TRADE SPECIALIZATION IN CONTEXT OF TRADE AND FINANCIAL INTEGRATION IN SELECTED ASIAN COUNTRIES

Thesis Submitted for the Award of the Degree of

DOCTOR OF PHILOSOPHY

in

Economics

By

Harwinder Kaur
Registration Number: 11511829

Supervised By

Dr. Vishal Sarin (11791)
Economics (Professor)
LOVELY PROFESSIONAL UNIVERSITY

LOVELY PROFESSIONAL UNIVERSITY
PUNJAB
2023

DECLARATION

I, hereby declared that the presented work in the thesis entitled "**TRADE SPECIALIZATION IN CONTEXT OF TRADE AND FINANCIAL INTEGRATION IN SELECTED ASIAN COUNTRIES**" in fulfilment of degree of **Doctor of Philosophy (Ph. D.)** is outcome of research work carried out by me under the supervision Dr. Vishal Sarin, working as Professor, in the Department of Economics, Mittal School of Business of Lovely Professional University, Punjab, India. In keeping with general practice of reporting scientific observations, due acknowledgements have been made whenever work described here has been based on findings of other investigator. This work has not been submitted in part or full to any other University or Institute for the award of any degree.

(Signature of Supervisor)

Name of the scholar: Harwinder Kaur
Registration No. 11511829
Department/school: Mittal School of Business
Lovely Professional University,
Punjab, India

CERTIFICATE

This is to certify that the work reported in the Ph. D. thesis entitled "TRADE SPECIALIZATION IN CONTEXT OF TRADE AND FINANCIAL INTEGRATION IN SELECTED ASIAN COUNTRIES " submitted in fulfillment of the requirement for the reward of degree of **Doctor of Philosophy (Ph.D.)** in the Department of Economics, is a research work carried out by Harwinder Kaur, 11511829, is bonafide record of his/her original work carried out under my supervision and that no part of thesis has been submitted for any other degree, diploma or equivalent course.

(Signature of Supervisor)

Dr. Vishal Sarin
Professor
Mittal School of Business
Lovely Professional University

ABSTRACT

In the era of globalization, there is a substantial increase in the liberalization of trade-related barriers and capital flows across the regions. Over the period, the interdependence of international trade, financial markets, and technology has spurred economic integration globally. Trade integration led to the exchange of technology across borders that shaped industrial specialization toward technology-intensive products. Similarly, development in the financial markets has led to an easy flow of capital across regions. Foreign investments and borrowings have become more approachable. Capital outflows across regions are taking place to maximum benefits from surplus funds and creating better economic ties. Earlier theories of trade believe trade integration to be an outcome of differences in the comparative cost of products. New trade theories state that trade integration depends on economies of scale, leading to industrial agglomeration in products and technology. The removal of trade restrictions and free flow of factors of production will produce a skilled labour force and more specialization in the product market. Similarly, financial integration is a free flow of capital across borders that widen the scope of financial markets and facilitate the exchange of new ideas and technology to induce specialization.

Economic integration as a process to enhance trade and financial integration is more applicable to the European Union. The EU integration is based on the process of common union and common currency. At the same time, Asian integration is barely based on institutional and policy arrangements. Economic integration in Asia is market-driven and based on trade-led growth. Even financial integration in the region was spurred by the financial crisis of 1997-98. Asia lacks the desired framework to initiate beneficial capital flows and financial market linkages. The unregulated capital flight in the region led to financial crises that spurred the need to rethink trade-led regionalism in Asia. The underdeveloped financial markets can lead to unnecessary movement of capital and cause imbalances in the current account. But to attain a competitive position in the global market, every economy has to undergo the process of economic integration to reap the benefits of trade and financial integration. The process can lead to advancement in technology, development of financial markets, investment-related risk diversion, and industrial specialization.

Economic integration in Asia is skewed and patchy. It is the most diverse continent consisting of prosperous and barely developed economies globally. Despite the lack of common currency and unions, trade and financial integration in Asia is taking place through market-driven policies. Asian economies surpass the growth rate of developed economies, and their role in international trade is growing beyond expectations. Most of the earlier studies related to financial integration and trade integration association are related to developed economies, and the issue has not been studied in developing regions like Asia. The study estimates the relationship between economic integration (trade and financial integration) and trade specialization in selected Asian economies.

To achieve framed objectives of the study, a panel of 10 Asian economies has been selected from the region. The linkages of trade, finance, and specialization are gauged using theoretical and analytical tools. Firstly, trade and financial integration are estimated in isolation. Then their mutual effect on trade specialization is determined using econometric tools. The study is entirely based on secondary data, which has been compiled from various sources such as World Development Indicators (WDI), World Economic Outlook (WEO), International Financial Statistics (IFS), BOP, IMF, World Bank, UNCTAD, UNCOMTRADE, WTO, Trade Map, Ministry of Finance. The data for the trade analysis is collected from 2001 to 2018, constituting 18 years. The data on trade is further decomposed into six categories based on the classification by Basu (2011), which classifies the commodities based on technology-based content in it. For financial integration, data was collected from 1980 to 2018. For empirical estimation, various statistical and econometric techniques are used like; Panel Unit Root, Panel Cointegration, Panel ARDL, Panel VAR, Panel VECM, Feldstein-Horioka puzzle, Grubel Lloyd Index, Herfindal-Hirschman Index, Financial Development Index, Trade Intensity Index, Intra-regional trade intensity index, Individual Trade Intensity Index, Panel ARDL Model, Toda-Yamamoto Causality, Impulse Response Function (IRF), Variance Decomposition Analysis, Generalized Method of Moments (GMM).

The empirical estimations of the first objective determine financial integration in Asia. A brief comparison of the EU and Asia is made through economic indicators. The trends assert that Asia surpassed the EU's growth rate and FDI inflows. But in terms of trade openness, it lacks behind. Also, there is a disparity in the currency exchange rate arrangements. For empirical estimation of financial integration is out using the model

propounded as Feldstein-Horioka Puzzle. The econometric tools of Panel cointegration, Panel VECM, dynamic ordinary least squares (DOLS), and fully modified ordinary least squares (FMOLS) causality test are used to determine the model. The outcome asserts less financial integration in Asia, but it has increased during the post-crisis period.

Secondly, the estimates on trade integration in Asia are carried out using the trends analysis of bilateral trade. Intra-regional trade is estimated for the panel of selected Asian economies. The country-specific estimates are also carried out to determine the extent of trade integration in Asia. The results assert that China, Korea, Malaysia, and Japan are preferable destinations for bilateral trade for all the Asian counties in the panel. Even smaller countries like Singapore, Thailand, and the Philippines play a significant role in bilateral trade. India's bilateral trade is lesser than other countries in the panel. The output of the trade intensity index asserts that Asian economies share intense trade relationships. Intra-regional trade trends reveal that trade within the panel of selected Asian economies is low compared to the panel's total. In selected economies, global trade has increased, but intra-regional trade within the panel has not altered much. The Asian crises of 1997-98 and the Global crises in 2011 harmed global and regional trade in Asia. Country-specific share in the panel's intra-regional trade varies across selected countries. Further, the share of regional trade in total trade differs among Asian countries. Countries, namely Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Korea, contribute nearly 50 percent of their trade in the region, such as Japan, India, and China.

Lastly, the effect of trade and financial integration on trade specialization is determined. The role of intra-industry and financial development is also estimated in the relationship of trade, finance, and specialization. For this purpose, the index for intra-industry trade and trade specialization is carried out. Specialization Index (GLI) asserts that most selected Asian economies have a moderately concentrated trade specialization pattern. The country-specific trends for the intra-industry claim that the Philippines, India, Thailand, Korea, Singapore, and Turkey are more involved in intra-industry trade than China, Japan, Indonesia, and Malaysia. The output of ARDL estimates upheld that trade integration and trade specialization have a negative but insignificant relationship. At the same time, financial integration associate positively with trade specialization significantly. Toda-Yamamoto Causality (modified WALD) test estimates assert no causal relationship between trade integration and specialization and a unidirectional

relationship between trade specialization and financial integration running from TS to FI. Also, the causal relationship between trade integration (TI) and financial integration (FI) is unidirectional. The GMM estimates indicate that specialization is negatively associated with trade Integration and positively with financial integration. The magnitude of the negative association between trade specialization and trade integration is higher than the positive impact of financial integration and trade specialization. It is also found that both trade and financial integration complement each other. Trade and financial integration impact specialization at a higher value of other variables. Also, trade integration and intra-industry trade are positively associated and trade integration in the form of intra-industry trade will further enhance trade specialization. Similarly, financial development will further strengthen financial integration. But financial integration will have more impact on specialization with underdeveloped financial systems.

It can be concluded that Asia is less financially integrated, but it is increasing over the years. As far as trade integration is concerned, Asia is well integrated globally and regionally. The specialization pattern has shifted from primary to technology-intensive products. Both trade and financial integration can determine the region's specialization pattern. So economic integration and specialization are interrelated. There is a need to explore the country-specific effects of trade and financial integration on trade specialization.

ACKNOWLEDGEMENT

The writing of this dissertation has been one of the most significant academic challenges I have ever had to face. It's been a long road, but here I am at the end, but there are so many people to whom thanks I extend!

I would like to thank God, for letting me through all the difficulties. I have experienced your guidance day by day. You are the one who let me finish my degree. I will keep on trusting you for my future.

I would like to acknowledge and give my warmest thanks to my supervisor Dr. Vishal Sarin, Professor and Head of the Department of Economics, Mittal School of Business who made this work possible. His guidance and advice carried me through all the stages of writing my thesis. I am grateful for his patience, motivation, enthusiasm, and immense knowledge. His guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better advisor and mentor for my Ph.D. He will always remain my mentor.

I express my sincere gratitude to Sh. Ashok Mittal, The Chancellor and Smt. Rashmi Mittal, The Pro-Chancellor, Lovely Professional University for providing research infrastructure and facilitating the student for quality research work.

I appreciate the love and support of each and every member of the Department of Economics, Mittal School of Business. To begin with Dr. Sanjay Modi, Professor and Executive Dean, Faculty of Business and Arts, Lovely Professional University for providing a motivational and supportive environment to the research scholars. I am also thankful to Dr. Rajesh Verma, Professor, and Head of School, Mittal School of Business for his constructive suggestions for improvement of the study. I appreciate the love

and affection received from Dr. Tushinder Preet Kaur, Dr. Pooja Kansra, Dr. Babli Dhiman and, Dr. Vijay Shrivastava. I would also like to thank all the panel members for letting my defence be an enjoyable moment, and for your brilliant comments and suggestions, thanks to all of you.

I sincerely acknowledge the contribution of Dr. Dinesh Jaisinghani, Assistant professor, School of Management, Bennett University for being a key person to enhance my learning of econometric tools and techniques for data analysis. His humorous, friendly nature and pleasing personality made every session livelier and more inspiring.

I would also like to give special thanks to my husband Rajinder Singh Rajput and my kids Abhinav Singh Rajput and Aranav Singh Rajput as a whole for their continuous support and understanding when undertaking my research and writing my thesis. I express my gratitude to my in-law Smt. Shobha and Late. Sh. Om Parkash for their prayer and love that sustained me this far.

I would like to extend my gratitude to my father late. Mr. Balkar Singh who always wished me to do something great in life. Thank you for showering your love from heaven. Thanks to my mother Mrs. Kuldeep Kaur for taking care of my kids in my absence. I feel happy to make her feel proud on this achievement

Last but not least I am also grateful to my classmates and co-researchers especially Ramanpreet Kaur, for being there for untimely discussion and never-ending feedback sessions, and moral support. Thanks should also go to the librarians, research assistants, and study participants from the university, who impacted and inspired me.

Harwinder Kaur

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATION

NAFTA	North America Free Trade Agreement
EFTA	European Free Trade Area
EU	The European Union
SAFTA	South Asia Free Trade Agreement
FDI	Foreign Direct Investment
ASEAN	Association of Southeast Asian Nations
AREAER	Annual Report on Exchange Arrangements and Exchange Restrictions
FH	Feldstein and Horioka
FTA	Foreign Trade Agreements
TI	Trade Integration
FI	Financial Integration
TS	Trade Specialization
IIT	Intra-Industry Trade
FD	Financial Development
GLI	Grubel Llyod Index
TII	Trade Intensity Index
HHI	Herfindal-Hirschman index
RTII	Intra-regional Trade Intensity Index
ITII	Individual Trade Intensity Index
CHN	China
IDN	Indonesia
IND	India
JPN	Japan
KOR	Korea
MYS	Malaysia
PHL	Philippines
SGP	Singapore
THA	Thailand
TUR	Turkey

RIM	Resource – Intensive Manufacturers
MF	Mineral fuels
NFPC	Non-Fuel primary commodities
UP	Unclassified products
HSTIM	High-Skill Technology Intensive Manufactures
LSTIM	Low-Skill Technology Intensive Manufactures
MSTIM	Medium-Skill Technology Intensive Manufactures

CHAPTER: 1
INTRODUCTION

1.1. Introduction

Globalization in the world markets has increased the economic interdependence of trade, finance, and technology within national borders. In the process of globalization, the competitive position of a particular economy is important in determining its path of development and growth. Increasing economic integration with minimal trade barriers worldwide has changed the specialization pattern across countries. In his well-known work "The Wealth of Nations", Adam Smith asserted that instead of government restriction, free trade is more efficient to bring specialization to the economy. He stated that the production pattern of the country should be based on absolute advantage in production. He also mentioned that division of the workforce according to their interest in the industry will generate a more skilled and talented labour force, which in turn can turn on specialization in that particular industry.

Another notable economist David Ricardo (1817) stated that it is not the absolute but the comparative advantage that determines the product trade and specialization in a country. His theory is based on relative differences in the productivity of two trading entities. Similarly, in the early 1990s, Heckscher-Ohlin stated that a country will produce more of products that use a factor of production available in abundance. The traditional trade theories stated that comparative differences in cost tend to inter-industry type (trade across industries). Whereas modern theories of trade assert that trade is not only determined by the comparative cost, it can take place for similar types of goods (intra-industry trade). Krugman (1979) asserts that rising economies of scale in a particular industry can lead to more specialization for that particular industry. Krugman (1991) further stated that lowering the cost of production can agglomerate industries at some specific locations. So, increasing return to scale in a particular industry can define the specialization pattern of the economy.

Specialization implies greater prosperity and self-sufficiency. Specialization pattern is mainly dependent on the nature of the economic integration of a particular economy. To understand product heterogeneity and competitiveness in the industry,

there is a need to know the depth of economic integration of that economy (Kalemli-Ozcan et al., 2001).

Economic integration is a process of globalized trade and liberalized financial markets. Economic integration facilitates the easy flow of goods and services, financial and capital flows, and people's movement within and across the regions. Economically integrated markets set minimal trade barriers and create more synchronized monetary and fiscal policies among regions or groups of countries. Economic integration directs trade and investment via different channels of trade agreements and regional blocks. Balassa (1961) defined integration as "the abolition of discrimination within an area." Kahnert, et al. (1969), defines economic integration as "the process of removing progressively those discriminations which occur at national borders." The phenomenal work of "Balassa" defined the process of economic integration in four consecutive stages: “Free Trade Area (FTA), Customs Union (CU), Common Market (CM), and Economic Unions”.

- Free trade Area is a form of integration where trade-related barriers among the member nations are removed. Though, every member country has the freedom to retain its policy regarding the imposition of tariffs and other trade restrictions on the non-member nations. NAFTA (1994) and SAFTA (2004) are a form of the free trade area.
- Customs Union is a type of trading block composed of free trade area for member nations with minimal trade restrictions and follows common tariffs rates for the countries outside the group. The Gulf Corporation Council GCC (2015) is an example of a common union.
- Common Markets: is a formal agreement among a group of countries to adopt a common external tariff. It also allows free flows of labour and capital among the member countries. European common market is the most successful common market.
- Economic Union is a formal agreement between two or more countries to harmonize their economic policies via unified industrial, monetary and fiscal policies. It is a more complex content of economic integration as it includes the concept of common markets. The European Union (EU) is a perfect form of

Economic Union. Common currency and harmonized banking structure are also the major components of economic unions.

In the present era of integration, European Union is the only successful group of nations to meet all the prerequisites to achieve economic integration. The region has accentuated the positive aspects to strengthen economic cooperation among economies. It is the perfect example of regional integration with common unions and common currency. The formation of the European Free Trade Area (EFTA) initiated the need for trade integration into the region to achieve uniformity in trade-related issues. Expansion of regional integration will enhance the productivity of labour and capital through extended networking for trade and investment. Understanding the concept of economic integration is desirable to determine trade and financial openness interaction. Trade integration is the essence of economic integration and removal of trade barriers among economies is a prerequisite for any type of integration. Such barriers arise due to political differences, factor or resource endowments, natural and institutional factors, and asymmetric knowledge of the economy's potential within and across borders. Preferential trade agreements, customs unions, and common markets are forms of economic integration that are greatly helping to reduce trade barriers and provide information regarding the policy of integration. This helps to reduce the risk associated with asymmetric information and reallocate the human and capital resources to foster specialization through trade creation and trade diversion (Comerford et al., 2019).

