

# **DETERMINANTS OF SERVICE EXPORT IN SELECTED DEVELOPING ASIAN COUNTRIES**

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## **ABSTRACT**

This paper attempts to empirically examine the determinants of service export in selected developing Asian countries (China, Hong Kong, South Korea, India, Iran, Indonesia, Malaysia, Philippines, Singapore, Thailand, Kuwait, Saudi Arabia and Turkey). The study conducted a static linear panel data analysis on annual data covering the period of 1985-2012. The main finding indicates that exchange rate, foreign income, foreign direct investment (FDI), the value added by services and communication facilities are likely to influence services exports in the selected developing Asian countries. This suggests that these countries have the opportunity to compete globally by exporting services, provided that they are able to exploit and enhance their potential by focusing on the significant and relevant indicators.

**Keywords:** Services Exports; Asian Developing Countries; Panel Data.

## **1. INTRODUCTION**

In recent decades, the services sector has been identified as the new engine of growth for most countries, especially developing countries, due to its increasing importance in global international trade and investment (Mattoo & Stern, 2007). Since the mid-1980s, many services that were previously considered non-tradable are now being actively traded<sup>1</sup>. According to the World Trade Organization (WTO) (2014), estimates on trade in services shows that services trade are taking a more pronounced role in global trade and are

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<sup>1</sup> McGuire, (2002) defined tradability of services as the possibility for the cross-border delivery of final services or of individual components in the services production chain without the movement of the producer or the customers. Sampson and Snape (1985) and Bhagwati (1988) proposed a view on service trade that was later formalised into the World Trade Organization's (WTO) General Agreement on Trade in Service (GATS). GATS came up with classifications that are based on four modes of supply: namely mode 1 (cross-border supply), mode 2 (consumption abroad), mode 3 (commercial presence) and mode 4 (movement of natural persons).

increasingly embodied in the production of manufactured goods. Thus, we believe that services can play a key role in defining the competitiveness of a country's exports, and can help countries take on tasks with a higher added value in the global value chains.

The rapid increase in traded services is also closely related to the globalisation of the world economy and technological progress made in the information and communication services (Organization for Economic Co-operation and Development [OECD], 2002). A recent trend shows that world exports of commercial services have registered relatively higher growth (6%) compared to trade in goods (2%) in 2013 (WTO, 2014) (see Table 1 and Table 2). Although increasing in terms of growth, trade in services accounts for a much lower share in terms of overall value. As of 2013, world trade in goods was valued at more than USD18.5 trillion, while trade in services accounted for almost USD 5 trillion (United Nation Conference on Trade and Development [UNCTAD], 2014). Meanwhile, in terms of share, trade in services represents about 20% of total trade globally (WTO, 2010). This development has a greater impact on countries that focus on generating additional income from the external sector, especially through service export.

**Table 1: World merchandise trade, 2005-2013 (Annual percentage change)**

	Merchandise Exports			Merchandise Imports		
	2005-2013	2012	2013	2005-2013	2012	2013
World	8	0	2	7	0	1
North America	6	4	2	4	3	0
South and Central America	9	-1	-2	12	3	3
Europe	5	-4	4	5	-6	1
Commonwealth of Independent States (CIS)	11	2	-3	13	6	0
Africa	9	5	-6	12	9	2
Middle East	12	6	0	11	8	6
Asia	10	2	2	10	4	1

Source: WTO (2014), International Trade Statistics.

**Table 2: World commercial trade in services, 2005-2013 (Annual percentage change)**

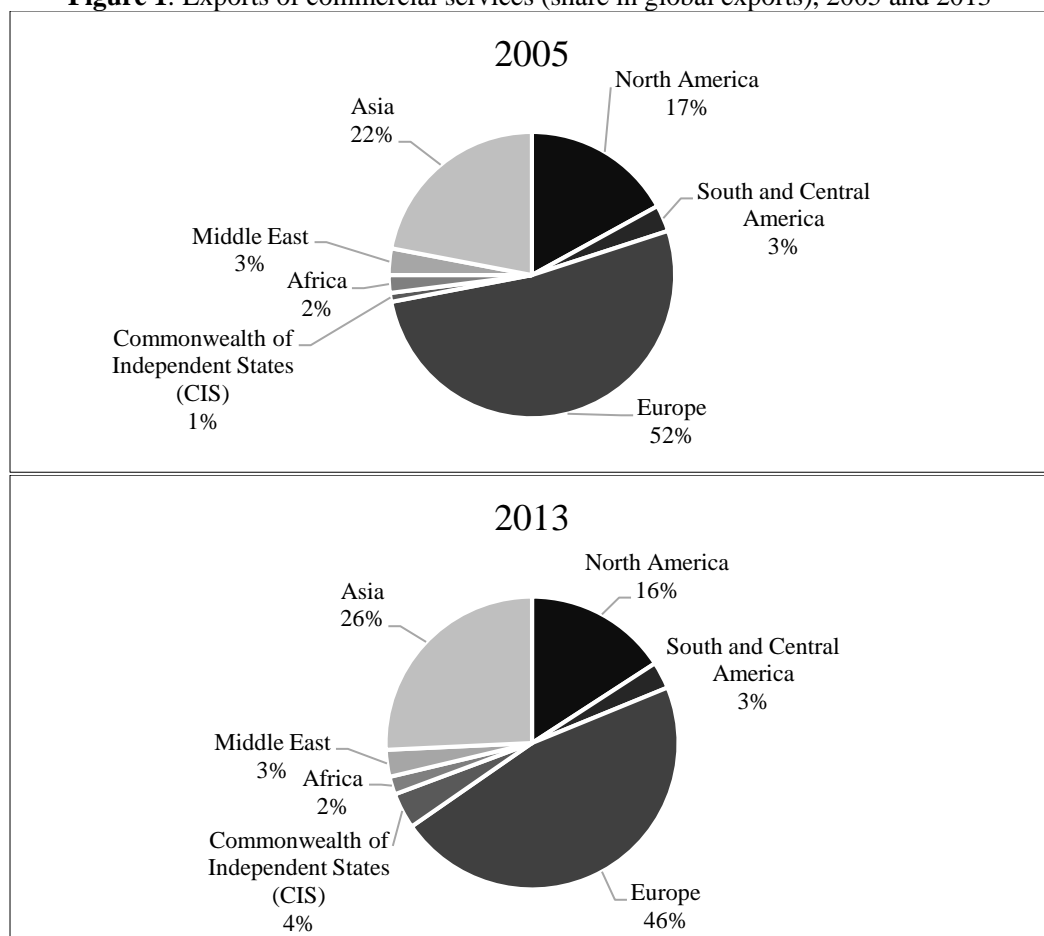
	Service Export			Service Import		
	2005-2013	2012	2013	2005-2013	2012	2013
World	8	2	6	8	3	5
North America	7	5	5	6	3	3
South and Central America	9	6	2	14	6	6
Europe	7	-2	7	6	-2	5
Commonwealth of Independent States (CIS)	14	9	9	14	18	15
Africa	6	7	-3	11	2	-1
Middle East	9	9	4	12	5	7
Asia	11	7	5	10	8	4

