THE DETERMINANTS OF INWARD FDI IN SELECTED SERVICES INDUSTRIES IN MALAYSIA

Tham Siew Yean, Andrew Jia-Yi Kam, Nirwan bin Noh*

Abstract

In its drive to achieve a high-income country status, Malaysia aspires to attract more private investment into the services sector. However, empirical studies on the determinants of foreign direct investment (FDI), especially in the services sector, are sparse, even more so at the industry level. The location theory asserts that FDI inflows into a host country are determined by variables related to resources, infrastructure, market conditions, cost and business environment. This paper investigates the validity of the location theory on Malaysia using a set of panel data for eight services industries from 2003 to 2010. We find that at the industry level, market size, ICT infrastructure and human capital have significantly influenced FDI inflows into the services sector. However, the impact of FDI liberalisation is not significant compared to the dynamic changes of the other variables as progress in FDI liberalization is slow and limited.

Keywords: services sector, services liberalisation, foreign direct investment, panel data, Malaysia
JEL Classification: F14, F23, L80, C40, O19

1. Introduction

Market liberalisation and openness to FDI have been recognised as important elements in attracting foreign capital and technology for manufacturing development in developing economies. In the early 1970s, Malaysia was one of the early movers in Southeast Asia to open its economy to foreign direct investments (FDI). Although import substitution made a brief return in the early 1980s, FDI and export-led manufacturing was reinstated in the mid-1980s (Jomo, 2007). By the 1990s, the rapid development of manufacturing has resulted in this sector having the largest employment share in the economy. High economic growth ensued with the World Bank recognizing Malaysia as part of the "East Asian Miracle" economies. However, this moniker was short-lived as the growth momentum faltered with the onset of the 1997 Asian Financial Crisis (AFC). The dot-com bubble and the accession of China to the WTO in the early 2000s contributed towards the slower growth of the manufacturing sector after the AFC.

The rise of China also affected inflows of FDI in the country by posing severe competitive pressures on low-cost manufacturing, while internally Malaysia struggled

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to upgrade its manufacturing sector as the rapid development of this sector rapidly eroded its low labour cost advantages. The Second Industrial Master Plan (1996-2005) recognised the limitations of labour-intensive manufacturing and proposed to upgrade manufacturing development by incorporating the development of the services sector. Subsequently, the government pushed for further services development in an effort to promote the services sector as a new engine of growth as the growth of its manufacturing sector continued to deteriorate. The Third Industrial Master Plan (2006–2020), Economic Transformation Plan and five-year development plans of the country continue to this day to promote the growth of the services sector. In 2015, Malaysia launched its first Services Sector Blueprint (Economic Planning Unit (EPU), 2015) outlining the development of the services sector as the next source of growth for the country. In line with this thinking, the government has been slowly liberalizing its services sector focussing in particular on FDI in the hope that FDI inflows in this sector will increase even as FDI inflows in manufacturing has fallen.

The services sector is a crucial source of economic growth as it is often linked to efficient utilization of human and physical capital; both of which contribute to increased productivity by shifting the production frontier. Francois and Hoekman (2010) postulated that services have an important input in the production process, as it facilitates transactions through space (transport and telecommunications) or time (financial services). In line with this thinking, the government has targeted a share of services of 58% of GDP by 2020 as it drives the country towards a service-oriented economy (The Star, 2015). Despite the increasing policy significance of this sector there is an overall paucity of research in this sector. For example, the literature indicates little empirical work on small and FDI-receiving economies such as Malaysia in the services sector as most of the previous work focussed primarily on the manufacturing sector.

Since the early 1970s, the services sector still faces problems, such as slow progress in liberalisation, intangibility issues and measurement difficulties in terms of the degree of protection and welfare gains from liberalisation (UNCTAD, 2006). According to Bebko (2000), the characteristics of intangibility in services may explain why the services industry has lagged in terms of empirical studies relative to the manufacturing as it implies that measuring services can be difficult. Cossy (2006) further argued that the lack of physical attributes of services as compared to the goods, renders it difficult to draw a line between the product and production process for services. The World Trade Organization (WTO) in 1995 had to define trade in services in terms of four different modes of supply,[1] compared to the single mode of trade in goods, due to the intrinsic complexities of services relative to goods.

