



Munich Personal RePEc Archive

Integrating South Asia into Asia: Evidence from Trade Statistics

Sapkota, Jeet Bahadur

Kwansei Gakuin University

2020

Online at <https://mpra.ub.uni-muenchen.de/106097/>
MPRA Paper No. 106097, posted 16 Feb 2021 03:45 UTC

Integrating South Asia into Asia: Evidence from Trade Statistics

Jeet Bahadur Sapkota*

Market-led regional integration in Asia is moving fast, despite the slow progress in establishing an effective Asia-wide regional integration institution. However, how South Asian economies are integrating into the Asian economy remains unclear. Using trade statistics from the Asian Development Bank's regional integration database, this paper investigates the situation and determinants of trade integration of South Asia into Asia. While the trade volume from South Asia to broader Asia rose sharply from US \$18.12 billion in 1990 to US \$381.84 billion in 2017, the trade share (of total trade) rose from 27.35% to 40.1% during the same period. However, the regional trade intensity index (TII) of South Asia to Asia declined from 1.27% in 1990 to 1.16% in 2017, indicating the declining importance of Asia vis-à-vis the outside world for South Asia. Using the dynamic panel data approach on the cross-country panel data of five South Asian countries for the period 1990–2017, this study explores the determinants of South Asian trade volumes and share into Asia. The results indicate that the past record of the dependent variables and the aid flows from Asian bilateral donors significantly increased both trade volume and share. Other positive determinants of trade volume are the economy size, trade openness, FDI inflows and ICT access. While the number of FTAs is a positive determinant, a country's level of economic development, size of economy and FDI inflows are the negative determinants of trade share. The military expenditure is a negative determinant for both trade volume and share. The finding suggests that more FTA participations and foreign aids from within the region should be promoted, and militarization should be minimized to accelerate the economic integration of South Asia into Asia.

Keywords: Asia, South Asia, regional integration, globalization, trade statistics, panel data econometrics

1. Introduction

South Asia is not considered a part of the broader, Asia-wide regional integration initiatives. Although India is a member of the regional comprehensive economic partnership (RCEP)—a mega-regional free trade agreement (FTA) under negotiation consisting of 10

* Assistant Professor, School of International Studies, Kwansei Gakuin University
Email: jeet@kwansei.ac.jp

countries of the Association of South East Asian Nations (ASEAN) plus Japan, China, South Korea, India, Australia and New Zealand—other South Asian countries are completely excluded from any mega integration initiative in Asia (Rahman & Ara 2015). However, South Asia is a highly populous sub-region with some of the world's big economies—such as India (5th), Bangladesh (41st) and Pakistan (44th)—in terms of gross domestic product (GDP) at the current price in 2019 (IMF nd). Therefore, the inclusion of South Asia in the mega regional integration would significantly magnify the benefits of regional integration (Francois, Rana & Wignaraja 2009). Thus, it is worthwhile to examine the existing situation, trends and determinants of market-led integration of South Asia into broader Asia. This paper contributes to this purpose.

Asia is the biggest and a highly diverse continent; hence, pan-Asian regional integration is extremely challenging. Among Asian sub-regions, South Asia is further behind in regional integration as well. Despite the creation of the South Asian Association for Regional Integration (SAARC) in 1985, its goal of creating the regional FTA is not likely anytime soon, mainly due to the conflict between India and Pakistan. Based on the various studies that used gravity models, Kathuria (2018) claimed that the total goods trade within South Asia could be worth \$67 billion, more than threefold of the actual trade, and the trade between India and Pakistan could be 15-fold more than the current levels. However, the Asian economy is growing faster than other regions, and Asia-wide comprehensive economic integration efforts have also increased over the recent years (Sapkota 2018, Wignaraja 2014). Liberalization of trade and investment regimes, unilateral as well as plurilateral, in many Asian countries and at various times and levels (Rai 2010) have contributed to the growth of trade and GDP in Asia, especially since the 1990s. The integration process is also driven by the production fragmentation across countries (Obashi & Kimura 2017). Similarly, starting rather late, South Asia is also growing rapidly, and its significance in Asia and the world is increasing (Ratna & Sharma 2016). Although backlash against globalization—especially in Europe and the United States—is growing (Kobrin 2017), openness in Asia is moving forward (Pengestu & Armstrong 2018; Sapkota 2011), demonstrating some progress in regional integration at the sub-regional level, with more debate, discussion and dialogue at broader regional levels. Despite the policy shift by the new United States administration regarding the Trans-Pacific Partnership (TPP) agreement, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)—also known as the TPP11—came into effect with Asia at its heart and excluding the United States in 2018 (Urata 2018). Efforts to make Asian integration more concrete and comprehensive will continue, if not increase, because Asian trade and investment volumes are

rapidly growing, and all involved countries are reducing trade and other barriers (Kimura & Obashi 2016). In this context, it is worthwhile to examine the current situation of South Asian economies in Asia to shed light on their prospect for the contribution on mega-regional integration.