Source: WTO (2014), International Trade Statistics.

On a regional basis, developing economies accounted for 43% and 34% of world merchandise and commercial services trade in 2013, respectively (WTO, 2014). Among the developing economies, Asia achieved the highest growth in merchandise exports at 4.5%, followed by North America (3%). As for the share of commercial service export, between 2005 and 2013,

only Asia and the Commonwealth of Independent States (CIS) region saw an increase in their share of exports of commercial services compared to those of North America, South and Central America, Europe, Africa and the Middle East, when it increased from 22% to 26% (see Figure 1). Although trade in services has generally been growing faster than merchandise trade, it is apparent that the growth rates remain quite different across regions. In general, developed countries account for about half of global trade in goods and about two-thirds of trade in services. Additionally, developed countries account for most of the demand (imports) and supply (exports) in the world trade in services, especially in computer and information services, financial services, royalties and license fees and communication services (UNCTAD, 2014). Nevertheless, service export in developing countries have been increasing in most sectors, especially since 2011, and it is of interest to note that their export of service has grown much faster than that of developed countries, especially in personal, cultural and recreational services, construction services, insurance services, computer information services, other business services and travel.

**Figure 1:** Exports of commercial services (share in global exports), 2005 and 2013



**Source:** WTO (2014), International Trade Statistics

Moreover, in terms of share of the value added by services, the developed economies accounted for a dominant share compared to the developing economies as whole. As depicted in Table 3, amongst the developed economies, America and Europe were the main contributors, with shares of 45.0% and 39.7% in 2013, respectively. The rest came from Asia and Oceania. As for the developing economies, the share of services value added is dominated by the Asian region (51.6 and 67.1% in 1990 and 2013, respectively). If we separate the developing Asian countries further, China accounted for the largest share, 34.7% in 2013 (compared to 15.4% in 1990). This is followed by India (13.5%) and Korea (10.6%) (UNCTAD, 2014).

**Table 3:** The share of services value added by region (percentage), 1990 and 2013

Developed Economies			Developing Economies		
Region	1990	2013	Region	1990	2013
America	43.0	45.0	Africa	11.3	9.3
Asia	15.1	12.7	America	36.8	23.4
Europe	40.1	39.7	Asia	51.6	67.1
Oceania	1.9	2.6	Oceania	0.4	0.2

*Source:* UNCTAD Statistics Database Website, 2014.

**Table 4:** Share of services exports in Asian Developing Countries (percentage), 1990 and 2013

Year/Country	1990	2013
China	6.1	18.4
India	4.8	13.5
Hong Kong	19.1	11.9
Singapore	13.4	10.9
Korea, Republic of	10.7	10.1
Thailand	6.7	5.3
Turkey	8.4	4.2
Malaysia	4.0	3.6
Indonesia	2.6	2.0
Philippines	3.4	1.9
Saudi Arabia	3.2	1.0
Iran (Islamic Republic of)	0.5	0.6
Kuwait	1.3	0.5
<b>Selected sample countries</b>	<b>84.3</b>	<b>83.9</b>
Other countries	15.7	16.1
Total Asian	100.0	100.0

*Source:* Author's own computation from UNCTAD Statistical Database (2014).

Finally, in terms of value of exported services, developing Asian countries recorded USD 1120.3 billion in 2013, which is an increase of 10.7 % from USD 95.6 billion in 1990 (UNCTAD, 2014). As shown in Table 4, the 13 selected developing Asian countries contributed more than 80 % to the total service export of the Asian countries as a whole, with China, India, Hong Kong, Singapore and Korea accounting for the largest shares. In sum, the significant progress shown by the developing Asian countries in recent years in contributing to the increased trade in services has provided an avenue for us to explore in the present study.

Although trade in services has generally been growing faster than the trade in goods, it is apparent that growth rates remain quite different across regions. For both developing and developed countries, the export of service has been increasing in most sectors since 2008. While export growth has often been higher for developed countries since 2008, export growth in developing countries has generally been higher since 2011 in most of the service sectors. It is of interest to note that developing countries' services exports have grown much faster than those of developed countries, especially in personal, cultural and recreational services, construction services, insurance services, computer information services, other business services and travel (UNCTAD, 2014).