Viner (1950) explains the role of the customs union in economic integration as a process of trade creation and diversion. Most of the old theories of integration define the process of integration as elaborated and enhanced trade and assessed the role of Custom Unions in reallocating the resources for maximum utilization (De Melo, Panagariya, and Rodrik, 1993, Pomfret, 1997). On the other hand, new theories of economic integration stress the role of free trade in achieving efficiency in the producer and consumer markets. Sheer (1981) stressed the importance of studying the dynamic impact of the economic integration of raising economies of scale, new technology, increased specialization, competitive market environment, growth of productivity, increased investment, and risk associated with it.

Integration via free trade agreements will create additional trade, it also induces investment flows to member or non-member counties (Dee & Gali, 2003). This increased

investment in form of FDI, portfolio investment, and other capital movements are the major determinants of financial integration (Vo, 2005). A country's economic integration is measured by the effect of global news regarding capital movement on its capital flows. If there is little effect on a country's capital flows, it is less financially integrated (Pukthuanthong & Roll, 2009). The issue arises as what defines financial integration. Baele et al. (2004) defined that "a market is said to be financially integrated into a given set of the financial system if they face a single set of rules, have equal access, and are treated equally with those financial services and instruments". In this case, the use of the financial system is independent of the financial structure within that region. There should not be any difference or discrimination in the use of financially integrated structures based on the originality of the foreign investments. It simply means the removal and deregulation of restrictions on cross-border capital movements and creating a competitive market to enhance capital flows.

Financial integration impacts economy via different channels. The direct effect of financial integration will reduce the cost of capital and generate resources for increasing investment flows and augment domestic savings. Secondly via the indirect effect of integration will lead to better institutional governance and financial development through macroeconomic discipline (Kose et al., 2006). An increase in financial integration will invite investment in technology in form of FDI and generate a competitive environment and comparative advantage for trade that will lead to trade specialization (Kalemli-Ozcan et al., 2003). While both trade and financial integration are channels of the same network (economic integration) but, trade integration reacts more frequently to the removal of trade-related barriers than financial integration as an act of capital account liberalization policies (Le, 2000). Both trade and financial integration are two major components of economic integration. Both the components are interdependent as the former create demand for financial flows and provide access to foreign banks and stock markets to raise funds and investment upgrading technology and specialization, whereas later raises trade opportunities to promote specialization via risk-sharing and reallocate capital resources to the markets having more comparative advantage. It is important to understand the aspect of trade and financial integration on an individual basis and their interaction effect on the specialization pattern of the economy.

1.2. Economic Integration: A case of Europe and Asia

Economic integration has become an integral part of liberalization policies at the regional and global levels. This resulted in a substantial increase in the trade and investment in the international markets, resulting in easy access to technology and capital across borders, and increases interdependence in the global market. Initially, the process of integration was initiated in form of reduction or partial removal of trade and capital account restrictions in developed countries. Slowly the process of economic integration disseminated to the other countries induced innovation, technological progress, and industrial specialization. In the era of globalization, economic integration is a primary condition for the proliferation of world trade share. Integrated Asia will not only establish a cooperative economic environment but also a built-up association to solve issues like poverty, hunger, and degradation of natural resources. Integrated Asian government unitedly can fix the issues of capital inflow and outflow-related norms for better utilization of funds. The financial crisis of 1997-98 resulted from of a huge capital flight in Asian economies. Countries like China, Japan, and Korea are leading economies of the region to surpass the real growth rate of the European Union and NAFTA. These economies together with other economies can lead the path of economic integration in Asia. Despite the large economic and political diversity economic integration in Asia is increasing due to expanded trade and investment over the last few decades. Regional integration is increasing with the expiation of trading blocks and global value chains are helping in the expansion of the world market.

Integration in Europe is a perfect example of regional integration based on the "Balassa" approach of a common market, common currency, economic and trade unions. Europe is in the right direction to achieve a fully integrated economy based on the above-required sequence. Whereas economic integration in Asia is largely influenced by theoretical and practical development in Europe despite the huge difference in their origins. Unlike Europe, economic integration in Asia is mostly market-driven and not based on policies governed or designed by regions to initiate cooperation on achieving integrated markets (Drysdale, 2005). European Union follows the institutional framework to achieve harmonized trade policies. Regional blocks are playing efficiently to achieve integration in Asia. But, growing interdependence in trade and finance over the years has largely been determined by market forces rather than institutional. Overall, Asia's

economic integration is mainly trade-driven. From an Asian perspective, it is nearly impossible to form law-binding regional institutes to foster economic integration as there is fear of loss of political and economic freedom. On the other hand, European Union members work under enforced legislative framework by-laws to achieve integration.

On the other hand Asian integration is based on supply chain and treaty-based bilateral, regional, and plurilateral arrangements (Pomfret, 2019). Regional integration in European Union is based on economic and political integration among the member nations. In contrast, integration is entirely defensive in Asia. Lamberte (2005) asserted that economic cooperation in Asia is based on five driving forces: "a defensive response to the rise of regionalism elsewhere; the slow progress in multilateral trade liberalization; competition with other regions of the world for FDI; concern to tidy up bilateral agreements; and institutionalizing the de facto increase in economic interaction". In such a scenario of economic integration, it is nearly impossible to bind all Asian countries in a common market or economic unions to follow regional trade agreements and common currency.

1.3. Financial integration in Asia: An overview

Financial integration occurs when the financial markets of a country are closely integrated into the regional and global markets. It initiates capital movements and raises the tendency to equalize prices and returns on traded financial assets in different countries across borders (Brouwer, 2005). Financial integration can take place through a formal treaty among a few countries regarding the elimination of cross-border restrictions on capital flight. It will also initiate a harmonized financial system and uniformity in the rules and regulations for financial investments among member countries. Secondly, this process will provide an institutional framework to act in response to financial disturbance (Ho, 2009).

The process of financial integration is way back related to history. The earlier studies related to the subject believed that economic integration ran high during two specific periods. Firstly, the integration went up in the "classical gold standard" for the period of 1870s to 1914 (Lothian, 2001). According to (Neal, 1990) "the second phase has occurred even earlier, during the approximate century beginning in the 1690s and ending at the start of the French Revolution". The rise in cross-border capital flows

among developing and industrial economies spurred a recent wave of financial globalization in the 1980s. Most of these economies went for liberalization of restrictions on capital movements across borders anticipating that this will result in better utilization of capital resources and minimize the risk associated with international investments. Financial integration was initiated with a presumption that it will be more beneficial to underdeveloped and capital-scare countries.

The wave of financial integration in Asia was strongly influenced by the 1997-98 financial crisis. The fact that a large portion of the business and bank loans were invested in foreign currency, led to major financial risk across the Asian economy (Borensztein & Loungani, 2011). Yung Chul Park (a prominent professor at the University of Korea) in Brookings's papers on economics, had warned that East Asia might be under the same kind of catastrophe that hit Mexico in 1994-95, but they were ignored. Some signs of danger were observed in late 1996 with the unanticipated collapse of the Thai baht. The unregulated inflows of financial investment in the region led to the onset of the financial crisis in 1997-98 in Asia (Radelet, et al., 1998). Asian financial crisis of 1997-98 spurred the need to rethink growing trade-led regionalism which is largely determined by market forces. There was a need to analyze the instructional pattern of economic integration to understand the financial market linkages, which would have prevented the event of financial crises. In this context, the noticeable step was taken by the ASEAN leader to create AEC (ASEAN Economic Community) by 2015 to foster free trade, services, and exchange of human and capital resources in the region. The other crucial step was the formation of the "Manila framework" in 1997 to deal with the erratic behavior offinancial markets. Another important step in this regard was to set up the "Asian Bond Fund" to provide a foreign reserve to the member countries during financial crises.Despite all these initiatives, Asian economies are less integrated financially. There is a need to foster financial development and symmetric information regarding all parameters of financial markets. Also, financial development is most important to organize and institutionalized the prerequisites of financial integration.

1.4. Trade integration in Asia: An Overview

Trade is simply an exchange of goods and services between two people and entities. Though, the practical measurement of regional and international trade has become more complex over the centuries. There are several theories to assess the

theoretical background in the context of rising domestic and foreign trade. The theories related to trade are broadly classified into two categories: Classical or country-based theories, and Modern or firm-based theories (Sen, 2010). Classical theories explain trade as an outcome of comparative or relative cost advantage arising due to differences in factor endowment between trading entities. On the other hand, modern trade theories asserted that innovations, research and development, economies of scale, and a competitive market environment determine global and regional trade. Country similarity theory propounded by "Steffan Linder" explains the concept of intra-industry trade. Whatever is the theoretical background, the past few decades have seen the proliferation of internal and international trade worldwide.

Trade is the most crucial component of economic integration. International trade has been an important channel to link Asian economies at the regional and global levels. In Asia, trade integration is an outcome of trade liberalization policies undertaken in the 1990s. In the early 1980s, several developing economies undertook liberalized trade-related policies and initiated market-oriented reform which intensified in the 1990s. The trade liberalization process, particulars are supposed to be undertaken after the collapse of traditional import swap policies of the 1950s–1970s. Moreover, the basic idea behind liberalization was to reduce government intervention regarding reallocation of resources and encourage export promotion discouraging import substitution (Shafaeddin, 2005). A growing number of regional blocks worldwide has been providing a platform to cooperate and negotiate on the trade requirements of the member countries. ASEAN, BRICS, APEC, and SAARC are the successful regional blocks in Asia. The Asian economy has become increasingly open to foreign trade and investment over the past forty years, but nonetheless, there are significant differences between the equal participation of all Asian member states, where East Asian countries have performed well and all South Asian remain underperformers. East Asian economies have outer performed in the growth of trade and investment globally event when China is not accounted for it. Trade has been an engine of growth for these economies. Whereas South Asian economies are still battling on political grounds to perform efficiently as compare to East Asia. The lack of an institutional framework of integration led to the "flying geese pattern" of trade in Asia. Nevertheless, the financial crises of the 1997-98 crises have evoked the policy-led integration and initiated the free trade agreements (FTA) and regional trade agreements

(RTA). Currently 184 preferential trade agreements are in force in Asia and Pacific (UN. ESCAP, 2020). Due to overlapping nature and differences in the scope, these agreements are termed "noodles bowl". Similarly, intra-regional trade constitutes a major part of total trade in Asia. Intra- regional trade has been playing increasingly in Asia, and the volume of intra-regional export has increased from 46 percent in 2002 to 52 percent in 2015 (Asian development bank report, 2015). Intra-industry trade is trending upward within Asian economies over the years (Wood et al., 2021; Salim et al., 2018). Intra-regional trade not only defines the strength of regional integration rather it indicates the specialization pattern of the economies. Intra-industry trade is another phenomenon related to regional integration. Intra-industry trade arises asa country export and import similar types of goods and services simultaneously. It helpsto identify the concertation or diversification of technology and product in the industry. Intra-industry trade is a great tool to determine specialization patterns in the industry bothare believed to be negatively associated with each other. On the other hand, inter-industry trade leads to a more diversified and specialized pattern of industrial specialization. Inter- industry trade in Asia is rising over years. However, the level of dependence on this new type of international specialization (direct and horizontal technology) is proportionately higher in East Asia compared to South Asian countries. Cross-border trade and intra- industry trade in Asia is growing faster than NAFTA and EU15 and the former has been able to be benefitted from the global expansion of trade and financial markets.

1.5. Trade, Finance, and Specialization Synchrony

It is complex to unravel the relationship and interaction of trade, financial integration, and specialization. Trade integration leads to specialization by creating and diverting trade opportunities within and outside the region. Similarly, financial integration may result in specialization by creating optimum investment opportunities for investors and reducing the risk associated with it. Specialization is desirable to create efficiency, competitiveness in the global market, and welfare aspects related to it. Reducing or in some cases eliminating trade and financial barriers has greatly reduced the cost of factor mobility and reallocated these resources towards the most suitable or desirable product and geographical areas. This resulting in specialization in the industrial sector has led to a more concentrated industrial structure. The roles of trade integration (TI) and financial integration (FI) to determine trade specialization (TS) have been considered individually.

A large literature has examined the relationship between TI and TS. Earlier classical trade theories asserted that trade integration will diminish the cost of trade and induce the trade of goods across industries called inter-industry trade. It was argued that the comparative advantage of low cost due to factor endowment creates production fragmentation across countries. Whereas the new trade theories asserted that economies of scale arising out of expanded trade facilitates the trade of goods within a similar industry which is called intra-industry trade. It is also postulated that with larger. Thus, the nature and extent of trade define the specialization pattern of the economy. inter-industry trade more will be specialization in the industry as production is more diversified in different-different industries. Whereas, intra-industry trade will lead to product concentration in a few industries and there will be less specialization in the industry (Verdoorn, 1960)

On the other hand, integration in financial markets will initiates specialization in the industry, as integration can facilitate better risk-sharing opportunities between countries through the participation of portfolio assets and borrowing and lending abroad. Financial integration provides a more diversified equity portfolio to households and a loan portfolio to banks. Hence both public and private investors are protected against asymmetric shocks and that leads to specialization in the product and services market. Financial integration will eliminate the barriers of international investment and provide symmetric information to the investors to diversify their risk associated with negative shocks in the financial market. Through sharing of risk, integration may lead to specialization in finance and product markets.

There are few studies to acknowledge the effect of trade integration on specialization and the effect of financial integration on specialization explicitly. Though there is a huge gap to explore in the nexus between trade, finance, and specialization, specifically in the case of Asia. The lack of institutional framework and diversified economic and political structure in Asia hinders the progress to initiate and cooperate on regional integration. Empirical studies already asserted that financial integration lags behind trade integration in Asia. Also, the specialization pattern of the economies in Asia is largely determined by the strength of intra-industry trade. Still, trade has remained the key factor in the development of Asian economies and it is desirable to keep track of the progress of financial integration since the advent of Asian financial crises. The nature and

extent of trade and financial integration stimulate the symmetric shocks and specialization pattern in the region. Thus, it is important to unravel the relationship between trade, financial integration, and specialization.

1.6. Justification of the study

Proliferation in the world economy has boosted both trade and capital flows among interested parties at the regional and global levels. Over the past few decades, economic integration in form of increased cross-border trade and capital flows has increased tremendously. The reduced or eliminated barriers to capital movement have generated economies of scale in the financial and product market. The investors are reallocating their factors of production across different technologies, sectors, and geographical areas for their efficient use. That resulted in increased specialization in the goods market as well as led to the development of financial instructions by diverting their risk in different markets and products. The recent attitude of increasing specialization has spurred to rethink of the linkages and role of trade and financial integration in industrial agglomeration. Increased specialization is not only desirable to create efficiency and competitiveness in the market rather it is more related to achieve welfare in the society as a whole. The specialization pattern of an economy also describes the magnitude of asymmetric shocks in its market. More synchronized trade openness and financial integration can reduce the occurrence and magnitude of such asymmetric shock-like global or regional financial crises. Therefore, it is important to understand the nexus between economic integration and specialization for its policy implications.

The advent of the Asian financial crises of 1997-98 has embarked on the need to reconcile the trade and finance-related issues through the institutional framework. Unwarranted capital flight in the region has led to Asian financial crises. The lack of procedural integration has led to an uneven pattern of specialization. In Asia particularly financial integration is less compared to Europe taking as a case study the cross-border lending and investment activities of national banking systems (Eichengreen & Park, 2003). Trade growth in Asia has outer performed in the last two decades. The share of world trade is rising and trade openness in Asia is higher than compared in other regions of the world (Cowen, et al., 2006). Given the huge diversity in the economic and social background of Asian economies, it is not more complex to unravel the relationship of trade and financial integration. Where most of the Asian economies are integrated by

export-led growth, there is a lack of a proper institutional framework to cooperate on policy-led financial integration. The nature of trade (inter or intra-industry) determines the specialization pattern in the region. Similarly, the extent of capital movement estimates the level of financial integration. But both trade and financial integration is promoting the growth of the economy. Studying trade specialization in the context of trade and financial integration not only reveals the role of both (trade and financial integration) but also their intensity in achieving specialization. There is large literature to postulate the relationship between trade and financial integration, trade and specialization, financial integration and specialization, in isolation. Though, little has been written on synchronizing of trade, finance and specialization. There is need to fill the gap, specifically in Asia, which is more open to trade and less financially integrated.

Given the evidence on the growing interdependence of trade openness and financial integration in determining specialization, the study is an attempt to examine the complexity of trade, finance, and specialization nexus. The extent and level of trade and financial integration are determined in isolation. Also, their combined role to determine specialization is postulated in the preceding sections.

1.7. Organization of Chapters:

Chapter 1 introduce the concept and theoretical background of economic integration. It also highlights the role of trade and financial integration in determining specialization. A brief comparison of integration in Asia and Europe is also described theoretically to feature the current integration scenario in Asia. The chapter also points out the justification for the study.

Chapter 2 provides a detailed theoretical and empirical background on the concept and measurement criteria used for financial integration, trade integration, and specialization. The chapter provides the research gap to be filled by the current study.

Chapter 3 discuss the detailed methodology to achieve objectives drawn to fill the research gap. The detail of country selection, data period, and statistical and econometric tools are highlighted.

Chapter 4 elaborated on the level of financial integration in Asia using theoretical background and conducted an empirical analysis using appropriate econometric tools.

Chapter 5 postulates the current bilateral and regional trade integration scenario in Asia. Country-specific trade intensities are also determined to determine trade integration.

Chapter 6 elaborated on the linkages between trade, finance, and specialization.

Chapter 7 discuss the significant findings, conclusion, and future scope.