Therefore, this study accounts for South Asian trade into Asia and uncovers its main determinants, which is useful for policymakers focusing their efforts on rapid progress in terms of regional integration in Asia. To do so, we use the dynamic panel data method—mainly the generalized method of moments (GMM) estimator—on the cross-country panel data of five South Asian countries, for the period 1990–2017. The data has been sourced from the Asian Regional Integration Center (ARIC) of the Asian Development Bank (ADB) and the World Development Indicators (WDI) of the World Bank.

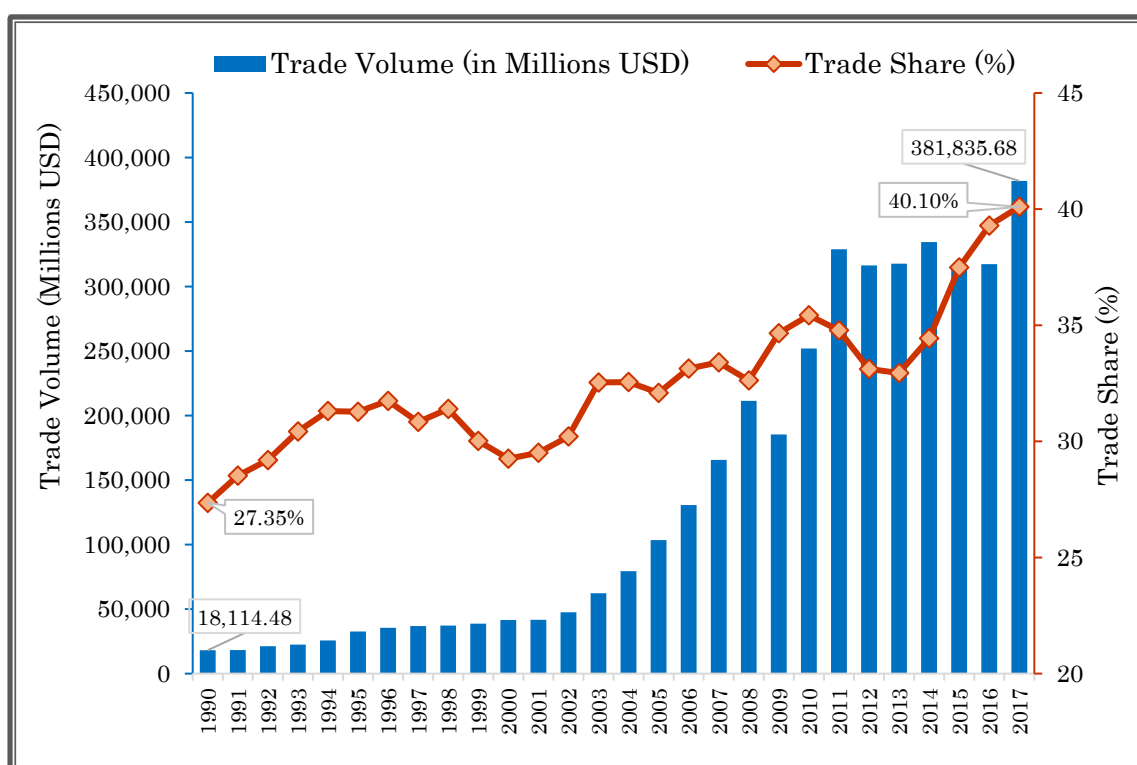
It is assumed that the participation in intra-regional FTAs/RTAs, trade openness, foreign direct investment (FDI) inflow, penetration of information and communication technology (ICT), support from developed Asian countries, the level of economic development and the size of the economy are the positive determinants. Similarly, military and tariff rates are considered the negative determinants.

2. South Asian Trade to Asia

In this paper, Asia is broadly defined following the definition and coverage of the ADB, which include East to West Asia, North to South Asia and the countries of Oceania, including Australia, New Zealand and the Pacific Island countries. Appendix 1 lists the countries in Asia by its sub-regional grouping. While 54.8% of the world's population lives in Asia, the region shares only 42.7% of the world GDP in purchasing power parity (PPP) term (ADB 2018). The gaps between the global share of population and South Asia's GDP is even more at 23% and 9%, respectively. The South Asian shares of population and Asia's GDP are 42% and 21.2%, respectively. South Asian share of global trade was only 2.1% in 2018, which grew gradually from 0.8% in 1990 (WTO 2019). These numbers clearly indicate that South Asian countries lag far behind other Asian countries in general.

Figure 1 demonstrates how South Asian trade was integrated into the broader Asia region, from 1990 to 2017. While the trade volume from South Asia to Asia sharply rose from US \$18.12 billion in 1990 to US \$381.84 billion in 2017, the trade share (of total trade) rose from 27.35% to 40.1%, during the same period. This growth is fueled by the increasing trading capacity of South Asian countries and growing economic inter, sub-regional integration through bilateral and regional/plurilateral FTAs (ESCAP 2019).