For the services sector, "Mode 3" [2] is considered the most important mode of supply of services as it covers 55 to 60 *per cent* of global trade in services (Magdeleine and Maurer, 2008). Despite its importance, there are still many types of barriers to the establishment of foreign firms in the services sector. Barriers to investment in services are mainly embedded

1 Cross-border, consumption abroad, commercial presence, and movement of natural persons.

2 Defined as the supply of a service through the commercial presence of a foreign firm in the territory of another WTO member country.

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in the domestic regulations of specific industries as the services sector is heterogeneous in nature (Dee, 2014). These regulations are expressed in a variety of forms and are generally sector-specific. They may limit the number of service suppliers, operators and/or the total value of services transactions.

Attracting FDI in services thus requires an understanding of these barriers and other factors that may also affect FDI inflows into this sector. Unfortunately, as will be shown in the literature review, empirical research in this area for the services sector is limited. Moreover, despite the heterogeneity of this sector, most studies still focus on the services sector as a whole. Therefore, the objective of this study is to fill in this research gap as well as to provide some policy guidance by examining the key determinants of inflows of FDI into Malaysia's services sector by its main sub-sectors. The paper is organized as follows. Section 2 synthesizes the literature review on FDI in services, while the model and data are shown in Section 3. Section 4 presents and discusses the findings. Finally, Section 5 concludes with a summary and some policy suggestions.

2. Literature Review

In Dunning's "location theory" (Dunning, 1973), the reason a multinational enterprise (MNE) chooses a particular location for its production is determined by the abundance of resources endowed in a host country, such as labour, energy, raw materials, infrastructure, regulatory barriers and legal system. MNEs may also establish themselves in foreign locations to seek better efficiency or wider market reach. Efficiency-seeking firms generally organise their production facilities in various places to produce various parts and components at the lowest cost. On the other hand, market-seeking firms prefer to locate in a market or region where a full-scale production facility is established to serve that specific region. Subsequently, Dunning and Lundan (2008) also included technology and internet as catalysts for business networks and cross-border trade. The above "locational advantages" thus determine the attractiveness of a host economy for attracting FDI into its country.

The empirical literature on the determinants of inward FDI is quite substantial at the macro level, and they indicate a large number of variables that may affect inflows of FDI (Banga, 2005). These can range from country-level determinants to industry and firm level determinants.[3] Several traditional determinants of FDI, such as growth of domestic markets, is widely accepted as different proxies for rate of return to investment, administrative restrictions, entry restrictions, and risk factors. Non-traditional factors on the other hand, include complementary factors of production such as infrastructure, labour cost, and availability of skilled labour, restrictions on foreign trade, and technology related variables (Nunnenkamp, 2002; Noorbakhsh, Paloni and Youssef, 2001).

While these studies examine the aggregate inflows of FDI into all sectors, industry level studies focussing on the services sector are limited due in part to data problems. Previous

3 Since this study covers industry level data as there is no firm level data available, the literature review will be confined to country and industry level determinants only (see Blonigen (2005)'s review of the empirical literature on the determinants of FDI at the firm level).

studies on services sector mainly focuses on diverse issues either at country or regional level. Cross-country study on the services sector, such as Kolstad and Villanger (2008), which examined 57 countries, found that the quality of institutions and political regime are important determinants of FDI inflows into the services sector. Individual country studies conducted for Japan, South Korea and China have found a rather disparate range of significant variables. For Japan, Fukao and Ito (2005) found that inward FDI penetration in services industries are mainly market driven, namely that they have higher advertisement intensity, a lower presence of government activities, and a lower presence of official restrictions. In the case of South Korea (Yeo *et al.,* 2008), market size, regulations, trade openness and agglomeration are key determinants; which is also supported by the findings on China (Feng, 2011).

Findings from the empirical study discussed above has led to one key observation: there are strong similarities between the variables affecting FDI inflows in services and the variables found in FDI literature on the manufacturing sector. For example, both Campos and Kinoshita's (2003) and Banga's (2005) studies found market size to positively affect FDI in manufacturing – for market expansion reasons, and FDI in services - due to the nature of certain services industries where there is a need to be in close proximity with the consumers such as hotels, branch campuses, *etc*. Some impact, however, may also be different. For example, low labour cost (wages) is a key component in determining FDI in the manufacturing sector (as the common objective of multinationals (MNCs) investing in developing countries is to cut production costs). However, Ramasamy and Yeung (2010) have identified a positive relation between wages and FDI in services as the nature of services sector are more inclined towards efficiency seeking.