*****

CHAPTER: 2

REVIEW OF LITERATURE

Trade and economic integration are adding the desired direction to globalization and are becoming an organic part of making the world a global village. Trade specializations are undergoing rapid change from the idea of trade and economic integration. Similarly, industrial specialization is primarily affected by financial integration among participation economies. A strand of literature has shed light on the relationship between trade and specialization and economic integration and specialization. Also, several studies explore the simultaneous relationship between financial integration, trade integration, and specialization.

Economic integration in Asia has increased over the past few decades in the form of increased trade and financial integration. Since the Asian financial crisis, Asian policymakers have embarked on several initiatives to foster regional integration. The interconnection of growing trade and financial linkages determines the pattern of trade specialization to a large extent. The proximity between trade and financial integration in the context of trade specialization is a complex phenomenon. In this chapter, an attempt has been made to present the significant reviews of past and current literature on the nexus of trade, finance, and specialization. To achieve a better understanding of the concept, the literature review is divided into the following sections:

2.1 Economic Integration in Asia

The concept and process of economic integration are defined by Balassa (1961) in five stages in his well-documented work. He defined the process of integration to progress from free trade area to a common union and from a single market to a common market in a region. This progress works in a sequence. It is a process of reducing or eliminating the economic barriers to reap the benefits of regional interdependence of trade and finance. Over the last few decades, there has been an immense increase in the global and regional economic integration in both developed and developing countries, owing to increased free trade agreements and custom union formations (Eiling and Gerard, 2015). The “Balassa Scheme” of economic integration seems to be more applicable to European

economies only (Capannelli, 2011). European Union is considered a model for economic integration's theoretical and practical foundation.

Economic integration in Asia is entirely different from that in the European Union. The integration process in Europe is based on government policies of the common currency and customs unions. At the same time, economic integration is primarily driven by market forces in Asia. The government's cooperation to create regional blocks and associations still lags. Lamberte (2005) stated that five forces primarily drive economic integration in Asia: a defensive response to the rise of regionalism elsewhere; the slow progress in multilateral trade liberalization; competition with other regions of the world for FDI; concern to tidy up bilateral agreements; and institutionalizing the de facto increase in economic interaction. Asia is heading towards integration without formal and institutional common unions and currency arrangements. Asian integration is more market-driven, and its level varies across different sectors in the region (Petri, 2006; ADB, 2008). The lack of institutional and political framework makes it difficult to achieve the goal of economic integration in Asia.

Regional institutions like Asia–Pacific Economic Cooperation forum (APEC) and ASEAN and global commitments through the General Agreement on Tariffs and Trade (GATT) are contributing to the progress of regionalism in Asia. The process of regionalism in Asia began with the formation of ASEAN in 1967 to promote cooperation at regional and international levels. In 1991 this association formed a free trade area for member nations known as AFTA. Though, large diversity in and weak institutional arrangements hinders the progress of such trading blocks in the region. Still, increasing trade agreements are expanding the production networks in Asia to reap the benefits of product fragmentation and maximum utilization of resources (Ando & Kimura, 2005; ADB, 2015). Even the progress of trade-led integration in Asia is multidimensional. The progress of economic integration via product fragmentation and growing trade is most significant in East Asia compared to other Asian regions. China and Japan have become the engine of growth in Asia (Aaditya & Ruta, 2015).

Similarly, economic integration in the form of global financial integration has risen over the last three decades. Asian countries have grown well under the era of global integration, but the advent of the Asian financial crises of 1997-98 changed the model of

economic integration in the region. The onset of the global crises of 2008 and the European debt crises in 2009-2011 led to worldwide unrest. It raised an alarming sign to foster regional and international integration to deal with the cyclical shocks of crises (Capannelli, 2011). The financial crises of 1997-98 led the Asian economies to understand their regional and economic interdependence. This regional cooperation led to the formation of institutional policies and reforms to strengthen economic ties to offset the impact of the financial crises of 2008-09 (ADB, 2010). The concept of trade and financial integration is elaborated in the following sections of the current chapter.

2.2 Financial Integration and its impact on trade specialization

The present era of financial globalization began in the mid-1980s due to increased international capital movement across developed and developing countries. It was caused by liberalizing capital controls in these economies with the expectation that free capital flow will better allocate financial sources and the risk associated with it. There is general agreement among financial analysts and researchers that worldwide financial integration has increased over the last few decades (Morrison & White, 2004; Agenor, 2003; Lemmen & Eijffinger, 1993; Lane & Milesi-Ferretti, 2003). Financial globalization is a systematic procedure to enhance the regional connectivity of financial and trading markets (Torki et al., 2010). Economies are cautiously in progress to reduce or remove capital account restrictions to foster capital movement and enhance financial communication. As integration between European economies has increased the OECD countries and developing countries are also lowering its barrier to capital movements among regions (Lemmen and Eijffinger, 1993; Epstein & Schor, 1992; Prasad et al., 2003). Deregulation of financial and money markets has led to a surge in capital inflows at both domestic and international levels.

However, an increase in financial flows led to the advent of the financial crises of the 1980s and 1990s. Openness to capital flows is anticipated to put developing countries developing more at risk of financial crises than developed countries. Few academicians view financial globalization as a threat to international financial stability (Rodrick, 1998; Allen & Gale, 2000; Stiglitz, 2002). It is required to monitor the control of capital with the help of instructional arrangements. At the same time, another strand of literature asserts that liberal capital controls are a prerequisite to growth and minimize the risk

associated with capital movement. Global integration will generate better resources for investment and profit (Summers, 2000; Samuelson, 2010). The positive and adverse effects of easing capital controls may depend on the particular economy's initial economic and political conditions. This scope of financial liberalization may vary due to differences in defining and measuring the concept and content of financial integration. There is a difference in defining the concept of financial integration, and there is no uniformity in tools and techniques to use to measure integration in financial markets. There is no universal definition and measurement criterion to define financial integration. Different academicians expressed financial integration in different ways. The literature provides a variety of definitions of integration according to the area and scope of related studies.

The different author-defined financial integration in different ways. The literature provides a variety of definitions of integration according to the area and scope of related studies.

Financially integrated is a procedure where financial markets follow a system to provide a similar set of rules for all the participants or investors to use financial instruments and services. It also implies that all the investors have similar assessments of those financial instruments without discrimination. Hence financial markets do not discriminate based on the origin of investors. This definition of financial integration is very much associated with the law of one price. According to this law any financial asset should have identical price among integrated markets, if it has the same risk and returns, regardless of where they are transacted. In other words, bonds issued by a single firm in two different regions or countries must yield the same rate of interest (Baele et al., 2004; Fukuda, 2011). In other words, the law of one price state that financial markets are said to be financially integrated only when identical goods and services of are valued at a similar rate beyond borders. It implies that a financial asset with similar risk should yield a similar return to the investor irrespective of his country of origin. (Yeyati et al., 2009; Akram et al., 2009; Jappelli & Pagano, 2008). However, some academicians assert that it is not possible to equalize the price of financial assets at the nation and across the border as return on investment depends on asymmetric information about the financial markets of respective countries (Jappelli & Pagano, 2008; Baltzer et al., 2008).

Financial integration is also defined as a process where an economy, to develop itself socially and economically, becomes integrated with other economies or the rest of the world and improves its financial system. This not only raises the choice for investment and saving but also diversifies their risk factor equalizing the price of a financial asset at home and abroad (Brouwer, 2005). But the said process of integration is possible only with the elimination or reduction of controls on the functioning of financial institutions. It will ensure better cross-border capital movement and linkages of financial markets (Economic Commission for Africa, 2008). Financial integration provides a system to minimize the price of the trade-in financial assets (Martin, 2011). The other way to define financial integration is falling into a formal and institution agreement by different agents of the financial system. It will ultimately lead to harmonizing rules and regulations of financial markets (Ho, 2009).

Based on these definitions, there can be total financial integration, or it takes place directly or indirectly in the system (Guha et al., 2004). There can be complete financial integration when the interest rate is equal for all financial securities in financial markets. It implies that there exists a law of one price. On the other hand, if this law does not hold and there is integration due to market efficiency, it is called direct integration (Stavarek et al., 2011). Whereas integration can occur in many other ways described by Liebscher et al. (2006), such as; Monetary integration via common currency, capital account liberalization, stock market integration through foreign stock exchanges, foreign, regulating and harmonizing integration policies.

Literature provides an array of determinants to measure the extent and depth of financial integration. Though, there is no single measure to define financial integration (Ho, 2009). The intensity and measurement of integration may differ from country to country depending on the economic structure of the economy. Baele et al. (2004) defined three broad measures of financial integration: (1) Price-based measures, (2) News-based measures, and (3) Quantity-based measures. The first type of measure enquires about the equality of prices of financial assets in different countries. Whereas, the second set measures the impact of global news on the functioning of financial markets. On the other hand, the third set of measures quantifies the impacts of the movement of capital across a group of people or countries.

The empirical estimation of financial integration used a number of indications as a determinant of financial integration. Vo and Daly (2007) have considered the concept of international financial integration and has provided an array of indicators to proxy for international financial integration, though none of the definitions can be accepted as a benchmark. He also mentioned that a large number of studies differentiate among different definitions of international financial integration and accordingly different indicators. According to these, financial integration can broadly be measured through two factors: (i) de-jure (a proxy for the prerequisites or causes of international financial integration) and (ii) de-facto (proxy for the consequences or results of international financial integration) measures.

Quinn et. al. (2011) divided the measures of financial integration into three groups; de-jure, de-facto, and hybrid measures (a combination of the former two). De-jure measures are the traditional measures based on the legal restrictions on the capital flows across borders. Such restrictions keep controls on the quantity and price of the capital and portfolio investments in financial markets. There are almost 60 types of such controls mentioned in the mentioned in Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). These measures are ranged from 0 to 1 for capital account openness. These restrictions are widely used to construct a measure for capital account openness by many notables' researches (Quinn 1997; Rodrick 1998; Grilli & Milesi-Ferretti 1995; Quinn & Toyoda, 2008; Chin & Ito, 2008). Some of the researcher differentiated between restrictions on capital and current account to measure financial integration (Chinn &Ito, 2006; Moday & Murshid, 2005). The IMF-AREAER report is a major source of formulating De jure (legal restrictions) indicators. Though, it is criticised over its coverage issues as data of such indicators is not available before 1966. Also, these are binary measures of capital account restrictions which failed to capture the actual intensity of controls on inflow of capital in form of FDI (Edward, 2007; Quinn & Toyoda, 2008).

In order to overcome such shortcomings Quinn (1997) assigned intensity scores to capital controls. He scored separately to the intensity of controls for capital account receipts and capital account payments (Bai, 2005). Though, this measure only covers few times period and (1958, 1973, 1982 and 1988) for 64 countries. Similarly, Miniane (2004) developed more sophisticated measure of capital control based on AREAER report that

covers only 17 years data for 34 countries. Further, Chin & Ito (2008) also developed new measure to assess financial integration termed as KAOPEN index. Despite these developments in the use of the AREAER report to develop measure of financial openness, several studies in this aspect concluded that these capital account controls are ineffective to control the actual and net inflow of capital (Aizenman and Noy, 2006).

Quinn et. al. (2011) quoted that, De jure indices of financial globalization do not reflect the extent to which actual capital flows evolve in response to legal restrictions, either because of a lack of enforcement or because controls in one area may induce a response in other asset flows. Therefore, the actual flow of capital may differ from measured legally allowed (Vo & Daly, 2007). An alternative approach to measuring financial openness is termed de-facto indicators of financial integration. Quinn et. al. (2011) divided these indicators as quantity-based, price-based, and hybrid measures as a combination of the former two. The 'quantity-based' measures determine the number of cross-border capital flows. A large strand of literature determined the depth of financial integration using quantity-based measures Lane & Milesi-Ferretti, 2003; Garali & Othmani, 2015; Schulauck & Steger, 2006; Bhattacharya & Ghosh, 2016; Bai, 2005). Despite a large literature on de-facto indicators as a proxy of financial integration variables, there is no specific definition on such indicators.

Vo and Daly (2007) number of proxy variables to determine financial integration. He considered policies on capital controls, level of development, economic growth, institutional, legal and investment environment, trade openness, financial market development, financial system and banking system, and tax policy as independent variables. He found that these factors do impact financial integration. Vo (2005b) used an array of indicators as a proxy variable to determine financial integration. He used a number of indicators such as: the aggregate stock of assets and liabilities as a share of GDP, the stock of liabilities as a share of GDP, the aggregate stock of foreign direct investment and portfolio investment as a share of GDP, the stock of FDI and PI inflows as a share of GDP (IFI04), the aggregate flows of equity as a share of GDP, the inflows of equity as a share of GDP, the aggregate stock of equity as a share of GDP and the stock of equity inflows as a share of GDP. Garali & Othmani (2015) also found trade integration, per capita GDP and exchange rate are major determinants of financial integration. Even, Bhattacharya & Ghosh (2016) asserted an association between

financial integration and de-facto variables (level of domestic credit, credit openness, growth rate, financial development, and political stability). Cheng & Daway (2018) considered foreign assets and liabilities in percent of GDP as financial integration. Openness to trade and capital account, GDP are treated as independent variables. There is another strand of literature to measure financial integration using price-based measures. These measures are grounded on the notation that in a well financially integrated market the rate of return on an investment will be similar to all the investors irrespective of their origin. Ultimately there is convergence in the rate of return (domestic and integrational) on any financial asset. This is based on the interest rate parity hypothesis as proposed and used by notable researchers (Quinn & Jacobson, 1989; Yeyati et. al., 2009; Jain & Bhanumurthy, 2005; Lee & Kim, 1993).

Apart from these measures discussed above, there are many other methods to determine financial integration termed as "Hybrid Measures". These measures are broadly based on the correlation of selected macroeconomic variables (Vo, 2005b) and some other used stock market correlation to determine financial integration Pukthuanthong & Roll, 2009). Most of the methods and determinants of integration define financial integration as a process to increase the movement of capital within or across the border. Thus, in any integrated financial market investment does not only depend on domestic savings. Similarly, there are no restrictions on the free flow of domestic savings to invest abroad. Feldstein and Horioka (1980) estimated the saving-investment model for 16 OECD countries. A high correlation between saving and investment and interpreted as a sign of low capital mobility. It was augmented that in the case of perfect mobility saving rates should not be associated with domestic investment rates. In contrast in the case of perfect capital mobility, domestic savings will flow to international markets seeking effective investment opportunities, domestic investment is financed by international capital flows and saving-investment cannot be integrated with each other across countries.

"With perfect world capital mobility, there should be no relation between domestic saving and domestic investment: saving in each country responds to the worldwide opportunities for investment while investment in that country is financed by the worldwide pool of capital" (Feldstein and Horioka,1980).

The FH puzzl is one of the most commonly used methodologies to determine the saving-investment relationship in developing economies, which is also known as the mother of all puzzles (Obstfeld & Rogoff, 2000). There is a substantial increase in the application of the FH puzzle to determine capital mobility across nations. The literature presents an extensive survey on the existing model in Feldstein (1983), Murphy (1984), and Coakley, Hasan, and Smith (1999). Feldstein (1983) reconfirmed that this relationship has not weakened over time. Sachs et. al., (1981) presented a revised version of the F-H model considering the current account as another variable to affects the saving-investment relationship. Many researchers followed the original F-H puzzle and asserted factors that can impact the association of saving-investment such as current account relationship with domestic savings Caprio and Howard (1984) and Obstfled (1986), country size intervention of the government, Fieleke (1982) and Murphy (1984). Tesar (1991), Penati and Dooley (1984) also found a positive association between saving and investment for selected samples.

The other strand of literature denies the association of capital mobility saving-investment correlation. In support of this argument, it is asserted that the saving and investment association may be owing to many other variables such as; the size of the country as larger countries may have a high saving investment coefficient (Herberger, 1980), and smaller courtiers show high capital mobility (Baxter & Crucini, 1993). Dooley et al. (1987) also exhibit a higher value for the saving-investment for industrial countries as equated to developing countries. Fiscal policies and the intervention of the government are favourable to the investment opportunities in an economy (Tobin, 1983; Bayoumi, 1989). Similarly, business cycles and shocks play a crucial role to regulate the pattern of savings and investments for a particular economy (Caprio & Honohan, 1999; Baxter & Crucini, 1993; Obstfeld, 1986; Yildirim & Orman, 2018). An alternative approach does not define the high association between savings and investments as capital mobility. This high association was assigned to inter-temporal budget constrain and current account imbalances (Sachs, 1981; Coakley et al., 1996; Artis & Bayoumi, 1992; Banerjee & Zanghieri, 2003; Sinha & Sinha, 2004).

Financial integration can impact the growth structure of the economy via different channels. Several theories assert that financial integration will enhance the growth of the economy. The neoclassical model asserted that the integration of financial markets is a

good source of economic growth both at the domestic and international level, as it promotes efficient allocation of capital, especially for poor countries as it not only facilitates capital flows but risk-sharing also, which promotes private savings and investments. Obstfeld (1994) stated financial integration provides better opportunities for internationaosl risk sharing related to international investment which helps to achieve steady-state growth. Gregorio (1999) asserted that financial integration benefits the development of the economy indirectly by enhancing financial development and diversified portfolio investments. The role of foreign direct investment cannot be ignored for the smooth functioning of the financial market and macroeconomic stability. Gourinchas and Jeanne (2004) asserted that countries with little capital can gain from financial integration as the flow of capital will increase but these gains from integration are limited for developing countries. As the structure and development of financial markets play a crucial role in reaping the benefits of financial integration. Epaulard and Pommeret (2005), and Wright (2005) asserted that capital market liberalization and symmetric knowledge of financial markets play an important role to maximise the benefit from financial integration respectively. Kose et al. (2009) asserted that there may not be a direct effect of integration on growth of the economy but, liberalization of the stock market and capital market does positively impact the economy at the micro-level. It has been argued that financial globalization indirectly leads to the development of the domestic financial market, governance, and household sector. Hoxha (2013) asserted that financial integration may help developing countries achieve a higher level of consumption as compared to the time they can take if remain in autarky.

