Economic Impacts of Free Trade Agreements: the Case of ASEAN Countries and Japan

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Abstract

The relationship between free trade agreement (FTA) and the performance of foreign direct investment (FDI) in the ASEAN is analysed. Due to firm-level heterogeneity, the impact of FTAs performance may differ across firms with different scales. This study adopts the multi-level analytical methodology to test such an effect. The results of a multi-level regression with an emphasis on the size of firms include: (1) Firm size matters: firms with larger size are more likely to conduct FDI and the presence of FTA would make positive effect on their performance; (2) ownership concentration (the degree of one parent company's dominance) are associated with the control, and have a positive impact on a firm's performance; (3) Service firms are more likely to undertake FDI with higher profitability due to relative ease of international investment reallocation since associated "sunk costs" are deemed low in contrast with manufacturing firms requiring physical facilities as location-bound sunk costs.

Keywords

Foreign direct investment, firm performance, heterogeneity, free trade agreements, service

1. Introduction

This study aims to use theoretically-backed empirical method to test the profitability of Japanese foreign direct investment (FDI) in the ASEAN, and discuss the impact of trade and investment liberalization on firm's performances as well as the relationship of the parent company's size and control with a firm's profitability. The empirical study would also provide some policy implications.

Following Melitz's (2003) development of Krugman's trade model by introducing firm heterogeneous characteristics, and combining with Brainard (1997), Helpman, Melitz and Yeaple (2004) further incorporated firm heterogeneity into "proximity-concentration" framework in the analysis of multinational firm's motivation: Because the fixed cost incurred by FDI behavior may be much higher than export cost, the most productive firm within the industry could seek for investment instead of export, while,

firms with moderate productivity would tend to do export. Antras & Helpman (2004) obtains a similar conclusion.

2. A theoretical interpretation of FDI and FTA from the perspective of new institutional economics

This section makes a theoretical interpretation of FDI and FTA from the perspective of new institutional economics (a branch of economic theory considering non-neoclassical factors). In the 1950s, the countries of the Association of South East Asian Nations (ASEAN) adopted industrialization policies aimed at rapid economic development. Both import substitution and export-oriented industrialization policy measures were adopted by national governments in ASEAN countries. Starting in the late 1980s, these economies experienced a period of economic "take-off," with high growth rates of sometimes more than 10 percent per annum. This rapid economic growth was sustained, to a large degree, by international capital inflows, employment generation, and technology transfer, all of which were facilitated by the surge of FDI into these ASEAN economies by multinational firms (MNFs). Some ASEAN countries, including Singapore and Malaysia, for example, have been enjoying FDI-driven economic development over the past three decades, as have many of its neighbors.

Meanwhile, portfolio investment inflows and bank lending to Asian countries affected by the so-called Asian financial crisis of 1997 are two other important types of capital flows. It is notable that, with the exception of Indonesia, FDI inflows were positive during and after the crisis period, while portfolio investment and bank lending exhibited net outflows. The unexpected occurrence of the crisis in mid-1997, triggered by the sharp devaluation of Thai baht, caused a net outflow of portfolio investment from the Thai economy as well as from other ASEAN economies, including those of Indonesia and Malaysia. However, FDI flows largely stayed positive. MNFs, as foreign direct investors in ASEAN countries, have also been streamlining their production operations in response to the changing economic circumstances following the crisis and free trade negotiations involving the ASEAN region.

The difference in growth rates and sustainability of FDI relative to portfolio investment and bank lending raises an interesting question as to the factors behind the performance of FDI as distinct from other types of capital flows. A systematic

theoretical and applied investigation into the factors contributing to these differences is one clear motive for further research into FDI.

The main objective of FDI by MNFs is to capture benefits in cost terms, exemplified by the existence of a cheap labor force in ASEAN economies. However, foreign governments often seek other benefits from FDI, including technology transfer and skill building of the labor force. As Tejima (1998) points out, MNFs aim to construct the most efficient international production network and are motivated by profit, whereas host countries desire FDI for the "full set" of production facilities, which become a "full package" within their own territories. In other words, MNFs shift, in certain economic circumstances, only their labor-intensive (and therefore low-value-added) production processes to foreign economies, in spite of host governments' policies designed to attain economic development through the establishment of all-encompassing domestic industries.

