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Behind-the-Border Determinants of Bilateral Trade Flows in East Asia

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Executive Summary

The global economy has witnessed significant reduction in traditional trade barriers (e.g., tariffs and quotas) in the past years. This trend has been mainly a result of unilateral, regional, and multilateral trade liberalization reforms. However, technical barriers to trade and other types of trade barriers still exist and have proliferated, hampering the free flow of goods and services as well as investments across borders. Some examples of trade bottlenecks include trade processes and procedures, trade-related infrastructures, regulations, and institutions. In this regard, trade facilitation has become one of the important trade policy measures that are being pursued by countries around the world.

In this paper, we observe that the recent trends on trade-related documentary requirements, trading time, cost to trade, quality of physical infrastructure—including airports, ports, railroads, etc., telecommunications services, accessibility to finance, and contract enforcement procedures, appear to be mixed across East Asian economies and over time. Using a standard gravity model and bilateral trade data at the Broad Economic Categories (BEC) 1-digit product classification, we find that, overall, bilateral trade in East Asia is influenced by time delays in trade, quality of port infrastructure, telecommunications services, and depth of credit information.

Across product groups or sectors, we find considerable variation with respect to the level of impact of trade facilitation or "behind-the-border" measures. Time delays appear to be influential in trade in food and beverages—due to its "perishability" and its maintaining quality—as well as in trade in transport equipment—as this sector tends to enforce just-in-time business practices and is heavily involved in production sharing. Quality of port infrastructure is significant in the trade in industrial supplies, fuels and lubricants, capital goods, and consumption goods; this suggests that these products are very much dependent on maritime transport. Trade in industrial supplies, fuels and lubricants, capital goods, and consumption goods, are also sensitive to the depth of credit information, implying that exporters and importers in these sectors rely more on financial capital. Trade in consumption goods and trade in other goods are seen to be dependent on telecommunication services, while trade in other goods alone is associated with contract enforcement.

Overall, we conclude that policymakers in East Asia must further promote trade facilitation through reducing time delays in trade, improving the quality of port infrastructure and telecommunication services, and providing more access to finance to both exporters and importers, in order to boost merchandise trade between economies in the region. Furthermore, policymakers must recognize that the potential impacts of addressing these trade facilitation measures vary across sectors or product groups. Therefore, trade facilitation policy must be geared towards addressing significant "behind-the-border" barriers that are specific to each of the key sectors or product groups, in order for trade costs to substantially go down and thereby promote freer bilateral trade within the East Asian region

1. Introduction

Trade facilitation¹ is seen as a vital trade policy that can enhance international trade between countries. This has become more important in the past years with tariffs and quotas being reduced in many parts of the world, while non-tariff barriers and other trade barriers remain and exacerbate trade costs, and thereby reduce international trade and hamper the economic benefits of international trade. Indeed, as traditional trade barriers such as tariffs and quotas are being lowered, the focus of trade policy has shifted towards trade facilitation, which is seen to enhance efficiency in trading processes and procedures and reduce trade costs. It is noted that trade facilitation covers a wide range of interrelated issues: customs, transport, hard (e.g., roads, ports) and soft (e.g., human capital) infrastructure, and financial services, among others. Several studies have pointed to the economic gains from trade facilitation: for example, Wilson and Shepherd (2009) have shown that trade facilitation reforms such as improving the quality of port infrastructure in Southeast Asia could increase trade in the region by 7.5%.

Economies in the Asia and Pacific region have embarked on trade policy measures, including trade facilitation, and other initiatives that promote greater economic integration and openness to trade and investments. For example, the 10-member Association of Southeast Asian Nations (ASEAN) formed the ASEAN Free Trade Area (AFTA) in 1992 that aims to create a single market and economic community in the region by the year 2015. More agreements were put in place by this regional body to achieve its goal, including the Common Effective Preferential Tariff (CEPT) scheme, ASEAN Investment Area (AIA), the ASEAN Framework Agreement on Services (AFAS), and the Mutual Recognition Agreement (MRA).