These theoretical disagreements about the benefits of financial integration have flourished in the extensive yet indecisive empirical literature. The effect of financial integration on specialization is studied exclusively in several directions. Integration of financial markets among countries allows them to enjoy consumption smoothening and engage in the lending and borrowing of products as per their requirement (Colacito & Croce, 2013). It was stated that financial openness is an important determinant to impact trade in an economy and the latter may lead to a more developed financial system (Chowdhury & Carmignani, 2005). Well-integrated markets have better financial depth that help to deal with trade imbalances (Beck, 2002). Any sort of capital inflow in the economy will raise both the source and choice of investment in the market.

Financial integration promotes development of the economy and insure against the risk associated with asymmetric market shocks. It induces product specialization through optimum allocation of capital and factor of productions. Hence there is positive relationship between risk-sharing and specialization (Kalemli-Ozcan et al., 2001; Gehringer, 2015; Obstfeld, 1994). There are more of indirect impact of financial openness on trade integration and its specialization. It is observed that an increased in trade in goods is usually followed with the increase in financial development. Hence both are related to each other directly or indirectly (Huang & Temple, 2005).

The indirect impacts of integration may induce development of domestic financial markets and improve institutional framework to increase the gains from financial openness. More integrated capital market allocates resources to the best that leads to rise in total factor productivity (Mishkin, 2009). Financial integration is a source to fetch investment from international sources in form of foreign direct investments (FDI). Large amount of literature asserts the impact of FDI on factor productivity due to various spill over effect arising out of increased investment flows (Javorcik, 2004). It is also asserted that foreign direct investment may facilitate the movement of technology and skilled labour to the needed countries. This may further increase the coemption in domestic market and raise the quality and profit of the competitors (Markusen & Venables, 1999). Thus, financial integration may induce specialization via different channels such as raising international funds, technological advancements, skilled manpower, financial development, economic growth, etc. Though it may not be possible to measure the actual benefits of financial openness (Kraay, 1998). Also, it is the level of development that determine the benefits of liberalizing capital controls as countries with more developed financial markets perform better (Edward, 2001). Similarly, Edison et. al (2002) stated that financial integration does not accelerate economic growth, even when controlling for particular economic, financial institutional, and policy characteristics. Mougani (2012) asserted that the association of financial integration with growth depends on the quality of government, level of corruption, and effectiveness of the judiciary. Hence there is a number of variables that determine the level of financial integration in an economy.

2.3 Trade Integration and its impact on trade specialization

Integration in an economy is essentially associated with removal of trade barriers at national and international level. Trade integration as part of globalization has become an important tool to examine the integration among economies. There are number of studies on determining the trade integration using different methodologies with different objectives to understand the process of its impact on economy. International trade is changing worldwide with the process of globalization and product fragmentation in the world market. Most of the economies are lifting trade barriers to increase integration in the global market. Such process of integration is changing the pattern of demand and supply of skilled technology leading to change in the industrial specialization and policy implications among nations. These trends of increased integration are creating spill-over effects in the international trade in many ways. Trade integration reallocate the recourses to best use and increase competition in the markets (Aghion & Howitt, 1998). It facilitates the resources of new technology and skill, accesses to international markets and generate economies of scale via spill over effect of integration (Dalum et al., 1999). It helps country to understand their specialization pattern according to their factor endowment and raise their product specialization (Paul, 1980). Tarde integration is essentially associated with the growth pattern of the economy. There are several theories like the theory of "comparative cost" and "Hecksher-Ohlin model" to assert the association between trade and growth. W. Arthur Lewis (1980) "demonstrates trade as an engine of growth". It is demonstrated that the pattern of growth is largely determined by the trade-oriented policies in the developing countries (Srinivasan & Bhagwati, 2001; Frankel & Romer, 1999). Lewer and Vanden Berg (2003) provided an array of literature on the trade and growth relationship. The study found a robust and significant association between both variables and it was asserted that a one percent increase in trade growth leads to one fifth percent rise in growth. There are a number of studies to state that trade labialization is accumulated with the speedy growth of the country (Favley et al., 2012; Thirlwall, 2000; Krueger, 1997). The literature asserts that there are several variables that define the association between trade and growth as the level of development (Kim, 2011); level of income (Menyah et al., 2014); level of technological development (Busse & Groizard, 2008). On the other hand, there is another strand of literature that demonstrate that increasing trade integration is associated with high competition in the market which

can cause a threat to infant firms. It was stated that trade integration and growth are negatively associated with each other and later leads to more output volatility (Musila & Yiheyis, 2015); McCombie & Thirlwall, 2002; Suardi & Aizenman, J., & Noy, I. d, 2009)

Trade integrations and their impact on the different channels of the economic system of the economy have always been considered as an important aspect of international trade. Liberalization of trade-related barriers has led escalation of regional and international trade agreements worldwide. Several studies consider the impact of trade integration on the growth of the economy, there are other effects that are needed to consider to determine the efficiency of integration in form of specialization of the economy. There are several theories that assert the impact of trade integration on specialization through various channels. Traditional trade theories assets that trade is an outcome of comparative cost advantage in the production of goods with an abundance of resources engaged in the production of that commodity. Courtiers will engage in the trade of goods that belong to different industries (inter-industry). It is based on competitive advantage and it will influence the pattern of their production (Ricardo, 1870; Ohlin, 1933). Whereas, modern theories of trade (Krugman, 1979, 1980) assert that trade can take place even if there is no difference in comparative cost. It was stated that rising economies of scale and product differentiation in a similar type of industry can lead to intra-industry trade (trade of goods that belong to the same industry). A country may concentrate on the production of some niche products and rising economies of scale will ensure the country specializes in those products. Krugman and Venables (1996) stated that trade integration leads to the agglomeration of industries. The specialization pattern of an economy may agglomerate to specific areas or industries depending on the cost of a trade.

Trade integration and specialization pattern of the economy is largely dependent on each other (Traistaru et al., 2003; Hildebrandt & Worz, 2004; Beine & Coulombe, 2004). Though, the relationship between trade integration and specialization depends on various factors. The new economic geography theory suggests finding a U-shape relationship between the cost of trade and economic activity. As the cost of trade fall integration will increase across the borders (Fujita et al. 1999). Some of the studies stressed the role of competitive advantage to shape the proximity of trade integration and specialization (Bernard & Jensen, 2004). While other stated that specialization increase

with the increase in development and per capita (Imb & Wacziarg, 2003; Amiti, 1999). It is also mentioned that the specialization pattern also changes with the change in the GDP per capita. Production structure diversifies with an increase in the GDP, but as the latter reaches its highest level there may occur specialization in the industry (Koren & Tenreyro, 2004). Whereas, some of the literature asserts that the GDP growth rate will not lead to re-specialization (Benedictis et al., 2009). The advantages of trade integration vary across industries depending on the level of technology and innovations in that particular industry (Grossman & Helpman, 1991).

Literature provides different methodologies to measure and access the degree of trade integration and its impact on trade specialization. Balassa (1977) examined the revealed comparative advantage in the case of industrial economies for the period 1953 to 1971 and asserted that an initial increase in technology levels will produce a diversified export structure but the situation may reverse in the later stages. Marvel and Ray (1987) studied determinants and effects of intra-industry trade in the U.S. for a sample of 314 four-digit Standard Industrial Classification (SIC) industries using the Grubel and Lloyd index. It was observed that such trade is consistent with improved access to national markets thus increasing international specialization and market specialization. It is the technology and product qualities that determine the response of a particular industry in the growing market. Intra-industry trade interlinks the benefits of the consumer and product industry. Such type of trade basket consists of products to be used as input or raw material in the production of other products. The estimated output suggests that intra-industry trade reflects that trading partners are specialized in the production of goods in which they have some special expertise.

This will lead to both product market agglomeration. Mezo (2007) separated Intra-industrial trade (ITT) into three trade categories: inter-industry, horizontally intra-industry trade, and vertically differentiated goods. The results show that the increased IIT between the sample countries is attributed to vertical specialization. Amador et al. (2007) compared the pattern of international trade openness between Portugal with Spain, Greece, and Ireland. The study used of Balassa (1965) index to evaluate the technology content in the manufacturing trade for selected countries. It was observed that there is a substantial increase in trade openness in all economies. The specialization is found to be higher exports than the import. Cadot et al. (2011) surveyed the empirical literature on

trade diversification and its linkages with growth. Linkages between trade diversification and productivity and import diversification and productivity are also discussed. A detailed review of widely-used measures of trade diversification such as; the Gini coefficient, Theil's entropy, Herfindahl index, Intensive and Extensive margin, and PRODY index has also been discussed. Fukao et. al. (2003) analysed trade diversion under NAFTA with the purpose to find how tariff preferences in the NAFTA may affect the U.S. imports for manufactured commodities from Canada and Mexico for the period 1992 to 1998. It was concluded that free trade agreements in North America have shifted trade the U.S. imports from Mexico in the textiles industry. The study reveals that these trading agreements do impact foreign direct investment and influence the pattern of trade and specialization. Imbs and Wacziarg (2003) demonstrate the effect of per capita income on industrial specialization. He asserted a U-shaped pattern between both variables. It was an argument that the production structure is more diversified at a low level of income to deal with sector-specific shocks, while countries adopt more concentrated and specialized production patterns at a higher stage of development and per capita income. Krugman (1991) constructed a product concentration index for selected US regions and the EU countries. It was found that the production patterns of the European countries are more diversified as compared to the US. While the EU economies are less specialized and concentrated on fewer products, the European countries have heterogeneous specialization structures and it is inversely related to the size of the respective country.

Ahmad et al. (2018) analyzed the trade integration between India and China using RCA index and concluded that both the economies are well integrated for merchandise goods. Similarly, Batra and Khan (2005) used HS and SITC classification to amylase the trade integration pattern of India and China using RCA. It was drawn that both the economies have differential advantages for merchandise products. Tyagi (2014) asserted the role of comparative advantage and bilateral trade in determining the trade integration. Helpman et al. (2008) stated that size of the region and distance among trading regions are important determiners of trade integration, which can be measured using the gravity model. Golovko and Sahin (2021) estimated the integration using the gravity model for 86 Eurasian countries from 1994 to 2018. It was concluded that these countries are less integrated than the estimated potential. Damuri et al. (2006) analysed the pattern of trade integration and specialization in East Asian economies. The role of tariff rate, trade

intensity and intra-industry trade is estimated to determine trade integration. The study used the Lafay index to determine the specialization pattern and concluded that the east Asian economy are specializing in higher-productivity goods. Crabbe et al. (2007) examined the association between trade integration and trade specialization in EU15 and Central Europe. The study used the Herfindal index to measure the specialization pattern in Europe. It was concluded that institutional reforms regarding tariff rates have led to an increase in export specialization. Ferrarini and Scaramozzino (2011) measured the pattern of trade and specialization in China. The paper explained the use of Lafay index and RCA to determine trade patterns. Intra-industry trade for China is estimated using the Grubel-Lloyd index (GLI). Lapadre (2001) surveyed the statistical methods to measure product specialization and trade specialization. The paper discussed the various tools such as the Lafay index, RCA (revealed comparative advantage), Grubel-Lloyd index (GLI), and trade specialization index to measure trade specialization. Whereas for measuring product specialization the study used index based on international trade and domestic factor determining demand and supply. There is enough literature to state that over the last decades global integration has increased manifolds. Though there is huge difference in the trade integration and specialization pattern at national and integrational level. Martincus and Sanguinetti (2005) found that with the effect of reginal trade agreements larger countries will specialize and smaller one will diversify more with their production structure. Similarly, Imbs and Wacziarg (2003) stated that poor countries have more diversified production structure then the other high-income countries. Beine and Coulombe (2004) also stated similar results while comparing the product diversification of Canada and US. As far as Asian economies are concerned, the region is also facing huge diversity in the integration and specialization pattern. There are several studies that state that trade integration in East Asian economies increasing rapidly (Ng & Yeats, 2003). As a result of liberalization policies, this region is able to attract more international investments (Baltzer, 2006). Therefore, the trade integration and specialization pattern vary over regions or countries based on their social, economic, political, and institutional structure.

2.4 Trade integration, Financials integration, and trade specialization.

A wide array of literature has significantly proven the linkages between financial and trade integration with trade specialization on an individual basis. Though the joint effect

of trade integration and financial integration on specialization in the economy is still unsolved. Most of the literature so far explicitly explains that trade integration will lead to trade specialization via different channels such as comparative advantage and other economies of scale arising with expanded trade. As trade integration increases it is cheaper to import a few products than producing those in the domestic market. This will increase specialization in the domestic and international markets (Dornbusch et al., 1977). In contrast, financial integration will provide more access to financial assets for domestic needs. Secondly, it will provide more investment opportunities to the domestic investor to fetch a higher rate of interest in the international market. More integrated financial markets also facilitate consumption smoothening and will provide assurance to the consumer against asymmetric shocks. This will help the economy to trade in fewer or specific types of assets to specialize more (Basu & Girardi, 2010). Imbs (2004) examined the relationship between trade, finance, industrial specialization, and business cycle co-movements. The empirical estimates found direct as well as indirect linkages of trade and finance with business cycles. It also asserted that countries with better financial linkages are more synchronized and specialized. Whereas trade-led specialization has no impact on specialization. The role of intra-industry trade on specialization is also estimated explicitly. Ozcan et al., (2003) also claimed financial market linkages will lead to industrial specialization. Frankel and Rose (1998) elucidate that trade integration will lead to symmetric business cycle shocks for OECD countries. Krugman (1993) also asserted that trade openness will ensure more specialization and lesser cyclical fluctuations. Aizenman and Noy (2009) estimated the two-way relationship between trade and financial integration. The empirical estimations postulated that both the variables have a strong association and financial openness largely determines the future trade integration. It was also stated that legal restrictions on capital movement have no effect on financial integration. Whereas, legal restrictions on the current account do impact trade integration. Hence trade and financial integration should be determined jointly.

Chambet and Gibson (2008) asserted that trade integration does impact the stock market integration in the case of emerging countries. Similar results are drawn by Chow et al. (2005) for East Asian economies. Eichengreen et al. (2009) found that financial integration is positively related to the industry's growth if that depends on external finance. Though this effect does not exist at the time of financial crises and level of

financial development also plays a huge role in the magnitude of this effect. Artis and Hoffmann (2007) stated that increased financial integration will improve consumption risk-sharing among industrial economies. Islamaj (2014) stated that financial integration not only eases the flow of capital for capital scare countries in form of FDI and other investments but also brings in technology that helps to boost trade and trade specialization. Financially liberalized countries are capable of allocating factors of production to the most efficient production pattern and diversifying the risk associated with industrialization. Whereas there is another strand of literature that finds slight evidence of risk-sharing with increased financial integration (Moser et al., 2009; Bai & Zhang, 2012). Literature also elucidates the role of development levels in affecting the relationship trade finance and specialization. Shin & Yang (2006) estimated how trade and financial integration complement each other. An investigation of the nature of financial integration concludes that financial assets traction is more in developed countries and distance does not matter much in these transactions, whereas information plays an important role. It was found that both trade and financial integration have common determinants. The observation of the study concluded that trade in goods boosts traded assets across borders. Both trade and financial integration shares a directional relationship with each other. The direction of relationships from trade to financial markets is much stronger.

Feeney (1994) also found complementarity in the association between assets and the goods market. As the financial market facilitates risk diversion and better investment opportunities, there is a change in the pattern of demand leading to specialization in industrial production. Lane (2000) analyzed the pattern of trade openness in the context large financial market. The study found that openness to trade and financial market structure is the main component of the investment pattern of a country. Also, the trade and financial markets are based on some indicators and they both complement each other. Rose and Speigel (2002) argued that bilateral trade influences the lending pattern in the financial markets. It is stated that the creditor country will engage in lending and borrowing with the country with whom it shares close bilateral ties. As it is more secure to deal in exchange for financial assets with countries having bilateral trade relationships. Ronci (2004) examined the effect of trade-led finance on trade flows in countries with major financial crises in Asia. The study asserted that trade finance does impact the

exports and imports of the country in the short-run more than it is impacted by a fall in income and prices. It is also augmented that the loss of trade from financial crises was not as huge as it could be in the case of banking crises in the region. Islamaj (2014) financial integration not only eases the flow of capital for capital scare countries in form of FDI and other investments but also brings in technology that helps to boost trade and trade specialization. Beine and Coulombe (2007) studied the impact of trade integration on trade specialization. It was found that trade integration will induce specialization in the short run. Whereas there is an inverse relationship between trade openness and specialization in the long run and the former will lead to a more diversified structure of industries and specialization will fall. Bos et al. (2011) conducted a robust analysis of 31 industrial countries from the period 1970 to 2005 to investigate the impact of trade and financial integration on industrial specialization. It was found that both trade and financial integration impact specialization positively and one type of integration strengthens the impact of another type of integration on specialization.