It is the right of MNFs to decide whether to undertake FDI. Depending on the policy circumstances, once FDI has been undertaken, MNFs themselves decide the types of operations to shift to the foreign economy. For example, Japanese MNFs shifted much of their production facilities abroad, mainly to the neighboring East Asian economies (including ASEAN economies), after the appreciation of the Yen in the wake of the Plaza Accord in 1985. Unlike official development assistance, the decisions of MNFs regarding FDI behavior have been motivated primarily by their profit-seeking objectives, with profit obtained through cost reduction by FDI in ASEAN economies. The nature of FDI undertaken by MNFs and its effect on an Asian country's economic development in the face of globalization are important topics of theoretical and empirical research.

The assumption of perfect markets underlies the analytical foundations of the conventional neoclassical theory of firm behavior. Empirically, however, firms in developing countries are known to engage in production activities in imperfect markets. They engage in their value-adding activities with incomplete knowledge of what would constitute the optimal set of corporate decisions. In general, imperfect information arising from economic agents' bounded rationality—in terms of perception, calculation, and action—renders market functioning imperfect. In other words, price signals do not reflect the "true" opportunity costs of the raw materials, factors of production, and final

products/services involved. The market-entry mode of FDI, too, may be chosen as a response to market imperfection, which would make the causes and effects of FDI very different those suggested by the conventional theories of FDI.

Dunning's (1992) so-called "eclectic framework" is a useful taxonomy of FDI determinants, approached according to the source of comparative advantages conducive to the choice of FDI. More specifically, the ownership-specific advantage, locational advantage, and internalization advantage are considered pertinent to FDI decisions by firms. With due consideration to this eclectic framework, an attempt is made to identify sources of comparative advantage that account for MNFs' decisions to engage in FDI.

MNFs' motivations for undertaking FDI are also influenced by the FDI-related trade policies, most importantly free trade agreements (FTAs), since they are formulated precisely to facilitate FDI between FTA partner countries.

According to Dunning (1992), the extent to which a given firm possesses its firm-specific assets (O-advantages) vis-à-vis firms of other nationalities in a particular market functions as a determinant of FDI. These O-advantages largely take the form of the privileged possession of intangible assets and those assets that arise as a result of the common governance of cross-border value-adding activities (Casson, 1986; Casson 1987; Casson, 1990; Dunning, 1992).

Assuming that the above conditions are favorable, another component of FDI determination is the extent to which the firm perceives it to be in its best advantage to add value to its O-advantages, rather than to sell them (or the right to use them) to foreign firms. These advantages are called I-advantages because market mechanisms are internalized by organizational fiat systems. This advantage can be interpreted as Williamson's (1993) transaction cost argument, adapted to the specific context of FDI determinants. Then, assuming the above two conditions are favorable, the extent to which the global interests of the firm are served by creating or using its O-advantages in a foreign location functions as the third determinant of FDI. The distribution of these resources and capabilities (i.e., O-advantages) is assumed to be uneven and hence location-specific, that is, the "L-advantage" is critical in determining the geographies in which to utilize the O-advantage.[1] The impact of FTAs comes in here: when there is

[1]One criticism of the OLI paradigm is that it is eclectic in nature, with little original insight into the determinants of FDI because it derives from a variety of theoretical approaches: international trade

an FTA between the home and host countries, the presence of such an FTA directly translates into the host country's location advantage.

3. Empirical analysis on the impacts of FTAs on firm-level investment

A new institutional approach mentioned above is applied to the empirical analysis of Japanese firms' FDI in ASEAN countries. The critical point is that the parent firm exports an intermediate good or technology (known as "firm-specific asset") from country A (e.g., Japan) to country B (e.g., an ASEAN country), assembles or utilizes it for making final good in country B, while using domestic factor inputs (in country B), and sells it locally while also exporting it to country

This type of investment can be called "greenfield downstream investment". The firm establishes facilities from scratch for the downstream part of the whole production process. In this model, the firm has to bear the transport cost to and the tariff in country A, yet it can instead avoid tariffs in country B and reduce transport costs of the finished product. The additional assumption here is that the firm can transfer the firm-specific asset concerning downstream production process to some extent.

