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**The impact of Japanese *Aid for Trade* on
Global Value Chain participation in East Asia**

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1. Introduction¹

Building on the momentum of the surging attention in recent years within the trade and donor communities surrounding Aid for Trade (AfT) effectiveness on the one hand, and the emergence on a wider scale of global value chains (GVCs) in our increasingly globalised world on the other hand, this paper brings together two crucial and not entirely dissimilar strands of research in an attempt to find out if a case of causality can be established specifically for the case of Japan and East Asia. As a formal category of Official Development Assistance (ODA), AfT provided by donor countries is aimed at helping developing countries build the trade capacity they need to benefit from trade opening. In theory, if AfT indeed stimulates trade between the donor and recipient country, or trade between the recipient country and the rest of the world, then it is likely that through trade in intermediate goods and services, the recipient country also participates in global value chains. This is because as an indicator of participation in value chains, intermediate trade (also known as trade in parts and components) has come to feature more prominently in modern cross-border trading relations between firms, most notably – and measurably so – for manufacturing firms in East Asia. This paper is thus an attempt at finding out if AfT from Japan, a major donor country, has led to an increase in trade and GVC participation in East Asia. Despite multiple free-trade agreements being signed among countries, and at least for years preceding more formal economic arrangements such as the ASEAN Economic Community (AEC) which only entered into force on 31 December 2015, the economic integration of East Asia that we know of today has mainly been a de facto one. Thus, if an economic correlation can be established between Japanese aid and improved trade networks with East Asian countries over time, one may claim that Japanese AfT has contributed to the de facto economic integration of East Asia.

To this end, both quantitative and qualitative research methodologies will be employed through a three-pronged approach: Firstly, historical data on aid and trade flows will be analysed through multi-country panel regression using the gravity model; Secondly, this paper will review the donor-perspective of AfT through published reports on Japanese AfT patterns and effectiveness in East Asia; And thirdly, project-level evaluation of a successful Japanese AfT project in East Asia, such as the Eastern Seaboard Programme in Thailand, will be discussed to give shape and form to otherwise elusively theoretical notions of AfT and GVCs. The implications of this research are potentially serious: If Japan is found to disburse aid by allocating aid based on size or potential of bilateral trade relations, then donation decisions cannot be said to be entirely altruistic. Moreover, if there is a positive economic correlation between Japanese AfT and an increased in intermediate trade – and by extension GVCs – in East Asia, then research on de facto East Asian integration should consider the role of aid as an enabler.

The paper proceeds as follows. The empirical literature of aid effectiveness, AfT effectiveness, and causality of AfT and GVC will be discussed in Section 2. Section 3 will present the data, estimation approach and results of the gravity model, as well as the qualitative sectoral reviews and project-level evaluations. Section 4 concludes.

¹ The author is grateful to Professor Fukunari Kimura of the Economics faculty of Keio University for providing both invaluable advice and helpful materials that have been instrumental to the progress of this research. The author takes responsibility for all remaining errors.

1.1. Definition and concept of Aid for trade

Before delving into a serious study of causality, there is a need to explicate the definitional concepts of AfT and GVCs, as well as the theoretical foundations of the relationship between AfT and GVCs on which many empirical studies are based on.

Originally conceived during the Uruguay Round, the AfT initiative was officially launched at the 2005 WTO Ministerial Conference in Hong Kong, which brought to focus the plight of developing nations in potentially being marginalized from trade liberalization and market access opportunities introduced as part of the Doha Round negotiations. The idea of AfT was predicated on the assumption that in practice at least, developing countries are not able to overcome barriers to trade even though the multilateral trading system creates many market access opportunities through which comparative advantage may be exploited. This inability of developing countries to participate more fully in trade networks have been attributed to trade constraints such as poor infrastructure, bureaucratic border procedures, unfavourably government policies, and weak access to trade finance. Against this backdrop, “Market access does not always convert into market presence. The potential gains from trade are not always fully realised” (OECD and WTO, 2015). The predicament facing the Least Developed Countries (LDCs) is an incisive exemplification of this problem. While the annual percentage change between 2000 and 2013 in total trade in goods and commercial services was 14.7%, significantly higher than the world average of 8.5%, LDCs’ share of the world trade has remained in a dismal state at 0.59% in 2000 and 1.23% in 2013² even though they have long enjoyed preferential market access under the bilateral and multilateral trading regimes. This provides impetus for multinational trade regulators such as the WTO to intervene to prevent such inequality stemming from high trade costs from playing out to the detriment of poor and fragile countries.

AfT, as a form of development assistance, was thus conceived as a way to redistribute the gains from trade from developed to developing countries, through voluntary aid on the part of the donor country targeted at helping their poorer counterparts develop a greater capacity to trade. Ten years have passed since the inauguration of the AfT initiative in 2005, with a total of USD 246.5 billion being disbursed by donor countries toward financing the trade programmes of recipient countries, which comprise both low and middle-income countries. In total, 146 countries – mainly Asian and African – received AfT in the form of either loans or grants. On the donor side, there have been a total of 60 countries – made up of bilateral and multilateral donors – whose ODA commitments and disbursements are recorded by the OECD DAC (Development Assistance Committee) Creditor Reporting System (CRS) database (OECD and WTO, 2015). Today, aid still makes up more than two-thirds of external finance for LDCs.

Due to the complexity of trade, there is no clear definition of the scope or meaning of AfT. The WTO online factsheet on AfT claims that AfT “includes technical assistance — helping countries to develop trade strategies,

² Data taken from WTO Secretariat database, where total LDC trade is approximated to be the sum of exports and imports; and total world trade is approximated to be the average of world exports and imports, according to the balance of payments accounting method.

negotiate more effectively, and implement outcomes. Infrastructure — building the roads, ports, and telecommunications that link domestic and global markets. Productive capacity — investing in industries and sectors so countries can diversify exports and build on comparative advantages. And adjustment assistance — helping with the costs associated with tariff reductions, preference erosion, or declining terms of trade.” The European Commission goes further to link AfT with the promised merits of poverty reduction and growth. More instructively, the CRS database provides a data-driven definition of AfT that is ideal for empirical research. According to the CRS, the AfT agenda is divided into three main proxies headings under which further subcategories are subsumed:

i) Trade policies and regulations and Trade-related adjustment

This category covers: a) Trade policy and administrative management, where aid is used to support ministries and departments in their legislation and management of trade policy such as exchange rate policies and export taxes, as well as plans for regulatory reform. Such forms of aid are also directed toward enabling the implementation of multilateral trade agreements through reducing the technical barriers of trade (TBT) and sanitary and phytosanitary (SPS) measures. b) Trade facilitation, which involves the simplification and harmonisation of border procedures, tariff reforms and support and training of customs departments. c) Regional trade agreements (RTAs), where aid is provided to RTAs and rules of origins and special and differentiated treatment are elaborated. d) Multilateral trade negotiations, such as in the case where countries are not able to effectively participate in negotiations due to lack of skills and training. Support is provided to help countries understand and assess the impact of negotiations with the WTO and other trade-related organizations. e) Trade-related adjustment, where aid could be used to boost the recipient government’s budget to help put in place trade reforms or to adjust to trade policy measures by partner countries, or to cover of balance of payments deficits resulting from trade with the rest of the world.

ii) Economic infrastructure

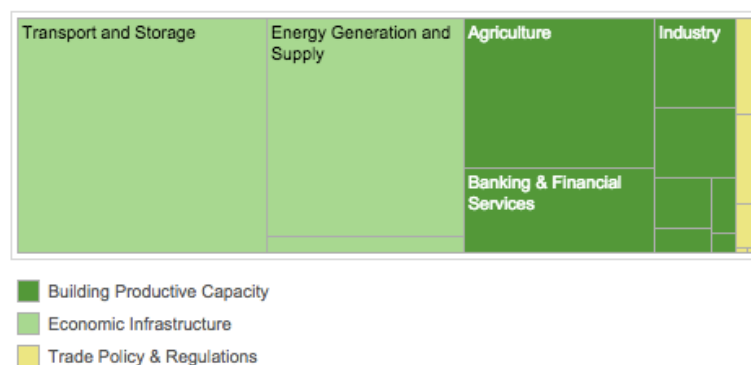
This category subsumes all aid that is directed toward one of the three following categories: a) Transport and Storage, which includes aid for transport policy and administrative management, the various transport types (road, rail, water, air), storage, and education and training in transport and storage. b) Communications, which is composed of communications policy and administrative management, telecommunications, the various media forms (radio, television, print), and information and communication technology (ICT). c) Energy Generation and Supply, where aid is provided to support energy policy and administrative management, power generation (both renewable and non-renewable), electrical transmission and distribution, gas distribution, various types of power plans (oil-fired, gas-fired, coal-fired, nuclear, hydro-electric), various energy and power sources (geothermal, solar, wind, ocean), biomass, energy education and training, and energy research.

iii) Building Productive Capacity

This category covers a broad spectrum of activities, and should not be confused with activities related to economic infrastructure for trade. Building productive capacity is perhaps a less direct form of AfT, given that it covers all activities related to banking and financial services, business and other services, agriculture, forestry, fishing,

industry, mineral resources and mining, and tourism. For instance, aid provided toward the banking sector could have a real impact on the country’s ability to trade if it supports prudent financial policy and administrative management, as well as institution building of central banks and financial intermediaries. Better access to trade finance through better banking services would undoubtedly boost a country’s trade prospects. Moreover, aid that helps industry development and research and development in sectors that boost a country’s comparative advantage would go a long way toward enabling the country to enjoy the gains from trade liberalization.

Figure 1: Category and sector breakdown of AfT, 2013



Source: OECD-DAC, CRS database

As can be seen in Figure 1, most of the AfT is focused on Economic Infrastructure and Building Productive Capacity, with very minimal aid directed toward Trade Policy and Regulations. To standardize the terms of reference, this paper will henceforth adopt the CRS categorization of AfT in the quantitative analysis that follows in Section 3.1.