The similarities in the determinants has allowed us to integrate Dunning's "location theory" to the focus sector of our paper, which is services. It has also allowed us to include discussion on important issues in FDI, such as the impact of protection and liberalisation, on inflows of FDI in services. It is important to note from our literature search, there is yet a study that has empirically tested the locational impact on inflows of FDI in Malaysia's services sector. Hence, anchoring on the location theory, FDI flows into a country due to various production facilitating factors such as competitive production costs (that is cheaper labour costs), country's infrastructure and human capital capabilities. Trade and investment policies that reduce trade costs and ease the movement of goods and services (World Bank, 2009) are also important determinants of FDI inflows.

Policy indicators are important because they represent the level of liberalization in the services sector. Barriers in FDI services include, among others, residency requirements, ownership limitations, standards on qualification and expertise, licensing requirements to practise and immigration rules, which may discriminate against potential foreign investors. Dee, Hanslow and Phamduc (2000) also argued that regulatory barriers are mainly designed to protect incumbent firms from any new entry; but it may have a negative impact on both foreign and domestic firms. The main problem with policy indicators is that they are difficult to measure and to quantify.

Measuring barriers in the services sector poses considerable challenges, due in part to data problems and consequently, few systematic attempts have been undertaken, especially

Prague Economic Papers, 2018, 27(2),215–231, https://doi.org/10.18267/j.pep.652

across time since most of these studies are cross-country comparisons (Stephenson, 2001). Country case studies by UNCTAD (2006) show that the bulk of the restriction is on foreign ownership where Malaysia, Thailand and Indonesia are found to have relatively restrictive policies on inward FDI despite having success in exports of manufactures. Hardin and Holmes (1997), and Koyama and Golub (2006) constructed indexes to quantify policy restrictiveness. The former used actual FDI restrictions information to construct an index of FDI restrictions that can be translated into tariff or tax equivalence. The latter used data classified by modes of supply and assessed barriers to entry, such as the extent of discrimination against foreign suppliers. While both studies concurred that removing barriers in FDI is important as part of services liberalisation, Koyama and Golub (2006)'s method is replicable to different services sub-sectors.

Using the same methodology, Noh and Tham (2012) constructed an index for Malaysia at the sub-sectoral level for a period of eight years to assess the liberalisation of these sub-sectors over time, instead of comparing across countries as in the previous studies. They found that all subsectors have an average individual score of more than 0.2 indicating little liberalisation over time for the period of the study.[4] Hence, this confirms that developing countries, such as Malaysia, indeed may have more restrictive services sector. To confirm this, empirical studies on the determinants of FDI in services sub-sectors over time are needed. At current juncture, the literature on the determinants of FDI in services do not include estimations of FDI barriers over time and sub-sectors. Hence we are unable to ascertain whether FDI liberalisation in Malaysia has affected the inflows of FDI into the different sub-sectors since liberalization efforts differ across sectors and over time. To reiterate, this study aims to fill this literature gap by estimating the reduction in FDI barriers over time and sub-sectors and empirically verifying the locational advantages for attracting FDI in selected services sub-sectors, based on Dunning's locational theory.

3. Model and Data

Model Specification

This study uses industry-level panel data to tests the locational variables and their relationship with inflows of FDI in the services sector. Panel data is used because it allows for the differences in behaviour across the industries over time (Greene, 2002)[5].

4 Koyama and Golub found that European countries, the most liberal economies, have a trade restrictiveness index of less than 0.2. Non-OECD countries are relatively more restricted than OECD countries (with scores > 0.2). At the sub-sectoral level, electricity and financial services are highly restrictive in all countries.

5 We use Panel data estimation because the time dimension spans only 8 years. Also, it is an unbalanced panel meaning that some data points are constructed due to limitations data availability. Hence the degrees of freedom will be weak should any time series method be applied. For stationarity, the variables consist of approximation from missing values and indexes and hence, the fluctuations of any time series effects are not representative. We did not consider the possibility of cointegration as this method is only suitable in identifying long-run relationship. Therefore, in view of the fact that there are only 8 years' data *per* entity, it is not meaningful to use time-series analysis.

The model for this paper is specified as follows:

$$LFDI_{it} = \alpha_i + \beta_1 GDPSEC_{it} + \beta_2 GRADG_{it} + \beta_3 LCOMM_{it} + \beta_4 LIB_{it} + \beta_4 WAGES_{it} + \upsilon_{it} \ldots (1)$$

where,

i represents the eight service industries and t covers the period of 2001–2010

α_i is the unknown intercept for each industry, for $i = 1$ to n

υ_{it} is the error term for each industry for fixed effect model (or $\upsilon_{it} = \omega_{it} + \varepsilon_{it}$ for random effect model), where ω_{it} is the between-industry error term and ε_{it} is the within-industry error term.

