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FOREIGN DIRECT INVESTMENT AND SERVICES TRADE: EVIDENCE FROM MALAYSIA AND SINGAPORE

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Abstract

Services trade is an important source of growth in Malaysia and Singapore. Both economies are export-oriented and actively court foreign direct investment (FDI) to advance their economic objectives of industrialisation and economic development. This paper examines the causal linkages between inward FDI and the country's engagement in services trade in bi-variate and tri-variate VAR frameworks. The empirical findings for Singapore show evidence of bi-directional causality between inward FDI and the total trade volume in services (i.e. the absolute sum of payments and receipts) as well as between FDI and services imports (in the tri-variate specification). This may reflect her relative open foreign investment policy and free trade regime in services. For Malaysia, the evidence of causality is weaker and unidirectional, from inward FDI to services imports. These findings are consistent with the different stages of economic development and openness attained by the two sample countries, and they provide useful background for trade and foreign investment policies and development strategies.

Keywords: Causality; services trade; foreign direct investment

JEL classification codes: C22; F21

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1. Introduction

The rapid expansion of trade in services contributes significantly to economic growth, both in developed and in developing economies (OECD, 2003). Growth in services trade is driven by numerous factors including liberalization of goods trade, deregulation of service providers, advances in information and communication technologies (as in e-commerce and telecommunications services) and increasing reliance on outsourcing by multinational corporations (MNCs). The Industry Commission (1997) notes that complementarities may exist between foreign direct investment (FDI) and services trade, particularly where ongoing contact with consumers is important, even though cross-border trade is technically possible (refer to Hardin and Holmes, 1997, p. 8). Empirical exploration of these relationships is the objective of this paper, specifically whether a causal relationship exists between inward FDI and the host country's engagement in cross-border trade in services. Singapore and Malaysia represent suitable sample countries for such an investigation because both are export-oriented economies that actively court FDI to advance domestic industrialisation and economic development.

FDI inflows, whether attracted spontaneously by host country growth or induced by policy incentives may stimulate the import of services through backward integration. Managerial, engineering and similar services are imported as intermediate inputs from abroad, including from the MNC home country, to add value in the host country. Services exports can be generated, for example, when foreign firms establish a commercial presence in the domestic services sector. This can include an extensive set of heterogeneous services such as tourism and hospitality (travel, hotel, restaurant, fast-food), transport, telecommunication, education, accounting, banking, finance, and health and related services. Hence, the total impact on host countries of the removal of restraints on inward FDI may be considerably stronger than is recognised in conventional competitive models (Markusen *et al*. 1999). It follows that services trade may stand in some causal relationship to inward FDI. In principle, causality can run in either or both

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directions, from FDI inflows to services trade and, conversely, from services trade to inward FDI.

This paper systematically explores the possible causality relationships between inward FDI and the total services trade engagement in the host country (i.e., the total volume of services imports and exports). It also examines the causality pattern between inward FDI and gross flows of services imports and exports, respectively. Such an examination extends the conventional approach which typically focuses only on the linkages between FDI and merchandise trade. It also has implications for the degree of FDI liberalisation and the design of appropriate polices to promote the services sector.

The present study conducts a comparative analysis of these linkages for Malaysia and Singapore using relatively standard Granger causality test procedures. We have chosen Malaysia and Singapore for empirical investigation because of the prominent recognition in those countries of the increasing importance of the services sector. Relevant similarities of both countries extend to their acceptance of the principle of trade liberalization and the role of private enterprise. The viability of their respective economies depends on export performance, and both still actively court FDI inflows to advance their economic objectives of industrialisation and economic development. In 2005, their services trade constituted 16.2% and 24.5%, respectively, of their total trade. Malaysia offers attractive incentives to draw foreign investment into selected priority industries. She also encourages existing MNCs to upgrade their production processes and introduce new products, services and technology (APEC, 1996). Singapore provides a wide range of incentives for inward investment in designated sectors and a liberal policy regarding foreign equity participation and employment of expatriates (MIDA, 2007).

The following section reviews the relevant literature. Section 3 describes the data and methodology – tests for structural breaks, determination of the order of integration of each variable based on unit root tests and the Granger causality (Granger, 1969, 1988) test procedure. Results are reported and analysed in Section 4 followed by concluding remarks and policy discussions in Section 5.