As for methodology, a multilevel modelling is applied. This modelling is useful for empirical data with a hierarchical structure, say, it can always construct the additional complexities in estimating regression with two or more levels. In such a case, units at a lower level could be nested within units at a higher level, for instance, in a study on employees' performance, observations of an individual worker can be regarded as level-1 data and firm characteristics as level-2 data, where, both of employees and firms are all typical level categories. Usually, the lowest level can be defined as a micro level and higher level as the macro level, and micro units are embedded in macro units as well as being influenced by the later ones.

Statistically speaking, in regression analysis of a nested dataset, assumptions held

theory, the theory of the firm, institutional theory and location theory. Despite being eclectic, it is comprehensive enough to incorporate the widely differing attributes of MNFs. It is therefore more useful than original, in a substantive sense. It is more useful as a taxonomic framework than it is applicable to particular circumstances of time and place determined by the MNFs involved. Another critique is submitted by Casson (1986, 1987, 1990), who points out that these OLI components are not mutually exclusive; as a matter of fact, O-advantages could be viewed as a special type of I-advantages. This critique supports the view that economic determinants of FDI can be divided into two sorts of advantages: those external to firms (L-advantages) and those internal to them (O- and/or I-advantages).

by traditional liner method might not be held. For an example, units within a same group or higher level (say, employees working in the same department) would share more similarities than units between groups, leading to problem of correlated residual errors, violates the core assumption that residuals are independently, identically distributed (the "i.i.d." assumption) held by former linear models. As for this scenario, multilevel design will take care of this statistical dependency by adjusting standard errors brought by residual correlation and provide control on clustering by putting on additional error terms to capture it. In contrast of traditional analysis, multilevel analysis' advantages are also embodied by avoiding the so-called ecological fallacy, in which the information of individual variables is aggregated into a higher level risking the ignorance of within-group variability.

There are random-intercept model and random-slope model, letting intercepts or slopes or both of which vary between individuals or clusters. Here is a typical expression of a random-intercept model:

$$Y_{ij} = \beta_{oj} + \beta_{1j} * X_{1ij} + \beta_{2j} * X_{2ij} + \varepsilon_{oj}$$

$$\beta_{0j} = \beta_{00} + \gamma_{0j}$$

In equations, ε_{oj} is the residual term of first level, and γ_{0j} denotes the residual part of level-2, they jointly explain the total variations.

A typical random-slope model without level-2 variables is shown as follow:

$$Y_{ij} = \beta_{oj} + \beta_{1j} * X_{1ij} + \beta_{2j} * X_{2ij} + \varepsilon_{oj}$$

$$\beta_{0j} = \beta_{00} + \gamma_{0j}$$

$$\beta_{1j} = \beta_{10} + \gamma_{1j}$$

$$\beta_{2j} = \beta_{20} + \gamma_{2j}$$

And we will get the mixed version of it, the equation we usually test with:

$$Y_{ij} = \beta_{oj} + \beta_{10} * X_{1ij} + \beta_{20} * X_{2ij} + \gamma_{0j} + \gamma_{1j} * X_{1ij} + \gamma_{2j} * X_{2ij} + \varepsilon_{oj}$$

Then, when considering the intra-level effects, the higher-level variables should be taken into consideration in the way of being included into the level-2 equations. As assuming Z to be the higher-level variable, then the model will have some interactive terms. In this case, if Z is a level-2 variable, a macro factor in the whole story, then, the model will become:

$$Y_{ij} = \beta_{oj} + \beta_{1j} * X_{1ij} + \beta_{2j} * X_{2ij} + \varepsilon_{oj}$$

$$\beta_{0j} = \beta_{00} + \beta_{3} * Z_j + \gamma_{0j}$$

$$\beta_{1j} = \beta_{10} + \beta_{4} * Z_j + \gamma_{1j}$$

$$\beta_{2j} = \beta_{20} + \beta_{5} * Z_j + \gamma_{2j}$$

In a mixed form, the model will be:

$$Y_{ij} = \beta_{oj} + \beta_{1j} * X_{1j} + \beta_{2j} * X_{2j} + \beta_{3} * Z_j + \beta_{4} * Z_j * X_{1j} + \beta_{5} * Z_j * X_{2j} + \gamma_{0j} + \gamma_{1j} * X_{1j} + \gamma_{2j} * X_{2ij} + \varepsilon_{oj}$$

Interactive terms here imply some intra-level effects.