Despite this impressive performance, developing countries' presence in the global market as suppliers of services is generally more limited, as international markets are largely supplied or dominated by developed countries. This explains, to some extent, why most developing countries incur a deficit in their services account while sustaining a surplus in their merchandise account. This makes it a matter of urgency for developing countries to find ways increasing the contribution of services exports and eventually to expand their presence in the international services market. It has been pointed out that reforms in the exported service sector could contribute positively to the sector's performance and eventually positively affect the overall development of nations (Hoekman, 1996). Although services contribute more than 50% to the gross domestic product (GDP) in most developing countries, the sector's role on the external front has been quite unsatisfying, despite positive progress, especially in the case of developing (especially Asian) countries.

Since the pioneering theoretical models of international trade by classical economists, many studies have examined issues related to trade flows, focusing largely on trade in goods and services (in aggregated form). Despite the growing importance of the services sector and the rapid internationalisation of services, very few studies have explored issues related to trade in services or service export in isolation. The existing literature on services largely focuses on the impact on growth of the services sector, determinants of service trade and the determinants and impact on growth of the services-based FDI (e.g., Francois & Schuknecht, 2000; Li, Greenaway, & Hine, 2003; El Khoury & Savvides, 2006; Gabrielle, 2006; Mishra, Lundstrom, & Anand, 2011; Lorde, Francis, & Drakes, 2011; Dash & Parida, 2013; Alege & Ogundipe, 2015). Thus, the present study seeks to fill the void by exploring the determinants of service export in selected developing Asian countries. Additionally, the present study complements the small existing literature on the determinants of service export and service trade (e.g., Sapir & Lutz, 1981; Freund & Weinhold, 2002; Kimura & Lee, 2006; Choi, 2010). Service export can be an important part of a developing country's strategy for growth. The findings of the study may have important policy implications for developing countries as a whole, since now most of the countries are transforming their economy towards a services- or knowledge-based economy and are liberalising the services sector at the regional as well as multilateral trading levels.

This paper is organised as follows: section 2 provides a review of related literature; section 3 describes the empirical model, the econometric method and the data; section 4 encompasses a discussion of the empirical findings; and section 5 summarizes the study and suggests some policy implications.

## 2. LITERATURE REVIEW

The importance of international trade to a nation's economic welfare and development has been heavily documented in the economics literature since Adam Smith's (1776) pioneering inquiry into the nature and causes of the wealth of nations. The rationale underlying the nature and causes of nation's welfare suggests that countries need to export goods and services in order to generate revenue to finance imported goods and services that cannot be produced indigenously. Over three decades, many theories have sought to answer the question of why countries and individual business enterprises engage in international trade. In line with these theoretical developments, many empirical studies have been published, addressing various aspects of international trade (e.g. Dollar, 1992; Edwards, (1993); Harrison, 1996; Frankel & Romer, 1999). In recent decades, the services sector has been identified as the new engine of growth for this millennium in most developed and developing countries (Noland, Park & Estrada, 2012; Park & Shin, 2012). This is because of widespread belief that an efficient services sector is highly important for international trade and economic growth (McGuire, 2002). In general, the services sector provides crucial support to other sectors in the economy and industries as a whole—for instance, through finance, transportation, communication, wholesaling, communications and other business services. Besides its significant contribution to various economic activities, an increase in services trade and the availability of various subservices may also boost economic growth by improving the performance of other industries. This is due to the fact that the services sector can offer key intermediate inputs, especially in an increasingly globalised world economy.

Copeland and Mattoo (2008) pointed out that services trade differs from trade in goods in two ways. First, trade in goods involves shipping goods from one country to another, but in the case of trade in services, cross-border trade is not the most important way of conducting international transactions. Second, services tend to be highly regulated, and many types of service are provided or produced by regulated monopolies. Barriers to trade in services arise from domestic regulations that often serve the dual purpose of responding to market failures (e.g., quality standards for medical practitioners) and protecting local suppliers from foreign competition. Qasenivalu (2008) noted that because trade in services is invisible, services are not treated as trade, leading to their non-inclusion in the initial negotiation of the 1947 General Agreement on Trade and Tariffs (GATT). However, in the mid-1980s, services gained recognition as a subject of trade and were included for the first time in the WTO's Uruguay round of trade negotiations, held between 1986 and 1993. Under the General Agreement on Trade in Services (GATS), services trade was classified into four modes of supply (Mattoo and Stern, 2007).

As for the theoretical foundation, scholars held the view that the standard concepts of comparative advantage and product specialisation could be applied to services trade to determine the patterns of trade in services (Hindley & Smith, 1984; Deardorff, 1985). Hindley and Smith (1984) argue that, from a conceptual point of view, there is no difficulty in applying the standard toolkit of the international economist to the problems of trade and investment in services. Accordingly, in the absence of a developed theory of trade in services, theories that are used to explain trade in goods (such as comparative cost theory and new trade theory) are often applied to services trade as well. This has been supported by Sapir and Winter (1994), who argued that, 'under perfect competition', the theory of comparative advantage could be applied to international trade in services.

Nevertheless, some argue that the introduction of services does require a different approach, necessitating a reinterpretation of the law of comparative advantage. According to Melvin (1989), when the principle of comparative advantage and the Heckscher-Ohlin (H-O) theorem are applied to services, they must be interpreted differently. Moreover, Francois (1990) argues that the non-transportability of services affects the basic economic concepts of international trade. For one thing, for goods, it is unlikely that an integrated world market for services will lead to uniform prices in different national markets, as it is not possible to reproduce in country B the price-quality combination of the services produced in country A, as is possible in the case of goods. So, although in general the theory of trade in goods has been applied to trade in services, the unique characteristics of services (e.g., non-transportability and intangibility) require a new theory of trade in services to help explain the cross-country patterns of specialisation in services. Despite on-going debates on the relevance of new and classical trade theory in explaining the determinants of patterns in the trade of services and of services exports, some empirical studies have applied conventional international trade theories.