2. Literature Review

Significant components of services trade, such as education, banking, and insurance, are best conducted through FDI. The linkages between FDI and services trade have been progressively consolidated with the globalisation of business operations (see Hardin and Holmes, 1997, Markusen *et al*., 1999 and Dee, 2001). Dunning (1993) noted that FDI opens up an important channel for cross-border intra-firm trade in value-adding activities. Firms typically engage in intra-firm trade because they find it more efficient to do business within firms than externally through the market. Secondly, the corporate strategy of network formation to promote the internationalisation of activities is supported by FDI that integrates production vertically and horizontally. In this context, Porter's (1985) generic value chain model helps to explain the increasing importance and changing pattern of inter- and intra-firm investment and trade relationships. It is unusual that one single firm performs all the core activities (e.g., research and development, production, marketing, delivery, and provision of after-sale services) and supporting activities (e.g., procurement of inputs, technology, human resources, and other infrastructure, like management and finance) by itself. Some of these activities can readily be performed cheaper or better by suppliers located elsewhere, which can lead to the determination of cross-border transaction flows in intermediate goods and services by multinational hierarchies (Dunning, 1993).

Ethier and Horn (1991) noted that internationally traded services are often customized to accommodate the needs of individual purchasers while Markusen *et al*. (1999) identified special attributes of services delivered via FDI. In general, those services can be characterized as knowledge-intensive intermediate inputs, (that may also be intensive in skilled labour) that can be supplied at low marginal cost. GATS formally recognises the work performed by skilled migrants and expatriates as services trade (Hardin and Holmes, 1997, p. 8). The payments for the "imported" services are recorded in the receiving country's balance of payments as services debits and as services credits in the providing country. In addition to skill embodiment, the GATS recognises three other modes of service delivery. The first mode is commercial presence where a supplier

establishes an MNC, joint venture or partnership in the host country to deliver services to the locals. The second mode is cross-border trade where the supplier and consumer are located in different countries, as with overseas telephone services and architectural services. And the third mode is consumption abroad, which involves the consumer moving to the foreign supplier as in tourism and education (Hardin and Holmes, 1997, p. 7-8).

Using data from the United Nations (UN) and Asian Pacific Economic Cooperation (APEC), Dee and Hanslow (2001) found that the stock of world FDI is spread across all sectors, with about 40 per cent invested in the services sector. The strong FDI-services linkage can be explained by the fact that the foreign affiliates established in the host countries are being used increasingly as operational headquarters (OHQ), international procurement centers (IPC) or regional distribution centres (RDC). As such, they provide a wide range of services to their affiliated companies throughout the region (see MIDA, 2007).

Notwithstanding the wide-ranging FDI-services and extensive trade-and-services linkages, there is relatively little empirical work examining the possible relationships between FDI and services trade. On the other hand, the causal relationships between FDI and commodity trade have been studied and documented extensively. For example, Alguacil *et al*. (2002) found for Mexico that the causal relationships between inward FDI and exports are running both ways. Wong and Tang (2007) empirically confirmed for Malaysia the existence of bi-directional causality between inward FDI and semiconductor exports. Furthermore, Pacheco-López (2005) made a novel attempt to study the interactions among inward FDI, exports and imports, and found evidence of long-run bi-directional causality between FDI and exports as well as imports in the case of Mexico.

3. Data, Unit Root and Granger Causality Tests

Data

The data set for the present investigation consists of quarterly time-series data obtained from *International Financial Statistics*. The observation period extends from the first

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quarter 1999 to the third quarter 2006 for Malaysia, and from the first quarter 1995 to the fourth quarter 2005 for Singapore. The choice of sample period is based on data availability. The series for FDI inflows, services credits (SC), services debits (SD) and total trade in services (TS $\equiv$ SC - SD) are converted into real terms before they are transformed into indexes and natural logarithm (ln)[‡].
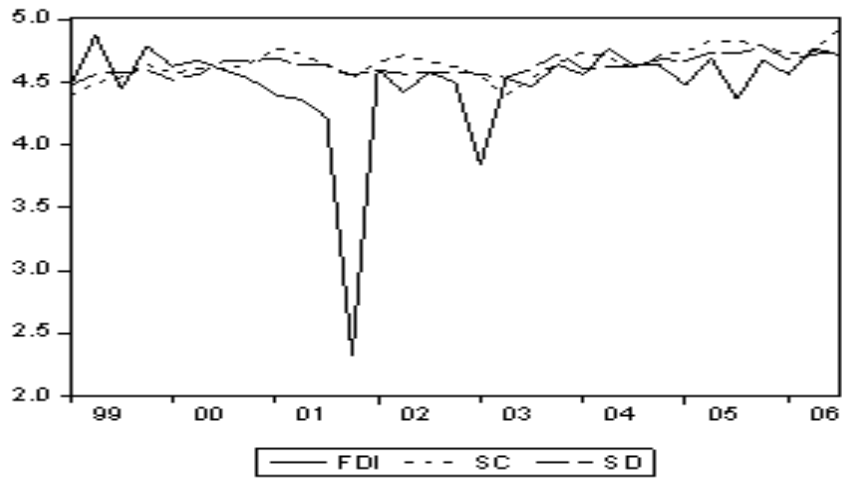
Unit Root Tests