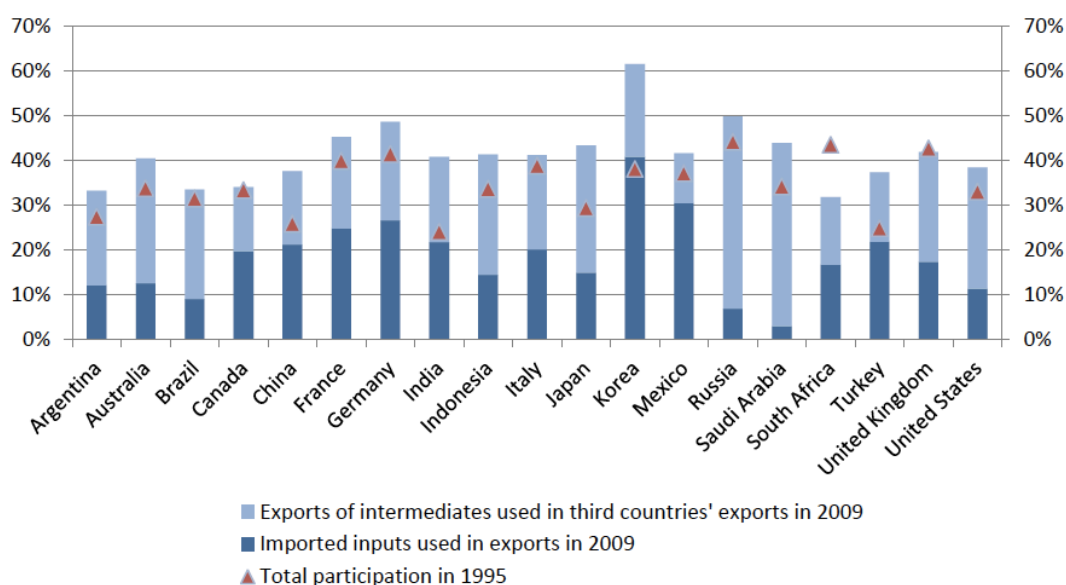
1.2. Global Value Chain participation

The global trading sphere has gone through multiple changes since pre-industrial times. Economic history provides keen insight into the evolution of international trade, starting from the early 19th century with the “first age of globalisation” as described by John Ikenberry in 2000. The invention of the steam engine and advances in transport technologies “shrunk” the world so much so that trade was possible from Asia to Europe and around Africa. Continued falling costs in transportation through advances in fuel-efficient technologies further enabled the expansion of international trade. This of course paved the way for specialization in goods and the division of labor, which were defining features of the Industrial Revolution. Such a process of globalization has been termed the first “unbundling” of globalization by Richard Baldwin in 2011, characterised by cheaper transportation that had led to a dispersion of production across countries and clustering into factories within the same geographical vicinity. At the same time, this saw a widening wealth gap between the richer, more industrialised “North” countries, which had great access to raw materials and markets for manufactured goods, and the poorer “South”. The trading policies of countries continually oscillated between free-market and protectionist positions up until World War One and the Great Depression of 1929 which led to the collapse of the international trading system, and only rebounded when

the Bretton Woods system was created. From that point onward, technological advances including a wide adoption of internet communication technologies led to a second “unbundling” of globalization, where the stages of production are now globally dispersed, and clustering of factories are no longer on a local but regional level. According to the 2013 World Trade Report, the volume of world trade quadrupled between 1980 and 2011, mostly because of increased cross-border shipments of manufactured products.

The geographical fragmentation of production into stages where international trade predominantly occurs between high-tech and low-wage nations is now a reality to contend with. The phenomenon of slicing up the production chain into stages from raw to finished product, and optimizing production where skills and materials are competitively available in whatever geographical location has spawned the term “Global Value Chains”. The spread of GVCs had been largely facilitated by large cost-conscious multi-national corporations (MNCs), who not only sought to extract value from intermediate cross-border trade within its internal network of affiliates and subsidiaries, but also engaged in arms-length trade with suppliers and buyers, including those on the domestic circuit. GVCs participation is gaining greater traction among countries due to the benefits of relying on cheaper foreign inputs in domestic exports through vertical specialization and supply-chain trade. The increase in trade in parts and components is an instructive indicator of GVC participation. Figure 2 reveals that GVC participation has increased tremendously since 1995 and makes up 30%-60% of the exports of G20 countries.

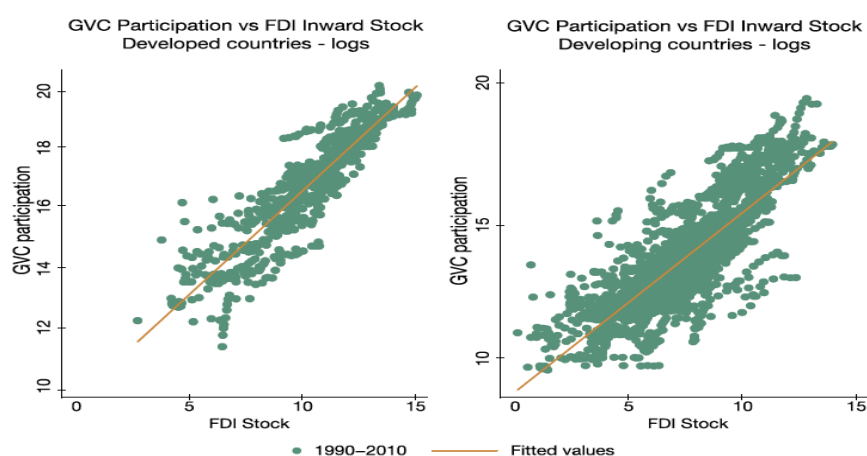
Figure 2: GVC participation of G20 countries increased between 1995 and 2009



Source: OECD (2013) Implications for Global Value Chains for Trade, Investment, Development, and Jobs

Foreign Direct Investment (FDI) is also closely and positively related to GVC participation, given that the establishment of affiliates overseas through FDI provides MNCs with an avenue for participation in GVCs. As seen in Figure 3, empirical research by UNCTAD finds strong evidence to suggest so.

Figure 3: FDI and GVC participation, 1990 -2010



Source: UNCTAD, World Investment Report 2013 – GVCs: Investment and Trade for Development

One has to carefully consider the features of GVC participation to detect possible complementariness of GVCs with AfT flows. A 2013 OECD report outlined seven key elements that make up the policy determinants for GVC participation:

- 1) Regional trade agreements
- 2) Lower investment barriers to MNCs
- 3) High-quality infrastructure
- 4) Speed and flexibility of movement of physical goods and information
- 5) Effective legal and regulatory systems
- 6) Efficient services
- 7) Capacity for domestic firms (often SMEs) to contribute to supply chain.

Undeniably, all seven determinants also happen to be target variables of AfT flows in some way. In other words, AfT in theory should spur participation in GVCs, given that aid flows could help reduce market access barriers, thereby stimulating trade. In fact, since trade in intermediate parts and components is becoming a more prominent feature of international trade, AfT is bound to make possible the entry of developing countries into existing GVCs. Regardless of its actual effectiveness, AfT has become an instrument of donor countries to spur trade in developing countries, and in equal measure, a means for developing countries to participate in GVCs.

1.3. East Asia: GVCs and Japan's AfT flows to the region

1.3.1. Why focus on East Asia as a region?

Given that both AfT and GVC activity are occurring on a global scale, why is it necessary to focus on East Asia in particular? Three key factors might explain why the East Asian experience is an interesting one to study.

Firstly, East Asia has experienced tremendous economic dynamism in the past few decades, boasting an extraordinary economic performance between the late 1960s up until 1990. The rapid increases in trade and large capital flows into and within the region contributed to the high growth rates that came to be termed the “East Asian Miracle” in a World Bank Policy Research Report in 1993. Broader definitions of the ‘miracle’ put the high-growth period between the late 1960s and early 2000s, with the exception of the period of the Asian Financial Crisis in 1997-8. Figure 4 illustrates how East Asian GDP growth rates between 1980 and 2004 had been consistently higher than that of other regions of the world. The nature of East Asian growth has been of rising factor inputs as well as total factor productivity increases – made possible by a particular set of initial conditions, as well as a combination of orthodox policies (such as macroeconomic discipline and trade openness) and heterodox policies (such as industrial policy and export subsidization). However, another factor could be said to have equal importance in sustaining the economies of East Asia. Given that many East Asian countries such as Singapore, Hong Kong and Korea were terribly impoverished before the 1960s, aid – whether for humanitarian or commercial donor interest – came to make up a huge part of the large capital flows to the region. Thus, from the very beginnings of its development as a region, East Asia cannot be disentangled from the vagaries of foreign aid.

Figure 4. East Asia has been growing faster than all other regions (GDP growth, 1980-2004)

<i>Region</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>2000-2004</i>
East Asia & Pacific	7.2	7.8	9.4	6.8	7.2
Latin America & Caribbean	1.4	2.2	3.6	2.4	2.2
Europe & Central Asia	n.a.	n.a.	-5.2	2.0	5.2
Middle East & North Africa	3.8	1.2	4.6	3.4	4.4
South Asia	5.4	6.0	5.0	5.8	5.6
Sub-Saharan Africa	1.6	2.4	0.6	3.6	3.4

Source: World Bank WDI and GDF Central Databases

Secondly, in consideration of the amount of aid received by East Asia compared to the equivalent received by the rest of the developing world, all East Asian countries – with the exception of Singapore, Hong Kong and Japan – have been significant recipients of development assistance since the post-war period. In fact, Asia and Africa have consistently been the two largest recipients of AfT by region, and within Asia, AfT flows have been particularly disproportionately focused on East Asia. This is in no way a coincidence of sorts. Given the dynamism of international trade within East Asia, it is hardly surprising that political and commercial interests would influence development aid directed toward the region. For more than thirty years now, 7 to 8 out of the 12 fastest-growing economies in the world have been East Asian economies, leading the World Bank to remark that the possibility of such random occurrence is 1 in 10,000. Protracted East Asian development has also led to greater wealth and trade involvement for the region: The share of East Asia to world GDP rose from 10% in 1953 to 19.3% in 2007. Likewise, the share of East Asia in total world exports rose from 12% in 1990s to 20% in 2004. One may posit that the existence of the mechanism of AfT presents itself as an opportunity for donor countries to provide ‘aid’ to East Asian countries, thinly veiled as a way to benefit commercially from the prospect of expansion trade networks.