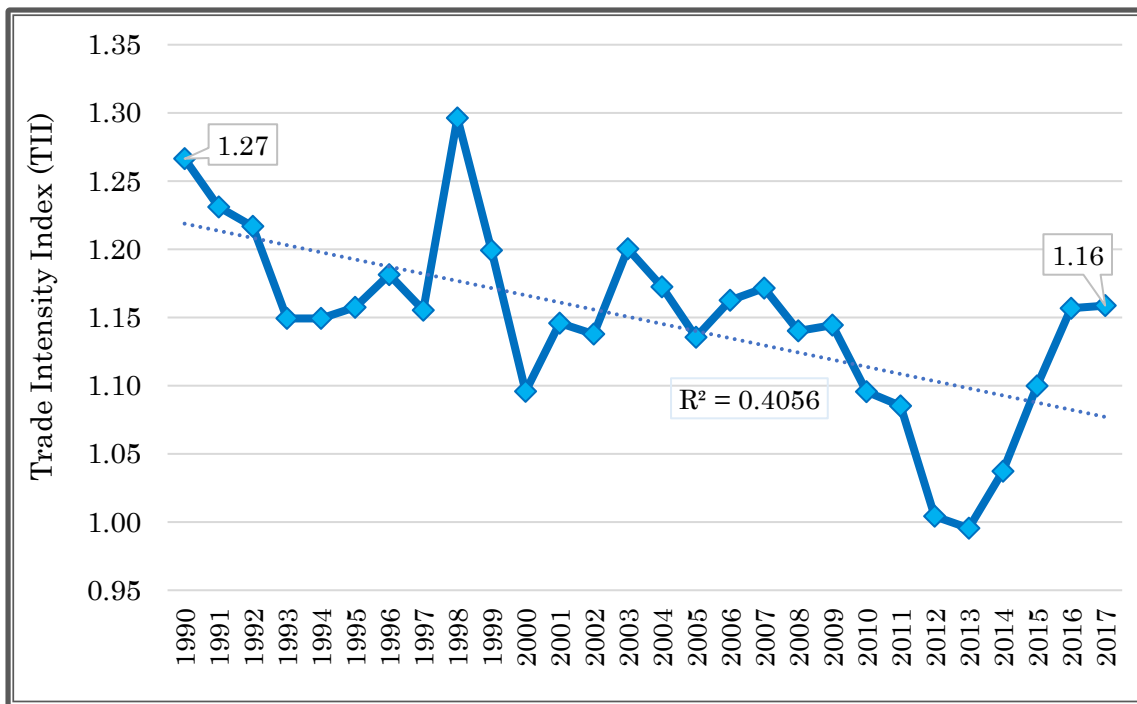
Figure 1: South Asian trade volume and trade share to Asia, 1990–2017.



Source: Computed from the ADB Regional Integration Indicator database online <http://aric.adb.org/integrationindicators> (21 July 2019)

Although both the trade volume and share have been increasing sharply, the relative importance of South Asian trade in Asia—vis-à-vis the global trade in the region—is still unclear. The interregional trade intensity index (TII) is useful in this context. As defined on the ARIC website, the interregional trade intensity index is the ratio of interregional trade share to the share of world trade with the region (ARIC nd). If the TII value is greater than 1.0, the interregional trade is more important than the global trade. Figure 2 presents the TII trend of South Asia to Asia. It shows that TII declined from 1.27 in 1990 to 1.16 in 2017, fluctuating sharply. Although TII peaked at 1.3 in 1998, it dropped sharply to 1.1 in 2000 and bottomed at 1 in 2013, before increasing rapidly until 2017. While declining TII indicates the declining importance of Asia, rather than the outside world, for South Asia; high fluctuation of the TII implies poor integration of South Asian economies into Asia.

Figure 2. Regional trade intensity index (TII) of South Asia to Asia, 1990–2017



Source: Computed from the ADB Regional Integration Indicator database online
<http://aric.adb.org/integrationindicators> (21 July 2019)

Despite the declining interregional TII, existing studies reveal that inter regional TII of its sub-regions with Asia is greater than 1, indicating the relative importance of sub-regional trade with Asia being greater than that of trade with the world (Sapkota & Shuto 2016). Several other empirical assessments also show significant benefits from such broader Asian economic integration (Shepherd 2019; Wignaraja, Morgan, Plummer & Zhai 2015). Arguably, an overall Asian economic integration is desirable, and the primary determinants of a broader Asian economic integration are important subjects to explore in the 21st century. As the most disintegrated sub-region with a huge prospect of economic development, bringing South Asia into the broader Asian integration is essential and a challenge.

3. Methodology

3.1 The data

Among the eight South Asian countries, we used the annual data of Bangladesh, India, Nepal, Pakistan and Sri Lanka for the period 1990–2017 from two online databases: the ADB-ARIC Integration Indicators (ARIC nd) and the WDIs (World Bank nd). Afghanistan, Bhutan and the Maldives were excluded due to limited data. We considered the South Asian trade

volume to be broader than the Asian region (as defined by ADB—Appendix 1), and for South Asian trade share to the region to be measures of the sub-region’s economic integration to the broad region. Therefore, these two indicators are the dependent variables in the model.