Macroeconomic time series generally tend to have unit roots, i.e. they are not stationary or their variances increase with time (Nelson and Plosser, 1992). OLS (ordinary least squares) may generate spurious correlation when regressing levels of non-stationary time-series variables that contain trend components. In such situations, Granger causality test results may be misleading. Since we are interested in identifying causality relationships, it is essential to test each individual time series (FDI, SD, SC, and TS) for unit roots before applying the Granger causality test (Granger, 1969, 1988). For this reason, we perform the Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1979) and Phillips and Perron (PP) (Phillips and Perron, 1988) tests to determine whether the various time series are $I(0)$.

The time-series plots of the three variables for Malaysia and Singapore indicate that both economies' FDI variable has outliers which occur in response to fairly time-specific shocks (Figure 1). FDI in Malaysia has outliers in the fourth quarter of 2001 and the first quarter of 2003. For Singapore, FDI exhibits significant outliers in the third quarter of 2002 and 2004.
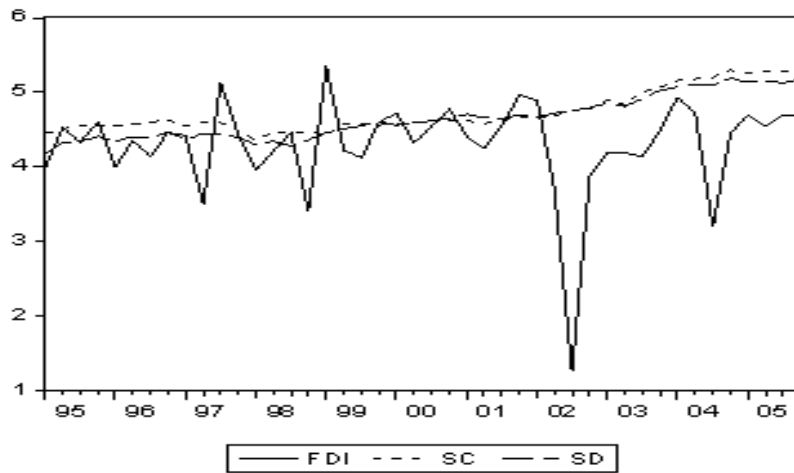
<u>Malaysia</u>

[‡] In the case of Singapore, the price indexes used to deflate the services receipts, services payments, and FDI variables into real terms are the export price index, import price index, and wholesale price index respectively. Meanwhile, the GDP deflator is used to deflate Malaysia's nominal FDI, services receipts, and services payments because neither export nor import price indexes are available.

Singapore

Figure 1. Time-series plots of *Ln*FDI, *Ln*SC, and *Ln*SD for Malaysia and Singapore

Perron (1989) reveals that the conventional unit root tests are not appropriate for variables that have undergone structural changes and the power to reject the unit root null declines if the data contains a structural break that is ignored. Hence, we apply several

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tests for structural break(s) (see Bai and Perron (1998, 2003)) for the FDI series before they are pre-tested for unit roots. Broadly speaking, there are four approaches to testing a hypothesis for structural changes: (1) a test of no break versus a fixed number of breaks and it is known as the supF test (see Bai and Perron (2003) for details), (2) a test of no break versus an unknown number of breaks (equal weighted version), and it is called the double maximum (Dmax) test (see Bai and Perron (1998) for details), (3) a test of no break versus an unknown number of breaks (weighted version) and it is named WDmax test (see Bai and Perron (1998) for details), and (4) a test of ℓ versus $\ell + 1$ breaks, which is based on the sequential application of supF test using the sequential estimates of the breaks (see Bai and Perron (2003) for details). The test statistics for the above hypothesis testing are implemented in a GAUSS programme[§] and the results are reported in Table 1.