Amidst these trade policy developments in the Asia and Pacific region, there are still calls for more active and effective trade facilitation as countries in the region face several bottlenecks to intra-regional trade, such as at-the-border and behind-the-border barriers to trade. These barriers include domestic laws, policies, procedures, and rules, that tend to exacerbate costs on trade and investments, and thereby impede the free flow of trade in goods and services and domestic and foreign investments in the region. Indeed, it has been conjectured that although the Asia and the Pacific region has in general experienced major improvement in the facilitation of trade, reducing trade procedures and processes, the progress has been uneven across its sub-regions (ADB and UNESCAP 2009).

This paper aims to contribute to the policy debate on trade facilitation in the Asia-Pacific region by identifying certain "behind-the-border" factors of bilateral trade flows in East Asia². The remainder of this paper is organized as follows. Section 2 presents a review of related studies on trade facilitation and Section 3 discusses the significance of this study. Section 4 provides a description of the trends in merchandise trade in the region while Section 5 shows the trends in certain "behind-the-border" indicators. Section 6 describes the methodology while Section 7 discusses key findings. Section 8 documents the limitations of the study. Finally, Section 9 provides the conclusion.

¹ One proposed definition of trade facilitation is that "it is the systemic rationalization of customs procedures and documents", and that "it covers all the measures that affect the movement of goods between buyers and sellers, along the entire international supply chain" (ADB and UNESCAP 2009).

² In this paper, East Asia includes: Brunei Darussalam, Cambodia, the People's Republic of China (PRC), Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.

2. Literature Review

Several studies that used gravity models have focused on the potential impacts of trade facilitation measures, including behind-the-border factors on international trade flows. In particular, these studies have shown that trade costs, trading time, customs procedures, and trade-related documentary requirements, among others, are major factors of trade flows. For instance, Djankov, Freund, and Pham (2010) study to what extent the time of delivering products from the factory to the ship affects trade in a sample of 126 countries, and they find that in general, a delay of one day lowers trade by 1%, with a larger impact on time-sensitive products such as agricultural and manufactured goods. Duval and Utoktham (2009) find in a sample of Asia-Pacific countries that a 5% reduction in the delivery cost for a good from the factory to the nearest port can lead to at least a 4% increase in exports.

Helble, Shepherd, and Wilson (2009) find that improving transparency in trade policy via simplification and greater predictability can reduce trade costs, boosting bilateral trade amongst 21 member countries of the Asia-Pacific Economic Cooperation (APEC). Sadikov (2007) uses a gravity model for a sample of 126 countries and shows that burdensome business registration procedures and export signature requirements can have a detrimental effect on exports, more so with differentiated products than homogeneous goods.

Other studies that have made use of gravity modeling have highlighted the important role of infrastructure on international trade. For example, Shepherd and Wilson (2009) find that bilateral trade flows in the Southeast Asia region are sensitive to information and communications technology (ICT) as well as to transport infrastructure, particularly port infrastructure. Using firm-level data with emphasis on small and medium enterprises (SMEs), Li and Wilson (2009) find that SMEs would more likely be an exporter and would have higher export propensity if certain trade facilitation measures are improved, such as ICT and policy predictability. Indeed, certain case studies have pointed towards the strong potential of ICT in lowering the transaction costs of SMEs, and thereby facilitate their entry into international trade, like that of the Philippines (de Dios 2009) and Republic of Korea (Yang 2009). Wilson, Mann, and Otsuki (2005) show that port efficiency and the quality of service sector infrastructure, among others, are significant factors of trade flows in a sample of 75 countries. Nordås and Piermartini (2004) prove that infrastructure quality is a significant factor of trade performance, with port efficiency having the largest impact on trade amongst all infrastructure quality indicators.