Thirdly, East Asian production and distribution networks, as characterised by their distinct vertical division of labor, are by far the most developed in the world in terms of (i) their importance in each economy, (ii) the extensiveness of their geographical coverage in the region, and (iii) the structural sophistication in comprising both intra-firm and arms'-length transactions (Kimura and Ando, 2005). Such networks are present in many industries, but are most visible and important in machinery industries, in which production and/or distribution processes can be easily sliced and layered vertically. Furthermore, it has been argued that machinery firms in Japan, Korea, and Taiwan possess a competitive edge in constructing efficient vertical value chains and developing subcontracting systems and modulation techniques (Kimura, Takahashi and Hayakawa, 2007). The formation of such networks in East Asia has been a result of the simultaneous decline in service link costs and pre-existing differences in locational advantages within the region, making fragmentation and trade in parts and components possible.

In sum, with its high trade flows, aid flows, and strong GVC participation within the same time span, East Asia as a region is potentially the most illustrative example of the aid-trade and value chain linkage mechanism.

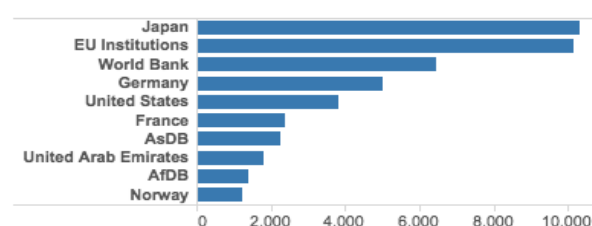
1.3.2. Why focus on Japan as a donor to East Asia?

In order to study the relationship between AFT and GVC participation in East Asia, one has to consider the experience of Japan, a major aid donor to Asia. Within Asia, the only significant donor countries are Japan and Australia, with China, Taiwan, and South Korea only recently becoming donors (they used to be aid recipients). Even though both Australia and Japan allocate most of their aid toward 'Asia' (which includes East Asia, South Asia, and Oceania), the bulk of Australian AFT is concentrated in Pacific Island countries such as Papua New Guinea, while Japanese AFT is spread throughout East and South Asian countries such as Indonesia, Thailand, Vietnam, Bangladesh, and Sri Lanka amongst others. In terms of the absolute amount of aid provided, Japan is a far more serious donor compared to Australia (and is also a more major exporter than Australia), disbursing a greater amount of aid toward the developing world. In fact, Japan is the second largest ODA donor country to Asia in 2013, after the United States.

i) Japan is the largest AFT donor in the world.

More significantly for this study, Japan was the largest AFT donor in 2013, and committed to providing USD 10.34 billion in aid. This amount surpassed commitments by multilateral donors like the EU Institutions (10.14 billion) and the World Bank (6.4 billion), and bilateral donors like Germany (5.0 billion) and the United States (3.8 billion).

Figure 5: Top ten donors of Aid for Trade, 2013

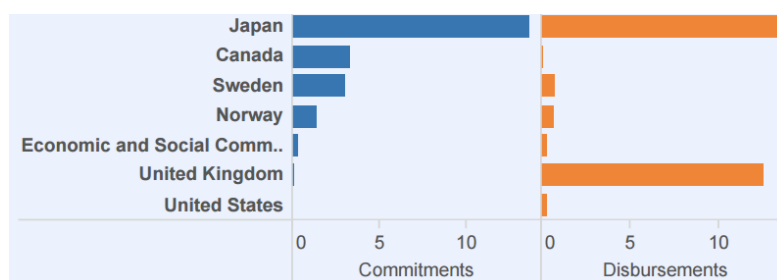


Source: OECD-DAC, CRS database (commitments in millions USD)

ii) Asia receives most of its AfT from Japan

Asia received USD 13.58 million from Japan in 2013, significantly more than it did from any other donor – bilateral or otherwise. Figure 6 shows that Canada, from whom Asia received its second-highest AfT amount, committed to providing USD 3.34 million in AfT to Asia, but in fact only disbursed USD 0.06 million. On the other hand, the United Kingdom committed to providing almost no aid for Asia, but in fact disbursed USD 12.53 million to Asia.

Figure 6: Top ten donors of Aid for Trade for Asia, 2013

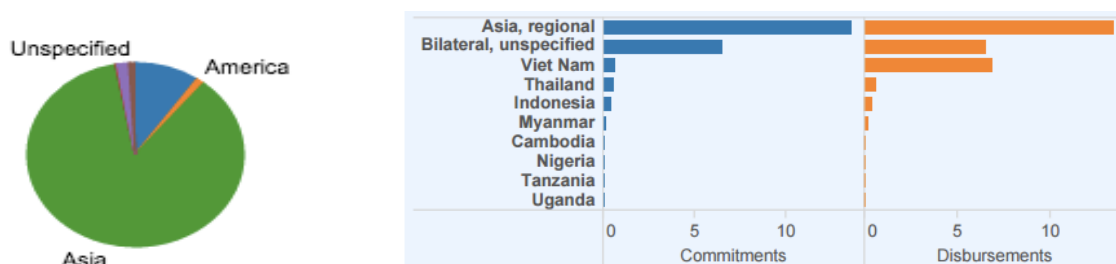


Source: OECD-DAC, CRS database (commitments and disbursements expressed in millions USD)

iii) Japan disburses most of its AfT to Asia

Not only does Asia receive most of its AfT from Japan, Japan’s AfT is almost entirely directed toward Asia. This is a superficial indication that Japan’s trade-related foreign policy contains a strong geographical bias toward Asia. As Figure 7 reveals, the bulk of Japanese AfT was directed toward East Asian countries such as Vietnam (6.5 million), Thailand (0.62 million), Indonesia (0.38 million), Myanmar (0.13 million), followed by African countries.

Figure 7: Regional distribution of Japan’s Aid for Trade & Top ten recipients of Japanese AfT, 2013



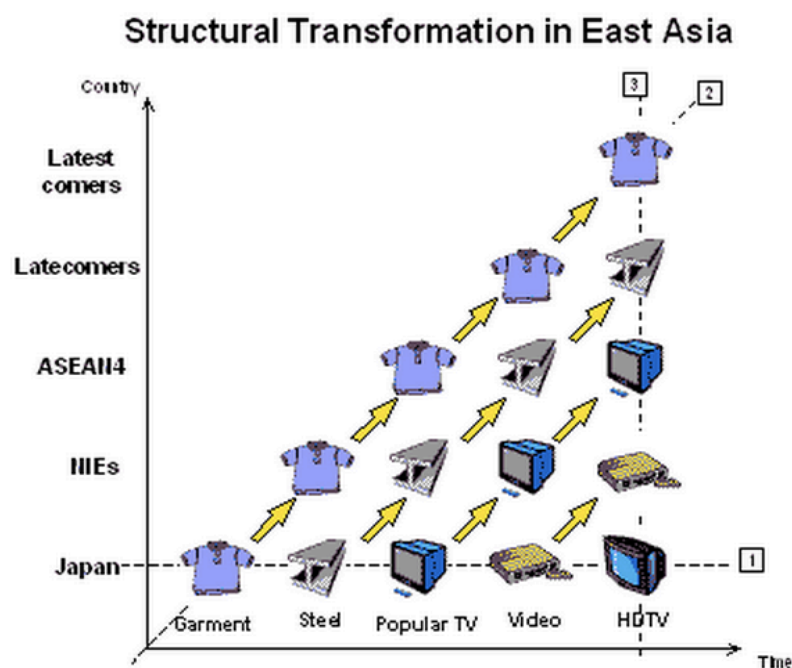
Source: OECD-DAC, CRS database (commitments and disbursements expressed in millions USD)

iv) East Asia’s economic development has been linked to Japan

In fact, East Asian countries and Japan share more than just a common geographical boundary. In order to understand the speed of East Asia’s development, one must not underestimate the role of the region in enabling economic and industrial development. Scholars cite Akamatsu’s Flying Geese Paradigm (1961) in attempting to explain why developing countries were able to catch-up with their more advanced neighbours through a process aided by the international division of labor within East Asia. The theory posits that East Asian countries of both the

first generation Newly Industrialising Economics (NIEs) (Singapore, Hong Kong, Taiwan, and South Korea) and the second generation NIEs (Malaysia, Thailand, Indonesia, Philippines) benefited from imitating Japan, who was the ‘lead goose’ that set in motion the process of relocating its production to the lesser developed countries of East Asia in response to rising labor costs over time. The process would continue in a hierarchical fashion for the other countries as well, when they too experience rising labour costs and have to relocate production to even lesser developed countries. In such a way, the most developed countries among them would end up producing more sophisticated goods that are capital-intensive, and the lesser developed of them would produce more labour-intensive goods at any point in time. Over the course of time, all countries would move up the ladder in a hierarchical fashion based on their levels of economic development, with Japan at the top, followed by the first generation NIEs, second generation NIEs and at the very bottom, the latecomers. Wide consensus over this imitation effect hypothesis was reached in its heyday in the 1960s and 1970s (Perkins, 2013), and essentially suggested that structural transformation of East Asia was set in motion by Japan’s industrial policy in East Asia.

Figure 8: Graphical representation of Akamatsu’s Flying Geese Paradigm



Source: GRIPS Development Forum. Accessed from <http://www.grips.ac.jp/forum/module/prsp/FGeese.htm> (Arrows suggest the direction of relocation of production within the region)

While this hypothesis may be too Japan-centric for the sensitivities of some, parallels can be drawn between this theory and the aid-induced trade paradigm proposed in this study. Both cite Japan’s role as a catalyst of the economic development and interdependency of East Asia – be it through industrial policy or the provision of aid for the purpose of enhancing trade prospects. Both theories can be thought of as different prisms to study the same East Asian development experience.