Based on existing literature, the potential determinants of the dependent variables were chosen. We considered the same determinants for both the trade volume and share. First, we considered three trade-related variables; each country’s number of bilateral and regional/plurilateral FTAs, overall trade openness—measured by the total trade as the percent of GDP—and the weighted average tariff rate. Despite the differences in quality and the nature of each of the FTAs, the gravity model revealed that the FTAs generally lead to trade creation rather than trade diversion (Urata & Okabe 2010). Therefore, a positive effect of the FTAs on regional economic integration is expected. We also expect the positive effect of trade openness and the negative effect of tariff rates on the dependent variables.

The literature that applied the traditional gravity model of trade demonstrated that the size of economy and distance between trade partners are the major determinants of inter-country trade (Helpman, Melitz & Rubinstein 2008). Hence, the larger economies in South Asia are expected to have proportionately more trade with the broader Asian region in terms of both volume and share (Thornton & Goglio 2002). Therefore, we included the GDP in the PPP term as another potential determinant. Distance is, however, not included in the model, because the focus is not bilateral or inter-regional but on regional trade. Another potential determinant included in the model is the gross national income (GNI) per capita, because most cross-country studies have used the level of economic development as a major factor influencing bilateral international trade (Sharma & Chua 2000).

We also included the net inflow of FDI as a percent of the GDP, net bilateral aid flows from the OECD’s development assistance committee (DAC) donors from Asia and mobile cellular subscriptions (per 100 people) into the model. While FDI openness is one of the key factors in regional economic integration (Bende-Nabende 2017), foreign aid helps economic integration in several ways: accelerating knowledge sharing among countries, allowing underdeveloped nations to participate in setting standards and in the convergence of standards and compensating the losers from economic integration (Chowdhury & Garonna 2007). The developed nations within Asia can speed up the economic integration of developing nations from South Asia as well as developed nations within the region. Similarly, Bankole, Osei-Bryson and Brown (2013) suggested that mobile technology may enhance the environment for international interactions and networking and, thus, may help increase regional trade.

Finally, we included military expenditure as a percentage of the GDP and the population

growth rate as the other prospective determinants. Higher military expending is considered detrimental to international and national trade as well as international development, and a threat to international as well as regional economic cooperation (Dunne & Tian 2015; Papanikos 2015; Jordaan 2014). We expect its negative impacts on regional economic integration as well. As in most cross-country studies (Simon 2019), we controlled for the population growth rate.

While trade volume is expressed in US dollar millions, GDP and GNI per capita are expressed in constant international dollars, in terms of the 2011 PPP. While trade volume to Asian region from the five selected South Asian countries ranges from \$757.6 million to nearly \$787.7 billion, with an average of \$80 billion, the trade share of total trade ranges from 22.3% to 85.8% of the GDP. Similarly, while the size of the economy—as measured by GDP in PPP terms—ranges from \$22.5 billion to \$8.72 trillion, with an average of \$1 trillion, the level of economic development, as defined by GNI per capita in PPP terms, ranges from \$2,203 to \$11,378 with an average of \$3,597. The average weighted mean of the applied tariff rate is 20.9%, with the average number of FTAs in the region being 2.6%; the trade to GDP ratio is 43.4%, net FDI inflow to GDP ratio is 1% and mobile cellular subscriptions rate is 28%. Further details are provided in the summary statistics in Appendix 2.

3.2 Model specification

We follow the dynamic panel data approach to estimate the determinants of South Asian trade in Asia. The trade volumes and shares from each country to this region have changed slowly over time, indicating that current levels of trade depend on its past levels. Thus, a one year lagged dependent variable is included as one of the determinants in the model, which creates a dynamic structure for the model. Therefore, as Nickell (1981) and many others have claimed, fixed country effects and the OLS estimator cannot be used as they cause the model to become biased and inconsistent. To solve this problem, Arellano and Bover (1995), Blundell and Bond (1998) and many others suggested a system GMM estimator, as specified in the following model:

$$Y_{it} = \alpha + \beta_1 Y_{it-1} + \beta_2 X_{it} + \eta_i + \varepsilon_{it}$$

Where, Y_{it} on the left hand side is the dependent variable measured by the natural logarithm of (a) trade volume to Asia (in USD millions), (b) trade share of total trade to Asia (%) of South Asian countries i at year t . Y_{it-1} is the one-period lagged dependent variable. X_{it} is a set of

dependent variables, and it includes the natural logarithm of the GNI per capita, the GDP, the number of FTAs, trade (% of GDP), average applied tariff rates (%), FDI (% of GDP), net bilateral aid flows from DAC donors from Asia (in million current US\$), number of mobile phone subscriptions (per 100), population growth (annual %) and military expenditure (% of GDP).

β_1 and β_2 are the coefficients of independent variables, which are the parameters of our interest. Among the other parameters, ε_{it} is the error term, which follows a normal distribution, η_i is the country fixed effect and α is the constant term.

The system GMM is appropriate for our panel data for two of the following reasons. First, the estimated coefficients would be inconsistent and biased if the explanatory variables (Y_{it}) are correlated with the error term ε_{it} , mainly due to simultaneity, omitted bias or measurement errors. In particular, the lagged dependent variables in the model are endogenous. To address the problem of endogeneity, the system GMM uses a large matrix of available instruments and weighs them properly (Blundell & Bond 1998).