Certain studies have argued that the level of financial development or access to finance, which is a major part of the overall domestic business or investment environment, can potentially affect international trade. Duval and Utoktham (2009) find that improving credit information can raise exports of merchandise goods by up to 16%. Hur, Raj, and Riyanto (2006) find in a sample of 27 sectors in 42 countries that the level of financial development is positively associated with export shares and trade balances for those countries with more intangible assets. Beck (2002) provides evidence for a sample of 65 countries indicating that financial development has a large causal effect on exports and trade balances of manufactured products.

Other studies have pointed towards the potential impact of certain governance indicators—contract enforcement, corruption, institutional quality, investor protection, and the rule of law, among others, on international trade. Duval and Utoktham (2009) show that in

developing Asia, simplifying domestic contract enforcement procedures to that of the average of member countries of the Organisation for Economic Co-operation and Development (OECD) can boost merchandise exports by up to 27%. Hur, Raj, and Riyanto (2006) find that improving investor protection can raise export shares and trade balances of countries with relatively more intangible assets. Méon and Sekkat (2006) use a gravity model composed of 38 to 60 countries and find that poor institutional quality is related to low manufactured exports; that control of corruption is the most significantly related to manufactured exports, compared to the rule of law or government effectiveness.

3. Significance of the Study

This study attempts to contribute to the existing literature on trade facilitation by providing a more comprehensive model and discussion on the potential effects of "behind-the-border" measures on bilateral trade flows in East Asia. Specifically, this study aims to first describe the most recent trends of potentially important "behind-the-border" measures—such as trade documents, time delays in trade, cost of trade, physical infrastructure, telecommunication services, access to finance, and business and regulatory environment—among others, as well as of bilateral merchandise trade, at both the aggregate and sectoral levels, in the region. Secondly, this study extends the empirical findings of related studies, namely, Djankov, Freund, and Pham (2010), Duval and Uthoktam (2009), and Shepherd and Wilson (2009), by identifying the important "behind-the-border" measures of bilateral trade flows, at both the aggregate and sectoral levels, in East Asia, as well as provide for possible explanations as regards the potential variation of these "behind-the-border" measures across sectors or product groups.

4. Merchandise Trade Performance in East Asia

Table 1 depicts the trends in East Asia's merchandise trade during the last four decades or so. Most economies in the region have registered steady improvement in their merchandise trade performances over the 1960-2008 period. The most open economies in the region—Hong Kong, China and Singapore—both recorded merchandise trade (as a share of gross domestic product or GDP) of more than 300 percent by 2008. Moreover, Cambodia, the People's Republic of China (PRC), and Thailand, have registered impressive growth in their merchandise trade in the past years. On the other hand, it may be worthwhile to note that other economies, specifically, Indonesia, Lao PDR, and the Philippines, have posted deterioration in their merchandise trade since 2000.

Table 1
Merchandise Trade in East Asia, 1960-2008
(Percent of GDP)

	1960	1970	1980	1990	2000	2005	2008
Brunei Darussalam	—	100.0	104.5	91.3	83.5	81.2	—
Cambodia	25.9	12.9	—	—	88.8	108.7	112.8
PRC	8.5	5.0	20.1	32.3	39.6	63.6	59.2
Hong Kong, China	129.8	142.7	150.3	217.4	246.4	333.2	354.4
Indonesia	—	21.8	42.0	41.5	66.1	56.9	51.6
Japan	19.3	18.8	25.8	17.3	18.4	24.4	31.5
Korea, Rep. of	9.7	31.7	62.4	51.1	62.4	64.6	92.3
Lao PDR	—	—	—	30.5	49.9	52.0	47.5
Malaysia	85.9	72.2	95.4	133.4	192.1	185.3	182.8
Philippines	20.0	34.1	43.3	47.8	101.2	91.8	64.8
Singapore	380.0	211.7	369.8	308.1	293.7	355.3	361.6
Thailand	31.1	28.3	48.6	65.7	106.7	136.5	136.8
Viet Nam	—	—	—	79.7	96.6	131.1	158.0

— = data not available. PRC = People's Republic of China.