Dependent variable:

The dependent variable, FDI_{it} is inflows of FDI into the service industry i and at time t. This variable captures the extent to which FDI inflows in a specific country can be explained by the offering of attractive economic conditions, market potential, resource competitiveness and openness in the services sector. Annual data for the period 2003–2010 were obtained from various government agencies such as the Department of Statistics Malaysia (DOSM) and the Economic Planning Unit, Prime Minister's Department (EPU).

Independent variables:

For this study, data were collected in the sub-panel format and time series of eight sub-sectors of services in Malaysia for a period of eight years, between 2003 and 2010, which is denominated in RM.

This model examines the determinants of FDI inflows into the services sector. Based on Dunning's theory of location, the model takes into account a multinational's motive(s) of investment as shown in Table 1.

Table 1 | Host Country Determinants of FDI Inflows

Variables	Motive of investment
$GDPSEC_{it}$ – market size	Market-seeking
$GRADG_{it}$ – skilled workers	Resource- and asset-seeking
$LCOMM_{it}$ – communications infrastructure	Efficiency- and asset-seeking
LIB_{it} – level of regulatory restrictiveness	Efficiency-seeking
$WAGES_{it}$ – cost of labour	Resource-seeking and efficiency seeking

Source: Dunning and Lundan (2008)

The choice of independent variables is based on suggestions from the literature review and is subjected to suitability and availability for sub-sectoral analysis.

Table 1 shows that sectoral Gross Domestic Product (GDP), $GDPSEC_{it}$, is chosen as the proxy for market size. Based on the discussion in earlier section on Campos and

Prague Economic Papers, 2018, 27(2),215–231, https://doi.org/10.18267/j.pep.652

Kinoshita (2003) and Banga (2005) market size is expected to have a positive relationship with FDI inflows.

The *a priori* assumption on the impact of human capital is subjected to the MNE's motive(s) of investment. In general, the success of capital-, knowledge- and skill-intensive investment hinges on the availability of skilled human capital as production inputs to provide technological capability, managerial expertise and organizational skills. Specifically, resource and asset-seeking MNEs in the services sector prefer skilled workers because they have the ability to adapt to swift changes in services demands, improve the quality of services delivery and capitalise on locational advantages. Fukao and Ito (2005) find that skilled-worker intensity has positive effects on FDI penetration in the services sector. This study uses the growth of employed workers with tertiary education[6] in each sub-sector as a proxy for skilled workforce or human capital, $GRADG_{it}$. The growth of employed graduates is therefore expected to have a positive relationship with FDI inflows.

$LCOMM_{it}$ (*log COMM*) represents the level of consumption on various communication services sub-sector, which is a proxy for communications infrastructure that facilitates the efficiency of business activities in Malaysia. The use of ICT has become an integral part of a firm's operations as it helps firms to lower the transaction costs in procuring and reallocating resources around the world (Dunning and Lundan, 2008). Technology users also acquire and utilise ICT in their daily activities to expedite business transactions and manage business operations. Therefore, countries with better ICT infrastructure are expected to have a positive relationship with the inflow of FDI.

Liberalisation of an economy is measured by its level of openness, which is commonly represented by the ratio of trade to GDP in the case of goods. However, this indicator may only be suitable for the goods sector as it deals with primarily cross-border trading. For the services sector, trade barriers are mainly governed by regulations. Hence, a more thorough study to quantify the level of openness is required. In this study, a regulatory restrictiveness index (LIB_{it}) is created as a proxy for institutional market openness. The index is generated based on Noh and Tham (2012) and accounts for liberalisation of the FDI regime for different services sub-sectors. The construction of the index uses information regarding Malaysia's international commitments and regulations made by the relevant regulatory bodies. The index is expected to have a negative relationship with FDI inflows since less restrictions allow easier access into the market. The details on the construction of the index are in Appendix 1.