Second, it is appropriate for controlling individual fixed effects and addressing heteroscedasticity and serial autocorrelation (Roodman 2009). While estimating the system GMM in stata, lag values are used as instruments for all endogenous variables. The Hansen test of overidentifying restrictions and the autocorrelation tests are carried out, which confirmed the validity of the instruments used.

4. Results and Discussion

The results are displayed in Table 1. While the first column reports the system GMM estimates of the trade volumes and shares to Asia, the second column reports the estimates of the trade share of the total trade to Asia. The signs and values of the coefficients indicate the direction and magnitude of effects.

The lagged dependent variable is significantly positive in both the specifications considered. The estimates show that a 1% increase in trade volumes in the current year contributes to a 0.25% increase in the following year's trade volume, while the same increase in trade shares of the total trade in the current year results in a further increase of about 0.66% in the following year. This indicates that if a country or economy can increase its trade volume as well as its trade share to Asia in a certain year, it will provide a foundation for future growth.

Table 1: Determinants of South Asian trade volume and share to and in Asia (1990–2015)

Dependent variables	Trade volume	Trade share
Lag dependent variables	0.250*** (0.065)	0.655*** (0.053)
GNI per capita, PPP (constant 2011 international \$)	0.034 (0.046)	-0.052* (0.027)
GDP, PPP (million, constant 2011 international \$)	0.688*** (0.060)	-0.072*** (0.012)
Number of FTAs (in effect)	0.029 (0.033)	0.064*** (0.018)
Trade, total (% of GDP)	0.576*** (0.060)	0.002 (0.027)
Tariff rate, applied, weighted mean, all products (%)	0.022 (0.034)	-0.020 (0.019)
Foreign direct investment, net inflows (% of GDP)	0.033** (0.013)	-0.016** (0.008)
Net bilateral aid flows from Asian DAC donors (current US\$)	0.034** (0.014)	0.016** (0.008)
Mobile cellular subscriptions (per 100 people)	0.056*** (0.009)	0.006 (0.005)
Population growth (annual %)	0.073*** (0.023)	0.004 (0.012)
Military expenditure (% of GDP)	-0.226*** (0.041)	-0.047** (0.021)
Constant	-13.59*** (1.298)	3.305*** (0.589)
Observations	90	90

Note: Authors' estimations using the one-step system GMM; Standard errors in parentheses; ***p < 0.01, **p < 0.05, *p < 0.1.

Source: Data for regional trade in Asia, and number of FTAs are from the ADB-ARIC integration indicators, retrieved from <http://aric.adb.org/>. Data for the remaining variables are taken from World Development Indicators (WDI): <http://data.worldbank.org/data-catalog/world-development-indicators> (July 21, 2019).

The size of the economy (measured by GDP) also has a significantly positive effect on the trade volume but a significantly negative effect on trade share. The results indicate a 1% increase in GDP increases the total trade volume of South Asian countries to Asia by 0.68% but decreases trade share by 0.07%. This result is consistent with Gaulier, Lemoine and Deniz's

(2007) findings, who stated that the trade growth of larger economies, such as China, is contributed to more from outside Asia than from inside the region. Similarly, GNI per capita (i.e., level of economic development) has no significant effect on trade volume to Asia; however, it exerts a negative effect on trade share at the 10% level of significance. Although the level of significance is very low, the result indicates that more developed countries trade more outside than inside Asia. This result signifies the necessity of a regional economic framework in Asia that will boost the regional economy along with the economic development of its member economies.

Interestingly, while the number of FTAs was found to be very effective (1% level significance) in increasing the trade share of South Asian countries to Asia, the trade openness measure by the total trade as a percent of the GDP was found to be equally significant in increasing trade volumes. This finding is consistent with the existing literature, such as Baier and Bergstrand (2007), who argued that bilateral FTAs approximately double trade between members, and Ghosh and Yamarik (2004), who found trade-creating effects of regional FTAs. Arguably, while trade openness is the foundation of boosting a country's overall trade, bilateral, sub-regional as well as broader Asian regional frameworks driven by strong political will are the catalysts for regional economic integration (Urata 2018). However, the average tariff is found to be insignificant to both the dependent variables. One potential reason for this result is that most South Asian countries are neither well integrated within South Asia nor Asia; instead, they enjoy the preferences given by the developed countries and regions, such as the USA and EU. In the context of ongoing efforts for achieving broader Asian integration—such as the Transatlantic Trade and Investment Partnership (TTIP) and the Regional Comprehensive Economic Partnership (RCEP) (for details about both, see Urata 2018)—despite the results of this study, it is worthwhile to minimize the tariff rates voluntarily and consider joining the broader regional integration projects to maximize gains and minimize the negative impacts of the Asia-wide regional integration.