In this study, a two-level model is built, and first, random intercept model is ready to test, level-1 is the firm level individual observations, and level-2 as the industry level:

Level-1 (firm):

$$\text{Profit}_{ij} = \boldsymbol{\beta}_{0j} + \boldsymbol{\beta}_{1j}\text{FTA}_{ij} + \boldsymbol{\beta}_{2j}\text{Service}_{ij} + \boldsymbol{\beta}_{3j}\text{ROA}_{ij} + \boldsymbol{\beta}_{4j}\text{lgGUOTotalAssets}_{ij} + \boldsymbol{\beta}_{5ij}\text{Concentration}_{ij} + \boldsymbol{\varepsilon}_{ij}.$$

Level-2 (industry):

$$\beta_{0j} = \gamma_{00} + \mu_{0j}$$

Secondly, we will test the random-slope model:

Level-1 (firm):

$$\text{Profit}_{ij} = \boldsymbol{\beta}_{0j} + \boldsymbol{\beta}_{1j}\text{FTA}_{ij} + \boldsymbol{\beta}_{2j}\text{Service}_{ij} + \boldsymbol{\beta}_{3j}\text{ROA}_{ij} + \boldsymbol{\beta}_{4j}\text{lgGUOTotalAssets}_{ij} + \boldsymbol{\beta}_{5ij}\text{Concentration}_{ij} + \boldsymbol{\varepsilon}_{ij}.$$

Level-2 (industry):

$$\beta_{0j} = \gamma_{00} + \mu_{0j}$$

$$\beta_{4j} = \gamma_{40} + \mu_{4j}$$

At last, the full model will play a part in this study:

Level-1 (firm):

$$\mathrm{ROE}_{ij}\ (\text{or}\ \mathrm{Profit}_{ij}) = \boldsymbol{\beta}_{0ij} + \boldsymbol{\beta}_{1ij}\mathrm{FTA}_{ij} + \boldsymbol{\beta}_{2ij}\mathrm{Service}_{ij} + \boldsymbol{\beta}_{3ij}\mathrm{ROA}_{ij} + \boldsymbol{\beta}_{4ij}\mathrm{Concentration}_{ij} + \boldsymbol{\varepsilon}_{ij}.$$

Level-2 (industry):

$$\beta_{0ij} = \gamma_{00} + \mathrm{lgGUOTotalAssets}_j + \mu_{0j}$$

$$\beta_{1ij} = \beta_{10} + \mathrm{lgGUOTotalAssets}_j + \gamma_{1j}$$

$$\beta_{3ij} = \beta_{30} + \mathrm{lgGUOTotalAssets}_j + \gamma_{3j}$$

Dependent variable Profit_{ij} denotes profit margin, a firm's profitability ratio, FTA is a dummy variable mearing if the extent of utilization[2] of FTA. Service is another dummy for distinguishing the service providers out of the total. GUOTotalAssets (in logarithm version) is defined as the total assets of the global ultimate owner, implying the total size of the parent company. This study would like to detect the effect of global owner on the profitability of the subsidiaries.

The dataset to test by this study include financial indicators about more than 6,000 firms within both manufacturing and non-manufacturing sectors from Singapore, Indonesia, Thailand, Malaysia, the Philippines and Vietnam. Japanese multinational enterprises account for global ultimate ownership of these firms located in ASEAN states and above 50% shares of these FDIs.