Table 1. Testing for Structural Break(s)

Tests:	Malaysia (0.1 critical value)		Singapore (0.1 critical value)	
SupF test: H_0: 0 break *vs*				
H_1: 1 break	0.1152 (7.04)		0.7795 (7.04)	
H_0: 0 break *vs*				
H_1: 2 breaks	4.7353 (6.28)		1.3886 (6.28)	
H_0: 0 break *vs*				
H_1: 3 breaks	4.0331 (5.21)		4.2073 (5.21)	
H_0: 0 break *vs*				
H_1: 4 breaks	2.3587 (4.41)		2.9639 (4.41)	
H_0: 0 break *vs*				
H_1: 5 breaks	2.0339 (3.47)		1.9665 (3.47)	
Dmax test:				
H_0: 0 break *vs*				
H_1: an unknown break	4.7353 (7.46)		4.2073 (7.46)	
WDmax test:				
H_0: 0 break *vs*				
H_1: an unknown break	5.4497 (8.2)		5.6851 (8.2)	
Sequential procedure:	BIC	LWZ	BIC	LWZ
0 break	-0.7332	-0.7004	-0.9208	-0.8978
1 break	-0.6206	-0.4830	-0.7962	-0.6752
2 breaks	-0.4403	-0.1928	-0.8333	-0.6121
3 breaks	-0.2417	0.1217	-0.7278	-0.4036
4 breaks	-0.0237	0.4624	-0.5632	-0.1330
5 breaks	0.1948	0.8121	-0.3931	0.1462

Notes: The maximum break points imposed is five, $h = 5$, BIC = Bayesian information criterion, and LWZ = modified Schwarz criterion suggested by Liu *et al.* (1997).

[§] We would like to thank Chor Foon Tang for computing the test statistics and critical values for the hypothesis testing of structural changes.

The SupF test indicate that the null hypothesis of no structural break cannot be rejected at 10% level of significance against the alternative of 1 or more structural breaks (up to the maximum of 5). In addition, both the Dmax and WDmax tests as well as the sequential application of supF test using both BIC (Bayesian Information Criterion) and LWZ (modified Schwarz criterion) to determine the number of breaks confirm that there is no structural break in both economies' FDI series over the sample period.

Table 2. Unit root tests

	Malaysia		Singapore	
	ADF	PP	ADF	PP
$Ln\text{FDI}_t$	-4.824 [0]	-4.820 [1]	-5.680519 [0]	-5.62627 [4]
	(0.0028)***	(0.0029)***	(0.0001)***	(0.0002)***
$\Delta Ln\text{FDI}_t$	-	-	-	-
$Ln\text{SD}_t$	-2.511619 [0][#]	-2.465893 [2][#]	-2.069333 [0]	-1.929044 [1]
	(0.1228)	(0.1335)	(0.5476)	(0.6222)
$\Delta Ln\text{SD}_t$	-7.157267 [0]	-14.53907 [28]	-8.673224 [0]	-8.624537 [1]
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
$Ln\text{SC}_t$	-2.524525 [7]	-2.783896 [9]	-1.091326 [0]	-0.933844 [1]
	(0.3144)	(0.2136)	(0.9188)	(0.9425)
$\Delta Ln\text{SC}_t$	-5.472404 [2]	-4.874195 [20]	-3.39147 [8][+]	-7.565988 [8]
	(0.0001)***	(0.0005)***	(0.0693)*	(0.000)***
$Ln\text{TS}_t$	-2.880138 [4]	-2.890156 [5]	-1.299418 [0]	-1.179382 [1]
	(0.1825)	(0.1795)	0.8748	(0.9022)
$\Delta Ln\text{TS}_t$	-5.258781 [2]	-7.8307451 [26]	-7.656461 [0]	-7.549492 [3]
	(0.002)***	(0.000)***	(0.000)***	(0.000)***

Notes: For the data in levels, constant and trend were included, in general, while the constant only was imposed on the data in first differences. [.] denotes the lag(s) suggested by AIC for ADF tests and by Newey-West using Bartlett Kernel for PP tests. (.) is the p-value. ***, **, and * denote the rejection of the null hypothesis of a unit root at 1%, 5%, and 10%, respectively.
[#] the ADF and PP equations were specified without time trend variable.
[+] the ADF equation was estimated with constant and time trend.