Source: World Bank, World Development Indicators

Intra-regional trade of East Asia has been growing immensely in recent years (see Table 2). For instance, intra-regional imports in East Asia expanded from US\$988 billion in 2004 to US\$1.6 trillion in 2008. The PRC had the biggest share in intra-regional imports for the full year of 2008 at 24.7% followed by Hong Kong, China (18.2%) and Japan (17.7%), while the Philippines and Indonesia had relatively low shares at 2.0% and 5.1%, respectively.

Table 2
Intra-Regional Trade in East Asia, 2004-2008
(US\$ Billion)

	2004	2005	2006	2007	2008
Brunei Darussalam	—	—	1.2	—	—
Cambodia	1.6	—	—	—	—
PRC	231.3	264.4	305.7	358.8	392.3
Hong Kong, China	198.1	220.0	248.2	274.1	289.1
Indonesia	23.9	32.9	34.3	42.5	80.6
Japan	185.4	206.9	227.1	243.5	281.0
Korea, Rep. of	101.4	115.1	132.2	154.5	180.9
Malaysia	60.4	66.3	75.7	85.3	88.5
Philippines	24.3	25.3	27.8	30.6	32.2
Singapore	93.2	104.6	124.0	135.9	155.8
Thailand	50.0	62.4	67.5	76.9	88.9
Viet Nam	20.2	23.9	29.9	42.0	—
Total	988.1	1,121.9	1,272.5	1,444.0	1,589.4

— = data not available, PRC = People's Republic of China.

Note: Myanmar and Lao PDR data are not available.

Source: Authors' calculations, United Nations (UN) Comtrade.

The structure of merchandise trade in East Asia in recent years has been biased towards capital-intensive commodities. Based on the Broad Economic Categories' (BEC) 1-digit product classification, more than 40% of intra-regional trade in East Asia involves capital goods (see Table 3). In particular, as of 2008, capital goods comprised 42.5% of East Asia's intra-regional trade followed by industrial supplies at 27.1%. Among the East Asian economies that have capital goods with the largest share in intra-regional trade include the PRC; Hong Kong, China; Japan; Republic of Korea; Malaysia; the Philippines; and Singapore.

Table 3
Structure of Intra-Regional Trade in East Asia by BEC 1-Digit Product Classification,
2004-2008
(Percent of total)

	Food & beverage	Industrial supplies (nec)	Fuels & lubricants	Capital goods (except transport equipment), including parts and accessories	Transport equipment, including parts and accessories	Consumption goods (nec)	Goods (nec)
2004	3.3	25.8	7.3	46.5	4.0	12.5	0.6
2005	3.0	25.6	8.3	46.5	4.1	11.9	0.6
2006	2.9	26.2	8.5	46.4	4.1	11.1	0.8
2007	3.0	27.1	8.3	45.6	4.4	10.7	0.9
2008	3.2	27.1	11.1	42.5	4.9	9.9	1.3

BEC = Broad Economic Categories, nec = not elsewhere classified.

Source: Authors' calculations, United Nations (UN) Comtrade

5. Selected Trade Facilitation and "Behind-the-Border" Measures in East Asia

As noted in the literature, among the trade facilitation measures and behind-the-border indicators that can potentially influence bilateral trade include trade-related documentary requirements, time to trade, costs to trade, quality of physical infrastructure (ex. ports, roads, air transport) and telecommunications services (ex. level of internet use), access to finance, and contract enforcement procedures, among others. This section presents a brief description on each of these, including its recent trends, in East Asia.

5.1 Trade Documents

Among the trade facilitation measures that can potentially affect trade flows are the "trading across borders" indicators—number of documents, time, and cost—to trade, based on the World Bank's Doing Business survey.

Table 4 presents the number of documents needed for export in East Asian economies

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