In this study, we tested several models with the firm-level data respectively, by different ways, to detect the relationship between firm performance and size issue and also global ultimate owner's concentration. According to Bernard et al. (2003), exporting firms are averagely bigger than non-exporting ones. The impacts of size on profitability will be examined by multilevel analysis in this study. In the past years, a great deal of studies has tested the relationship between firm size and performance. Theoretically, from the neoclassical view, it's expected that there exists a positive effect of firm size on profitability because of economies of scale, and such effect are generated from three sub-reasons, financial, organizational reason and technical reason. Meanwhile, on the contrary, a negative

[2] "Utilization" here signifies automatic application of preferential treatment under the presence of FTA; unlike in the case of commodity trade (where specific "application forms" are submitted by those companies wishing to get preferential treatments), preferential liberalization in services usually take the form of automatically applying preferential treatments.

relationship between firm size and profitability is suggested for the reason that large firm are more likely multi-purpose organization whose objective function may be changed by managers really put self-interest as priority. Empirical studies show us mixed results on this. Vijayakumar and Tamizhselvan (2010) conducted research on total assets and sales' relationship with profit margin and profit on total assets and found it is positive. Lee (2009) applied panel data analysis on a sample of 7,000 US public companies and also detected a positive correlation between profitability and firm size. Similarly, Amaton & Burson (2007) found a cubic profit-size relationship in the case of financial sector.

On the other hand, negative size-profit relationship was discovered by some other studies. Ammar et al. (2003) examined the data of a sample of electronic manufacturers, and their result suggests that larger size (sales in this study) would indicate a decreasing on profitability.

In this study, we also test the size effect, in contrast of previous studies, this research focus on the influence of size of global ultimate owner on subsidiaries' profitability. The variables used in this study are defined as below. We will mainly consider following factors in this empirical study:

(1) ROA: This is the return on assets, here, it measures the earnings after tax divided by total assets. We regard it as an internal factor and firm characteristic indicator. The expected sign is positive.

(2) FTA: This is defined as a proxy variable implying the presence of FTA framework between Japan and ASEAN countries, here, including Japan-Singapore Economic Partnership Agreement (JSEPA), Japan-Indonesia Economic Partnership Agreement (JIEPA), Japan-Malaysia Economic Partnership Agreement (JMEPA), Japan-Philippines Economic Partnership Agreement (JPEPA), Japan-Thailand Economic Partnership Agreement (JTEPA) and Japan-Vietnam Economic Partnership Agreement (JVEPA). According to the agenda, JSEPA came into force in the year of 2003, followed by JMEPA in 2006, JTEPA in 2007. JPEPA and JIEPA were carried out in 2008, and JVEPA was into force in the year of 2009. So, in this study, FTA is a dummy variable, it will be 0 if the observation is dated at a time point which is before the invalidity data of FTA, and it will be 1 if the data is observed after the

specific data when the FTA has already been in force. In this study, we expect a positive sign for this variable. We suppose FTA will be with a positive sign.

(3) Service: This is another dummy variable in this model. We set up Service=1 if the observation belongs to a service sector performer, and assume Service=0 if the data is for a manufacturer. The categorization is based on the NACE rev.2 data. It could be a negative or positive term in terms of the case.

(4) GUOsize: This is the indicator of parent firm's size, which is calculated as the logarithm form of total assets of a global ultimate owner firm. In the dataset, we have the total asset of each global ultimate owner. Here we use total assets as the measurement of firm size. For this variable, we also expect there is a positive sign.

The source of data adopted in this research is the Orbis[3] database, which contains information on 200 million public or private enterprises around the global, especially, 55 million of them within the Asia-Pacific region. Company information includes corporate financial accounts, financial strength indicators, Private equity portfolios, ownership structures and so forth. In this paper, it mainly selected datasets including summarized financial information about cross-border companies based in Japan and whose subsidiaries in ASEAN member states, mostly for the period 2000-2014. For example, there are detailed historical data of totally 290 sampling Japanese share-holding companies in Malaysian dataset, on their locations, corporate financial, industrial code, number of employees, company code and some others. Also, in avoid of a problem of biased selection, data about Japanese affiliates in both of manufacturing and service industries are collected and relative analysis will be conducted in this research.