Table 2 reports the results of ADF and PP tests. They consistently suggest that for both Malaysia and Singapore the services variables (SD, SC, and TS) are non-stationary $I(1)$ but that FDI is stationary $I(0)$.

Granger Causality Tests

The specification of the Granger causality test (Granger, 1969, 1988) can be written in terms of a VAR system. To ensure all the variables included in the system are stationary,

the non-stationary $I(1)$ variables are differenced once with the exception of Malaysia's and Singapore's FDI variable, which was confirmed by the unit root tests as $I(0)$. The Wald test, which follows the chi-square distribution, is used to test the causal relations based on the VAR specification. In addition, a binary (zero-one) dummy variable is imposed on the VAR model in order to account the outlying observations noted above. For Malaysia, the dummy variable (*Dum*) takes on the values of one for 2001:4 and 2003:1 and zero for the remaining observations. Similarly, the dummy variable (*Dum1*) for Singapore takes on values of one to capture the outliers in 2002:3 and 2004:3 and zero for the remaining observations.

Initially, this study tests the causal linkages between FDI and trade in services (TS). The potential causality patterns can be represented by bi-variate VARs for Malaysia and Singapore as follows:

Malaysia

$$LnFDI_t = b_0 + \sum_{j=1}^{j} b_1 LnFDI_{t-j} + \sum_{j=1}^{j} b_{2j} \Delta LnTS_{t-j} + b_3 Dum + c + u_t \qquad (1)$$

$$\Delta LnTS_t = \alpha_0 + \sum_{j=1}^{j} \alpha_1 LnFDI_{t-j} + \sum_{j=1}^{j} \alpha_{2j} \Delta LnTS_{t-j} + \alpha_3 Dum + c^{'} + u_t^{'} \qquad (2)$$

Singapore

$$LnFDI_t = b_0 + \sum_{j=1}^{j} b_1 LnFDI_{t-j} + \sum_{j=1}^{j} b_{2j} \Delta LnTS_{t-j} + b_3 Dum1 + c + u_t \qquad (3)$$

$$\Delta LnTS_t = \alpha_0 + \sum_{j=1}^{j} \alpha_1 LnFDI_{t-j} + \sum_{j=1}^{j} \alpha_{2j} \Delta LnTS_{t-j} + \alpha_3 Dum1 + c^{'} + u_t^{'} \qquad (4)$$

Since using aggregated trade data in services (TS) may introduce aggregation bias in the estimation of a bi-variate VAR, this study also considers testing the linkages between inward FDI and services exports (SC) as well as services imports (SD) using a tri-variate VAR for both economies, which can be specified as:

Malaysia

$$LnFDI_t = b_0 + \sum_{j=1}^{j} b_1 LnFDI_{t-j} + \sum_{j=1}^{j} b_{2j}\Delta LnSC_{t-j} + \sum_{j=1}^{j} b_{3j}\Delta LnSD_{t-j} + b_4 Dum + c + u_t \quad (5)$$

$$\Delta LnSC_t = \alpha_0 + \sum_{j=1}^{j} \alpha_1 LnFDI_{t-j} + \sum_{j=1}^{j} \alpha_{2j}\Delta LnSD_{t-j} + \sum_{j=1}^{j} \alpha_{3j}\Delta LnSC_{t-j} + \alpha_4 Dum + c' + u_t' \quad (6)$$

$$\Delta LnSD_t = c_0 + \sum_{j=1}^{j} c_1 LnFDI_{t-j} + \sum_{j=1}^{j} c_{2j}\Delta LnSC_{t-j} + \sum_{j=1}^{j} c_{3j}\Delta LnSD_{t-j} + c_4 Dum + c'' + u_t'' \quad (7)$$