The results also show the positive effects of FDI net inflow (significant at 5%), net bilateral aid flows from Asian DAC donors (significant at 5%), mobile cellular subscriptions (significant at 1%) and population growth (significant at 1%) on trade volumes from South Asia to Asia. However, the effect of FDI net inflow was found to be negative (significant at 5%) and net bilateral aid flows from Asian DAC donors was found to be positive (significant at 5%) on trade shares; mobile cellular subscriptions and population growth remained insignificant. The trade promoting effect of FDI is well documented in the literature (for details, see Urata 2001 and Thangavelu, Findlay, & Lim 2015); hence, our finding of the positive effect on trade

volume is consistent with the existing literature. However, the reason for FDI's negative effect on trade share is not straightforward. One possible reason could be South Asia's source of FDI, which may mostly come from outside Asia. In this case, intra-regional FDI within Asia is beneficial.

The significant positive effect of net bilateral aid flows from Asian DAC donors on both trade volumes and shares indicates the aid's effectiveness in boosting regional trade. Similarly, the positive effects of technological advancements—as measured by mobile cellular subscriptions—in the growth of trade volumes to the broader region is consistent with Bankole, Osei-Bryson and Brownas' (2013) findings. They found a significant positive effect of ICTs on intra-African trade. However, the impact of ICTs on the South Asian total trade and the trade with Asia are not so different, as our finding shows no significant impact of the ICT variable on broader regional trade share. The results of the population growth rate also imply that increasing population significantly increases imports and exports, from and to the global market, without any specific pattern evident for Asia.

Finally, the results of military expenditure show a trade reducing effect, both on trade volumes (significant at 1%) and shares (significant at 5%), from South Asia to Asia. A huge body of literature examines the impacts of military expenditure on different aspects of socio-economic development (for detailed literature, see Kollias & Paleologou 2019; d'Agostino, Dunne & Pieroni 2018; Fan, Liu, & Coyte 2018), but it is rare when involving trade. To the best of the author's knowledge, no empirical study has examined the impacts of military spending on regional economic integration. Based on the results from South Asian data, we argue that military spending is detrimental to overall as well as regional trade.

The results revealed that the lag dependent variable and bilateral aid from Asian DAC donors are the key determinants in the increase of South Asian trade, both in terms of volume and share, to Asia. Similarly, the size of the economy and FDI inflow boost the trade volume but reduce the trade share to the broader region. Other determinants in increasing trade volumes to the broader region are trade openness, ICTs and the population growth rate. While military expenditure is a significant determinant in reducing trade volumes and shares, the number of FTAs is one of the key indicators of an incline in South Asian to Asian trade shares.

5. Conclusion

In the context of growing efforts for broadening Asian regional integration and increasing South Asia's importance, this paper explored the primary determinants of the South Asian trade

volume and share into Asia. The panel data of five major countries—Bangladesh, India, Pakistan, Nepal and Sri Lanka—from 1990 to 2017 showed that the South Asian to Asia trade volume rose from US \$18.12 billion in 1990 to US \$381.84 billion in 2017 and the trade share (of total trade) rose from 27.35% to 40.1% during the same period. Declining TII from 1.27 to 1.16 during the same period, however, indicates the deteriorating importance of Asia vis-à-vis the world for South Asia.

The dynamic panel data estimation in the one step system GMM revealed that the past record of the South Asian countries' trade volumes and shares to Asia and the bilateral aids from Asian DAC donors significantly contributed to an increase of South Asian trade, both in terms of the volume and share. While military expenditure significantly reduces both the trade volume and share, the number of FTAs is a key determinant of the increase of trade share. Similarly, the size of the economy and the FDI inflow significantly boost South Asian trade volumes but reduce trade shares to Asia. The trade openness measured by trade to GDP ratio, ICT penetration and population growth also significantly contribute to increases in trade volume.

Clearly, South Asian countries need more participation in bilateral as well as regional and mega FTAs, more FDIs and ICTs development to take advantage of the tremendous trade and investment opportunities emerging within and beyond the region. Changing the situation of conflict to cooperation, especially between India and Pakistan, and reducing the overall military expenditure are major challenges undermining regional peace and prosperity and limiting the prospect of economic integration within Asia. With established significance of the aids received from advanced Asian nations, we suggest expanding this support by focusing on building a trading capacity, reducing barriers of trade and investment and neutralizing the interstate conflicts in South Asia. Finally, further study is suggested to account for the benefits of the full integration of South Asia into Asia, which will motivate and guide policymakers towards accelerating the integration process.

Acknowledgements

I dedicate this study to Professor Shujiro Urata, under whose careful guidance I was able to complete my PhD in 2011.

References

ADB (2018). Key Indicators for Asia and the Pacific 2018. Manila: Asian Development Bank. Manila. <https://sdbs.adb.org/sdbs/index.jsp> (July 21, 2019).