2. Literature Review and theoretical models

Three main streams of empirical research may be distilled from the relevant literature. The most common type of aid literature explores the relationship between aid and growth through the mechanisms proposed by the neoclassical model of factor accumulation leading to growth and poverty reduction. While many seminal studies with rigorous quantitative methods have surfaced to try to validate this, the effectiveness of aid on growth remains inconclusive, and much less is known about the direction or size of the effect, if any. Literature on aid for *trade* in particular has focused on aid allocation. But similar to the relationship of aid and growth, the direction of aid-trade relations remains ambiguous. Whether the causal relationship is bi-directional (aid and trade are mutually reinforcing) or uni-directional (trade leads to aid or aid leads to trade) is secondary to understanding the transmission process by which aid leads to trade. On the latter issue, it remains unclear as to whether the transmission effect would be a result of (i) aid being directly tied to trade (or vice versa), (ii) aid flows inducing general effects which then spur trade in the recipient country, (iii) aid flows strengthening the economic and political links through which trade is influenced, (iv) or a combination of one or more of the above (Suwa-Eisenmann and Verdier, 2007). Last but not least, given the novelty of this research area, literature linking AfT and GVC causality remain sparse, if not non-existent. The main strength of this paper is thus the idea of extending the link between AfT and trade expansion to include GVC participation. The only explicit reference to such a link is in a joint report published in 2013 by the OECD and WTO, suggesting that “aid-for-trade programmes are dealing with GVC-related issues already... and this is reflected in value chain developed as captured by intermediate trade” (OECD and WTO, 2013). The following section will offer insights into each of the three streams of aid research through a study of the theoretical models of causality, followed by a review of related empirical findings.

2.1. Aid Effectiveness

The idea of aid as a way to alleviate poverty and improve standards of living through economic growth finds its roots in the neoclassical view of factor accumulation where aid spurs an increase in domestic savings, which – through a process of income transfer – is channelled to productive investment, and this would finally lead to economic growth. There is a considerable moral imperative to this issue: the very idea of foreign aid was conceived to help poor countries grow, and it would no less than a travesty if tax-funded aid is found to be ineffective in achieving this objective.



In practice however, this relationship has proven difficult to empirically validate, and there is no consensus on whether aid has the effect of raising growth rates in a poor country. In a widely cited piece of work that makes use of cross-country statistical results, Burnside and Dollar (2000) find that aid would have a positive effect on growth if it were allocated toward “good policy environments”. In other words, the effectiveness of aid in generating growth is dependent on the existence of good fiscal, monetary, and trade policies of the recipient country. The

policy implications are clear: To ensure the effectiveness of aid, it should be allocated toward countries that have adopted sound economic policies. This is obviously a challenge in itself, given that most developing countries are usually mired in problems of poor governance like corruption and unproductive government expenditure, but are nonetheless in dire need of foreign aid. Burnside and Dollar also point to the fact that the mechanism of income transfer may or may not produce growth, with the outcome dependent on whether aid is productively used in investment that can produce a return on capital. More significantly, they find that on average aid has had little impact on growth. However, the Burnside and Dollar conclusion has met with its fair share of criticism. In a robustness check conducted by Easterly, Levine, and Roodman (2004) in which new data was added to the same estimation by extending the time period of study beyond 1997, the original conclusion did not hold.

In another seminal piece of work, Hansen and Tarp (2001) find that aid is in no way related to policy, and the econometric specification would heavily influence any result. Dalgaard, Hansen and Tarp (2004) also find no evidence to suggest that the aid-policy interaction is strong, and if it exists at all, that the magnitude of the effect of aid on growth is ultimately dependent on “climate-related circumstances”, where aid seems to be less effective in the tropics. Speculations of why this is the case has linked climate to productivity, but there is no strong rationale for why tropical areas would be particularly unproductive. Clemens, Radelet, Bhavnani, and Bazzi (2012) have also attempted to prove this aid-growth link, and find that the aid has a positive effect on economic growth over a four-year period. Yet in a robust empirical study that includes cross-study and panel analysis across time horizons, Rajan and Subramanian (2008) provides contrarian evidence to suggest that aid and growth are hardly correlated. In fact, this conclusion contradicted all the above studies that claim that the aid-growth relationship exists, or that “certain forms of aid” are more effective than others.

In sum, given the seemingly impossible task of proving that it exists, it seems as though the status quo of the aid-growth nexus would continue to remain in a state of flux for now.

2.2. Aid for Trade Effectiveness

With no consensus on the effect of aid on growth or poverty reduction, the sectoral approach of disaggregating aid flows by type and category has gained popularity amongst researchers. This approach allows the effect of aid to be captured through isolating the variables, by disaggregating aid flows into its subcategories such as Aft. Theoretically, Aft should deliver positive results for the recipient country, and is distinguished from more general aid flows because aid for *trade* is aimed specifically at inducing growth in imports and exports. Empirical literature on Aft has been mainly concerned with two flows – whether aid leads to trade, or if trade leads to aid.

i) Aid leads to Trade

In a chain of causation proposed by the OECD, Aft would lead to the development objectives of poverty reduction through the following transmission channel:



Trade that has been induced by AfT flows should raise the recipient country's productivity, which should lead to income growth through the rapid expansion of trade. In turn, rising incomes from increased productivity should lead to poverty reduction. Of course such a transmission effect would break down if just one link between AfT and poverty reduction ceases to function. If the first link between AfT and trade growth is tenuous, the following links between trade growth and income growth and between income growth and poverty reduction is fraught with even more uncertainties. For instance, government mismanagement of resources, conflict, and investment or education policies that run counter to trade policies may threaten to void any potential transmission of trade gains to income increments. Even if income indeed increases, there is no certainty that income gains will have any effect on the reduction of poverty. The transmission is heavily dependent on the distribution of income, and the inherent structure of the economy with regards to whether there is bias towards labour-intensive production over capital-intensive ones, the general level of skill of the workforce, resource ownership, and consideration of other initial conditions that would threaten to prevent income increases from benefiting the larger population.

Attempts have been made to empirically validate the first part of the chain of causation – the effect of aid for trade on increasing trade. Much evidence has been encouraging, suggesting that AfT is effective in reducing the trade constraints of developing countries. For instance, Cali and te Velde (2011) find that aid flows between 1995 to 2007 that had been directed towards trade facilitation had reduced the cost of trading for developing countries. Further, aid channelled towards economic infrastructure and productive capacity is found to have a positive and significant effect on exports, with a caveat that the effect may be already skewed towards the sectors that have already been performing well. In a study by Helble, Mann and Wilson (2009) that surveyed 167 exporters and 172 importers from 1990 to 2005, the rate of return of every dollar of AfT is found to be the equivalent of USD \$697 million in additional trade. The increase in global trade from 1% of AfT towards trade policy and regulatory reform would be valued at USD \$818 million.

ii) Trade leads to aid

One view that may influence the effectiveness of AfT concerns aid tying. This is the idea that the donor would provide aid on the condition that the recipient is obliged to purchase goods from the donor. Consolidation of commercial ties in this way could be in the form of export subsidy or mixed credits, and essentially amounts to a tacit instrument of trade policy (McGillivray and Morrissey, 1998). While this seems to be a win-win situation for both donor and recipient, it could also be potentially counterproductive for the developing country. Suppose that goods that the recipient country are made to purchase happen to be capital-intensive products and are not immediately useful for the labour-intensive structure of the developing country. In such a case, inefficient industries are encouraged by tied aid and poor countries would simply be kept poor. A more extreme view in the same vein claims that aid tying would engender a system of trade dependency, where the recipient country would continue to purchase goods from the donor country out of habit and not out of efficiency-based considerations.

Another interesting angle of the AfT research surrounds the notion of donor motivation. It is unlikely that donors – specifically bilateral ones – are perpetually altruistic in their allocation of aid. Political and commercial interest could wield a significant influence over the choice of country and type of aid that the donor chooses. For instance,

consider why Japan would disburse a significant portion of its aid toward Malaysia, a country that has a higher middle-income status, rather than toward other Sub-Saharan African countries. Surely Malaysia faces less trade constraints than a country like Mali, and would be comparatively less ‘deserving’ of any AfT. Yet Malaysia is arguably a more important trading partner for Japan, and it would scarcely be surprising to find that economic considerations trump humanitarian ones. This is the idea of ‘trade leading to aid’ instead of ‘aid leading to trade’ since the premise of aid-giving is based on the prospect of deepening trade relations with the recipient country, and this would encourage the donor to be biased toward already commercially favourable trading partners, as a way of rewarding the country for purchasing its exports. It could also be the case that aid is used to promote trade expansion in currently lesser markets that could be potentially beneficial for the donor country. This strand of research has been termed the ‘politicization of aid’, with reference to the practice of self-motivated aid-giving.

On a broader level, developmental aid in general is heavily politicized. Kuziemko and Werker (2006) find that vote buying exists at United Nations Security Council (UNSC), where non-permanent Council members (usually developing countries) clandestinely trade their vote in exchange for foreign aid. In return, they would vote on key global security issues in the way the donor country expects them to. The study claims that a Council member can expect to receive an extra \$8 million from the UN and \$45 million from the United States during the important years during which the UNSC has to vote on important security issues. Kuziemko and Werker (2006) also showed that the United Nations Children's Fund (UNICEF) is a key channel through which the United States influences Council members. Using data from 2000 to 2009, Hlavac (2013) verifies that Council members that were politically aligned in their voting behaviours with the United States received more aid from UNICEF than members who were not. This is consistent with broader studies of the motivations of foreign aid, in which Alesina and Dollar (2000) found that voting in the UN seemed to be larger predictor of the receipt of foreign aid than the status of democracy or per capita income.

If foreign aid in general has such a political dimension to it, it would be surprising if aid for *trade* were not similarly influenced by politics. Interestingly, empirical research does not seem to echo this. Huhne, Meyer and Nunnenkamp (2013) find that AfT increases the exports from recipient countries to donors, more so than it increases the imports from donors. In other words, if we consider that the merit of trade lies with a country’s ability to increase its exports, donors are not found in this study to be self-interested in their disbursement of AfT, since they do not get to export as much as they import from recipient countries.

iii) Uni-directional or bi-directional?

Causality studies are inherently difficult, particularly when the direction of flow is not immediately apparent. Given that aid can lead to trade and vice versa, both aid and trade could be dependent variables in the same equation. This bi-directional causation is obviously problematic and needs to be accounted for before an econometric regression is performed. McGillivray and Morrissey (1998) used the Granger causality test for the purpose of picking up the direction of causality. However, the study found that the direction of causality would vary considerably between donor-recipient pairs, with the instances of trade causing aid more likely than aid causing trade.