As in most FDI studies, the paper investigates the impact of labour cost on FDI in services. In this study, the annual wages paid *per* employee in the services sector is used as a proxy for the cost of labour, $WAGES_{it}$. Past literature argues that the relationship between wages and FDI inflows is ambiguous depending on whether they are firms seeking efficiency or solely motivated to find new markets. Cheng and Kwan (2000) found significant negative relationship between wages and FDI inflows when firms focus mainly on labour cost reduction in developing countries. This may be due to FDI being characterised by a vertical model,

6 According to OECD (2005), "employment in tertiary-level graduates is an indicator of the labour market's innovative potential and displays a general trend towards upskilling".

whereby resource- and efficiency-seeking MNEs relocates low-skilled production process to low-wage countries to reduce production cost, thereby generating a negative relationship between FDI and real wages (Braconier, Norback and Urban, 2005). On the other hand, Yang, Groenewold and Tcha (2000) argue that FDI that focuses on skilled workers may overlook higher wages resulting in a positive relationship between wage and FDI inflow in services.

Data

The paper uses unpublished data collected and constructed from the Department of Statistics in Malaysia (DOSM). Full explanation of the data set is in Appendix 2.

Inflows of FDI ($LFDI_{it}$), market size ($GDPSEC_{it}$), growth of skilled human capital ($GRADG_{it}$) and real wages ($WAGES_{it}$) are provided by the DOSM. There are some missing values in the time series for wages, which are based on the annual and biannual surveys. However, since wages are considered sticky, the simple average of pre- and post-missing values (Carlberg, 2002) is taken hence giving us a balanced panel dataset. The time-frame of the data is from 2003 to 2010.

The other independent variables, level of regulatory restrictiveness (*LIBit*) and ICT utilization (*LCOMMit*) are not available and has to be constructed. For *LIBit*, the data is an index of liberalisation of the services sector under Mode 3. Adapting the method by Koyama and Golub (2006), the index was constructed based on the data gathered through a focus group discussion with officials from the Ministry of International Trade and Industry (MITI),[7] who are responsible for trade policy and negotiations, ASEAN Economic Cooperation and the development of services industry. The group contains six experienced officers who coordinate and attend international meetings related to the formulation of Malaysia's international commitments at the World Trade Organization (WTO) and ASEAN. The construction process of the index is explained in detail in Appendix 1.

$LCOMM_{it}$ is used as a proxy for communications infrastructure. Since data pertaining ICT utilization is not available in the DOSM database, data on the use of communication input by other services sub-sectors is constructed based on the 2000 and 2005 input-output (IO) tables obtained from the DOSM. Given the IO table in Malaysia is not updated every year, projections are made to update the table for the past 10 years. IO tables for 2000 and 2005 are used as the basic data and the RAS method (bi-proportional method by Stone (1963) and United Nations (1999)) was utilized to update the table for the period from 2003 to 2010, in order to meet the requirements of the study period.

4. Findings and Discussions

Estimation Results

The descriptive statistics are shown in Appendix 3. The Hausman specification test recommends the use of the random effects model. In addition, Greene (2002) also suggested

7 MITI is the focal point for all trade negotiations in Malaysia and is considered to have the knowledge and expertise to provide information on behalf of all the sub-sectors studied in this paper.

Prague Economic Papers, 2018, 27(2),215–231, https://doi.org/10.18267/j.pep.652

the Breusch-Pagan Lagrange multiplier (LM) test to examine whether the model only requires OLS estimation method. The LM test shows that the null hypothesis can be rejected at 1% level which means variance across entities is not zero. Therefore, the random effect estimator is the most suitable for the model. The robust estimator is used to deal with possible heteroskedasticity problem. The correlation matrix (Table 2) shows weak correlations among the independent variables hence indicating multicollinearity is not a concern in the model. Table 3 shows the estimation results[8].

Table 2 | Correlation Matrix

	LFDI	*GDPSEC*	*GRADG*	*LCOMM*	*LIB*	*WAGES*
LFDI	1.0000	–	–	–	–	–
GDPSEC	0.5740	1.0000	–	–	–	–
GRADG	−0.0383	−0.1184	1.0000	–	–	–
LCOMM	0.8006	0.4597	−0.1904	1.0000	–	–
LIB	0.0823	−0.4023	0.0084	0.0462	1.0000	–
WAGES	0.6242	0.1211	−0.1118	0.6952	0.5566	1.0000

Source: Authors.