Much of the research on international trade focuses on the macroeconomic determinants and consequences of trade (e.g., Baldwin, 1979; Bahmani-Oskooee, 1986; Chowdhury, 1993; Guisan & Cancelo, 2002; Khedhiri & Bouazizi, 2007; Chang, 2009; Goswami, 2013). The empirical literature focusing on the services trade is quite limited, despite the fact that the importance of the services trade has been increasing significantly in the overall development of nations. Specifically, some studies on the determinants of the service trade and service export have been undertaken by Sapir and Lutz (1981), Freund and Weinhold (2002), Barcenilla and Molero (2003), Wong, Tan and Fausten (2009), Kandilov and Grennes (2010), Sandeep (2011), Karam and Zaki (2012), Ahmadzadeh, Knerr, Yavari, Asari and Sahabi (2012), Covaci and Moldovan (2015) and Pham and Vü (2016), focusing on research objectives with different scopes, indicators, sample countries and methodologies. The initial work by Sapir and Lutz (1981) focused on the determinants of the patterns of comparative advantage in service trade (freight transportation, other transportation and insurance) using the H-O framework. The main finding of the study was that trade theories could be used to explain the patterns of trade in services in spite of varying and often substantial degrees of protectionism. The authors also highlighted the fact that the comparative advantage in freight services was related to capital intensity, scale, composition of trade and distance from trading partners. Performance in passenger services depended on capital abundance and the flow of passengers. Meanwhile, for trade in insurance services, the availability of human capital and economies of scale seem to be important determinants. In addition, some traded services, such as consultant and engineering services, licensing and technical assistance, serve as a medium of technology transfer and are therefore important in the development process.

In line with the significant advances in information and communication technology and in e-commerce, Freund and Weinhold (2002) attempted to determine whether the Internet had any significant impact on international service provision in practice, using detailed data from 31 countries and 14 industries from 1995 to 1996. They estimated a general model of services trade across countries and investigated whether the inclusion of data on Internet penetration, as measured by the number of Internet hosts in a country, was statistically significant. Overall, the findings provided evidence that the Internet was related to growth in services trade. After controlling for GDP and exchange-rate movements, the results suggested that a 10% increase in Internet penetration in a foreign country was associated with about a 1.7 percentage point increase in export growth and a 1.1 percentage point increase in import growth.

Similarly, Choi (2010) re-examined empirically the role of Internet in the international trade in services, using panel data for 151 countries from 1990 to 2006. Using a pooled ordinary least squares regression, a fixed-effects model, and a panel Generalized-Method of Moments (GMM), the increase in the number of Internet users per hundred people correlated to an increase in total service trade, as well as service export and service import. A 10% increase in Internet users per hundred people was associated with an increase in service trade from 0.23% to 0.42%. The measured effect of the Internet on service trade, while significant, is actually small, because this is aggregated service trade. This is because the dependent variable has three variations: the sum of the service export and service import, service export, and service import. This is in contrast to Freund and Weinhold (2002), who found that the effect of the Internet on US business and professional service import was more than double the effect on overall US service import. On the whole, we concluded that an increase in a country's Internet access will facilitate an increase in its service trade with other countries.

Using dynamic modelling, Barcenilla and Molero's (2003) research provided new evidence on the determinants of service export in the European Union by estimating the demand function for export using cointegration techniques. The aim was to examine the main determinants of service export in the long and short run. In a study of 15 European countries over the period 1970-2000, they found that the effect of rising foreign income on the volume of exports was positive for all countries. Furthermore, the values for income elasticity were very large for several countries with different patterns of service trade. They also found that price and exchange rate elasticity were significant in explaining the patterns of service export in most of the countries concerned.

A recent study by Wong et al. (2009) explored empirically the relationship between FDI and service trade for Malaysia and Singapore, since service trade is an important source of growth in these countries. Moreover, both economies are export-oriented and receive substantial inflows of FDI, with Singapore being the largest recipient among countries in the Southeast Asia region. The study examines the causal linkages between inward FDI and the country's engagement in service trade, using bivariate and trivariate (Vector Autoregressive) VAR frameworks. The empirical findings for Singapore show evidence of bidirectional causality between inward FDI and the total trade volume in services as well as between FDI and service import (in the trivariate specification). This may reflect Singapore's relatively open foreign investment policy and its free trade regime in services. For Malaysia, the evidence of causality is weaker and unidirectional, from inward FDI to service import. 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.

Using disaggregated data on service export and gravity equation, Kandilov and Grennes (2010) examined the sources of the advantages of the transition economies of Central and Eastern Europe (CEE) over those of competing exporters. The authors analysed service export to nine Western European countries from a large number of high- and low-income partners across the globe, including many lower-cost service exporters such as CEE countries, India, China and Brazil. The authors separated the effects of geographical distance, time zones, relative quality of legal institutions and other determinants of service export. The findings indicated that the importance of geographical distance varied substantially across types of service export. Geography is important for exports of construction services, but it was found to have a



negligible impact on computer-related services. Moreover, the impact varies for time zone differences: a larger time difference promotes exports of financial services, but it reduces construction service export. Additionally, high quality of legal institutions (i.e., the legal environment) also consistently significantly promoted trade in services. The results demonstrate that aggregating services that are not homogeneous could conceal important differences in the effects of geographical distance and other variables on the pattern of service trade. As a whole, the results indicate that CEE has different advantages over low-cost Asian and South American rivals for different types of service export.