2.3. Aid for Trade and Global Value Chain causality

In marrying the literature of AfT and GVC, one finds few but encouraging areas of overlaps. For instance, the OECD and WTO state in a 2013 report that “the emerging prominence of GVCs underscores the urgency of AfT”. This is an unmistakable allusion to the complementariness of AfT and GVCs. In fact, in 1998, McGillivray and Morrissey conclude in their study of *Aid and Trade Relationships in East Asia* that Japan’s aid flows to East Asia “are more related to economic cooperation than to a needs-based development cooperation”. This is the basis by which the same paper suggests that historical Japan aid flows to the region have “played a role in sustaining, if not actually promoting, the economic dynamism within the region” (McGillivray and Morrissey, 1998).

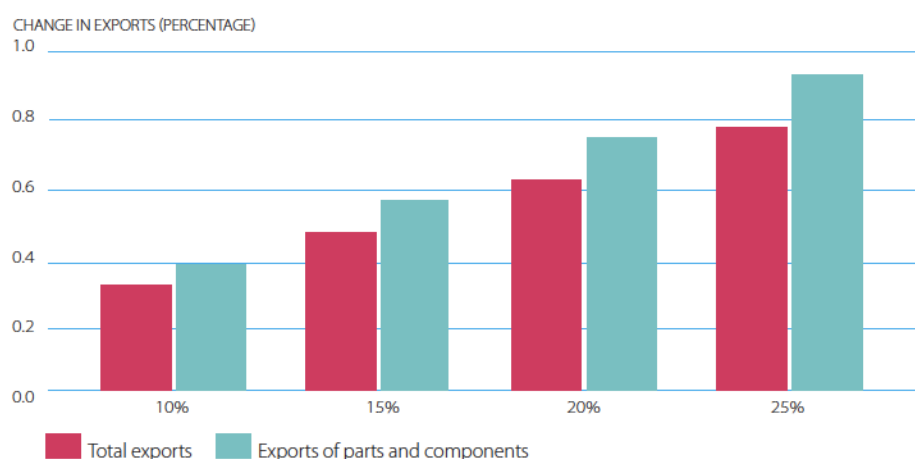
Aid for the purpose of promoting trade had already existed for many decades preceding the initiation of ‘AfT’ as a formal category of aid during the Hong Kong Ministerial Conference in 2005. Given that Japan has long provided aid to East Asia, it should be of no surprise that East Asia’s development could be a beneficiary of Japanese aid flows. With the onset of the fragmentation of production occurring at a more rapid pace between East Asian firms in recent decades, one begs the question of whether Japanese aid has similarly encouraged the means for East Asian countries to participate in value chains within East Asia through the provision of AfT. If AfT manages to reduce trade costs, then this has the effect of easing the participation of firms to enter cross-border value chain activity. In fact, there is evidence that aid that is specifically targeted towards trade facilitation and infrastructure are the most effective at raising exports (OECD and WTO, 2013). Given that trade facilitation and good infrastructure are crucial elements for countries to enter into value chains, AfT could easily complement the process of GVC participation.

The same study utilised a cross-country regression to prove the relationship between AfT flows and GVC participation. Taking as a starting point parts and components exports to be a key indicator of GVC participation, the OECD/WTO study showed that a 10% increase of AfT to all developing countries would raise parts and components exports from developing countries by 0.5%. Figure 9 shows a graphical representation of the results, with the horizontal axis being the percentage of additional aid for trade and the vertical axis being the change in exports in percentage. As can be seen, when greater aid for trade flows are being directed towards developing countries, the corresponding change in parts and components exports is of a lesser magnitude but positive nonetheless. What is also significant to note is the change in parts and components exports is larger than the change in total exports, which draws attention to the fact that compared to total exports, value chain activity (as indicated by parts and components exports) captures the effect of AfT more definitively.

Given the relative novelty of this proposed causality, this paper builds on the OECD/WTO study by concentrating on finding if causality between AfT and GVC participation holds more strongly for the case of Japanese flows to East Asia. In consideration of the historical ties, economic relations, and geographical proximity between Japan and East Asian countries, if Japanese AfT is found to have no effect of spurring GVC participation in a region so economically dynamic like East Asia, one is prompted to believe that: (a) East Asian value chains (characterised by

the fragmentation of production and distribution networks) are a result of factors relating to the region’s inherently competitive edge, and are unaffected by exogenous changes such as foreign aid from Japan, (b) the Aft-GVC causality as claimed by the OECD/WTO study does not apply for the region of East Asia, and is unlikely that aggregating the effects for all donor-recipient pairs would provide sufficient insight into this subject area.

Figure 9: Impact of aid for trade increases on parts and components exports



Source: OECD and WTO (2013). “Evaluating the Effectiveness of Aid for Trade” (Chapter 5).

3. Research Methodology & Results

In attempting to understand the Aft-GVC nexus more comprehensively, it is of utmost importance to draw insight from data and case studies, and to consider both donor and recipient perspectives. As can be observed from the aid literature, one’s choice of econometric methodology could dramatically alter the conclusion of the research. This is why qualitative studies could be used to make up for shortfalls in qualitative rigour. To this end, both qualitative and quantitative methods will be employed in this study.

3.1. Quantitative

3.1.1. Data and Econometric Specification

The estimation strategy used in this study is based on the gravity model, first introduced by Tinbergen in 1962. The merit of this approach is that it is a simple way to estimate the pattern of bilateral trade flows based on economic size (GDP) and distance between bilateral country pairs.

Data on Aft flows was taken from the CRS database compiled by the OECD since 1973. The CRS database contains data on bilateral aid flows from donor to recipients for all countries and bilateral/multilateral donors, and also includes the value of aid for specific kinds of Aft. For the purpose of this study, data on Aft flows as reported in USD millions between years 2002 to 2013 were analysed for the following 19 recipient of Japanese Aft (in

alphabetical order): Afghanistan, Armenia, Azerbaijan, Bangladesh, China, Egypt, India, Indonesia, Iraq, Kenya, Malaysia, Mongolia, Morocco, Pakistan, Philippines, Sri Lanka, Thailand, Turkey, and Vietnam. In order to pick up the effects of Japanese AfT on GVC participation in East Asia, this list of countries reflects a mix of East Asian and non-East Asian countries that receive significant amounts of Japanese AfT. To precisely determine the countries that could qualify for this list, the top 10 recipients of Japanese aid in absolute amounts were tabulated for the years between 2002 and 2013. The abovementioned countries were recipients of Japanese AfT that appeared in the top ten lists for any one year, for at least once. Even though the database publishes both aid disbursements and aid commitments, only aid disbursements was considered because it is the actual value of aid given to recipient countries (and not what the donor promises to give) that would matter in this study.

Given that the CRS database reports both aggregated and disaggregated aid flows, both types of aid flows will be analysed in this paper. Firstly, total AfT flows will be used to test for its impact on trade. To introduce some variation, total AfT flows would be replaced in the econometric equation by specific AfT flow types delineated in earlier sections – Aid for Trade Policy and Regulation (AfTPR), Aid for building Productive Capacity (APC), and Aid for Economic Infrastructure (AEI). The results of the regression should indicate the relative significance of each specific type on trade flows.

Data on trade flows was taken from the UN Comtrade database, which publishes annual data on country-pair bilateral trade flows from 1962. The database also contains monthly statistics from 2010, but to ensure a long enough time span for the regression, this paper will only consider annual trade flows, using data for the period of 2002 to 2013. Data on parts and components trade was also taken from the UN Comtrade database, based on the reference codes relating to machinery parts and component under the SITC Revision 2 commodity classification system as identified in Kimura, Takahashi and Hayakawa (2007). The SITC Revision 2 system, compared to SITC Revision 1 and 3 systems, presents a more accurate and detailed classification in goods related to machinery and transport. The 60 reference codes are as follows:

7119, 71319, 71331, 71332, 7139, 7149, 7169, 71889, 72119, 72129, 72139, 72198, 72199, 7239, 72449, 72469, 72479, 7259, 72689, 7269, 72719, 72729, 72819, 72839, 72849, 7369, 73719, 73729, 74149, 7429, 7439, 74419, 7449, 74519, 74523, 74999, 759, 764, 77129, 772, 77579, 77589, 77689, 77819, 77829, 77889, 784, 78539, 78689, 79199, 7929, 82119, 82199, 87429, 88119, 88121, 88129, 88411, 88529, 89949.

Data on bilateral FDI was taken from the UNCTAD database, which compiles statistics on FDI inflows, outflows, inward stock, as well as outward stock for 206 economies. This paper will make use of both bilateral FDI inflows and outflows to recipient countries, as reported by Japan. An important caveat is that there are considerable gaps in the FDI data between the years 2002 and 2013, and it is not entirely clear if missing data is due to FDI values being truly zero, or if there was simply no record of FDI flows between Japan and the recipient country.

In order to apply the gravity model, more variables such as GDP of donor (Japan) and recipient countries are needed. Nominal GDP reported in USD, was taken from the World Development Indicators (WDI) under the

World Bank database. Other information (such as country area and membership in GATT/ WTO) to account for bilateral fixed country effects were taken from the Centre d'études prospectives et d'informations internationales (CEPII) database.

To reiterate, the quantitative section serves to answer the following research question: Does Japanese AfT spur greater participation in GVCs in East Asia? To break down the question further, the econometric specification was designed to capture this causality through finding out if:

(i) **Japanese AfT leads to increase in bilateral trade.** Before finding a link between AfT and GVC participation, it is first important to establish if there is even a relationship between AfT and trade. Bilateral trade flows in this case would be indicated by imports from recipient countries to Japan, as reported by Japan. The choice to use import data over export data is a deliberate one. Import data is generally considered to be more reliable than export data, since import data records what the country actually 'buys', while export data records what the country professes to 'sell'. In general, there is less impetus for the reporting country to under-report import values than over-report export values. Instead of using import data recorded by recipient countries, import data recorded by Japan is used in this study. This is not only for the sake of consistency to have all trade data reported by the same country, but also due to many missing data points in the import database recorded by recipient countries that renders it difficult to use the recipient country values. For this paper, the traditional static gravity equation where the log of variables is taken on both sides (log-log) is used. Equation 1 of the econometric model is specified as follows to test for the impact of AfT on bilateral trade:

$$\ln TRADE_{ijt} = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln AfT_{it} + \alpha_{ijt} + \lambda_t + \varepsilon_{ijt} \quad (1)$$

In this equation, $TRADE_{ijt}$ denotes bilateral imports from recipient country i to country j (Japan) in year t , GDP_{jt} denotes country i 's GDP, GDP_{jt} denotes country j 's GDP in year t , AfT_{it} denotes the aid disbursed by Japan to the recipient country in year t , α_{ijt} denotes bilateral country fixed effects, λ_t denotes year fixed effects, and ε_{ijt} is the residual term.