Table 3 | Panel Data Estimates (RE)

Dependent variable LFDI = (ln of FDI) Number of observations: 61

Independent Variables	**Constant**	***GDPSEC***	***GRADG***	***LCOMM***	***LIB***	***WAGES***
Coefficients	8.68	0.19	0.011	0.61	0.96	0.00001
Robust Std. Error	(4.463)**	(0.107)*	(0.001)***	(0.342)*	(1.11)	(0.000084)*
R-squared	Overall = 0.74 Within = 0.26 Between = 0.87					
F-test	Prob > chi2 = 0.0000					
Hausman test	Prob > chi2 = 0.818					
Breusch-Pagan LM test	Prob > chi2 = 0.0001					

Notes: * significant at 10%, ** significant at 5%, ***significant at 1%; standard errors are in parentheses.
Source: Authors.

8 While it is acknowledged that the services sector is heterogeneous in nature, the coefficients reflect country level in part due to the insufficient data points to estimate individual sector model. One possibility is to place industry dummies to control for different industries. But as the Hausmann test suggests, the structure of our data set has already controlled for the influence of different entities/ industries on the dependent variable (random effect).

Based on Table 3, market size (*GDPSEC)* has a significant and positive effect on inflows of services FDI. A 1 *per cent* increase of the GDP in services industries as a proportion of total GDP increases FDI inflows into the services sector by 19 *per cent* (holding other variables constant). The results show that as market size grows, the motivation of the investors to enter the market is higher. Investors may leverage on this potential not only to tap on the domestic market, but also the regional market as more and more free trade agreements come into effect.

The growth of skilled and educated workforce in the economy (GRADG) has a significant and positive impact on inflows of services FDI. This confirms that an economy with higher educated workforce is likely to attract more foreign investors into its services sector. A percentage point increase in skilled workers in services sector increases FDI inflows into the sector by a similar percentage. This finding is also consistent with previous studies, such as Noorbakhsh *et al.* (2001). This implies that workers with higher-level academic and technical skills are expected to respond to the needs of the growing services sector. The findings also suggest that communications infrastructure (LCOMM) is a significant determinant of FDI inflows in the services sector. A percentage increase in the utilization of communication services by the services sector each year, increases FDI inflows into the services sector by 0.61 *per cent*. This is not surprising as the cost of communications has decreased over the years and connectivity through telecommunications network and internet has significantly increased. The decreasing in cost and improvement in connectivity has allowed deeper integration of industries across several continents, hence facilitating the relocation of services to cost-effective hosts.

One interesting finding is the insignificance of regulatory restrictiveness index (LIB) in this study. Since the index focuses on regulatory restrictions, our findings are unable to ascertain the effect of FDI regulatory limitation on FDI inflows into the services sector of Malaysia. This does not imply that market liberalisation is not important in attracting FDI into the services sector. Anecdotal evidences have confirmed that the liberalisation process is still very slow and restrictive in Malaysia (Noh and Tham, 2012; Dee and Dinh 2009). The insignificance of the variable may imply that the liberalization efforts have yet to register an impact on inward FDI as the liberalization of services is rather slow and protracted. Consequently, the impact of market liberalisation may not be as profound compared to the dynamic changes in other variables such as market size, human capital and infrastructure communication thereby rendering the variable insignificant[9].

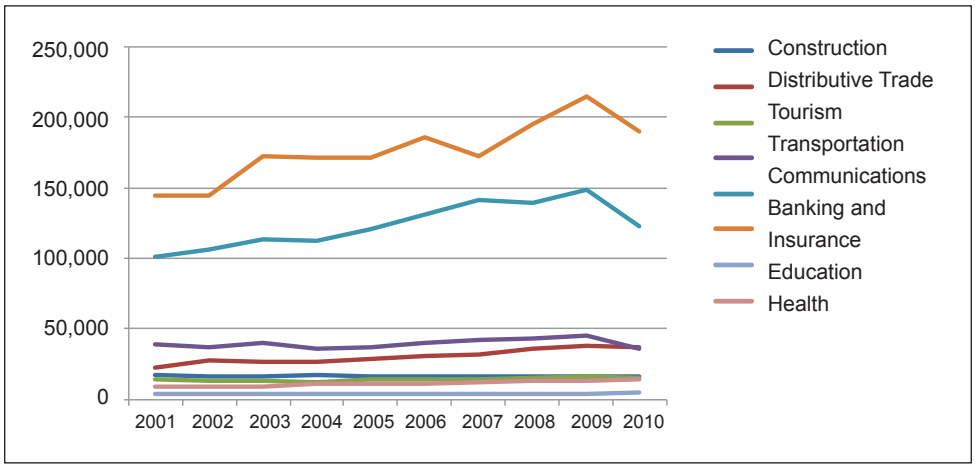
The findings of this study also show that real wages, as measured by WAGES, have a positive and significant impact on FDI. This further confirmed our conjecture that MNEs in the service sector are not seeking for low skilled workforce, but for high productivity workers in Malaysia. This is consistent with Mankiw (2009)'s the efficiency wage hypothesis suggests whereby it is more beneficial for services firms to pay wages at a higher rate so that they can employ skilled workers who can provide high quality customer service.