Similarly, van der Marel (2011) analysed whether, and to what extent, the determinants of comparative advantage have explanatory power for service trade for 23 EU countries. The EU was selected because it has the most developed regional trading arrangement (RTA) for services in the world. The author assessed the geographical, Heckscher-Ohlin's factor endowment and institutional (governance of regulation) determinants of services trade based on the literature for goods trade. The findings indicated that factor endowment, skilled labour and institutional factors are important source of services trade. First, the author argued that countries that are endowed with a relatively high-skilled labour force and an ICT-employed capital stock will find it easier to exploit a comparative advantage in services that intensively use these factors of production (e.g., business services). Second, they asserted that although semi-skilled labour does not constitute a direct determinant for services specialisation, countries with relatively more semi-skilled labour will nevertheless find it easier to export services than goods. Third, institutions seem to be unimportant for service trade. Although the link between institutions and trade turns out to be robust for goods and services, service trade appears to be substantially more strongly associated with the higher levels of trust it requires from importers as a specific element of their relationship and less with the rule of law.

In a different perspective, Sandeep (2011) examined the potential of the US services sector for export to Asian trading partners (i.e., Japan, China, India, Singapore, South Korea and Hong Kong), using a panel data analysis based on the gravity model that is widely used to analyse trade in goods. Nine years of data covering the period from 2000 to 2008 were used with six cross-sections. The study revealed that the US had export potential in services to India and Japan. Additionally, it was found that the US exports converged with those of Hong Kong, India and Korea and diverged from those of Japan, China and Singapore. The findings also indicated that there was a large scope for export expansion to Hong Kong, India and Korea.

A recent study by Karam and Zaki (2012) incorporated a new determinant of trade performance, which is the number of commitments undertaken by the sector in the WTO and the availability of those commitments by mode of supply to investigate the determinants of bilateral trade in services for the Middle East and North African (MENA) countries. They used an adapted version of the gravity model and a panel dataset covering the period 2000–2009 on 21 countries and across 10 sectors. The study focused on the trade in services of the MENA region due to the fact that in some MENA countries, trade in services, rather than trade in goods, appears to be the core of their development strategies. The results showed that being a WTO member boosted trade in services. In addition, the number of commitments and binding these commitments increased export, import and trade in services. The authors pointed out that this positive and significant effect remained robust even after controlling for several econometric issues, namely, the selection bias related to WTO membership and the internality of commitments.

Focusing on a slightly different issue, Ahmadzadeh et al. (2012) examined the competitiveness of service export and its determinants among the Organisation of Islamic Cooperation (OIC) member countries, using the Revealed Comparative Advantage (RCA) and the panel data method, respectively. This study used time series data for the period 1996–2010, with variables including total service export, GDP per capita, real effective exchange rate, inflation, information and communication technology and FDI. The findings from the RCA analysis showed that the comparative advantage of exporting travel and transportation services amongst the OIC member countries had increased and that the percentage of countries for which the RCA index is less than 1 had decreased. The number of countries that had no comparative advantage in the export of other commercial services had increased. Factors GDP per capita, real effective exchange rates, foreign investment inflow and communication infrastructure had significant and positive effects on service export. The variables inflation and institutional index reduced service export. Furthermore, the membership of these countries in the regional blocks Economic Cooperation Organization (ECO) and the Developing Eight (D8)<sup>2</sup> increased the service export.

Recently, two studies by Covaci and Moldovan (2015) and Pham and Vũ (2016) examined the determinants of service export. Covaci and Moldovan (2015) investigated the determinants of aggregate service export and the determinants of seven service subcategories (i.e., transport, travel, communication, computer and information, financial, construction and other business services) in Lithuania using a gravity model and a panel dataset for 2003–2012. The results showed that the GDP of the destination country and a common spoken language exert a positive influence on trade in services. Time zone differences, EU membership and relative human capital were found to have different effects across service subcategories. Also, the significance of physical distance between Lithuania and its partners depended on the type of service. Physical distance from the destination country was insignificant for the majority of service subcategories, but not for transport services, other business services and computer and information services. Pham and Vũ (2016) analysed the determinants of service trade flows between Vietnam and the European Union. In this study, a gravity model was estimated from panel data and pooled, random and fixed effect estimates, covering the ten years from 2002 to 2011, for total service trade flows, service export and service import between Vietnam and the European Union. The estimated results indicated that the service trade flows between Vietnam and its European partner countries were determined by the gap in GDP per capita between Vietnam and the EU countries, the population of the EU countries, the real exchange rates, the colonial relationship and former membership of the Council of Mutual Economic Assistance.

Generally, based on the review above, we can conclude that the literature on service trade and service export is relatively limited compared to that focusing on aggregated trade flows or patterns. Nevertheless, in recent years, rising awareness and interest among researchers and policymakers on services sector matters, such as the determinants and their potential impact on economic growth, have finally triggered some studies in these subjects. Most of the studies still adopt the classical international trade theory, especially Heckscher-Ohlin, and the new trade theory as a framework for analysing the factors affecting service trade. Moreover, the above review also reveals that most of the factors affecting service trade and service export are

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<sup>2</sup> ECO - established in 1985 by Turkey, Iran and Pakistan. In 1992, new members such as Afghanistan, Kazakhstan, Turkmenistan, Azerbaijan, Uzbekistan, Kyrgyz were added. D8 - group of developing countries which comprise of Indonesia, Iran, Turkey, Bangladesh, Egypt, Nigeria, Malaysia and Pakistan.

similar to those influencing trade in goods (such as GDP per capita, exchange rate, population, distance, membership in regional trading arrangements, FDI, communication facilities and infrastructure, institutional quality, etc.) as indicated by Kimura and Lee (2006), who demonstrated that service trade responds to many of the same basic determinants as does goods trade.