The above literature elucidates that trade integration, financial integration, and trade specialization are interlinked. Though there are several factors that can influence the intensity of such a relationship. Eichengreen et al. (2011) asserted a positive association between financial integration and the growth of industrial economies but the level of financial development can influence the relationship to a large extent. As a well-developed financial system can provide accurate information and finance from external sources. It will also provide better investment opportunities for domestic investment (Andrews & Criscuolo, 2013). Well-integrated financial markets will facilitate more trade integration among economies, which will invite advanced technology and lower the cost of production in the industry. Financial development will impact the specialization pattern of such industries which are more dependent on external finance for their development (Beck, 2002; Johansson et al., 2014)

Similarly, industrial or product specialization pattern of an economy is largely influenced with the extent of intra-industry trade. International trade has seen a pattern of production where a particular product may have been designed at in one country and produced and assembled in another county. Krugman (1981) postulated that a positive association of trade integration on specialization is largely determine by the type of trade (inter or intra-industry trade). A country will specialize more if it is involved in

inter-industry trade. Whereas intra-industry trade is more concentrated on producing limited products within industry. Lapinska (2016) asserted that concept of intra-industry trade is studies more with respect to developed countries as these countries are similar in their demand and level of technology used in production. Damuri et al. (2006) stated that smaller countries themselves are not able to take advantage of economies of scale of growing trade so they get into intra-industry trade with other countries who are at benefit from trade integration. Martincus and Sanguinetti (2005) found that trade integration in form of expanded trade agreements lead to more specialization for big countries (Argentina and Brazil). Whereas, for smaller countries (Chile and Uruguay) FTA leads to more diversified production structure. Muryani and Pratiwi (2018) analysed the pattern of intra-industry in ASEAN countries. The empirical estimates of Grubel-Lloyd index state that these countries are largely involved in intra-industry trade of manufactured products. It was also postulated that income and trade openness are positively associated with intra-industry trade. Elzbieta Kawecka-Wyrzykowska (2009) investigated the changing pattern of intra-industry trade for EU member states. It was stated that these countries still are involved in intra-industry trade more then 50 percent of their total trade. Though the share of intra-industry trade is declining as new members are joining the group of EU and industrial specialization is increasing over the period. However, the extent of intra-industry trade depends on the similarity of cost of production (capital-labor ratio) and the level of income between trading economies. Intra-industry trade will increase if capital-labor ratiois similar.

Hence the role of financial development and intra-industry trade cannot be ignored to determine the specialization pattern of the economy. The major reasons to study the interlinkages of trade and finance lies in that there are unequal benefits of trade and financial integration in different regions. Unlike European Union, the concept of integration in Asia lacks any institutional foundation and is more defensive market-driven. Asia is more dependent on trade integration for its devolvement. Since the advent of Asian financial crises, policy-makers are putting large initiative to foster regional trade (Asian Development Bank, 2006). Intra-industry trade plays a huge role in shaping the growth pattern of Asia. Unlike EU, intra-industry in Asia is concentrated more in intermediate products, parts and components (Kimura & Ando, 2005). Despite the advent of global financial crises, Asian integration is increasing over the years (Sapkota, 2020).

Though there is huge diversity in the pattern of specialization and integration within Asia. China is playing huge role at national and world market production chain (Gaulier et al., 2007). East Asia most integrated among all regions of Asia in the world market (Ng & Yeats, 2003). There is large potential for south Asian economies to trade more than actually it is doing at present (Kathuria, 2018). Guru and Yadav (2021) determined the impact of financial integration on factor productivity and capital accumulation for the sample of 43 Asian economies. The GMM estimates postulate positive effect of capital account openness on factor productivity and stock of capital. The results assert that FDI inflow leads to output growth in the economy. Though the positive impact of financial integration on productivity and capital accumulation is more relevant for developing countries. Whereas, for underdeveloped countries, the benefit of financial integration is limited to productivity growth only.

From the above review of literature, it can be concluded that it is actually a complex phenomenon to study the relationship between trade integration, financial integration, and trade specialization. All these three components are defined and measured differently across regions. It is also observed that the term integration is more suitable for developed economies. The developing or underdeveloped economies still lag the institutional framework to get the benefits of integration in terms of increased specialization. There is a need to study the benefits of economic integration (trade and financial integration) on specialization patterns for developing economies.

*****

CHAPTER: 3

DATABASE AND RESEARCH METHODOLOGY

The chapter describes the database and methodological aspects used to achieve the designed objectives. The chapter begins by stating the research problem (research gap). The next sections discuss the designed objectives. The data sources and selected econometric and empirical tools are discussed in the next section.

3.1 Research Gap

Increasing industrialization and capital flow across or within the region has spurred economic integration worldwide. Liberalization of trade-related agreements is causing countries to exchange skills and new technology of production. Similarly, the removal of restrictions on the movement of financial assets will generate economies of scale in the financial and product market. Such an environment with reduced barriers to trade integration (TI) and financial market integration (FI) induce specialization (TS) in product and financial markets. Economic integration with expanded trade and finance will assure risk diversification and minimize the happening of financial crises. More synchronized trade openness and financial integration can reduce the occurrence and magnitude of such asymmetric shocks as global or regional financial crises.

Therefore, it is important to understand the nexus between integration and specialization for its policy implications. Both TI and FI integration is promoting the growth of the economy. It is important to understand how industrial specialization is changing with the change in the pattern of trade and financial integration. Studying trade specialization in the context of trade and financial integration not only reveals the role of both variables but also their intensity in achieving specialization. A variety of literature by notable economists Ricardo (1817), Ohlin (1933), Krugman, (1979; 1980,1981), Krugman (1991), and Venables (1996) has revealed the interaction between trade and trade specialization. Similarly, the interaction of financial integration and specialization is been discussed by Brainard and Cooper (1968), Ruffin (1974), and Kalemli-Ozcan et al. (2003). Most of the earlier studies focused on examining the trade, finance, and specialization linkages concerning developed countries, as these countries are more integrated via the institutional and legal framework. Whereas, Asia still does not falls

under the category of developed countries. It is only the advent of the Asian financial crises of 1997-98, that have embarked on the need to reconcile the trade and finance-related issues through the institutional framework. The unregulated capital flight in the region has led to the happening of the Asian financial crisis. Since after Asian crisis of 1997, there is considerable effort to promote trade integration. Trade activities have strengthened after crises (Asian Development Bank, 2006). In Asia growth of trade has performed well and its share of world trade is rising. Trade openness in Asia is higher than compared in other regions of the world (Cowen, et al., 2006). But financial integration in the region is less compared to Europe in terms of the cross-border lending and investment activities of national banking systems (Eichengreen & Park, 2003). It is stated that Asian integration is scantly developed in comparison to the EU and USA. It lacks the institutional arrangements required for integration. Moreover, there is regional disparity in the process of economic integration as it is mostly confined to East Asia (Razeen, 2010). Intra-regional trade has grown tremendously within or outside the region for East Asian economies. South Asian economies are the least integrated region of Asia. Despite the lack of institutional arrangements and a common currency, trade-led integration in the region is increasing continuously and it has led to product fragmentation among countries (Obashi & Kimura, 2017). The specialization pattern of the region varies across the countries in Asia. On one hand the share of technology-based products is rising in the region. On the other hand, the magnitude of primary products in the total trade has not fallen as they serve for industrial growth. Growing ties in the world trade and financial markets are determining the pattern of specialization to large extent. There is a need to understand how integration will induce the specialization pattern of Asian economies.

So far both trade and financial integration's role in achieving specialization has been studied in isolation but little has been shown how both trade and financial integration together can play to achieve trade specialization. This work is an attempt to solve the interaction of trade and financial integration for trade specialization specifically in the context of Asia.

3.2 Objectives of the study

1. To measure the level of financial integration in selected Asian countries
2. To measure the level and extent of trade integration in selected Asian countries

3. To measure the role of financial integration in determining the effect of trade integration on trade specialization
4. To measure the role of inter or intra industry trade and financial development in determining the effect of trade and financial integration on trade specialization

3.3 Methodology

Asia is one of the most diverse regions of the world. The diversity in the economic, social, cultural, political, and financial structure of the economy makes it difficult to operate under a single financial market. As a continent of contrasts, it consists of economies with different growth opportunities and challenges in the financial markets. Under such an assortment, it is difficult to put forward a single criterion to estimate financial integration in Asia. Based on a few indicators of trade and financial integration, ten countries have been selected from Asia to represent as a region. The region accounts for nearly 49 % of world GDP on purchasing power parity. It consists of 59 % of the world's population. This is one of the important regions in the world market. The export from the region to the world market falls nearly 40 %. Whereas the import from the world market consists of 38 percent. The region is playing a significant role in the world market, but the country-specific role within the region is different. The detail of selected indicators and country-specific share in the region is elaborated in the sub-section below. To achieve desired objectives, statistical and econometric tools are discussed in the subsequent sections.

3.3.1 Country Selection Criterion

Since the advent of financial crises in Asia, there is a surge of policies to initiate economic integration via increased trade and financial openness at the regional and global levels. Many steps have been taken to foster financial integration within the region. Whereas, trade openness has always been an important feature of Asian integration. Though all countries within Asia are not capable to reap the benefits of economic integration due to differences in their institutional framework and level of development. There are few countries like China and Japan that represents Asia in the world market. Thus, few factors may determine the extent of the economic integration of a particular economy. As per the data depicted in Table 3.1, selected Asian economies together represent more than seventy presents of the GDP in the region and nearly 50 % of the

world GDP. China consists for nearly 40% of the region's GDP followed by Japan (14%), India (8%), Korea (5%), Indonesia (3%), and all others contributing 8% approximately. Selected countries share 78% of Asia's and forty-five percent of the world's population. China is one of the most populated economies contributing 31% of Asia's and 18 % of the world's population. Similarly, India is also sharing 30% of Asia's and 17% of the world's population. Only these two economies consist of 61 % of Asia's population. These selected economies contribute 25% of the world's imports and 40% of Asia's total export. China shares 12% of the region's total export to the world followed by Japan (3.8%), Kore (3.1%), Singapore (2.1%), Malaysia (1.3%), Thailand (1.3%), and others contributing less than 1 % of their total exports. Similarly, imports from the world market are larger for china (10.8%) followed by Japan (3.8%), Korea (2.7%), India (2.6%), and less than 2% for all other countries. The panel of selected countries contributes largely to the FDI inflows and Outflows.

It is evident from the data set that Singapore is the largest recipient of FDI inflows in the panel followed by the Philippines (3.2), Malaysia (3.0%), Indonesia (2.1%), and less than 2% of GDP for all other countries in the panel. The share of FDI outflows as a percent is GDP is higher for Singapore (8%) followed by Thailand (4.1), Japan (3.5%) Korea (2.1), and less than 1% for other countries in the panel. Table 3.1 also exhibits that there is a disparity in the trade openness among selected Asian countries. Countries like Singapore, Malaysia, Korea, the Philippines, and Thailand are more open to trade than India, China, Japan, and Indonesia. It is also evident that net acquisitions of liabilities exceed assets of the most of selected countries. Countries like India. Indonesia and the Philippines have a very low ratio of domestic credit to the private sector as a percentage of GDP, which indicates a low level of financial openness. The data on current account balances also indicate that a few countries are surplus and others are facing deficit on their current account balances.

From table 3.1 it is clear that there is huge diversity in the share of all selected countries on selected indicators. Thus, it gives a reason to study the aspect of integration under such diversity. Based on such factors that can determine both trade and financial integration in a country, ten Asian countries have been selected to achieve desired objectives of the study

Table 3.1. Asian countries: Selected Economic Indicators

Sr. No		CHN	IND	IDN	JPN	KOR	MYS	PHL	SGP	THA	TUR	Panel total	Asia s Total
1	GDP (US $ Bn)	13407.4	2716.8	1022.5	4971.9	1619.4	354.3	330.8	361.1	487.2	766.4		
2	GDP (% in Asia)	40.1	8.1	3.1	14.9	4.8	1.1	1.0	1.1	1.5	2.3	78.0	
3	GDP on PPP (World share)	18.7	7.8	2.6	4.1	1.6	0.7	0.7	0.4	1.0	1.7	39.3	49.0
4	Population (Mn)	1382.7	1309.3	258.7	126.9	51.2	31.7	104.2	5.6	69.0	79.8	3419.2	4368.9
5	Population (Mn) % in Asia	31.6	30.0	5.9	2.9	1.2	0.7	2.4	0.1	1.6	1.8	78.3	
6	Population (Mn)% in world	18.4	17.7	3.5	1.6	0.7	0.4	1.4	0.1	0.9	1.1	45.8	58.7
7	Exports (Mn)	2487045.0	325562.2	180215.2	738403.0	300.0	247365.2	67487.9	412629.0	252106.4	167967.2	4879081.1	7946171.8
8	export (% in world Import)	12.8	1.7	0.9	3.8	3.1	1.3	0.3	2.1	1.3	0.9	25.1	40.8
9	Import (Mn)	2135905.0	510664.7	188711.7	748735.2	2590.0	217470.6	114738.3	370634.5	249660.4	223046.5	4762156.8	7482849.3
10	Import (% in world Export)	10.8	2.6	1.0	3.8	2.7	1.1	0.6	1.9	1.3	1.1	24.1	37.8
11	Trade % GDP	37.8	40.8	39.4	34.4	80.8	135.8	71.8	322.4	122.8	54.1		
12	Trade % in Asia	28.3	5.5	2.2	10.4	7.8	2.6	1.0	6.6	3.6	2.4	70.2	
13	FDI Inflow % GDP	1.4	1.5	2.1	0.4	1.1	3.0	3.2	19.6	1.8	1.3	35.4	
14	FDI outflow % GDP	0.8	0.4	0.2	3.5	2.1	1.8	1.1	7.6	4.1	0.3		
15	Inward FDI % in Asia ($ Mn)	27.4	9.1	0.5	2.3	2.2	2.0	1.6	12.6	0.3	2.5	60.7	
16	Outward FDI % in Asia ($ Mn)	35.3	1.0	-2.4	28.0	5.3	1.1	0.7	4.6	2.6	0.6	76.7	
17	current account balance % GDP	1.3	-1.4	-1.6	4.0	4.9	3.0	-0.7	16.6	11.0	-5.6	31.7	-88.1
18	Domestic credit to private sector (% of GDP)	155.8	48.8	38.7	169.1	144.8	118.8	47.8	128.2	145.0	70.9	1067.9	2613.1
19	Net incurrence of liabilities, total (% of GDP)	1.8	2.7	3.2	3.1	1.4	3.8	2.9	9.2	2.5	3.1		73.8
20	Net acquisition of financial assets (% of GDP)	NA	0.8	0.7	-0.1	3.5	0.1	-0.3	14.1	1.9	1.0		33.9

Sources: IMF (international monetary fund), World Economic Outlook, Direction of Trade Statics, Trade Map, World Bank, World Development Indicators
Note: Database is collected for the year of 2018
Trade data excludes services, NA implies data not available

3.3.2 Data Sources and Period of the Study

The study aims at analyzing the relationship between integration and specialization nexus for selected Asian economies. The empirical analysis is based on various time series as well as panel data econometric techniques. The data has been compiled from various sources such as World Development Indicators (WDI), World Economic Outlook (WEO), International Financial Statistics (IFS), BOP, IMF, World Bank, UNCTAD, UNCOMTRADE, WTO, Trade Map, Ministry of Finance, etc. The data for various macroeconomic indicators were collected to portray the current scenario of economic integration in Asia. The data for the trade analysis is collected from 2001 to 2018 constituting 18 years keeping in mind the fluctuations and consequences of financial crises in Asia. The data on trade is further decomposed into six categories based on the classification by Basu (2011), which classifies the commodities based on technology-based content in it. On the other hand, the empirical study of the financial indicator is based on data collected from 1980 to 2018. It was the financial crisis of Asia in 1998 that spurred the need for economic integration among Asian economies to minimize the risk and maximize the benefits associated with globalization. Among all Asian countries, ten countries were selected as a panel for the empirical analysis of the study. The selection of the panel is based on some economic and financial indicators, widely used and accepted in the literature to measure trade and financial integration.

3.3.3 Tools and Techniques for Empirical Estimation

The empirical estimation includes various statistical and econometric techniques like Panel Unit Root, Panel Cointegration, Panel ARDL, Panel VAR, Panel VECM, Feldstein-Horioka puzzle, Grubel Lloyd Index, Herfindal-Hirschman Index, Financial Development Index, Trade Intensity Index, Intra-regional trade intensity index, Individual Trade Intensity Index, Panel ARDL Model, Toda-Yamamoto Causality, Impulse Response Function (IRF), Variance Decomposition Analysis, Generalized Method of Moments (GMM). Data has been converted to normality to achieve uniformity in data. All assumptions data are considered during the empirical estimation of each econometric model. The detail of the research methodology adopted for empirical estimations of the objectives is described below.

3.3.3.1 Measuring Financial Integration (Feldstein Horioka Puzzle).

As discussed earlier in the literature review part, there is no single definition and determinant of financial integration. Though the seminal work of Feldstein and Horioka (1980) or Saving-Investment approach is widely used in literature to assess the degree of financial integration through capital mobility. It is described in detail as follows.

The theocratical framework of the Feldstein Horioka Puzzle.