(ii) **Japanese AfT leads to greater GVC participation.** Given that both FDI and parts and components trade (or also known as intermediate trade) are indicators of GVC participation, the left-hand side variable of equation (1) will be replaced by these two variables. The econometric models are specified as follows to test for the impact of AfT on parts and components trade in machinery goods $PCTRADE_{ijt}$, as well as the impact on bilateral FDI, FDI_{ijt} :

$$\ln PCTRADE_{ijt} = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln AfT_{it} + \alpha_{ijt} + \lambda_t + \varepsilon_{ijt} \quad (2)$$

$$\ln FDI_{ijt} = \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln AfT_{it} + \alpha_{ijt} + \lambda_t + \varepsilon_{ijt} \quad (3)$$

The dependent and independent variables and their sources are summarised in the table below:

Variable	Description	Data source
$TRADE_{ijt}$	Bilateral imports from country i to country j in year t	UN Comtrade
$PCTRADE_{ijt}$	Machinery parts and components trade from country i to country j in year t	UN Comtrade According to reference codes used in Kimura et al. (2007)
FDI_{ijt}	Bilateral foreign direct investments from country i to country j in year t	UNCTAD
GDP_{it}	GDP of country i in year t	WDI (World Bank)
GDP_{jt}	GDP of country j in year t	WDI (World Bank)
AfT_{it}	Aid for Trade, which represents the sum of flows of Aid for Trade Policy and Regulation (APR), Aid for Productive Capacity (APC), and Aid for Economic Infrastructure (AEI) from the bilateral donor (Japan).	OECD-CRS
α_{ijt}	Bilateral country fixed effects: East Asia dummy, GATT dummy	CEPII

In order to capture the effect of causality, the aid flows will be adjusted with a time lag of 1 and 2 years, acknowledging that the transmission effect from aid flows to trade, trade in parts and components, or FDI, may take some time to set in.

3.1.2. Results

The descriptive statistics for each of the explanatory variables are as follows:

Variable	Obs	Mean	Std. Dev.	Min	Max
year	228	2007.5	3.459648	2002	2013
id	228	10	5.489277	1	19
limports	228	19.92651	3.399992	12.4608	25.96202
lPCimports	194	16.16542	4.6355	7.690286	22.96339
loFDI	138	5.327901	2.456786	-.7092766	9.508982
liFDI	50	1.734041	1.8882	-1.136314	5.750958
lgdp_d	226	25.30244	1.757934	21.05728	29.88132
lgdp_jp	228	29.20557	.1225262	29.01251	29.41516
laft_jp	227	5.350805	1.454538	.4338368	8.168992
laftpr_jp	178	-1.405386	1.722623	-5.068794	2.630617
lapc_jp	219	2.425305	1.762674	-2.463999	5.872242
laei_jp	221	3.664755	2.249654	-4.17196	7.433311
EA_	228	.3114035	.4640862	0	1
GATT_exp~r	228	.8157895	.3885087	0	1

A total of 48 regressions were carried out for this study, with results presented in four tables. In each table, each column represents a regression made for one particular type of aid flows (either total aid for trade (Aft), aid for trade and policy regulation (AFTPR), aid for productive capacity (APC) or aid for economic infrastructure (AEI)), during one particular period (either same year, lagged one year, lagged two years). The “b/se” under each heading denotes that the results represents the coefficient (b) value that is attached to the corresponding variable in the left column, and standard errors (se) are presented in the parentheses. As expected of the control variable, GDP of destination country (lgdp_d) is mostly significant and positive in relation to total imports, parts and components imports, and outward FDI. The GATT membership dummy was not significant in any of the regressions, possibly because most countries were GATT/WTO members during the period of study of 2002 to 2013. The East Asia dummy was also not found to be significant. The Hausman test (results as shown below) was conducted to determine if fixed or random effects would be used for the estimation. Results find that the p-value was significant (<0.05), and thus estimations were carried out using fixed effects.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
laft_jp	.1374836	.1857672	-.0482835	.
lgdp_jp	.0801179	-.9656249	1.045743	.1800987
lgdp_d	.4709407	.8516125	-.3806717	.0994403
EA_	.0679176	3.67286	-3.604942	.4899683
GATT_expor~r	.6410856	.9800925	-.3390069	.

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 42.54
 Prob>chi2 = 0.0000
 (V_b-V_B is not positive definite)

Table 1 presents the results of the regression as derived from the specification of equation (1) concerning the effect of Japanese Aft on spurring bilateral trade (in the form of imports received by Japan). As can be observed, if total Aft increases by 10%, then imports to Japan *decrease* by 2.24%. This result is strongly significant at the 1% level. In other words, the more Japan provides aid to recipient countries, the less trade occurs between them. This is counterintuitive to what was predicted about trade flows. On consideration of a lag time of one and two years for the dependent variable, the change in imports is less striking, but the result is only weakly significant at the 10% level. Aft that increases by 10% would decrease imports to Japan by 1.3% one year later. If measured two years later, imports would decrease by 1.36%. Upon disaggregating the aid flows into its subcategories, one finds nothing significant in the results apart from aid for economic infrastructure (AEI) flows with a time lag of one year that record weakly positive results for imports. For 10% increase in AEI from Japan, imports to Japan from recipient countries would *increase* by 0.66%. This means that while total aid flows do not have any positive impact on bilateral trade between these 19 countries and Japan, by disaggregating the aid flows, it is possible to claim that aid directed at economic infrastructure could spur some trade between Japan and recipient countries, but the effect is not detectable until one year later.

The impact of Japanese Aid for Trade on Global Value Chain participation in East Asia

Table 1. Effect of Japanese aid for trade on **bilateral trade** (imports as recorded by donor country Japan); aid flows lagged for up to two years

	AfT b/se	AfTlag1 b/se	AfTlag2 b/se	AfTPR b/se	AfTPRlag1 b/se	AfTPRlag2 b/se	APC b/se	APClag1 b/se	APClag2 b/se	AEI b/se	AEIlag1 b/se	AEIlag2 b/se
laft_jp	-0.224*** (0.06)											
lgdp_jp	0.312 (0.55)	0.090 (0.58)	-0.087 (0.59)	-0.004 (0.58)	-0.264 (0.56)	-0.119 (0.63)	-0.062 (0.58)	-0.020 (0.59)	-0.134 (0.61)	0.099 (0.57)	-0.127 (0.56)	-0.208 (0.59)
lgdp_d	0.691*** (0.13)	0.708*** (0.14)	0.803*** (0.16)	0.603*** (0.14)	0.809*** (0.14)	0.835*** (0.20)	0.736*** (0.14)	0.721*** (0.15)	0.832*** (0.17)	0.662*** (0.14)	0.593*** (0.14)	0.699*** (0.16)
EA_	0.095 (0.66)	0.036 (0.68)	0.078 (0.68)	-0.041 (0.62)	-0.030 (0.59)	0.084 (0.62)	0.011 (0.69)	0.039 (0.68)	-0.038 (0.69)	0.006 (0.67)	-0.037 (0.65)	-0.031 (0.67)
GATT_expor~r	0.034 (0.33)	0.366 (0.41)	0.274 (0.45)	0.353 (0.38)	0.195 (0.39)	0.142 (0.47)	-0.079 (0.34)	0.313 (0.41)	0.316 (0.46)	-0.049 (0.34)	0.293 (0.39)	0.244 (0.44)
L.laft_jp		-0.130* (0.06)										
L2.laft_jp			-0.136* (0.06)									
laftpr_jp				0.018 (0.05)								
L.laftpr_jp					0.029 (0.05)							
L2.laftpr_jp						0.070 (0.05)						
lapc_jp							-0.011 (0.05)					
L.lapc_jp								-0.032 (0.05)				
L2.lapc_jp									-0.106 (0.05)			
laei_jp										0.003 (0.03)		
L.laei_jp											0.066* (0.03)	
L2.laei_jp												0.019 (0.03)
_cons	-5.503 (13.83)	-0.246 (14.58)	2.607 (14.89)	4.869 (14.81)	7.385 (14.38)	2.553 (15.37)	3.240 (14.56)	2.108 (14.94)	2.819 (15.19)	0.387 (14.27)	8.235 (14.29)	8.131 (15.00)
r2	0.292	0.244	0.235	0.221	0.286	0.245	0.247	0.221	0.214	0.242	0.244	0.190
N	226	208	189	178	161	144	219	200	181	221	202	183

Standard errors in parentheses

* Significant at 10%; **significant at 5%; ***significant at 1%

Table 2 presents the results of the regression as derived from the specification of equation (2) concerning the effect of Japanese AfT on spurring bilateral trade in parts and components (in the form of imports received by Japan). Out of the twelve regressions done, none of the coefficients for aid flows were found to be significant in determining the value of parts and components trade in machinery and transport goods.

Table 3 and 4 present the results of the regression as derived from the specification of equation (3) concerning the effect of Japanese AfT on spurring FDI. In almost all cases, Japan's GDP was found to be fairly positively significant in determining the level of inward FDI to Japan. Three instances were recorded to be significant: First, a 10% increase in aid for productive capacity from Japan to recipient countries would *decrease* inward FDI into Japan by 9.08%, significant at the 5% level. This is a fairly strong effect since the percentage change is almost equivalent. Second, a 10% increase in aid for economic infrastructure from Japan to recipient countries would once again *decrease* inward FDI into Japan by 6.52%, significant at the 5% level. Third, after a one year time lag is applied, the corresponding level of decline in inward FDI is 5%, but now only weakly significant at the 10% level.