- Arellano, M. & Bover, O. (1995). "Another Look at the Instrumental Variable Estimation of Error Components Models", *Journal of Econometrics* 68(1), 29-51.
- ARIC (nd). Regional Integration Indicator database. Manila: Asian Development Bank, Asian Regional Integration Center. <http://aric.adb.org/integrationindicators> (July 21, 2019).
- ____ (nd). Integration Indicators technical notes. Asian Regional Integration Center. <http://aric.adb.org/integrationindicators/technotes> (July 21, 2019).
- Baier, S.L., & Bergstrand J.H. (2007). "Do free trade agreements actually increase members' international trade?", *Journal of International Economics* 71(1), 72-95.
- Bankole, F. O., Osei-Bryson, K. M., & Brown, I. (2015). The impact of information and communications technology infrastructure and complementary factors on intra-African Trade. *Information Technology for Development*, 21(1), 12-28.
- Bende-Nabende, A. (2017). *Globalisation, FDI, regional integration and sustainable development: theory, evidence and policy*. Routledge.
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, 87(1), 115-143.
- Chowdhury, A., & Garonna, P. (2007). Effective foreign aid, economic integration and subsidiarity: Lessons from Europe. *CASE Network Studies and Analyses*, (346).
- d'Agostino, G., Dunne, J. P., & Pieroni, L. (2018). Military expenditure, endogeneity and economic growth. *Defence and Peace Economics*, 1-16.
- Dunne, J. P., & Tian, N. (2015). Military expenditure, economic growth and heterogeneity. *Defence and Peace Economics*, 26(1), 15-31.
- ESCAP (2019). The Asia-Pacific Trade and Investment Report 2018: Recent Trends and Developments. United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. https://www.unescap.org/sites/default/files/publications/APTIR%202018_4Jan19_0.pdf (July 22, 2019).
- Fan, H., Liu, W., & Coyte, P. C. (2018). Do military expenditures crowd-out health expenditures? Evidence from around the world, 2000–2013. *Defence and Peace Economics*, 29(7), 766-779.
- Francois, J., Rana, P. & Wignaraja, G. (2009). *Pan-Asian Integration: Linking East and South Asia*, Asian Development Bank. Retrieved from: <http://hdl.handle.net/11540/181> (11.09.2017).
- Gaulier, G., Lemoine, F., & Deniz, Ü. K. (2007). China's emergence and the reorganisation of trade flows in Asia. *China Economic Review*, 18(3), 209-243.
- Ghosh, S., & Yamarik, S. (2004). Are regional trading arrangements trade creating?: An application of extreme bounds analysis. *Journal of International Economics*, 63(2), 369-395.
- Helpman, E., Melitz, M., & Rubinstein, Y. (2008). Estimating trade flows: Trading partners and trading volumes. *The Quarterly Journal of Economics*, 123(2), 441-487.
- IMF (nd) IMF Data Mapper. International Monetary Fund, Washington. <https://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWORLD> (August 7, 2019).

- Jordaan, A. (2014). "International trade and military expenditure: Friends or foe?," Proceedings of International Academic Conferences 0301731, International Institute of Social and Economic Sciences.
- Kathuria, S. (Ed.). (2018). *A glass half full: The promise of regional trade in South Asia*. Washington DC: The World Bank.
- Kimura, F., & Obashi, A. (2016). Production networks in East Asia: What we know so far. In *Production Networks and Enterprises in East Asia* (pp. 33-64). Springer, Tokyo.
- Kobrin, S. J. (2017). Bricks and mortar in a borderless world: Globalization, the backlash, and the multinational enterprise. *Global Strategy Journal*, 7(2), 159-171.
- Kollias, C., & Paleologou, S. M. (2019). Military spending, economic growth and investment: a disaggregated analysis by income group. *Empirical Economics*, 56(3), 935-958.
- Obashi, A., & Kimura, F. (2017). Deepening and widening of production networks in ASEAN. *Asian Economic Papers*, 16(1), 1-27.
- Pangestu, M & Armstrong, S., (2018). Asian economic integration: The state of play. In Armstrong, S., & Westland, T. (Eds.). *Asian Economic Integration in an Era of Global Uncertainty*. Acton: ANU Press.
- Papanikos, G. T. (2015). Military spending, International trade and Economic growth in the Mediterranean Basin. *Athens Journal of Mediterranean Studies*, 1(2), 187-194.
- Population Division, United Nations Department of Economic and Social Affairs (2015). *World Population Prospects: The 2015 Revision, Key Findings and Advance Tables*. UNDESA ESA/P/WP.241.
- Rahman, M. M., & Ara, L. A. (2015). TPP, TTIP and RCEP: implications for South Asian economies. *South Asia Economic Journal*, 16(1), 27-45.
- Rai, D.K. (2010). "Asian Economic Integration and Cooperation: Challenges and Ways Forward for Pan-Asian Regionalism", *GIGA Working Paper Series*, 152. Retrieved from: <http://ssrn.com/abstract=1713187> (29.08.2017).
- Ratna, R. S., & Sharma, S. K. (2016). Mega Trading Blocks: Is Time Ripe for ASEAN–SAARC FTA?. *South Asia Economic Journal*, 17(2), 181-199.
- Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, 9(1), 86-136.
- Sapkota, J. B. (2011). Globalization and Human Aspect of Development in Developing Countries: Evidence from Panel Data. *Journal of Globalization Studies* 2(1), 78-96.
- Sapkota, J. B., & Shuto, M. (2016). Is Pan-Asian Economic Integration Moving Forward?: Evidence from Pan-Asian Trade Statistics. *Area Studies Tsukuba* 37: 39-57.
- Sapkota, J. B., Acharya, C. P., Minowa, M., & Neupane, P. (2018). Trade integration in Asia: Trends and determinants. *Journal of International Studies* Vol, 11(3): 271-283.
- Sharma, S. C., & Chua, S. Y. (2000). "ASEAN: economic integration and intra-regional trade", *Applied Economics Letters* 7(3), 165-169.