To determine the level of financial integration in selected Asian economies from 1980 to 2017 the original Feldstein and Horioka (1980) used the theoretical framework as described below.

$$\left(\frac{I}{Y}\right)_i = \alpha + \beta \left(\frac{S}{Y}\right)_i + \mu \qquad (1)$$

Where

$\left(\frac{I}{Y}\right)_{i,t}$ is a gross domestic investment in percent of GDP

$\left(\frac{S}{Y}\right)_{i,t}$ is gross domestic saving in percent of GDP

β is the degree of FI

If β = 1 shows less FI

If β = 0 shows strong FI

μ is the error term

The original F-H puzzle is based on cross-sectional data, but later it was used for time series as well as panel data. Panel data is considered to be more efficient as it includes both time and cross-section components. Panel data helps to control cross-section heterogeneity over time present in the sample, raised due to cross-sectional properties in the sample. Panel data is more informative and provides more degrees of freedom. Also, it is less concerned with the issue of multicollinearity. So, panel data

provides the best and most efficient estimates. The present study used panel data to estimate financial integration with the help of the Feldstein-Horioka puzzle.

Panel Framework for F-H puzzle.

Over the years, the estimation of saving-investment correlation has shifted to advanced econometric tools of cointegration and panel data. The F-H puzzle for panel data equation form is expressed as below:

$$\gamma_{i,t} = \alpha + \beta \chi_{i,t} + \varepsilon_{i,t} \quad (2)$$

In above equation

$\gamma_{i,t}$ is investment rate

$\chi_{i,t}$ is saving rate

β represents the degree of financial integration

i stands for country-specific and i = 1, 2, 3……. N cross-sections

t stands for time component and t = 1, 2, 3……. T time

$\varepsilon_{i,t}$ is a random error term

Thus, panel regression includes both cross-section and time components. Miller (1988) estimated cointegration between saving investment, which was followed by many by

academicians.

3.3.3.2: Unit Root Test

To determine an econometric relationship among selected variables, there are some mandatory diagnostic tests to perform to fulfill the time-series properties of the data. Which are described in the following section.

Panel unit root test

There are some measures to analyze the unit root properties of the data in a panel format. The basic idea behind these measures is to gather information from the time and

cross-section components of the data to gather maximum information about the panel. Several unit root tests are performed to determine properties regarding unit root namely; Levin, Lin, and Chu (LLC)test, (Levin, Lin, & Chu, 2002), Im, Pesaran, and Shin (IPS) test (Im, Pesaran, & Shin, 2003), Fisher-type tests using Augmented Dickey-Fuller Hadri tests. These unit root tests estimate the stationary in the data series. All of these tests of unit root assume data has a unit root as null hypothesis and no unit root alternatively. Whereas, Hadri test is assume data opposite of all other mentioned tests.

Levin, Lin and Chu (LLC) Test (2002)

This is the first tests to analyze panel unit root. It is based on the assumption that data has a unit root

$$\Delta\gamma_{i,t} = \rho_{i,t} + \alpha\gamma_{i,t-1} + \sum_{k=1}^{n} \theta k \, \Delta\gamma_{i,t-k} + \phi_{i,t} + \delta_t + \mu_{i,t} \quad (3)$$

This is a two-way fixed-effect model. It assumes that α is common and there is cross-sectional independence in the model. It assumes the null hypothesis mentioned below.

Hypothesis of LLC

H_0: $\alpha = 0$

$H_{1:}$ $\alpha < 1$

Under the null hypothesis it assumes a unit root for the series, whereas in the alternative hypothesis, there is no unit root.

Im, Pesaran and Shin (IPS) test (2003)

IPS test is an extended form of the LLC test allowing heterogeneity in α for alternative hypotheses. The equation for IPS is presented below.

$$\Delta\gamma_{i,t} = \rho_{i,t} + \alpha_i\gamma_{i,t-1} + \sum_{k=1}^{n} \theta k \, \Delta\gamma_{i,t-k} + \phi_{i,t} + \delta_t + \mu_{i,t} \quad (4)$$

Hypothesis of IPS

H_0: $\alpha_i = 0$, for all i and $H_{1:}$ $\alpha_i < 1$, for at least one i

Under the null hypothesis unlike LSE, IPS assumes that only a fraction of the series is stationary.

Fisher-Type Tests

Another alternative approach for panel unit root testing was provided by Choi (2001) and Maddala & Wu (1999). It is based on deriving a combination of the p-value for each cross-sectional unit root. The null and alternative hypotheses are similar to that of IPS.

Hadri Tests

Unlike all other unit root tests which assume unit root as the null hypothesis, the Hadri test assumes that there is no unit root in the series of the panel. The equation can be written as follow:

$$\gamma_{i,t} = \mathrm{V}_{i,t} + \varepsilon_{i,t} \qquad (5)$$

Where

$$\mathrm{V}_{i,t} = \mathrm{V}_{i,t-1} + \mu_{i,t}$$

H_0: $\sigma_{\mu}^2 = 0$

If $\mu_{i,t}$ is zero then $\mathrm{V}_{i,t}$ is constant and thus series ($\gamma_{i,t}$) becomes stationary. This test adjusts the problem of heteroscedasticity.

3.3.3.3: Panel Cointegration tests

After determining the order of integration, the next step is to determine the statistical relationship between the series of a high order. Granger (1969) developed a cointegration methodology to determine the long-run relationship among variables. Further, Granger, (1988) used cointegration on time series data. In the 1990's This methodology was extended to use on panel data. Cointegration is employed to check or determine the long-run relationships between nonstationary series of the order I (1). Two sets of series are said to be cointegrated if a linear combination of those series has a lower order of integration. Several cointegration techniques are available in the literature to

determine the relationship between saving and investment Kao (1999) and Pedroni (1999) and Fisher cointegration tests are used to determine the level of financial integration in solving the F-H puzzle.

Kao Test of Cointegration

Kao introduced two types of panels cointegration tests: The Dickey-Fuller and the ADF tests for analysis interpretation. The following formula is used to test the statistics of these tests:

$$\hat{\varepsilon}_{i\,t} = P\,\hat{\varepsilon}_{i\,t-1} + \sum_{j=1}^{\kappa} \theta_j\,\Delta\hat{\varepsilon}_{i\,t-J} + \mu_{i,t} \qquad (6)$$

Where $\hat{\varepsilon}_{i\,t}$ is the difference between regressand and its lag value $(\gamma_{i,t} - \gamma_{i,t-1})$ and is κ the number of lags in the model. The null hypothesis of the test is H_0: Θ =1 and alternative H_1: Θ < 1. The ADF value in the Kao test interprets the presence of cointegration.

Pedroni Test of Cointegartion

Pedroni (1999) introduced a panel and group cointegration test, where analysis is based on seven residual-based tests to estimate the hypothesis of no cointegration in panel regressors. Where out of seven four are panel statistics and three are group statistics, those were introduced to determine the hypothesis of no cointegration. The first four-panel cointegration statistics also called within-dimension-based statistics set null and alternative hypotheses respectively as

H_0: $\Theta = 1$

H_1: $\Theta < 1$

Assuming the homogeneity of coefficients under the null hypothesis. On the other hand, the other three group statistics are also defined as between-dimension-based statistics. Where HO: $\Theta = 1$ and H1: $\Theta < 1$ for all i assuming the slope heterogeneity across countries under the alternative hypothesis.

Pedroni model in equation form is expressed as follows:

$$\gamma_{i,t} = \alpha_i + \rho_{i\,t} + \beta_{1i}\,\chi_{1it} + \beta_{2i}\,\chi_{2it} + \beta_{ki}\,\chi_{kit} + \mu_{i,t} \quad (7)$$

As mentioned below

i = 1……N,

t = 1……T

κ = 1……K

Whereas T, K, and N define several observations, units, and regressors respectively in the model.

Johansen Fisher Panel Cointegration tests

Johansen (1988) suggested two approaches to find out the existence of cointegration vectors in non-stationary time-Series.

- Likelihood ratio trace statistics
- Maximum eigenvalue statistics

For Trace Statistics

H_0: At most r cointegrated vectors

H_1: r or more cointegrated vectors

For Maximum Eigenvalue Statistics

H_0: At most r cointegrated vectors

$H_{1:}$ r +1 cointegrated vectors

Fisher (1932) derives a combined test that uses the results of the individual independent tests. Maddala and Wu (1999) use Fisher's result to propose an alternative approach to testing for cointegration in panel data by combining tests from individual cross-sections to obtain test statistics for the full panel. If π_i is the p-value from an

individual cointegration test for cross-section *i*, then under the null hypothesis for the panel equation is as:

$$-2\sum_{i=1}^{N} Log\,(\pi i) \rightarrow \chi^2 2N \qquad (8)$$

By default, EViews reports the χ^2 value-based on MacKinnon-Haug-Michelis (1999) *p*-values for Johansen's cointegration trace test and maximum eigenvalue test.

3.3.3.4: Panel FMOLS and DOLS estimates

After checking co-integration among the variables, the next step is to measure long-run equilibrium among the variables. Generally, the OLS method is used for this purpose but in the case of panel data, this method gives biased and inconsistent results. Thus, the study has used the Fully modified ordinary least square method (FMOLS) and the dynamic ordinary least square method (DOLS). These methods were proposed by Kao and Chiang (2001). These methods allow high flexibility even in case of heterogeneity among the variables. The equation for fixed effect panel regression is as follows.

$$y_{it} = p_1 + qx_{it} + u_{it} \qquad (9)$$

Where i refers to n number of terms and t refers to t number of terms. Yit is a (1,1) matrix, q is a vector of slope dimension, p_1 is the individual fixed effect, u_{it} is a disturbance term and x_{it} is a vector assumed to be of an order one. FMOLS and DOLS are improvements over the OLS method for endogeneity and serial correlations. Both FMOLS and DOLS provide standard errors which can be used as inference. In the case of FMOLS, there exist no issues of lag and leading variables. The equation for FMOLS is as follows.

$$Y_t = \alpha_0 + \alpha' x_t + u_t \qquad (10)$$

Kao and Chiang (2001) mentioned that both these estimators have normal limiting properties but in the case of small samples, DOLS outperforms FMOLS. DOLS can be estimated using the following equation.

$$D_{it} = \alpha_i + \beta x_{it} + \sum_{j=-q}^{q} c_{ij}\,\Delta x_{i,t-j} + \varepsilon_{it} \qquad (11)$$

Where i refers to 1 to n and t refers to 1 to t. c_{ij} refers to lead or lag coefficients of the dependent variable at first difference.

3.3.3.5: Vector Autoregression (VAR) Model

Vector Autoregression was introduced by Sims (1980) as a technique for multivariate modeling, considering simultaneous sets of variables equally. This technique allows each endogenous variable to regress on its lag and the lag of other variables in the model. Let's consider k variable panel VAR with *p* lag order of itself and all of the other *n-1* variables with an error term.

$$y_{it} = y_{it-1} A_1 + y_{it-2} A_2 \ldots + y_{it-p+1} A_{p-1} + y_{it-p} A_p + x_{it} B + \mu_{it} + e_{it} \quad (12)$$

In above equation

y_{it} and x_{it} are vectors of dependent and exogenous covariant respectively

μ_{it} *and* e_{it} are the vector of dependent variable and error term respectively

$A_1, A_2, \ldots A_{p-1}, A_p$ *and* B are parameters to be estimated

3.3.3.6: Vector Error Correction Model (VECM)

If all the variables of a vector autoregressive model are integrated of order I (1) and cointegration among them exists, we use the VEC model. This is an extended form of the VAR model for long-run equilibrium. Two variable VECM equations can be written as

$$\Delta y_{it} = \beta_{y0} + \beta_{y1} \Delta\gamma_{it-1} + \cdots + \beta_{yp} \Delta y_{it-p} + \gamma_{y1} \Delta x_{it-1} + \cdots + \gamma_{yp} \Delta x_{it-p} - \lambda_y (y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + V_t^y \quad (13)$$

$$\Delta x_{it} = \beta_{x0} + \beta_{x1} \Delta\gamma_{it-1} + \cdots + \beta_{xp} \Delta y_{it-p} + \gamma_{x1} \Delta x_{it-1} + \cdots + \gamma_{xp} \Delta x_{it-p} - \lambda_x (y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + V_t^y \quad (14)$$

Where $y_t + \alpha_0 + \alpha_1 x_t$ represents long-run cointegration between Y and X. Whereas λ_y and λ_x are error correction terms to measure how both variables Y and X react to restore long-run equilibrium. These error correction terms define the speed of adjustment towards equilibrium.

3.3.3.7: Trade Intensity Index (TII)

TII is an indicator to determine the country's importance in the world. This index indicates whether the value of trade between two economies is greater or smaller than would be expected based on their importance in world trade. It is defined as the share of one country's exports going to a partner divided by the share of world exports going to the partner.

It is calculated as:

$$Tij = \frac{Xij/Xit}{Xwj/Xwt} \quad (15)$$

Where

$T^{i}j$ = Trade Intensity index of country i and j

$Xij =$ Country is export to country j

$Xwj =$ World export to country j

Xit = Country is total trade

Xwt = Total world export

The value of TII lies between 0 and ∞. Where 0 indicates there is no trade between two countries whereas the value of 1 indicates intense trade relations.

3.3.3.8: Intra-regional Trade Intensity Index (RTII)

This index is the ratio of the sum of exports of all member nations within the region to the sum of export of member nations outside the region. The index ranges from 0 to 1.

Index 0 indicates that there is no export within the region among member countries. Whereas the value of 1 indicates that the member is exporting within the group to other members. Following the methodology of Yash Raj Lamsal (2019), the formula for RTII is expressed below.

Let g (W', E') be sub-graph of G (W, E) and $W' \subseteq W$ and $E' \subseteq E$. The G (W, E) represents all countries in the world and their export relationships. Sub-graph g represents trade agreements. RTII for sub-graph g is calculated as I_g.

$$I_g = \frac{\Sigma_{i:\forall i \epsilon w'} \Sigma_{j:\forall j \epsilon w'} e_{ij}}{\Sigma_{i:\forall i \epsilon w'} \Sigma_{j:\forall j \epsilon w} e_{ij}} \quad (16)$$

Individual contribution to the regional integration is computed as Individual Contribution Index (ICI)

$$ICI_g^i = \frac{\Sigma_{j:\forall j \epsilon w'} e_{ij}}{\Sigma_{i:\forall i \epsilon w'} \Sigma_{j:\forall j \epsilon w} e_{ij}} \quad (17)$$

Where, ICI_g^i is the ICI for a country i in sub-graph g.

The weighted sum of ICI is equal to the regional trade integration index, which is expressed as below;

$$I_g = \sum_{i:\forall i \epsilon w'} ICI_g^i \quad (18)$$

3.3.3.9: Individual Trade Intensity Index (ITII)

The index indicates how integrated a particular country is in a certain group. The index analysis the export of a country within the region to export outside the region. Or, this index is the ratio of the sum of exports of the country to all members of the region to the sum of export of the country to all others outside the region. the value of the index ranges from 0 to 1. Integration index 1 indicates the country's whole export is within the region and there is no export outside the region. The formula to calculate ITII is as below:

$$I_g^i = \frac{\Sigma_{j:\forall j \epsilon w'} e_{ij}}{\Sigma_{j:\forall j \epsilon w} e_{ij}} \quad (19)$$

Where I_g^i represents the integration of a country i in region g.

3.3.4.0 : Market Concentration Index

The market concentration index of trade is constructed based on the Herfindal-Hirschman index (HHI). This index has originated its name from economists Albert O. Hirschman (1945) and Oriris C, Herfindal (1950). "The HHI accounts for the number of firms in a market, as well as concentration, by incorporating the relative size (that is, market share) of all firms in a market." HHI is calculated by squaring the market share of all firms in a market and then summing up square. The formula to calculate HHI is expressed as follows.

$$HHI = \sum_{i=1}^{n} S_i^2 \qquad (20)$$

HHI = Herfindahl-Hirschman Index

S_i^2 = Share of the ith firm in the market

The value of HHI ranges from 0 to 1. If the HHI =1, it implies there exists a monopoly and a single company takes over the whole market. On the other side, if the market is uniformly distributed among all companies or firms, the value of HHI is low and minimum (Sandeep et al., 2018). This index is used to derive indices for market concentration, diversification, and specializations among firms or industries.

3.3.4.1 : Intra-Industry Tarde (IIT)

Intra-industry trade refers to the export and import of similar types of goods between two countries. The Grubel-Lloyd Index measures intra-industry trade. It was introduced by Herb Grubel and Peter Lloyd in 1971. It is expressed as follows:

$$GL_i = 1 - \frac{|X_i - M_i|}{X_i - M_i} \quad ; \; 0 \leq GL_i \leq 1 \qquad (21)$$

Where, X_i denotes the export and M_i denotes the import of goods i.

If the value of GL_i = 0, there is no intra-industry trade, there is only inter-industry trade. This means that country under study either only export or import good i. Whereas, if GL_i = 1, there is only intra -industry trade and no inter-industry trade. This implies that a country export good i as much as it imports.

3.3.4.2 : Panel Autoregressive Distributed Lag Model (ARDL)

For the empirical estimation of the relationship between variables under consideration, various econometric tools are used. Most of the econometric tools are based on the assumptions of stationary time series properties and a series converges towards its mean over time. However, in a practical landscape, most of the data series are non-stationary and do not converge to their mean over the period. Thus, regardless of the order of integration ARDL is the most suitable technique to determine cointegration where there is a mix of I (0) and I (1) series. It is very efficient with small data as well.