9 As much as we would like to conduct a robustness check for this indicator, we are unable to find any available substitute proxy (for checking purposes) for Malaysia. Most indicators in the literature are constructed using customised and unpublished data.

Prague Economic Papers, 2018, 27(2),215–231, https://doi.org/10.18267/j.pep.652

To support this hypothesis, Figure 1 shows that the trend in labour productivity in the services sector in Malaysia generally is increasing, especially in the communication and banking and insurance sectors where more skilled workers are paid higher wages.

Figure 1 | Labour Productivity in the Services Sector in Malaysia 2001–2010 (RM/worker)



Source: Authors' calculation based on data sourced from DOSM (2013).

5. Conclusion

Consistent with the location theory, the key findings of this study on the determinants of FDI in services show that there is a positive relationship between FDI inflows with market size, human capital, communication infrastructure and wages. Of all these factors, human capital has the strongest statistical significance in affecting FDI inflows. Nevertheless, these factors are deemed important for any investors in the services sector who seek an environment that is efficient, skilful and innovative.

However, the findings also point to an insignificant relationship between FDI inflows and the FDI restrictiveness index in the services sector. This result may be due to the fact that the measurement of FDI liberalization in services indicate limited progress in FDI liberalization and the degree of liberalization is below the OECD average (Noh and Tham, 2012), which also corroborates with the evidence given in Dee (2014) that Malaysia's regulations on FDI in the services sector are still restrictive. It is possible that the limited liberalization experienced during the period of this study is inadequate to attract FDI into the services sector compared to the dynamic changes in the other variables.

Consequently, one policy suggestion is that FDI in the services sector in Malaysia can be further improved by tapping on the regional market, namely the Association of Southeast Asian Nations (ASEAN) market, which is a dynamic and growing market with a population of 620 million and combined GDP of USD 2,574 billion in 2014. Malaysia's relatively small domestic market can be enhanced by using Malaysia's access to the larger ASEAN

market as Malaysia's communications infrastructure is among the best in ASEAN. At the same time, the training of workers to improve the quality of human capital and further investments into ICT infrastructure needs to be continuously enhanced for Malaysia to have an advantage over its ASEAN neighbours in these two factors.

Extending this study can be done if data is available on the nature of FDI restrictions in the services sector by assessing regulatory measures and reforms at the sub-sectoral level since each services sub-sector is governed by different regulations and licensing regimes. For example, professional services such as architectural, health and engineering services have their own regulatory acts that serve as prudential measures for protecting consumers' interests but which can at the same time, intentionally or unintentionally, restrict entry of foreign as well as domestic investors. A more detailed study on the nature of FDI restrictions in each services sector will therefore help to deepen our understanding of the relationship between FDI inflows and liberalization efforts in the country.

Appendix 1 | Construction of the FDI Regulatory Restrictiveness Index (LIB_{it})[10]

The index is adapted from the methodology developed by Koyama and Golub (2006), and is constructed using primary data obtained through focus group and interviews with experienced policymakers in the Ministry of International Trade and Industry specifically from the ASEAN Economic Cooperation Division, Services Sector Development Division and Multilateral Trade Policy and Negotiations Division. A combination of survey questionnaires, focus group meetings and secondary qualitative and quantitative data sources are employed based on Koyama and Golub (2006)'s measurement of explicit regulatory restrictions on FDI in 29 OECD and 13 non-OECD member countries. The questions are divided into three main categories of variables, namely, foreign equity participation, screening and approval and other restrictions. Each category has been detailed out into a few items and these items were assigned individual scores as shown in Table A1:

The respondents are expected to provide10 responses to each question that correspond to the period between 2001 and 2010. The scores for each question are summed and an average is taken by dividing it with the number of sub-activities in the industry. This process is applied to each industry for each year until an index table of eight industries and 10 years is constructed.