- Shepherd, B. (2019). Mega-regional trade agreements and Asia: An application of structural gravity to goods, services, and value chains. *Journal of the Japanese and International Economies*, 51, 32-42.
- Simon, J. L. (2019). *The economics of population growth* (Vol. 5403). Princeton University Press.
- Thangavelu, S. M., Findlay, C., & Lim, H. (2015). FDI liberalisation, free trade agreements and greater regionalism in Asia and ASEAN. In *ASEAN and Regional Free Trade Agreements* (pp. 114-132). Routledge.
- Thornton, J., & Goglio, A. (2002). Regional bias and intra-regional trade in Southeast Asia. *Applied Economics Letters*, 9(4), 205-208.
- Urata, S. (2001). Emergence of an FDI-trade nexus and economic growth in East Asia. *Rethinking the East Asian Miracle*, 409-459.
- Urata, S. (2018). Free Trade Agreements and Patterns of Trade in East Asia from the 1990s to 2010s. *East Asian Community Review*, 1(1-2), 61-73.
- Urata, S., & Okabe, M. (2010). The impacts of free trade agreements on trade flows: An application of the gravity model approach. In *Free Trade Agreements in the Asia Pacific* (pp. 195-239).
- Wignaraja, G. (2014). The determinants of FTA use in Southeast Asia: A firm-level analysis. *Journal of Asian Economics*, 35, 32-45.
- Wignaraja, G., Morgan, P., Plummer, M. G., & Zhai, F. (2015). Economic Implications of Deeper South Asian–Southeast Asian Integration: A CGE Approach. *Asian Economic Papers*, 14(3), 63-81.
- World Bank (nd). World development indicators. Washington, D.C. The World Bank. Retrieved from: <https://data.worldbank.org/products/wdi> (July 21, 2019).
- WTO (nd). The WTO Data portal. World Trade Organization, Geneva, Switzerland. <https://data.wto.org/> (July 22, 2019).

Appendices

Appendix 1: List countries in Asia region as defined by ADB (five South-Asian countries included in the analysis are underlined)

Central Asia sub-region	Armenia; Azerbaijan; Georgia; Kazakhstan; the Kyrgyz Republic; Tajikistan; Turkmenistan; and Uzbekistan
East Asia sub-region	People’s Republic of China; Japan; Hong Kong, China; the Republic of Korea; Mongolia; and Taiwan, China
Southeast Asia sub-region	Brunei Darussalam; Cambodia; Indonesia; the Lao People’s Democratic Republic (Lao PDR); Malaysia; Myanmar; the Philippines; Singapore; Thailand; and Viet Nam
South Asia sub-region	Afghanistan; <u>Bangladesh</u> ; Bhutan; <u>India</u> ; the Maldives; <u>Nepal</u> ; <u>Pakistan</u> ; and <u>Sri Lanka</u>
The Pacific sub-region	Cook Islands; Fiji; Kiribati; the Marshall Islands; the Federated States of Micronesia; Nauru; Palau; Papua New Guinea; Samoa; Solomon Islands; Timor-Leste; Tonga; Tuvalu; and Vanuatu
Oceania sub-region	Australia and New Zealand

Source: Asian Development Bank (ADB), retrieved from: <https://aric.adb.org/integrationindicators/groupings> (21 July 2019).

Appendix 2: Summary statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent variables</i>					
South-Asian trade volume into Asia (in Millions USD)	140	79989.97	172581.2	757.59	787674.7
South Asian trade share to Asia (%)	140	43.99	16.42	22.27	85.8
<i>Independent variables</i>					
GNI per capita, PPP (constant 2011 international \$)	140	3,597.32	2,203.05	1,168	11,378.24
GDP, PPP (in billion constant 2011 international \$)	140	1,030.00	1,810.00	22.50	8,720.00
Number of FTAs (if effect)	140	2.6	3.1	0	13
Trade (% of GDP) (trade openness)	140	43.4	16.65	15.51	88.64
Tariff rate, applied, weighted mean, all products (%)	140	20.84	17.59	4.43	79.8
Foreign direct investment, net inflows (% of GDP)	140	0.89	0.75	-0.10	3.67
Net bilateral aid flows from DAC donors from Asia (current US\$)	140	268.00	262.00	-68.10	1,560.00
Mobile cellular subscriptions (per 100 people)	140	28.02	37.07	0	135.07
Population growth (annual %)	140	1.59	0.74	-0.27	2.96
Military expenditure (% of GDP)	140	2.65	1.42	0.88	6.7

Source: Data for regional trade in Asia, and number of FTAs are from ADB-ARIC Integration Indicators retrieved from: <http://aric.adb.org/>. Data for the remaining variables are taken from World Development Indicators (WDI): <http://data.worldbank.org/data-catalog/world-development-indicators> (21 July 2019).