For the estimation of the relationship between Trade Integration (TI), Trade Specialization (TS), and Financial Integration (FI), the equation is specified as follows

$$TSi = \beta 0 + \beta 1TI + \beta 2FI + \mu ti \quad (22)$$

As the variable in the above model consists of a mix of stationary and non-stationary series, the ARDL specification of the above model is expressed below.

$$\Delta TS_t = \beta_{01} + \sum_{i=1}^{n1} \beta_{11}\ \Delta TS_{t-i} + \sum_{i=0}^{n2} \beta_{12}\ \Delta TI_{t-i} + \sum_{i=0}^{n3} \beta_{13}\ \Delta FI_{t-i} + \phi_{11} TS_{t-1} + \phi_{12} T1_{t-1} + \phi_{13} FI_{t-1} + \varepsilon_{t1} \quad (23)$$

Where β_{01} is drift, ε_{t1} is an error term and Δ represents the first-order integration. $\beta_{11}\ \beta_{12}\ \beta_{13}$ are the short-run coefficients and $\phi_{11}\phi_{12}\phi_{13}$ are long-run coefficients?

3.3.4.3 : Toda and Yamamoto Granger Causality Test

To determine the causality relationship between trade integration and financial integration and specialization granger causality test approached by Toda and Yamamoto (1995) is applied. The said approach is way more efficient than earlier approaches to test causality. This method of causality does not depend on the order of integration of selected

series in the study. It can be applied to test causality on any series irrespective of knowing its order of integration. Also, this method does not require the information of cointegration between series to conduct causality. It also takes care of biasness associated with properties of unit root and cointegration.

Toda and Yamamoto's model is based on the concept of VAR (Vector Autoregressive Model) at level ($p=k+d_{max}$) with correct var order and d extra lag. Where d is maximum, Ytorder of integration of the series. This method uses Wald stats to test causality among variables. The estimated equation based on selected variables to test causality can be represented below.

$$Y_t = B_0 + B_1 Y_{t-1} + B_2 Y_{t-2} \ldots\ldots\ldots B_K Y_{t-K} + e_{it} \quad (24)$$

Where $Y_t = \begin{vmatrix} Y_{1t} \\ Y_{2t} \\ Y_{3t} \end{vmatrix} = \begin{vmatrix} TI \\ FI \\ TS \end{vmatrix} = e_{it}$ $i.i.d\ N\ (O, u)$. Where TI, FI, and TS stand for trade integration, financial integration, and trade specialization.

To detect the causal relationship among selected series with augmented VAR ($k+d_{max}$) the equation can be represented below

$$Y_t = \alpha_0 + B_1 Y_{t-1} + Y_{t-k} + B_{K+1} Y_{t-K+1} + B_p Y_{t-p} + e_{it} \quad (25)$$

3.3.4.4 : Impulse Response Function

The estimates of granger causality are limited to the selected time and it does not provide any future forecasting of the relationship among selected series that can describe the strength of the existing relationship. The graphs of impulse response functions represent the process of transmission among variables from one to another. It also analyses the effect of one variable (dependent) on another variable (independent). The graphs of this method represent the response of one variable after giving a shock to another variable. It determines the impact of one variable on another variable. In this study, the period of ten years is selected to determine the response of TS on TI and FI for Asian countries. IRF will determine how all these three indicators will impact each other during the next ten years.

Variance decomposition analysis determines the forecast error variance of each that is assigned to shocks in itself and other variables in the system. It evaluates the contribution of information provided by each variable to other variables of the model. It also verifies the output of the impulse response function. The first part of Table 6.28 describes the variance decomposition of TS (trade specialization) for the upcoming ten years. The error forecast variation of TS is largely determined by its shock of TS both in the short as well as long run.

3.3.4.5 : Variance Decomposition Analysis or Forecast Error Variance Decomposition (FEVD).

Variance decomposition analysis determines the forecast error variance of each variable that is assigned to shocks in itself and other variables in the system. It evaluates the contribution of information provided by each variable to other variables of the model. It is important to understand that if a variable is exogenous, it will be determined by its shock. This method will determine the dynamic interaction between selected series beyond the sample period. It will also inform about the length of association among the variables. The error forecast variation is used to measure the interaction between TS (trade specialization), TI (trade integration), and FI (financial integration).

3.3.4.6 : GMM (The Generalized Method of Moments)

GMM estimates are based on a set of sets of population moments called orthogonality conditions. In dynamic panel data models, introducing lagged dependents variable as a regressor may violate the assumptions related to the homogeneity of the variables. This may lead to a correlation between regressors and error terms. To overcome the issue In Arellano–Bond (1991) came up with a methodology of using an instrumental variable as lagged dependence in the model. Though in case the dependent variable follows a random walk process the estimates of the Arellano–Bond method may not be accurate. Blundell and Bond (1998) derived a condition under which it is possible to use an additional set of moment conditions. These additional moment conditions can be used to improve the small sample performance of the Arellano–Bond estimator. Specifically, they advocated using the moment conditions. The general GMM estimation principle is based on such moment conditions. The model can be expressed as follow.

The general model can be written as:

$$Y_{i,t} = \beta_1 Y_{i,t-1} + \beta_2 \chi_{i,t} + \varepsilon_{i,t} \quad (26)$$

Where

$$\varepsilon_{i,t} = \mathrm{V}_i + \mu_{i,t} \quad (27)$$

It can be extended as

$$Y_{i,t} = \beta_1 Y_{i,t-1} + \beta_2 \chi_{i,t} + \mathrm{V}_i + \mu_{i,t} \quad (28)$$

Where $Y_{i,t}$ is a dependent variable, $Y_{i,t-1}$ is lagged regressor of the dependent variable, $\chi_{i,t}$ represents explanatory variables and $\varepsilon_{i,t}$ represents error term composed of the unobserved country-specific error term V_i and $\mu_{i,t}$ observation specific error term. Where $i, and\ t$ represent country and time respectively.

The presence of lagged dependent variable as an explanatory variable in the model will lead to a correlation between a lagged variable and other explanatory variables, which will produce inefficient OLS regression estimates. Such a scenario may lead to the problem of endogeny also. To deal with such inconsistency out of lagged dependent variable, endogeneity, and unobserved error, the GMM method provides the best estimates (Campos and Kinoshita, 2003).

The basic model to determine the relationship between selected variables GMM model can be written as follow;

$$Y_{i,t} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 \chi_{i,t} + \beta_3 \chi_{2i,t} + \varepsilon_{i,t} \quad (29)$$

Where χ_i represents endogenous and χ_2 represents an exogenous variable. some of the independent variables are endogenous E ($\chi_{it}\ \varepsilon_{i,t}$) ≠ 0. To deal with this problem Z_i set of instrument variables is included which satisfies the condition that E $[Z_i\ \varepsilon_{i,t}] = 0$.

*****

CHAPTER 4
DETERMINATION OF FINANCIAL INTEGRATION IN ASIA

4.1 Introduction

Asia is one of the fastest-growing regions globally and its growth remained resilient even during global financial crises. Reduction of capital account restrictions and dismantling the barriers to cross-border investments have increased the financial market integration globally over the decades. Financial integration may benefit trade and the growth of the economy. It will promote the efficient utilization of a large pool of Asia's savings for domestic investment and liquidity requirements. Financial integration may foster integration among capital markets within the region. It will improve the allocation of financial resources and reduce external dependency on liquidity arrangements in the region. It simply creates linkages in the financial markets to share and diversify the risk associated with the movement of capital within or outside the region. Typically, financial integration in an economy increases with the increase in trade integration. But, for most Asian countries, rapid expansion in trade has not been matched by an increase in the degree of financial integration (Pongsaparn & Unteroberdoerster, 2011). Since the Asian financial crisis, large initiatives have been taken forward to foster regional and financial integration in Asia. Ever since the Asian financial crisis of 1997, it has become the priority of policymakers to embark on several initiatives to foster regional cooperation and financial integration in Asia. Furthermore, the Euro crisis has re-stated the cause of being cautious and learning the negative and positive aspects of financial integration. Though there is no single determinant of financial integration, some basic indicators that show the extent and depth of financial integration for selected Asian economies are represented below.

There is no single criterion to define and measure financial integration given by the literature. It simply means the process of increasing integration among two countries or regions (Eyraud et al., 2017). In other words, financial integration means diminishing or eliminating barriers to the movement of capital among countries. Although there is no universal definition of financial integration, several determinants and indicators can impact the integration among economies. Broadly, the level of growth, investment

inflows, trade integration, and restriction on capital movement may provide an overview of the extent of financial integration in a region. The chapter is divided into two sections to determine financial integration in selected Asian economies. The first part discusses the selected indicators such as; GDP growth rate, GDP per capita, FDI inflow and outflows, Trade openness, Current account balance, and de-facto exchange rate arrangements that present the economic outlook of the selected Asian countries. These variables are widely used theoretically and empirically to determine financial integration (Edison et al., 2002; Lane & Ferretti 2003; Vo & Daly 2007; Fakhr & Tayebi, 2009; Bhattacharya & Ghosh 2016; Garali & Othmani 2015; Cheng & Daway, 2018). In the second part, empirical analysis is carried out to determine the level and extent of financial integration for selected Asian economies using a quantity-based approach to measure financial integration named "Feldstein-Horioka Puzzle."

4.2 Dimensions of Financial Integration

There are no universal definitions and measurement criteria to define and measure financial integration. A large strand of literature has assessed the degree of financial integration using different variables broadly categorized as legal and non-legal restrictions on the capital movements at the national and integrational levels. Where most legal restrictions restrict the movement of capital via exchange rate restriction, the non-legal restriction controls the price equality of financial assets in the financial markets. There are a number of variables that determine the path of financial integration in an economy.

Gross domestic product and growth of the economy are important determinants of financial integration. Phutkaradze et al. (2019) reviewed various channels through which financial integration can impact the economy's growth. A particular financial and institutional development level is more important to reap the maximum benefit of financial integration (Kose et al., 2011). The other important indicator to determine financial integration is FDI. The period of the 1980s and 1990s was the era of increased financial integration, which was an outcome of the globalization of investment flows at national and global financial markets. Investment flows in the form of FDI not only bring investment rather it a great source of technology and innovations in the product market. This exchange of capital encourages the need for a sound financial system, which results

in more financial integration. The nature and pattern of FDI have a large impact on the financial system of the economy (Wei & Wu, 2002; Levchenko & Mauro, 2007). Similarly, there is sufficient literature to gauge the existence of interaction between trade and financial integration. It asserts that countries with higher trade oppresses are less prone to a sudden stop and financial crises. It states that less open economies have to go through large adjustments in their exchange rate and depreciation of currency during currency crises, as a 1 percent increase can reduce the chance of a sudden stop by 3 percent (Frankel & Cavallo, 2004). Thus, the degree of trade integration does coincide with financial integration.

Another major determinant of financial integration is the current account balance. A surplus on the current account can determine the flow of capital in an economy. A surplus in the current account states that the economy is a net lender to the world economy. In contrast, a deficit defines the economy as a net borrower from the global market. It also expresses the gap between saving and investment, which determine the depth of capital flows in an economy (Higgins & Klitgaard, 1998). Another widely used detriment of financial integration is the exchange rate arrangements of the country, as it is the most common legal tool to control capital flows across borders.

Unlike the EU, which follows the common exchange rate, there is a large diversity in Asia's exchange rate arrangements. The level of economic development is also very different for all the economies in Asia. Under these circumstances, it is nearly impossible to follow common exchange rate arrangements to follow the path of financial integration. Common markets in the form of a common exchange rate reduce the risk associated with currency crises and help to reap maximum financial integration (Fornaro, 2019).

The above-discussed variables are very important to explain and determine the extent of financial integration in any economy. Although Asian economies are way diverse in terms of their economic development, there is a need to understand the determinant of financial integration with Asian economies. So discussed variables are elaborated in the following section with the help of the desired database to determine the depth of financial integration in selected Asian economies.

4.2.1 : Trends of Gross Domestic Product

Economic theory postulates a positive association between financial integration and economic growth. The former may enhance the latter by creating efficient investment opportunities to reduce the risk associated with portfolio diversion and integration in product and financial markets. Asia as a region maintained a healthy economic outlook over the period. Asia's economic growth as a sum of 48 Asian economies is higher compared to the world and Europe's economic growth. The growth rate for Asia has fluctuated over the period but remained higher than Euro and World average growth rate.

Table 4.1: Gross Domestic Product Growth (% change)

Country	1990	1995	2000	2005	2010	2015	2016	2017	2018
China	3.89	10.92	8.52	11.37	10.56	6.9	6.73	6.76	6.57
India	5.53	7.58	3.98	9.29	10.26	8.00	8.17	7.17	6.81
Indonesia	9.00	8.22	4.98	5.69	6.38	4.88	5.03	5.07	5.17
Japan	4.89	2.74	2.78	1.66	4.19	1.22	0.61	1.94	0.81
Korea	9.81	9.57	8.36	4.31	6.81	2.81	2.95	3.16	2.67
Malaysia	9.01	9.83	8.67	4.98	7.53	5.01	4.45	5.74	4.74
Philippines	3.04	4.68	4.41	4.78	7.63	6.07	6.88	6.68	6.24
Singapore	9.82	7.20	9.04	7.36	14.53	2.89	2.96	3.7	3.14
Thailand	11.62	8.12	4.46	4.19	7.51	3.13	3.36	4.02	4.13
Turkey	9.26	7.19	6.64	9.01	8.49	6.09	3.18	7.47	2.83
Asia	4.47	3.96	6.36	6.60	6.76	2.73	3.74	3.71	3.64
World	3.45	3.33	4.81	4.91	5.41	3.46	3.39	3.81	3.61
Euro area	N/A	2.90	3.80	1.69	2.10	2.10	1.90	2.54	1.94

Sources: *International Monetary Fund, World Economic Outlook Database, October 2019*

From table 4.1, it is clear that the world growth rate fell by 0.2% in 2018 compared to 2017 due to a global downfall in the growth rate due to escalating trade and monetary frictions between the largest economies of the world. There is a fall in the growth rate of Asia by 0.1% from 3.71 (2017) and 3.64 (2018), respectively. It's evident from table 1 that the growth rate of Asia was lowest during 2015 due to world market

fluctuations. China's growth rate has almost doubled from 3.89 in 1990 to 6.57 in 2018, and it is the highest contributor to Asia's GDP. In India's case, the growth rate increased throughout the period and remained higher than China's growth rate after 2015. For Indonesia, the GDP growth rate was 9.00 in 1990, which declined to 4.88 in 2015 and again rose to 5.17in 2018. A recent decline in commodity prices has led to a slower growth rate in Indonesia.

Despite Japan being among the major Asian economies, its growth rate has remained lower than other Asian economies. A slow growth rate results from fluctuating interest rates, weak consumption, and low investment. For other economies, e.g., Korea, Malaysia, Singapore, and Thailand, Turkey's GDP growth rate has deteriorated from 1990 to 2018 from 9.81 to 2.67, 9.01 to 4.74. 9.82 to 3.14, 11.62 to 4.13, 9.26 to 2,83 respectively. Whereas for the Philippines, the growth rate has increased from 3.04 (1990) to 6.24 (2018).

The data in the table depicts the consequences of financial integration and financial crises (Asian financial crises in 1997, Global financial crises in 2008, Euro financial crises in 2011) on the growth rate of Asia and the world. It is evident from the data that in 2015 every region or economy depicted in the data table showed a slow-down in GDP growth rate owing to world market fluctuation resulting in the devaluation of China's currency against the US dollar and deterioration of interest rate in Asia's market. Thus, any action in the world financial market does hold a reaction in the Asian GDP and its financial market.

Table 4.2: Gross Domestic Product Growth on PPP World Share

(% change in Billions)

Year	European Union	Asia
1997	23.81	0.78
2001	23.5	0.73
2005	21.49	0.77
2009	19.47	0.86
2013	17.27	0.94
2017	16.49	1.01
2018	16.27	1.02

Sources: International Monetary Fund, World Economic Outlook Database, October 2019

However, Asian economies are among the fastest-growing economies in the world. From table 4.2, it is clear that Europe's share of world GDP on purchasing power parity is much higher than Asia's. The percentage of the EU has fallen from 23.81 % to 16.24% in the world share of GDP on purchasing power parity. At the same time, the share for Asia has increased from 0.78% (1997) to 1.02 % (2018). The percentage of the EU is much more significant than the share of Asia, depicting it as a role model of financial integration.

4.2.2. Pattern of Foreign Direct Investment

Foreign direct investment flows are the major determinants of capital movement among countries within or outside the region. The extent and nature of FDI can determine the direction of financial integration in an economy. FDI is considered more beneficial than other types of capital flows as it brings technology and skill to the region. The increase in integration in the 1980s brought investment inflows in the form of FDI and portfolio investment and expanded in the 1990s. However, the expanded inflows raised concern after the advent of the Asian financial crisis. Despite a fall in the global FDI to 1.3 trillion in 2018 from 1.5 trillion in 2017, foreign direct investment inflow to Asia rose by 3.9% to 512 US billion dollars in 2018 (UNCTAD World Investment Report 2019). Large tax reforms by the US led to a reduction in the global FDI, though Asia remained the main destination with 43% of global inward FDI. Table 4.3 elaborated that with the most diversified economic structure in Asia, a considerable amount of inward FDI goes to China, with 139.04 billion dollars in 2018 as against 37.52 billion dollars in 1995.