The results of multi-level regressions are shown below (Tables 1-3). In Table 1, we see that all the variables have significant positive effect on the dependent variable. The service dummy is significantly positive, service providers seem to perform better than manufacturers. Similarly, FTA dummy shows a positive relationship with profitability.

[3] Bureau Van Dijk provides the database (http://www.bvdinfo.com/en-gb/our-products/company-information/international-products/orbis). The database has been provided by RIETI.

The utilization of FTA has a coefficient of 0.68, and that tells us the utilization of FTA will bring such an increase on firm's profit margin. Meanwhile, the estimated coefficient on GUOsize variable is 0.494. that implies, holding on other variables constant, one percent increase of global owner's size will lead to, roughly, a 0.494 increase in profit margin. This result is in line with the new new trade theoretical analysis, that the size matters. ROA as a firm internal variable, also shows us a positive effect on the profit margin. As for the second level, the country difference plays a considerable part in the total variation. That means the country effect plays an important role in this case, and could account for the firm performance to some extent.

Insert Table 1 here

As for the model 2, the random-slope model, the model performed well. The table displays a consistent result, by model 2, that very similar with which obtained by model 1. In this case, in the upper level, GUOsize as an explanatory variable, has been added in to estimation. We believe that as level-1 is the subsidiary level data, thus, by putting the variable of global owner's size into a higher level, it would probably show us the effect of size will play a significant role as a whole. Therefore, in this case, we can find that GUOsize variable now is with a bigger coefficient at a significant level. At the same time, after changing the model, all other variables are having a similar effect on the dependent variable.

The third model is the model with interactive effects. In this model, the interaction term ROA times size is added, while, when other variables held as constant, this term does not show a significant effect on the profit margin. In this case, the size of global ultimate owner seems to be significantly affect the subsidiary's profitability in all three models, which is in line with our expectation.

We have also tested the relation of global owner's FDI concentration rate with a subsidiary's performance. Concentration rate indicates the direct controlling proportion held by the owner company, which is believed as a measurement of control power of the owner to the subsidiary.

In this test, a new variable (GConcent) is introduced as follows.

GConcent: it is the direct control rate of global ultimate owner for its subsidiary. As expected, we think that the larger the magnitude of this proportion, the easier controlling of the subsidiary. Hence a positive impact is expected of this variable.

The estimation results are shown in Table 2. In this Table, the new variable GConcent has been added into the regression model. In the fourth model, GConcent as

a level-1 explanatory variable, indicates the concentration rate of investment from global ultimate owner.

Insert Table 2 here

The model 4 is an intercept model. Compared with the test of size issue, here, in this model, we can see the concentration rate variable plays a positive and significant role to profit. When concentration rate increases by one percent, while other variable being held constant, the profit margin will increase by 0.152. the direct concentration has a positive effect on the firm performance. Similarly, FTA dummy has a positive coefficient of 0.587, in line with the test of company size. Service dummy shows a same direction with the dependent variable. It's same with ROA variable.

In the model 5, the slopes are varying between different groups. At the higher level, GConcent as an explanatory variable is included. In this case, the coefficient of GConcent becomes larger, getting 0.209, still showing a positive effect on the dependent variable. All other variables get similar result, being with positive signs, shows that the model change does not affect the sign of variables. FTA dummy indicates almost the same effect on the firm performance, and also the Service dummy.

As for the interaction model, model 6, other than the interactive term being with a negative sign, variables including FTA, Service, ROA and GConcent are showing an expected result. All of them are positive at 90% or 90% above confident level. Regarding the random effect part, intercept model shows a significant variation caused by country difference, while, other two models do not have such obvious outcome.

Next, we drop the ROA variable and conduct a test on the effect of period of utilization of FTA framework on the firm performance. Table 3 shows the obtained results.

Insert Table 3 here

In this Table, the FTAPeriod is the time period of the firm under FTA framework. For example, Japanese firm A established a subsidiary on 2007 in Indonesia, since the JIEPA was in effect on 2009, then until 2016, the firm has utilized such FTA by 7 years. So, it means FTA period for this firm is 7 years. The result shows that without ROA, Service and lGUOSize variables perform well, but the FTAPeriod variable does not show us significant effect in such test.