Singapore

$$LnFDI_t = b_0 + \sum_{j=1}^{j} b_1 LnFDI_{t-j} + \sum_{j=1}^{j} b_{2j}\Delta LnSC_{t-j} + \sum_{j=1}^{j} b_{3j}\Delta LnSD_{t-j} + b_4 Dum1 + c + u_t \quad (8)$$

$$\Delta LnSC_t = \alpha_0 + \sum_{j=1}^{j} \alpha_1 LnFDI_{t-j} + \sum_{j=1}^{j} \alpha_{2j}\Delta LnSD_{t-j} + \sum_{j=1}^{j} \alpha_{3j}\Delta LnSC_{t-j} + \alpha_4 Dum1 + c' + u_t' \quad (9)$$

$$\Delta LnSD_t = c_0 + \sum_{j=1}^{j} c_1 LnFDI_{t-j} + \sum_{j=1}^{j} c_{2j}\Delta LnSC_{t-j} + \sum_{j=1}^{j} c_{3j}\Delta LnSD_{t-j} + c_4 Dum1 + c'' + u_t'' \quad (10)$$

4. Results

The results of the Granger causality tests in bi-variate VAR are reported in Table 2. While the tests results for Singapore suggest that the causal linkages between inward FDI and total trade in services could run in either direction, there is no evidence of causality is revealed in the Malaysian data. The bi-directional finding for Singapore is consistent with her relatively more open foreign investment policy, liberalised trade regime and deregulation of restrictive practices. Given Singapore's strategic location, excellent infrastructure, developed information, communication and technology (ICT) sectors and stable political regime, many large foreign firms have set up their regional headquarters there to provide a wide range of services to their subsidiaries in other parts of the region. Besides, its substantial re-export and entrepôt activities, which are instrumental in the rapid growth of financial and insurance services (to traders and producers), warehousing, transportation, tourism and hospitality services also continue to attract foreign investment. This argument supports the evidence that FDI inflows have laid the foundation for services (export) trade. Also, the increase in services trade also attracts

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FDI inflows. For instance, Singapore's trade (imports and exports) in education services may have led to the establishment of foreign universities there.

Table 2. Granger causality tests in a bivariate VAR framework

Malaysia VAR(8)	χ^2 (*p*-value)	Singapore VAR(12)	χ^2 (*p*-value)
ΔLnTS=/=>LnFDI	9.57329 (0.2963)	ΔLnTS=/=>LnFDI	42.00071 (0.000)***
LnFDI=/=>ΔLnTS	11.3006 (0.1852)	LnFDI=/=>ΔLnTS	29.02495 (0.0039)***

Note: The order of VAR(.) is suggested by AIC from a maximum of 12 quarters. Note: ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Table 3 presents the results of Granger causality tests using a tri-variate VAR. There is evidence of causality relationships between inward FDI and services for both sample countries. But the nature of the causality relation differs markedly. Malaysia shows strong evidence of a unidirectional causal linkage that runs from inward FDI to services imports (payments). Singapore also shows evidence of causality between these two variables. However, the evidence is relatively weaker compared with Malaysia and suggests that causality runs in both directions. Furthermore, the Singapore data also indicates that services exports drives services imports. Neither country shows any evidence of causal interaction between FDI and services exports in the tri-variate setting.

The test results are consistent with the fact that foreign firms in Malaysia depend on outsourcing value chain activities (e.g. research and development, IT services, product design) as they can be performed better and cheaper by suppliers abroad. Also, some of these value chain activities do not fit into the core activities of domestic firms because they do not have the competitive advantage to handle activities that require fast-changing technology. As a result, an extensive use of foreign services is best transferred through FDI, which opens up a channel for the delivery of knowledge-intensive services e.g. through backward integration.

The tri-variate Granger causality test results for Singapore indicate bi-directional causality between inward FDI and imports of services. Services payments are capable of drawing FDI inflows into the country, and inward FDI is able to promote services payments. For example, Singapore is highly dependent on foreign expertise to make it the

regional and international hubs for business, financial and knowledge-based services. As a result, it continues to attract foreign investment into business and financial services on top of its existing comparative advantages in shipping, communications, air traffic, tourism and hospitality services. Its strategic location in the region, the availability of skilled workforce and sophisticated infrastructure, and attractive investment incentives continue to attract FDI inflows. As a consequence of her successful engagement in entrepôt trade, the evidence of high import content of exported services in Singapore could constitute evidence in support of causation running from services receipts (exports) to services payments. Such a services trade pattern would be consistent with multinational trade and investment activity that involves backward and forward linkages.