In consideration of the effect of aid flows on outward FDI, it is interesting to note that both GDP of Japan and GDP of the recipient country are fairly significantly positive in determining the level of outward FDI from Japan. It is not hard to see why: the richer Japan and recipient countries get, the more Japan invests in recipient countries. However in terms of aid flows, there was only one instance where there was a significant – albeit weak – result: a 10% increase in aid for trade policy and regulation would *decrease* outward FDI by 1.99%.

Without much significance recorded by the regressions, the results appear to be largely weak and inconclusive. Where significant, aid flows are found to have a *negative* impact on trade and FDI flows. Moreover, unlike the OECD/WTO (2013) conclusion, Japanese AfT does not seem to have any impact on parts and components trade. At least preliminarily, this goes to show that the AfT-GVC nexus does not apply for the case of Japan and recipients of its aid. In addition, the East Asian dummy did not record any significant results, and thus there is no perceptible case of aid-led GVC participation in East Asia. Japan's bias in disbursing aid toward East Asia does not appear to pay off, given that Japan not only imports less from recipient countries, but it also receives less investment (FDI inflows decrease) from them upon disbursing aid. However, it could also be the case that recipient countries in fact export more and receive more FDI from other countries upon receiving aid, just not vis-à-vis Japan. The regression only measures bilateral effects between Japan and the recipient country, but the effects of aid on a developing country could lead to trade and investment with other countries, and not necessarily with Japan.

In light of the results of the regression, there are some possible areas of refinement and improvement: First, the time lags could be extended to 5 years, since aid may take more time than expected to lead to increases in trade. Second, the list of countries surveyed could be broadened to account for all recipients (not just top 10 in a year between 2002 to 2013) of Japanese AfT. This would increase the number of observations and thus the explanatory power of the data. Third, the time period of study should be extended far beyond 2005 (when AfT was officialised), when long enough time series monthly data on both imports and exports become available.

Table 2. Effect of Japanese aid for trade on **bilateral parts and components trade** (imports as recorded by donor country Japan); aid flows lagged for up to two years

	PC_AfT b/se	PC_AfTlag1 b/se	PC_AfTlag2 b/se	PC_AfTPR b/se	PC_AfTPRlag1 b/se	PC_AfTPRlag2 b/se	PC_APC b/se	PC_APClag1 b/se	PC_APClag2 b/se	PC_AEI b/se	PC_AEIlag1 b/se	PC_AEIlag2 b/se
laft_jp	0.137 (0.11)											
lgdp_jp	0.080 (0.76)	0.125 (0.79)	0.084 (0.81)	0.435 (0.83)	-0.239 (0.84)	-0.205 (0.90)	0.073 (0.75)	0.069 (0.79)	0.105 (0.83)	0.182 (0.77)	0.235 (0.80)	0.040 (0.81)
lgdp_d	0.471* (0.20)	0.551** (0.21)	0.604* (0.24)	0.408 (0.22)	0.585* (0.23)	0.562 (0.30)	0.566** (0.20)	0.609** (0.22)	0.729** (0.26)	0.424* (0.21)	0.580** (0.21)	0.547* (0.25)
EA_	0.068 (0.83)	0.152 (0.84)	0.138 (0.86)	0.166 (0.82)	0.077 (0.82)	0.120 (0.83)	0.137 (0.82)	0.165 (0.84)	0.130 (0.87)	0.090 (0.83)	0.175 (0.84)	0.128 (0.85)
GATT_expor~r	0.641 (0.48)	0.568 (0.51)	0.421 (0.57)	0.657 (0.50)	0.515 (0.54)	0.510 (0.63)	0.692 (0.47)	0.531 (0.51)	0.527 (0.58)	0.704 (0.48)	0.582 (0.51)	0.460 (0.56)
L.laft_jp		0.004 (0.12)										
L2.laft_jp			0.059 (0.12)									
laftpr_jp				-0.020 (0.06)								
L.laftpr_jp					0.010 (0.07)							
L2.laftpr_jp						0.068 (0.07)						
lapc_jp							-0.015 (0.07)					
L.lapc_jp								0.001 (0.08)				
L2.lapc_jp									-0.116 (0.09)			
laei_jp										0.050 (0.04)		
L.laei_jp											-0.032 (0.05)	
L2.laei_jp												0.029 (0.05)
_cons	0.409 (18.66)	-2.204 (19.65)	-2.565 (20.17)	-7.343 (20.66)	7.978 (21.05)	7.607 (21.43)	-1.022 (18.50)	-1.983 (19.57)	-5.785 (20.62)	-0.828 (18.90)	-6.003 (20.15)	0.413 (20.44)
r2	0.131	0.115	0.111	0.101	0.098	0.084	0.135	0.123	0.116	0.125	0.118	0.099
N	194	179	164	161	147	133	189	174	158	191	176	160

Standard errors in parentheses

* Significant at 10%; **significant at 5%; ***significant at 10%

Table 3. Effect of Japanese aid for trade on **inward FDI** (as recorded by donor country Japan); aid flows lagged for up to two years

	iFDI_AfT b/se	iFDI_AfTlag1 b/se	iFDI_AfTlag2 b/se	iFDI_AfTPR b/se	iFDI_AfTPR~1 b/se	iFDI_AfTPR~2 b/se	iFDI_APC b/se	iFDI_APClag1 b/se	iFDI_APClag2 b/se	iFDI_AEI b/se	iFDI_AEIlag1 b/se	iFDI_AEIlag2 b/se
laft_jp	-0.903 (0.49)											
lgdp_jp	8.938** (2.86)	7.537* (2.87)	4.595 (2.41)	8.503** (2.90)	5.335 (2.64)	5.096 (2.72)	8.172** (2.63)	5.430* (2.47)	5.033* (2.46)	7.699** (2.52)	7.258* (2.70)	5.237 (2.58)
lgdp_d	-0.182 (0.76)	0.169 (0.76)	1.393 (0.70)	-0.167 (0.80)	1.327 (0.94)	1.579 (0.98)	0.095 (0.67)	1.441* (0.67)	1.523* (0.73)	-0.558 (0.70)	-0.077 (0.72)	1.367 (0.75)
EA_	-0.784 (1.50)	-0.934 (1.56)	-0.812 (1.26)	-0.573 (1.54)	-0.860 (1.31)	-0.712 (1.37)	0.270 (1.47)	-0.454 (1.36)	-0.986 (1.29)	-1.221 (1.37)	-1.289 (1.48)	-0.891 (1.30)
GATT_expor~r	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
L.laft_jp		-0.625 (0.57)										
L2.laft_jp			-0.566 (0.41)									
laftpr_jp				-0.381 (0.24)								
L.laftpr_jp					-0.053 (0.24)							
L2.laftpr_jp						0.115 (0.26)						
lapc_jp							-0.908** (0.33)					
L.lapc_jp								-0.301 (0.32)				
L2.lapc_jp									-0.103 (0.20)			
laei_jp										-0.652** (0.20)		
L.laei_jp											-0.500* (0.21)	
L2.laei_jp												-0.068 (0.19)
_cons	-248.498*** (69.34)	-218.654** (71.99)	-166.035** (59.81)	-242.198** (71.49)	-189.457** (61.61)	-189.251** (63.58)	-236.505*** (65.18)	-194.479** (60.55)	-185.437** (60.58)	-204.418** (63.00)	-205.136** (68.05)	-187.277** (62.19)
r2	0.435	0.373	0.517	0.393	0.503	0.475	0.489	0.535	0.493	0.528	0.445	0.491
N	50	49	47	48	45	43	50	48	47	50	49	47

Standard errors in parentheses

* Significant at 10%; **significant at 5%; ***significant at 1%

GATT dummy omitted because of collinearity

The impact of Japanese Aid for Trade on Global Value Chain participation in East Asia

Table 4. Effect of Japanese aid for trade on **outward FDI** (as recorded by donor country Japan); aid flows lagged for up to two years

	oFDI_AfT b/se	oFDI_AfTlag1 b/se	oFDI_AfTlag2 b/se	oFDI_AfTTPR b/se	oFDI_AfTTPR~1 b/se	oFDI_AfTTPR~2 b/se	oFDI_APC b/se	oFDI_APClag1 b/se	oFDI_APClag2 b/se	oFDI_AEI b/se	oFDI_AEIlag1 b/se	oFDI_AEIlag2 b/se
laft_jp	0.280 (0.16)											
lgdp_jp	-2.928** (0.99)	-2.930** (1.02)	-2.732** (1.01)	-2.244* (0.98)	-3.065** (0.99)	-2.660** (0.99)	-2.734** (1.00)	-2.882** (1.00)	-2.726** (0.97)	-2.704** (1.00)	-2.779** (1.02)	-2.791** (1.00)
lgdp_d	1.838*** (0.27)	1.782*** (0.29)	1.642*** (0.30)	1.574*** (0.27)	1.676*** (0.29)	1.430*** (0.32)	1.814*** (0.28)	1.655*** (0.29)	1.419*** (0.30)	1.798*** (0.28)	1.782*** (0.29)	1.589*** (0.30)
EA_	1.416 (0.89)	1.504 (0.91)	1.466 (0.90)	1.649* (0.82)	1.482 (0.86)	1.500 (0.83)	1.439 (0.90)	1.403 (0.90)	1.597 (0.86)	1.487 (0.89)	1.542 (0.91)	1.548 (0.88)
GATT_expor~r	0.678 (0.60)	0.803 (0.61)	0.742 (0.61)	1.087 (0.55)	0.977 (0.57)	0.962 (0.64)	0.791 (0.60)	0.941 (0.60)	0.931 (0.58)	0.797 (0.60)	0.874 (0.61)	0.951 (0.59)
L.laft_jp		0.158 (0.17)										
L2.laft_jp			0.338 (0.19)									
laftpr_jp				-0.199* (0.08)								
L.laftpr_jp					0.045 (0.08)							
L2.laftpr_jp						-0.064 (0.08)						
lapc_jp							0.075 (0.09)					
L.lapc_jp								0.079 (0.10)				
L2.lapc_jp									0.143 (0.10)			
laei_jp										0.058 (0.06)		
L.laei_jp											-0.001 (0.06)	
L2.laei_jp												0.039 (0.06)
_cons	39.877 (24.04)	42.003 (24.95)	38.940 (24.92)	27.842 (24.09)	49.613* (24.69)	44.140 (23.76)	36.155 (24.49)	44.568 (24.69)	45.940 (24.16)	35.644 (24.23)	38.466 (25.34)	43.648 (24.91)
r2	0.388	0.351	0.335	0.410	0.341	0.254	0.371	0.329	0.307	0.379	0.340	0.310
N	138	131	123	124	117	110	136	129	121	137	129	122

Standard errors in parentheses

* Significant at 10%; **significant at 5%; ***significant at 1%

3.2. Qualitative

3.2.1. Sectoral Evaluations

In attempting to understand the effectiveness of aid for trade on a qualitative level, one could consider the perspective of donor-commissioned reports. Evaluations in the form of impact assessments have become an important facet of the aid process for donors. According to a report by the OECD and WTO in 2013, donor “evaluations typically involve extensive review of a collection of projects over time to assess their aggregate impact on trade, growth, poverty, often looking at cross-cutting issues”.

