dist)				0.085
				(0.075)
Experience3plusxLog(Dist)				-0.112**
				(0.044)
Observations	813,653	813,653	122,643	122,643
Region fixed effects	No	Yes	No	Yes
Firm fixed effects	No	No	No	No
FDI type	All	All	All	All
FDI entries	2010	2010	3074	3074
Log likelihood	-20691	-19935	-28623	-28477

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

reveal that it is profitable to establish a foreign affiliate there.

4 Robustness Checks

5 Summary

In this paper we address the question of why FDI falls with distance conditional on export activity in the foreign country. We suggest that learning by exporting mechanism plays an important role in MNEs behaviour, and we attempt to detach it from other effects. MNEs reveal the uncertainty of the foreign market via exports, and update their expected profitability. However, distance increases trade costs and may reduce the time of experimentation with exports. This can lead to a decrease in FDI.

We test this hypotheses empirically using two confidential micro surveys compiled by Research and Statistics Department of the Ministry of Economy, Trade and Industry of Japan: Basic Survey of Japanese Business Structure and Activities and Basic Survey of Overseas Business Activities. We reveal the dynamics of FDI and Exports from these micro data for a period of 1995-2013, and show that FDI entry occurs after experimentation with exports in a considerable number of cases

(around 72%).

We conduct empirical analysis of the effect of distance on FDI flows and stocks of Japanese MNEs. We confirm its negative effect by employing OLS and Tobit with correlated random effects models. Finally we examine the probability of FDI entry subject to export experience and distance using semiparametric proportional hazard model. The results show that export experience increase the probability of FDI entry while distance affects negatively Japanese MNEs outward FDI activity.

Nevertheless, our study still lacks a number of important considerations. From the empirical point of view a number of robustness checks should be deployed. For instance, a parametic analysis (e.g., Weibul) of the probability of FDI entry needs to be performed. From the theoretical point of view we need to identify how the learning by exporting mechanism shapes trade costs effect on FDI entry decision. This remains on our future agenda.

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