According to the random-intercept and random slope model with country as level-2 identity (in Table 3), FTA dummy in most cases shows a significantly positive sign, implying that there is a positive impact on profitability of multinational firms under the presence of those economic partnership agreements. Secondly, participates in services sector seem to be more profitable, which could be easily found in all the results indicates a positive relationships between variable Service with dependent variable Profit. Size of firm show us a mixed result, here logarithm of total assets of a firm as a proxy of firm's size, sometimes it could not account for a higher profit margin. Regarding the exogenous factors, the size of parent firms or so-called ultimate owner would also have a positive and significant impact on the profitability of a subsidiary, say, the larger the size of a parent company, the higher profit margin it could be. For this point, concentration rate of the ultimate owner is another factor we should take into consideration, and by adding this explanatory variable, the model is becoming more promising and concentration rate as a proxy of control power of owner company, shows us a positive effect.

With these results, a conclusion that the ownership offers explanatory power to a firm's profitability can be drawn. Forging of FTAs makes sense since the presence of the bilateral FTAs between Japan and some ASEAN countries seem to enhance the profitability of those investing firms in ASEAN. Model specification and more test are still in process, and related further discussion are necessary for this study.

4. Conclusions and policy implications

This paper addresses Japanese firms' investment in ASEAN from an institutional perspective and under the existence of FTAs between some of ASEAN countries and Japan. The roles of firm-level heterogeneity, more specifically size and service / non-service distinction, are examined. The critical role of non-market-mediated,

institutional factors (including sunk costs) is also noted. A multi-level analysis reveals that (1) larger-scale initial FDIs are undertaken in FTA-partner countries; (2) the profit margin of firms established after coming-into-effect of an FTA tends to be higher; and (3) the profit margin of those firms grouped under the service (non-manufacturing) sector is higher; this is probably due to service firms' less dependence on location-bound physical assets, hence their efficient FDI in ASEAN in the context of optimal value chain.

As for policy implications for ASEAN, further reduction of avoidable sunk costs e.g., through information sharing of best-practices among potential investors, could be an indispensable policy focus for making FTA effective in terms of its firms' increase in profitability. A useful direction for future research would be to further examine the scale effect by sub-sectors (in both service and non-service industries).

References:

Amato LH, Burson TE (2007), "The Effects of Firm Size on Profit Rates in the Financial Services", *Journal of Economics and Economic Education Research*, 8(1), pp.67-81.

Ammar A, Hanna AS, Nordheim EV and Russell JS (2003), "Indicator Variables Model of Firm's Size-Profitability Relationship of Electrical Contractors Using Financial and Economic Data", *Journal of Construction Engineering and Management*, pp. 192-197.

Antras, Pol and Elhanan Helpman (2004), "Global Sourcing", *Journal of Political Economy*, University of Chicago Press, vol. 112(3), pp.552-580.

Bernard, A.B., Eaton, J., Jensen, J.B., Kortum, S.S. (2003), "Plants and productivity in international trade", *American Economic Review* 93 (4), pp.1268–1290.

Brainard, S Lael (1997), "An Empirical Assessment of the Proximity-Concentration Trade-off between Multinational Sales and Trade", *American Economic Review*, Vol. 87, No. 4 (Sep., 1997), pp. 520-544.

Casson, Mark (1986), "General Theories of the Multinational Enterprise: Their Relevance to Business History", in Peter Hertner and Geoffrey Jones (eds.), *Multinationals: Theory and History*, Aldershot: Gower, pp. 42-63.

Casson, Mark (1987), *The Firm and the Market: Studies on Multinational Enterprise and the Scope of the Firm*, Oxford: Basil Blackwell.

Casson, Mark (1990), *Enterprise and Competitiveness: A Systems View of International Business*, Oxford: Clarendon Press.Head, K., and J. Ries, 2003, "Heterogeneity and the FDI versus Export Decision of Japanese Manufacturers", *Journal of the Japanese and International Economies*, Vol. 17(4), 448-467.