In the case of Japan, Mizuho Research and Investment, supported by the Ministry of Foreign Affairs (MOFA), has assumed the task of evaluating the effectiveness of Japanese AfT over the years. Given the dismal deflation and debt situation in Japan, it is crucial to establish if Japan’s expenditure on developmental aid has being a worthy ‘investment’ all these while. The Mizuho Report (2012), while careful to distance itself from representing the viewpoint of the government, points to several interesting, albeit sanguine, conclusions. The report surveyed aid projects in Vietnam and Laos between June 2011 and February 2012, and find “apparent improvements in economic performance (economic and export growth) in the main countries receiving AfT from Japan”. On the whole, it finds that AfT has been “very relevant”, especially for recipient countries in East Asia. In fact, there is explicit reference to Japanese aid being deliberately directed at East Asian middle-income countries, which the report identifies as “historically...the focus of Japanese aid”. In an attempt to evaluate Japan’s AfT policies and initiatives, including their ODA projects, the Mizuho report engaged in domestic hearings with stakeholders in the Japanese government, document reviews, field surveys in recipient countries, and case studies to verify the link between Japanese aid efforts and its corresponding impacts. The evaluation was based how qualitatively consistent the aid initiatives were with what they set out to achieve. The report finds that Japan’s AfT policies are broadly consistent with international frameworks such as the WTO Doha Work Programme Ministerial Declaration and UN Millennium Development Goals. It also finds that on an aggregate level, aid inputs exceeded what Japan had initially promised to provide to developing countries.

Not unexpectedly, the report finds that AfT outputs are difficult to define and capture, given that they are spread among different ODA projects. Whether implementation of these projects had occurred can be verified, but the actual impact of the project itself is impossible to distil and aggregate. However, based on its best efforts of measurements, the Mizuho report concludes that there is a positive link between Japan’s AfT and the export growth, FDI inflows, export climate, and investment climate for the surveyed Asian recipient countries – 19 in total. It considers attributing these successes to Japanese AfT as overly presumptuous, but finds it not totally unreasonable to assume that Japanese AfT is a factor that had contributed to such favourable economic conditions.

3.2.2. Project-level case study

In order to illustrate the effect of aid on spurring development through trade, this section is dedicated to the explication of a case study of a development project funded by Japanese aid.

Eastern Seaboard Development Plan (ESDP) in Thailand is arguably the most important and successful development project that Japanese aid has had a part in supporting. Since the launch of the ESDP, substantial export-oriented industrialisation has taken place in Thailand, and economic activity of the ESDP has come to make up the backbone of the Thai economy. Started in the early 1980s and completed toward the end of the 1990s, the project was mostly financed by Yen loans that continued up until 2000. In total, loans amounted to 134 billion yen. The ESDP was to some extent borne out of necessity: Thailand in the late 1970s was hit by challenges to its economy. Following a decline of international prices in primary products, Thailand was forced to restructure its economy away from a reliance on raw materials and shift toward labor-intensive manufacturing instead. Moreover, there was an overconcentration of resources, population, and industrial activity in the metropolitan area of Bangkok. It was only a matter of time before the country would be faced with massive inequality and uneven development problems. The ESDP was essentially conceived as a solution to the crisis. Situated just 20km southeast from Bangkok, the area of Laemchabang in Chonburi was identified to be the alternative export base for what was to be a relocation of resources and labor-intensive industries away from Bangkok. Plans were made for the construction of a port and industrial estates surrounding it. Nearby, the area of Map Ta Phut in Rayong was also identified to be a region where a major port and large industrial complexes would be built, similar to the Laemchabang area. These two ports and its locality came to be known as the Eastern Seaboard Region. This region bears strategic importance because of its proximity to the Thai Gulf, Bangkok, as well as the major airport, Suvarnabhumi Airport.

The Japanese government, through the Japan International Cooperation Agency (JICA) and the Japan Bank for International Cooperation (JBIC) (then known as the Overseas Economic Cooperation Fund (OECF)), cooperated on the ESDP in the following areas between 1980-1989: Development of Water Resources, Port Development, Industrial Development Plan Creation, Promotion of Investment, and Environmental Protection. The Laem Chabang Industrial Estate was specifically developed as a site for export-oriented non-polluting industries and transport infrastructure such as roads, ports and subways. On the other hand, the Map Ta Phut Industrial Estate was focused on the heavy chemical industries. Industrialisation of the Eastern Seaboard Region has been very successful, with much investment and economic activity generated. According to a JICA/OECF Joint Evaluation report on the ESDP, half of all investment-licensing activities in Thailand could be attributed to the Eastern Seaboard region in 1977. By 1995-1997, this increased to 64.7%. Likewise, the per capita income in the region was 2.76 times above the national average (1996). Factory concentration also increased at a faster rate in this region (5 times) than in central Thailand (4.5 times) between 1981 and 1996, an unsurprising fact considering that around 200 companies had relocated there from metropolitan Bangkok.

In Laem Chabang, over 80% of investment came from foreign capital, and 80% of jobs were created through joint ventures with foreign companies like automobile manufacturers from Japan. Industrial development for the purpose of facilitating export-oriented development is a case in point of how aid for trade could spur bilateral trade – not just in final goods, but also in parts and components. With the agglomeration of domestic firms and foreign

affiliates situated within the same geographical locality, and with the improvement of infrastructure that reduces service link costs, firms are likely to find merits in participating in value chains either through arms length trade or intra-firm trade. By fragmentation of production and/or distribution processes, the costs of production could be significantly lowered. As seen in the example of the ESDP, AfT has made it easier for firms to participate in GVCs.

4. Conclusion

Upon examination of the quantitative and qualitative evidence, the results of the study as a whole paint a mixed picture of the Japanese aid effectiveness landscape on spurring GVC participation, whether in East Asia or otherwise. A review of the literature of aid for trade effectiveness mostly finds that AfT has led to an increase in bilateral trade between donor-recipient pairs. However, these findings could not be corroborated for the case of Japan and its aid recipients in this study, and in many cases, the regression results indicate that Japanese AfT flows actually led to a decrease in bilateral trade with recipient countries. Already, the apparent absence of a positive and/or significant link between AfT and trade flows for Japan renders the AfT-GVC discourse slightly peripheral. If the quantitative results do not indicate that aid leads to trade, what reason is there to consider that aid could lead to GVC participation? AfT and GVC participation may be complementary in their objectives and functionalities, but proving a case of causality is exceedingly difficult. Indeed, results for intermediate trade flows did not return significant results, even when tested with a time lag of up to two years.

What does this imply? On some level, this suggests that Japan's aid efforts toward recipient countries have been relatively futile in generating trade, whether in final goods or parts and components. One way to understand this is to look at the countries surveyed. Out of the 19 countries surveyed, it is obvious that many do not have strong trade ties with Japan to begin with. Some countries have been notably war-torn, such as Afghanistan, Pakistan, and Iraq, and many others are only very small trading partners of Japan, such as Armenia, Azerbaijan, and Mongolia. The value of imports recorded by Japan from these countries has been steadily low, and it could be so for a multitude of reasons unrelated to aid, or the lack thereof. Out of the 19 countries, only Thailand, Malaysia, China, India, and Vietnam are significant trading partners of Japan. It is also troubling that Japanese AfT is correlated with less FDI inflows and outflows from/to recipient countries. However, given the few number of observations concerning FDI due to missing data points, any empirical results should only be taken lightly. Interestingly, the quantitative results also did not produce sufficient evidence to indicate a higher return on Japanese aid flows directed towards East Asia. This is contrary to findings by McGillivray and Morrissey (1997), who posit that Japanese aid carries a bias towards its trading partners because of the potential gains in trade. At least according to findings in this paper, there is insufficient evidence to make such a case.

Yet it would be presumptuous to then claim that Japanese aid has done nothing to advance the economies of recipient nations. Whether or not the returns on aid investments can be verified, it seems likely that Japan would continue to focus its development assistance efforts on East Asia. As seen through the lens of official government

reporting or government-commissioned impact assessments, there appears to be optimism over Japanese aid efforts as well as broad consensus over its effectiveness in engendering good economic conditions in recipient countries. The Eastern Seaboard program is a case in point where Japanese AfT has brought about positive results in ways that are not only positively measurable but also tangible – increase in jobs and investment activity, the construction of infrastructure, and knowledge transfer.

The quantitative and qualitative evidence discussed in this paper present contrasting but nonetheless insightful views of Japanese aid efforts, not unlike the already eclectic empirical research landscape surrounding aid. Within the context of deepening value chains globally and regionally, alongside the increasing relevance of slicing up production and distribution processes, it is only a matter of time before GVCs become a force to be reckoned with. In the same vein, economic integration through GVCs would be strengthened if aid flows could serve its purpose of reducing developing countries' barriers to trade. Even if aid flows from Japan do not currently appear to have a significant role in spurring the GVC participation of its recipients, there exist much potential for cooperation in AfT and GVC strategies on a supranational level.

Given that engaging in value chain activity could be useful for establishing cross-country business linkages and is cost-effective for firms at the same time, participating in GVCs may quicken developing countries' integration in international and regional trade networks, and this in turn would spur exponential economic activity. By ensuring that future aid for trade dialogue focuses on enabling participation in GVCs, such as through helping firms specialise in one or more parts of the vertical chain of production, aid effectiveness would be substantially strengthened.

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