The scoring system looks into explicit regulatory barriers, excluding non-policy institutional restriction or governance. Since the index provides a measure of the level of deviation from national treatment (NT), that is discriminatory treatment against foreign presence, it is a credible proxy of market openness for the services sector. The biggest weight is accorded to restrictions on equity since the extent of foreign ownership is an important condition for attracting FDI. The system also allocates a full restrictive score of 1 if a specific sector in banned totally, which is foreign equity participation, is not allowed.

10 Based on Noh, N. and Tham, S. Y., 2012, Quantifying Barriers to Trade in Services Through Commercial Presence: Selected Services in Malaysia, *International Journal of Economics and Finance Studies* 4(2), 149–158.

Prague Economic Papers, 2018, 27(2),215–231, https://doi.org/10.18267/j.pep.652

Therefore, even though the scores for each question are expected to add up to an index of between 0 and 1, in which 0 represents full liberalisation and 1 represents full prohibition, a score of more than 1 is possible if a certain sector has a total ban on equity.

Table A1 | Guidelines on Regulatory Restrictiveness Index of Services

Type of restrictions	Scores
Foreign Direct Equity Investment Limits	
No foreign equity allowed	1.0
1 to 30 % foreign equity allowed	0.4
31–49% foreign equity allowed	0.3
50–99 % foreign equity allowed	0.1
100% foreign equity allowed	0
Screening and Approval	
Investor must show economic benefits	0.2
Approval granted if not contrary to national interest	0.1
Approval is automatic subject to notification	0.05
No approval is required	0
Other Restrictions	
Number of licenses	
Up to 5 licenses allowed	0.05
Between 6 and 10 licenses allowed	0.025
No limitation	0
Number of branches	
Only a branch is allowed	0.05
Between 2 to 5 branches allowed	0.025
No limitation	0
Duration of approved work permit	
No entry	0.05
Less than one year	0.0375
One to two years	0.025
Three to four years	0.0125
Five years and above	0
Composition of the board of directors	
Majority must be nationals or residents	0.05
At least 1 must be national or resident	0.025
No restriction on nationality or residency	0
Composition of managerial posts	
Majority must be nationals or residents	0.05

At least 1 must be national or resident	0.025
No restriction on nationality or residency	0
Performance requirement on financing	
Domestic content > 50%	0.05
Other	0.025
None	0
Performance requirement on employment	
Domestic content > 50%	0.05
Total* Between 0 and 1	

Note: * It is possible that various scores sum to slightly more than 1.0, and in such cases, the index is capped at 1.0.

Source: Adapted from Koyama and Golub (2006).

Appendix 2 | Data Used for Estimating Equation 1

No.	Variable	Proxy	Source	Remarks
1.	*Log of inflows of FDI in services* ($LFDI_{it}$)	Inflows of FDI in the services sector (RM milions)	Annual balance of payment reports, Bank Negara Malaysia and Department of Statistics Malaysia (DOSM)	Time series available from 2003–2010
2.	*Sectoral GDP* ($GDPSEC_{it}$)	Sectoral GDP is used as a proxy to indicate the size of the market compared to total GDP (Percentage of total GDP).	DOSM	Time series available from 2003–2010
3.	*Growth of skilled human capital* ($GRADG_{it}$)	Annual percentage increase of employees with tertiary education (percentage change)	DOSM	Time series available from 2003–2010
4.	*Log of ICT utilization* ($LCOMM_{it}$)	Communications as an input into the services sectors in RM, which represents the available infrastructure.	DOSM	Author's own calculations based on Input-Output Tables 2000 and 2005
5.	*Regulatory restrictiveness index as a proxy for institutional market openness* (LIB_{it})	Liberalisation of FDI regulatory measures in the form of an index	Questionnaires, focus group discussions, reports from various international organizations, Malaysia's Economic Report and other sectoral policy documents.	Author's own calculations, based on Noh and Tham (2012).
6.	*Real wages* ($WAGES_{it}$)	Wages paid by the various service industries in RM.	DOSM	Annual and biannual surveys conducted by DOSM between 2003–2010

Source: Authors

Appendix 3 | Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min.	Max.
FDI by service Industries (RM million)	64	1960	3190	0	15000
Sectoral GDP (% of total GDP)	64	4.65	4.17	0.49	13.64
Growth of skilled human capital	64	11.80	30.09	–24.0	232.39
ICT utilization (RM thousand)	64	2928.6	4195.3	66.7	23600
Restrictiveness Index	64	0.53	0.15	0.25	0.87
Real Wages (Annual/Biannual RM)	64	55365.6	42197.16	19695.83	177182.1

Source: Authors.

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