Although momentum in the number of research papers is increasing, we believe that there is still scope for further research on the determinants of service trade or service export, since the findings may vary across region, country, study period, variables and methodology used. Such analysis is crucial for policy implications, especially for developing countries, as many of these countries are involved in bilateral, regional and multilateral arrangements (i.e., in the WTO). All of these trading arrangements have incorporated service liberalisation (i.e., GATS) as one of the main targets to achieve by member countries. It is apparent that many developing countries are reluctant to liberalise their services sector because of uncertainty about competitiveness and its impact on growth. Findings from the present study may provide some insights and policy implications for developing countries to enhance services trade and export. The present study, therefore, focuses to examine the determinants of services exports in the case of selected developing Asian countries.

### 3. DATA AND METHODOLOGY

#### 3.1. Theoretical Model

Several theoretical models have provided explanations of the determinants of trade; these include both classical and modern trade theories. These theories mostly focus on trade in goods. Thus, in the case of the services trade, the main question raised by international trade economists is whether the classical concept of comparative advantage can be used to explain services trade patterns. Some scholars, such as Hindley and Smith (1984) and Deardorff (1985), have asserted that the standard concepts of comparative advantage and product specialisation, which are based on the Hecksher-Ohlin (H-O) framework, can also be applied to services trade. The theoretical foundation for empirical studies on the determinants of trade and export also relies on new trade theories. For the purpose of the present study, we adopted the export demand function introduced by Bahmani-Oskooee (1986), but with the addition of a few independent variables drawn from the empirical literature. According to Bahmani-Oskooee (1986), the world demand for a country's aggregate exports is specified in log linear terms as

$$\ln X_t = a + b \ln YW_t + c \ln (PX/PXW)_t + d \ln E_t + v_t \quad (1)$$

where

- X** = quantity of exports;
- YW** = weighted average of the real Gross National Product (GNP) of a country's trading partners;
- PX** = export price;
- PXW** = weighted average of the export prices of a country's trading partners;
- E** = export-weighted effective exchange rate.

The export demand function that is represented by equation (1) implies that exports are influenced by foreign income, relative prices and the exchange rate. We extended equation (1) by incorporating other factors: FDI, communication facilities and the value added by services as a share of the GDP that likely affect the service export in developing countries. Therefore, the estimating export demand function for services is specified as follows:

$$\text{LNEXSV}_{it} = \beta_0 + \beta_1 \text{EXCH}_{it} + \beta_2 \text{LNGDPI}_{it} + \beta_3 \text{FDI}_{it} + \beta_4 \text{LNCOMM}_{it} + \beta_5 \text{LNVADS}_{it} + \varepsilon_{it}, \quad (2)$$

where  $i$  represents the country and  $t$  is the period of time. The variables in the equation are defined as follows, with service exports (EXSV) as the dependent variable:

<b>EXSV<sub>it</sub></b>	=	value of service export for country $i$ at time $t$ ;
<b>EXCH<sub>it</sub></b>	=	real exchange rate as a proxy for the relative prices in the domestic and international markets of country $i$ at time $t$ ;
<b>GDPI<sub>it</sub></b>	=	the real world GDP value as a proxy of foreign income level;
<b>FDI<sub>it</sub></b>	=	FDI as a percentage of GDP for country $i$ at time $t$ ;
<b>COMM<sub>it</sub></b>	=	communication facilities, represented by the number of fixed line users per 1000 people in country $i$ at time $t$ ;
<b>VADS<sub>it</sub></b>	=	the value added by the services sector as a percentage of GDP of country $i$ at time $t$ ;
<b><math>\varepsilon_{it}</math></b>	=	the error term.

All the variables were transformed to log form except for EXCH and FDI.  $i$  stands for the country number,  $t$  stands for the year and  $\varepsilon_{it}$  is the error term.

### 3.2. Variable Descriptions

#### (a) Real Exchange Rate (EXCH)

The real exchange rate is the ratio of the price abroad to the domestic price, where the foreign price is converted into domestic currency units via the current nominal exchange rate. The real exchange rate is also a measure of real competitiveness, as it captures the relative prices, costs and productivity of one particular country vis-à-vis the rest of the world (Auboin & Ruta, 2011). A fall in the relative domestic prices due to exchange rate depreciation indicates a cheaper price for exported goods and services in the international market, which eventually increases the demand for exports. Thus, a positive relationship between real exchange rate and service export is expected.

#### (b) Foreign Income (GDPI)

The gross domestic product of importing countries or trading partners (GDPI) is regarded as one of the primary indicators that are likely to influence the demand for service export. It reflects the external demand from the rest of the world. GDPI was included as an independent variable to control for country size and income effects (Bahmani-Oskooee, 1986; Freund & Weinhold, 2002). For the purpose of the present study, GDPI represents the income from the world. The higher the external demand or income of the trading partners, the higher the service

exports (Guisan & Cencelo, 2002; Khedhiri & Bouazizi, 2007). Thus, service export and GDPI are expected to have a positive and significant relationship.

(c) *Foreign Direct Investment (FDI)*

Foreign direct investment (FDI) plays an important role in global trade; many Asian countries are highly dependent on FDI inflows. For the host country that receives foreign investment, FDI can increase its capital in various ways. In this study, FDI is represented by the share of FDI in the GDP as a proxy of foreign investment. The impact of FDI on exports or trade is mixed in the existing literature. Several studies have found that FDI exerts a positive influence on exports generally (e.g., Pfaffermayr, 1996; Santos-Paulino, 2005; van Dijk, 2002). On the other hand, some studies have indicated a negative relationship (e.g., Hoekman & Djankov, 1997; Ibrahim & Makolle, 2013). Thus, the result is ambiguous.