Dunning, John H. (1992), *Multinational Enterprises and the Global Economy*, Wokingham, England: Addison-Wesley Publishing.

JETRO (2015), *2015 JETRO Survey on Business Conditions of Japanese Companies in Asia and Oceania* (Retrieved from Japan External Trade Organization : https://www.jetro.go.jp/ext_images/_Reports/01/4be53510035c0688/20150115_english.pdf).

Lee, Jim (2009), "Does Size Matter in Firm Performance? Evidence from US Public Firms", *International Journal of the Economics of Business*, Vol. 16, No. 2, pp.189 – 203.

Melitz, Marc J. (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity", *Econometrica*, 71(6):1695-1725.

Melitz, Marc, Elhanan Helpman, and Stephen Yeaple (2004), "Export Versus FDI with Heterogeneous Firms." *American Economic Review* 94, pp.300-316.

Tejima, Shigeki (1998), "Chokusetsu-Toshi to Keizai Kaihatsu" (Foreign Direct Investment and Economic Development), *Kaigai Toshi Kenkyujo Ho*, pp. 4 – 48.

Vijayakumar A and Tamizhselvan P. (2010), "Corporate size and profitability: An empirical analysis", College Sadhana – Journal for Bloomers of Research, 3(1), pp.44-53.

Williamson, Oliver E. and Sidney G. Winter (eds.) (1993), *The Nature of the Firm: Origins, Evolution, and Development*, New York: Oxford University Press.

Table 1. Estimation results (with ROA included)

	(1)	(2)	(3)
VARIABLES	Profit	Profit	Profit
ROA	0.707***	0.707***	0.733***
	(0.00764)	(0.00763)	(0.0275)
FTA	0.680***	0.687***	0.693***
	(0.232)	(0.231)	(0.232)
Service	1.747***	1.714***	1.713***
	(0.216)	(0.216)	(0.216)
GUOsize	0.494***	0.629***	0.648***
	(0.0461)	(0.171)	(0.172)
ROA_size			-0.00318
			(0.00324)
Constant	-3.644***	-4.591***	-4.748***
	(1.305)	(0.426)	(0.455)
var(_cons)	8.78	1.81E-11	4.97E-11
var(GUOsize)		0.16	0.16
var(Residual)	123.27	122.98	122.97
Observations	12,343	12,343	12,343
Number of groups	6	6	6

Notes: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2. Estimation results (with ROA included) (Cont.)

	(4)	(5)	(6)
VARIABLES	Profit	Profit	Profit
ROA	0.759***	0.760***	0.825***
	(0.0110)	(0.0110)	(0.0317)
FTA	0.587*	0.593*	0.609*
	(0.313)	(0.313)	(0.313)
Service	1.956***	1.932***	1.911***
	(0.301)	(0.301)	(0.301)
GConcent	0.152***	0.209*	0.271**
	(0.0588)	(0.109)	(0.113)
Gcont_ROA			-0.0103**
			(0.00468)
Constant	-1.597**	-1.929***	-2.333***
	(0.794)	(0.463)	(0.497)
var(_cons)	2.06	0.05	0.05
var(GConcent)		1.98E-15	1.65E-18
var(Residual)	108.47	108.41	108.32
Observations	6,002	6,002	6,002
Number of groups	6	6	6

Notes: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3. Estimation results (without ROA)

VARIABLES	(7) Profit	(8) Profit	(9) Profit
Service	2.456***	2.477***	2.480***
	(0.289)	(0.289)	(0.289)
lGUOsize	0.767***	0.940***	0.704***
	(0.0617)	(0.242)	(0.252)
FTAPeriod	0.0447	0.0452	-0.886***
	(0.0608)	(0.0608)	(0.233)
GUO_FTAPERIOD			0.112***
			(0.0270)
Constant	-0.975	-2.350*	-0.429
	(1.619)	(1.275)	(1.454)
var(_cons)	13.41	5.44	6.70
var(GUOsize)		0.29	0.30
var(Residual)	222.47	221.88	221.56
Observations	12,387	12,387	12,387
Number of groups	6	6	6

Notes: Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1