Table 3. Granger causality tests in a tri-variate VAR framework

Malaysia VAR(6)	χ^2 (*p*-value)	Singapore VAR(9)	χ^2 (*p*-value)
$\Delta Ln\text{SC}=/=>Ln\text{FDI}$	7.4961 (0.2774)	$\Delta Ln\text{SC}=/=>Ln\text{FDI}$	11.45554 (0.2458)
$Ln\text{FDI}=/=>\Delta Ln\text{SC}$	7.487445 (0.2781)	$Ln\text{FDI}=/=>\Delta Ln\text{SC}$	6.97914 (0.6393)
$\Delta Ln\text{SD}=/=>Ln\text{FDI}$	5.64478 (0.4641)	$\Delta Ln\text{SD}=/=>Ln\text{FDI}$	16.24711 (0.0619)*
$Ln\text{FDI}=/=>\Delta Ln\text{SD}$	17.89107 (0.0065)***	$Ln\text{FDI}=/=>\Delta Ln\text{SD}$	19.10624 (0.0243)**
$\Delta Ln\text{SD}=/=>\Delta Ln\text{SC}$	4.338721 (0.6309)	$\Delta Ln\text{SD}=/=>\Delta Ln\text{SC}$	5.417374 (0.7965)
$\Delta Ln\text{SC}=/=>\Delta Ln\text{SD}$	10.16127 (0.1180)	$\Delta Ln\text{SC}=/=>\Delta Ln\text{SD}$	34.35072 (0.0001)***

Note: ***, **, and * denote significance at 1%, 5%, and 10%, respectively. For Malaysia, VAR(6) is estimated because there is insufficient observations to estimate VAR(7) as suggested by AIC for a maximum lag length of 7 quarters. For Singapore, the VAR(9) is suggested by AIC from a maximum lag length of nine.

5. Conclusions

This paper attempts to explore empirically the causal relationships between inward FDI and services trade. The rationale for such an investigation is that FDI provides direct channels for services trade. For example, backward integration involves the import of intermediate goods and services from abroad, including the home countries of the foreign investing firms, for value adding in the host country. Conversely, buoyant services trade may identify areas of growth that attract FDI. The present study has examined evidence

from Malaysia and Singapore because those countries offer attractive environments and incentives for foreign investors.

Granger causality tests for Singapore show bi-directional causality between inward FDI and services trade. This evidence is resilient in the sense that it is robust with respect to the alternative bi-variate and in tri-variate specifications. In the former case the causality relates inward FDI and total trade in services, and in the latter it is restricted to FDI and services imports. The data also suggests that Singapore's services exports Granger-cause imports of services into Singapore. The relatively strong presence of MNCs supports the demand for financial, business and related services and liberalized trade regime accommodates the cross-border trade in services. Our findings support the analytical conjecture that services trade draws FDI inflows into the country, and that inward FDI promotes trade in services. In essence, further liberalisation of FDI and services trade flows could lead to higher growth and further economic development. In contrast, barriers to FDI or restrictions on cross-border services trade by foreign firms, whether motivated by economic, political, social and cultural reasons, could have a direct negative impact on the economic performance and prospects for development of Singapore. Such market interventions would also distort the allocation of capital between foreign and domestic investment. This could result not only in more costly services but also in less consumer choice, lower productivity and perhaps slower technology transfer.

The results of Granger causality tests for Malaysia show that FDI inflows promote services imports. There is no evidence of causation running the other way, from services to inward FDI, in either the bi-variate or tri-variate specification, nor is there any evidence of causality between services imports and exports. In Malaysia, the typical scenario involves wholly owned subsidiaries of foreign corporations to outsource activities to foreign providers for value added in Malaysia. This practice is consistent with the phase of Malaysia's economic development captured in the observation period of this study. Most domestic firms lacked the capital, industrial experience, and linkages to the international markets to provide the standard of serve required by the MNCs..

The different finding for Singapore, of bi-directional causality between inward FDI and services trade (imports), is consistent with her more advanced stage of economic development. Since Singapore has already moved up the value chain from downstream to upstream activities, a significant proportion of FDI has been attracted to the services sector. The expansion of the domestic services sector has supported a redirection of production away from low productivity manufacturing and provided Singapore access to well-paid and high quality jobs. Foreign firms establish affiliates in Singapore as operational headquarters, international procurement centres and regional distribution centres tend to encourage "imported" services since the restrictions on foreign investment as well as the movement of professional and highly skilled personnel have been liberalised except for some selected industries. This evidence implies that inward FDI Granger causes cross-border imports of services. Furthermore, the causation from services receipts to services payments corroborates the high import content of "exported" services, which is consistent with notion of entrepôt trade in services.

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