(d) *Communication Facilities (COMM)*

Trade in both goods and services proved to be influenced by Internet development in a country (Freund & Weinhold, 2002, 2004). Indeed, communication facilities and infrastructure development are key determinants of the services trade. Countries that export or import service are naturally concerned about the host nation's communication infrastructure and facilities such as electricity, the telecommunication backbone, Internet speed, the mobile phone network, the postal network coverage and the usability of such services for the general consumers. The expansion in communication facilities matters in terms of accessing the world market (Kumar, 1998; Majeed & Ahmad, 2006). Other than that, Shepherd and Wilson (2009) found that bilateral trade flows were sensitive to information and communication technology (ICT). As for the service trade, Freund and Weinhold (2002) and Choi (2010) have indicated that the relationship between the Internet and the service trade is positive. To measure communication facilities we employed the number of fixed line users instead of Internet users (as indicated by Choi, 2010) because of data unavailability for the sample used in the present study. We expected a positive relationship between communication facilities and service export.

(e) *The Value Added by the Services Sector (VADS)*

The value added by services is a proxy for services production of a country. Bertil (1968) claimed that the level of production is one of the determinants of exports. Higher levels of production are the main cause of export expansion, since an output surplus can be exhausted in the international market. In an open economy, such surpluses create a motivation to export products. Empirically, Kumar (1998) and Majeed and Ahmad (2006) confirmed the positive impact on exports of the value added by services. Moreover, as services now have become tradable and can be increasingly unbundled, whereby a single service activity can be fragmented and offered at different locations throughout the world (Mishra, Lundstrom and Anand, 2011), there is the possibility for the value added by services to increase export growth. It is also believed that through enhancements in technology and innovation, the value added by services could be increased and hence creates room to support service export. Therefore, we expected a positive impact of GDP on exports.

### 3.3. Data Sources

The panel data adopted for this study were annual and covered the period from 1985 to 2012. The data series were sourced from the UNCTAD statistical database (2014) and the World Bank database (World Development Indicators) (see Table 5). The study incorporated 13 developing countries from Asia, namely: China, Hong Kong, South Korea, India, Iran, Indonesia, Malaysia, Philippines, Singapore, Thailand, Kuwait, Saudi Arabia and Turkey. The selection of countries was based on the performance of the service export (measured in terms of the share of service export to total exports among the developing Asian countries) as well as on the availability of data.

**Table 5:** Summary of Data Sources

No.	Variables	Source
1	Real Exchange Rate (EXCH)	UNCTAD
2	Foreign Direct Investment (FDI)	UNCTAD
3	Foreign Income (GDPI)	UNCTAD
4	Communication Facilities (COMM)	WORLD BANK (WDI)
5	Services Value added (VADS)	UNCTAD
6	Services Exports (SERV)	UNCTAD

## 4. EMPIRICAL FINDINGS

This section presents and discusses the empirical results for the determinants of service export. Tables 6 and 7 present descriptive statistics and correlation analyses for the main variables included in the analysis. The correlation coefficients matrix reveals that most of the independent variables had low correlations (less than 0.5) with the dependent variables except for LGDPI (0.637). Meanwhile, among the independent variables, it was observed that most of the variables produced low coefficients, except for LVADS and FDI (0.580). In addition, most of the independent variables had positive relationships with the dependent variable, except for the real exchange rate (EXCH) which had a negative correlation with service export ( $r = 0.311$ ).

The objective of the study was to examine the determinants of service export in selected developing Asian countries. The method used for estimating the model was a static linear panel analysis which consists of pooled ordinary least square regression (OLS), fixed and random effects. However, to choose the best model, several tests needed to be performed. The first test was the Breusch and Pagan Lagrangian multiplier (LM), which was used to choose

**Table 6:** Descriptive Statistics for Key Variables

Variables	Observation	Mean	Standard Deviation	Min	Max
EXSV	364	9.225	1.332	5.442	12.162
EXCH	364	1.061	0.289	0.440	2.630
GDPI	364	10.522	0.219	10.146	10.867
FDI	364	3.524	6.283	-2.800	41.100
COMM	364	2.371	1.248	0.000	4.127
VADS	364	3.892	0.233	3.480	4.510

**Table 7:** Correlation Coefficient between the Variables

Variables	LEXSV	EXCH	LGDP	FDI	LCOMM	LVADS
LEXSV	1.000					
EXCH	-0.311	1.000				
LGDP	0.637	-0.092	1.000			
FDI	0.454	-0.190	0.214	1.000		
LCOMM	0.449	-0.211	-0.338	0.408	1.000	
LVADS	0.433	-0.139	0.080	0.580	0.458	1.000

between random effects and pooled OLS. The results from the Breusch-Pagan test indicated a preference for a random effects model to pooled OLS in the estimation model. As there are country-specific effects, the pooled OLS model shown in Table 8 was considered to be unacceptable. Then, the Hausman test was carried out to choose between random effects and fixed effects. The result in Table 8 clearly shows that the null hypothesis failed to be rejected ( $p > 0.05$ ), and therefore it was concluded that the random effects model was the appropriate model. Before using the random effects model, it was necessary to perform a diagnostic test on the serial correlation. This was done by performing Wooldridge's serial correlation test. The null hypothesis of no first order autocorrelation is rejected if  $p$  is less than 0.05. The result was  $p = 0.0006$ , which is smaller than 0.05, indicating that there is a significant serial correlation of the residuals. Thus, the model was then re-estimated using the Generalised Least Square (GLS) estimator for the random effects model.

**Table 8:** Pooled OLS, Random Effects and Fixed Effects

Variable	OLS	Random Effects	Fixed Effects
Real Exchange Rate (EXCH)	-0.894*** (0.164)	-0.159*** (0.076)	-0.156** (0.077)
Foreign Direct Investment (FDI)	0.026*** (0.009)	0.074*** (0.278)	0.077*** (0.277)
Foreign Income (LGDP)	3.433*** (0.225)	3.218*** (0.144)	3.231*** (0.137)
Communication Facilities (LCOMM)	0.054 (0.056)	0.228*** (0.043)	0.229*** (0.434)
Value Added Services (LVADS)	1.524*** (0.250)	0.982*** (0.261)	0.933*** (0.270)
Constant	-32.104*** (2.654)	-28.865*** (1.478)	-28.842*** (1.360)
R <sup>2</sup>	0.607	0.792	0.786
Breusch-Pagan test	3064.75(0.000)		
Hausman test	1.37 (0.850)		
Wooldridge's serial correlation test	45.005 (0.0006)		
No. of observations	364	364	364

*Notes:* Values in parentheses refer to standard error. \*\*\*, \*\*, \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

The GLS estimator provides the Best Linear Unbiased Estimator (BLUE). Thus, the final model for the inference of the random effects was based on the GLS estimator. Table 9 shows that the real exchange rate (EXCH), foreign income (GDPI), communication facilities

(COMM) and the value added by services (VADS) are statistically significant at the 1% level. All independent variables had a positive relationship with service exports, except for the real exchange rate (EXCH). Theoretically, we expected that exchange rate depreciation would improve exports. As expected, the results indicated that the real exchange rate exerted a significant impact on service export. This finding is in line with Chowdhury (1993) and Chang (2009). The real sense of such an increase is that if the services become more expensive due to the exchange rate, the demand may decrease due to customer inability to pay for the services. A higher exchange rate means that the receiver would be paying more for receiving the same service that had been received before.

**Table 9: Random Effects GLS Model**

Variable	Coefficient
Real Exchange Rate (EXCH)	-0.127(0.138)***
Foreign Direct Investment (FDI)	3.286(0.355)***
Foreign Income (LGDPI)	0.056(0.007)***
Communication Facilities (LCOMM)	0.220(0.004)***
Value Added Services (LVADS)	1.306(0.261)***
Constant	-30.219(4.453)***

*Note:* Values in parentheses refer to standard error. \*\*\*, \*\*, \* denote statistical significance at the 1%, 5% and 10% levels, respectively.

Foreign income, which is a proxy for the world gross domestic product (GDPI), is one of the key factors determining service export. The findings show that GDPI had a significant impact on service export, whereby for every 1% increase in GDPI, service export increased by 3.286%. A higher GDPI implies a higher potential demand for service export from trading partners or importing countries. At the same time, it also creates the opportunity for the country to export its services as intermediate input to other forms of production such as transportation, insurance, banking and telecommunications. This positive and significant finding is in line with Guisan and Cancelo (2002) and Khedhiri and Bouazizi (2007). As for the FDI, the positive and significant relationship concurs with the studies by Wong et al. (2009) and Ahmadzadeh et al. (2012). These studies revealed that the some of the components of service trade, such as education, banking and insurance, are best conducted through FDI. The links between FDI and service trade have been progressively consolidated with the globalisation of business operations (see Wong et al., 2009).

Moreover, since the nature of services is intangible, inseparable, heterogeneous and perishable, communication facilities are important as one of the determinants for service export, especially as an intermediate input to foreign producers. The finding provides evidence that communication facilities have a significant impact on service export. This finding is in line with those of Freund and Weinhold (2002 and 2004), Majeed and Ahmad (2006) and Choi (2010). Lastly, the value added by services seems to influence service export; however, the impact is quite weak, because with a one percent increase in the value added by services, services export is likely to increase by only 0.025%. Francois and Reinert (1996) noted that the importance of services in relative terms increases as a country becomes richer and they observed that most of the services are embodied within the goods; therefore, it is difficult to see the impact of services alone in the service export. This finding is also in line with the study conducted by Majeed and Ahmad (2006).



## 5. CONCLUSION

In this paper, an export demand function was employed to investigate the determinants of service exports in selected developing Asian countries. The empirical results derived from a static linear panel data analysis (random effects model) indicate that the real exchange rate, foreign income, foreign direct investment, the value added by services and the communication facilities are significant determinants of service export in selected Asian countries. Foreign income has a positive impact on demand for service exports, suggesting that exports can be regarded as an engine of growth for developing Asian countries. The pattern of services exports in this region features mostly conventional types of exports, like travel and transport. Therefore, it is important for this region to look to other areas' based on the pattern of foreign income to boost their services exports.

In addition, the value added by services also serves as an influential determinant for services exports. It is important to exploit any sources that can increase production in the services sector. Developing Asian countries must exploit other potential activities, especially in the technology and skill-oriented services sector. Moreover, Asian developing nations should have a sufficient and efficient physical communication infrastructure to support the modes of service deliveries. The development of Internet communication and satellite management facilities is crucial not only for promoting export growth but also for sustaining economic performance. Communication infrastructure can be a constraint in adopting and using information technology applications in developing Asian countries, especially for small businesses, implying the lack of capacity to assess the returns and costs of using advanced communication facilities and a visible failure to retain ICT-skilled labour. Therefore, it is crucial for governments to develop policies for creating new IT-related products and services rather than depending on developed countries to provide such technologies in order to deliver services.

In this study, it was found that FDI was also a significant determinant of services exports in developing Asian countries. FDI can stimulate services exports in the form of technological transfer, knowledge transfer, management know-how and any services related to the processing of goods. Historically, most developing Asian countries relied on FDI and multinational companies (MNCs) to change their economies from those of primary commodity suppliers to those of industrial nations during the early 1970s and 1980s. Therefore, it is widely believed that when inflow of FDI remains steady and the MNCs' production increases through the utilisation of advanced technology, the combined effect of technology transfer in the host countries can facilitate the creation of new competitive advantages with high value additions to service sector products. To conclude, developing Asian countries have the opportunity to compete in exporting services globally, provided that they can exploit their potential and enhance their competitiveness in exporting services to the international market.

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