Similarly, from 1995 to 2018, for several economies, there was a rise in the inward FDI by many folds. In the case of India, Indonesia, Singapore, Thailand, and turkey, the inward FDI rose to 42.29, 21.98, 77.65, 10.49, and 12.94 billion dollars, respectively. Though there is a fall in the amount of inward FDI to a few countries like Japan, Korea, Malaysia, and the Philippines for the year 2018 as a result of a fall in global FDI. Looking at the regional data of FDI in East- Asia rose by 4% to $289 billion in 2018 as compared to last year. In East Asia, China is the largest developing economy to receive the highest FDI inflow, with a share of 9% of the world FDI. On the other side, talking about South Asia, there is an increase in FDI inflow by 3,6% to $54.20 billion. India, as the major economy, received increased FDI by 5.9% to % $42.29 billion. It is clear from

the data that there is a continuous rise in the inflow of FDI to South Asian countries as a region. The inward FDI to the region has risen from $2.82 to $54.20 billion in the span of 23 (1995 to 2018) years. Western Asia got an increase in investment inflow by 4.6% to $51.56 billion in 2018 as compared to the previous year. Turkey is one of the major receivers of FDI in this region. South-east Asia is another largest receiver of investment flow in Asia. The region received an increase in investment of 3.13% to $148.69 billion. Countries like Indonesia and Thailand are the source of this investment growth. It is evident from the data that initially (1995), Asia's share of world FDI was less than that of Europe. In 1998 financial crises took place in Asia, resulting fall in investment inflow by 52% in 2000. Due to global financial crises, there was a fall in FDI inflow for almost all economies in the world.

Though the investment inflows to selected economies depended on country-specific cultural, political, and institutional arrangements. It is noted FDI inflows in Asia is largely dominated by investment inflows in China. India is also one of the major sources of FDI investment inflows in Asia. As compared to these economies, Japan is not able to attract international investments due to the restrictive market policies that make it difficult for new investors to compete in the market (Driffield et al, (2007). Although there is a decline in the investment inflows in Asia from 2015 to 2016 due to slower growth, low commodity prices, and structural reforms. China’s inflows fall by nearly one percent and inflows to Kore almost doubled due to its cross-border merger and acquisitions deals. There was a fall of nearly 16 percent in investment inflows to Singapore. Whereas in Indonesia, Malaysia, and Thailand there was a huge fall in investment inflows due to significant disinvestment by multinational companies. In turkey political stability cause a fall in investment inflows.

Despite these country-specific issues overall FDI inflows in Asia is still not much affected, and its share in world FDI inflow has increased from $24 billion (1995) to $42 billion (2018). At the same time, the share of Europe in world investment inflow has fallen from $38 billion (1995) to $21 billion resulting in financial crises in Europe. Thus, for Asia, investment inflow is rising, and its integration with the rest of the world is increasing. However, the nature and type of Investment inflow need to be given priority for claiming that Asia is opening to the world market for investment opportunities.

Table 4.3. Inward Foreign Direct Investment in Asia

($ billions)

Economies	**1995**	**2000**	**2005**	**2010**	**2015**	**2016**	**2017**	**2018**
China	37.52	40.71	72.41	114.73	135.61	133.71	134.06	139.04
India	2.15	3.59	7.62	27.42	44.06	44.48	39.9	42.29
Indonesia	NA	NA	8.34	13.77	16.64	3.92	20.58	21.98
Japan	0.04	8.32	2.78	-1.25	2.98	17.75	10.43	9.86
Korea	2.49	11.51	13.64	9.5	4.1	12.1	17.91	14.48
Malaysia	5.82	3.79	4.07	9.06	10.08	11.34	9.4	8.09
Philippines	1.46	2.24	1.85	1.3	4.45	6.92	8.7	6.46
Singapore	11.94	14.75	17.75	57.46	59.7	73.86	75.72	77.65
Thailand	2.07	3.41	7.98	14.55	5.62	1.82	6.48	10.49
Turkey	0.89	0.98	10.03	9.09	18.99	13.71	11.48	12.94
Regions								
Southern Asia	2.82	4.87	14.18	34.86	51.17	54.22	52.34	54.2
Eastern Asia	47.83	120.12	125.93	200.55	320.73	288.02	278.24	289.38
Western Asia	4.22	10.94	51.74	72.07	48.44	50.46	51.56	53.98
South-eastern Asia	28.63	21.75	42.74	113.01	114.28	116.77	144.18	148.69
Asia % share in World	24.82	11.73	25.01	32.08	26.72	27.17	35.62	42.62
E U % share in World	38.31	50.07	51.31	26.48	31.25	28.29	22.6	21.31

***Source**: UNCTAD (United Nations Conference on Trade and Development)*

Table 4.4. Outward Foreign Direct Investment in Asia ($ billions)

Economies	**1995**	**2000**	**2005**	**2010**	**2015**	**2016**	**2017**	**2018**
China	2.10	0.92	12.26	68.81	145.67	196.15	158.29	129.83
India	0.12	0.51	2.99	15.95	7.57	5.07	11.14	11.04
Indonesia	NA	NA	3.07	2.66	5.94	-12.21	2.08	8.14
Japan	22.63	31.56	45.78	56.26	136.25	151.3	160.45	143.16
Korea	3.87	4.84	8.33	28.22	23.69	29.89	34.07	38.92
Malaysia	2.49	2.03	3.08	13.4	10.55	8.01	5.64	5.28
Philippines	0.11	0.13	0.98	2.94	4.35	1.03	1.75	0.61
Singapore	7.28	6.85	12.55	35.41	45.22	39.78	43.70	37.14
Thailand	0.89	-0.02	0.31	7.94	4.69	12.37	17.06	17.71
Turkey	0.11	0.87	1.06	1.47	4.81	2.89	2.63	3.61
Regions								
Southern Asia	0.13	0.54	3.49	16.29	7.82	5.52	11.49	11.22
Eastern Asia	56.48	98.1	99.47	250.74	391.46	454.02	451.28	414.64
Western Asia	-0.05	6.26	16.36	25.92	55.1	58.43	47.77	57.27
South-eastern Asia	12.08	9.00	20.06	63.33	68.98	50.08	70.83	69.61
Asia % share of world	19.24	9.79	16.71	26.52	31.15	36.31	40.84	54.40
E U % share of world	44.24	68.01	68.17	33.6	38.92	31.61	28.92	38.45

Sources: *UNCTAD (United Nations Conference on Trade and Development)*

From Table 4.4, it is clear that the investment outflow from Asia to the world has declined by almost 7% to $551 billion in 2018. Asia's investment in the world declined by 7.4% in 2018 to $500.6 billion. Higher outward investment from other Asian countries was not enough to offset the decline in outward FDI from powerhouses such as the PRC (–$28.5 billion), Japan (–$17.3 billion), and Singapore (–$6.6 billion) due to global financial crises. However, the share of Asia in global FDI has risen from 35% (2017) to 53% (2018). Even the economies like China, Japan, and Singapore, FDI outflow fell by $-28.46, $-17.29, and $-3.92 billion in 2018 as compared to last year. Still, even after a fall in the investment outflow, these economies (China, Japan. Korea, and Singapore) are a major source of investment outflow. Despite a fall in the investment outflow by 8.12% to $414.6 billion, East Asia is still the largest region for investment outflow followed by Southeast Asia, East Asia, and South Asia.

The overall trends of FDI outflows indicate there is wide gap in the country-specific contribution to investment outflows. Where China is the biggest investor and growing investment outflows are the result of purchase of M&A by multinational companies of the country. These investments are initiated to improve quality in the manufacturing sector (Jin, 2017). The fall in FDI outflows in 2016 for Singapore. This fall in investment is an outcome of global uncertainty as the country is considered a hub for outward investment for ASEAN countries. The fall in investment outflows in Malaysia was an outcome of low oil prices in the country. In India, the fall in investment in 2016 was an outcome of avoidance of double-taxation in India and Mauritius which resulted in a fall in the profits of investors. The investment outflows for Japan, Korea, and Thailand increased due to their investment-oriented policies. Despite these trends the overall share of Asia in world FDI outflow has increased from 19% (1995) to 54% (2018). Whereas the share of Europe has fallen from 44% to 38% from 1995 to 2018. Thus, Asia is emerging as a power in the world economy.

4.2.3. Trade Openness

Trade openness is base for the development and growth of Asian economies. Asia consists of the largest and most populated nations in the world. Therefore, in order to fulfil the demand of these nations trade plays a crucial role. Trade not only affects

Table 4.5. Trade Openness of selected Asian Economies

Economies	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
China	54.85	57.07	54.69	50.56	39.19	44.55	44.73	42.47	40.99	38.66	33.52	31.19	32.33	32.63
India	28.79	30.95	30.45	41.14	33.62	35.38	41.81	43.23	41.74	39.2	31.75	28.4	29.36	31.03
Indonesia	48.03	42.49	41.01	44.15	33.81	35.62	39.02	39.88	39.27	38.57	33.01	29.35	31.41	34.74
Japan	21.81	25.23	27.43	28.69	19.79	23.84	25.73	25.89	28.7	30.89	28.48	24.64	27.37	29.30
Korea	59.91	62.63	65.31	85.22	75.37	80.38	95.34	94.76	88.58	80.82	69.85	64.14	68.4	70.31
Malaysia	173.34	173.69	161.43	149.49	134.85	130.9	128.19	120.25	114.53	111.44	107.27	102.45	108.99	107.23
Philippines	60.47	59.34	53.09	50.26	42.70	45.19	43.07	44.46	39.12	41.01	37.38	39.47	45.5	45.72
Singapore	342.13	345.4	315.02	347.52	274.68	287.99	293.56	280.36	269.79	255.48	223.64	207.43	218.83	231.52
Thailand	112.67	108.22	103.77	111.28	93.44	101.3	110.53	110.03	104.2	104.89	97.39	92.10	92.38	92.55
Turkey	37.88	41.35	41.08	43.79	37.88	38.65	44.92	44.54	42.45	42.97	40.95	39.51	45.95	50.99
Regions														
Southern Asia	33.49	34.88	33.91	41.15	34.20	35.87	40.26	39.06	38.48	37.76	31.41	29.51	30.95	33.29
Eastern Asia	43.98	49.14	51.22	51.59	39.91	46.2	48.58	48.25	49.34	48.08	42.74	39.03	41.2	41.79
Western Asia	65.07	66.58	68.58	73.27	63.62	64.93	72.32	74.58	72.22	69.1	62.64	58.95	61.8	63.87
South-Eastern	124.62	120	113.43	115.27	93.21	96.2	99.52	97.67	95.7	95.18	87.98	82.43	87.51	92.20
Asia	51.91	56.12	57.29	59.55	47.06	52.51	55.51	55.34	55.61	54.04	47.78	44.06	46.44	47.80
World	42.54	45.3	46.48	48.96	39.99	44.52	48.26	47.88	47.44	46.5	42.92	41.04	42.82	44.53
Europe	52.82	56.77	57.39	59.24	50.59	57.24	62.2	62.61	61.79	61.09	60.56	60.38	63.46	64.62

Sources: *UNCTAD (United Nations Conference on Trade and Development)*

growth but also defines the level of financial openness of an economy. Openness to trade will invite investment from external sources to finance innovation and research in industrial manufacturers. Increased investment inflows further enhance capital movements and initiate a reduction in the regulation of on these inflows. There are inter-temporal linkages between trade and financial openness. Here trade openness is defined as a ratio of total trade to GDP. The economic integration of an economy largely depends on the degree of trade openness within the regions and outside with other economies. Usually, it is asserted that smaller countries are more open in comparison to large economies as the former are more dependent on external trade for meeting their domestic demand for intermediate and final products.

From table 4.5, it is clear that South-eastern Asia is the most open region of Asia with a 92% trade openness index followed by Western Asia (64%), Eastern Asia (42%), and Southern Asia (34%). Singapore, Malaysia Thailand, Korea, and Turkey are the economies where trade openness is more than 50% as compared to other economies. Though after 2011 a period of global financial crises there is a fall in the value of trade openness. Comparing Asia with the world, trade openness for the former is 47.80% and later stood at 44.53%. Whereas the trade openness in Europe is much higher with 64.62%.

4.2.4. Current Account Balance

Current account balance is a systematic record of all monetary tractions of an economy with the rest of the world. A deficit in the current account balance means that the economy is a net borrower. Whereas a surplus in the current account implies the economy is a net lender to the world. Current account balances indicate the extent of capital inflows in an economy. It indicates that countries with surplus in current account are lending and those with deficit in current accounts are borrowing. Current account balance is important indicator of financial integration. Asian economies had experienced diverse nature of capital flow for the last 22 years. Net capital flows to economies of Asia changed a lot after the financial crises of 1997-98. There was a huge inflow of FDI and portfolio as a result of a higher rate of interest offered on international investment.

Table 4.6. Current Account Balance (Percent of GDP)

Country	1997-06	2007-16	2017	2018	2019
China	3.43	4.03	1.62	0.37	1.05
India	-0.22	-2.30	-1.84	-2.10	-1.97
Indonesia	2.55	-0.86	-1.60	-3.04	-2.86
Japan	2.92	2.60	4.16	3.53	3.34
Korea	2.25	3.71	4.63	4.44	3.24
Malaysia	9.47	8.47	2.79	2.10	3.13
Philippines	-0.17	2.95	-0.68	-2.64	-1.98
Singapore	18.87	18.98	16.37	17.87	16.55
Thailand	3.71	3.70	9.68	6.41	6.01
Turkey	-1.84	-5.15	-5.55	-3.53	-0.59
Asia	1.93	4.83	-1.24	-0.96	-0.64
European Union	0.44	1.60	3.44	3.22	2.90

Sources: *World Economic Outlook Database (IMF, 2019)*

Table no. 4.6 depicts the picture of the current account balance of Asian economies for the period of the last 22 years. Countries like Singapore, Thailand, Malaysia, Korea, Japan, and China are the capita exporter with a current account surplus of 17%, 6%, 3%, 3%, and 1.1% of GDP respectively among selected Asian economies. Singapore is leading all the economies in the selected panel. Whereas the current account balance is negative for countries like India, Indonesia, the Philippines, Thailand, and Turkey. These economies are net borrowers of capital import. Comparing Asia and Europe for the period of 1997-06 Asia was leading Europe with an average current surplus of almost 2% of GDP as compared the value for latter stood at 0.44%. Similarly, the value for the period 2007-16 was 5% and 2% of GDP respectively for Asia and Europe. As per the data, there is a fall in the current account surplus and both Asia and Europe are net capital borrowers with a 0.64% and 2.90% deficit of GDP. The reason for the fall in the current account surplus is global financial crises and more import of goods.

4.2.4. Exchange Rate

Exchange rate arrangements are a powerful-tools to control capital flows in an economy. These arrangements can target inflation and uniformity in the regulations of central banks. Stability in the monetary market is largely associated with trade and financial structure of the country. Coordinated exchange rate arrangements can influence the process of financial integration to a large extent.

Table 4.7. De facto exchange rate arrangements April 2018

Asian Economies	**Exchange rate arrangements**
China	Crawl like arrangements
India	Floating arrangements
Indonesia	Stabilized arrangements
Japan	Free Floating arrangements
Korea	Floating arrangements
Malaysia	Floating arrangements
Philippines	Floating arrangements
Singapore	Stabilized arrangements
Thailand	Floating arrangements
Turkey	Floating arrangements
European Economies	
Germany	Free Floating arrangements
U K	Free Floating arrangements
France	Free Floating arrangements
Italy	Free Floating arrangements
Russia	Free Floating arrangements
Spain	Free Floating arrangements

Sources: *IMF, 2018 Annual Report on Exchange Arrangements and Exchange Restrictions*

Thus, uniformity in the exchange rate is a precondition to establishing common currency and banking markets in the country. EU's success in reaping the benefits of financial and economic integration largely depends on common baking and financial

structures. Unlike the EU, Asia itself is very diversified for its exchange rate arrangements. There is the least motivation for political unity in Asia due to huge differences in political, economic, social and financial, and economic development. It is evident from Table 7. that EU is based on common and free-floating arrangements for the exchange rate. Whereas the exchange rate regimes are different among Asian economies. Whereas the exchange rate regimes are different among Asian economies. It is nearly impossible to adopt a uniform exchange rate policy in Asia due to larger political conflicts within the region. Moreover, due to large diversity in economic and political structure the concept of common currency system in Asia is not feasible. Asian can learn from EU to set up common exchange rate arrangements within the group of interested countries. Despite the efficient setup for financial integration, the EU faced financial crises and it could serve as a lesson for Asian economies.

4.3 An Empirical Analysis of Financial integration in Select Asia

4.3.1. Feldstein-Horioka Saving Investment Approach

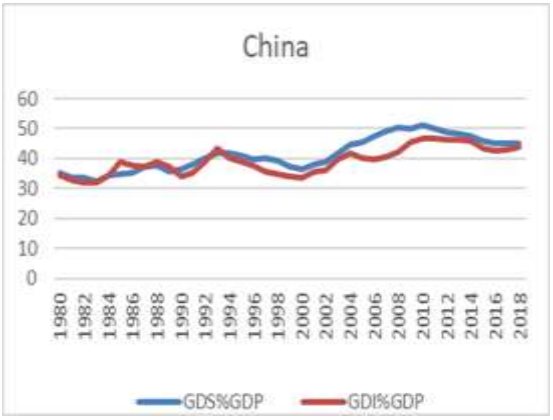
There are different approaches and methodologies to determine financial integration**.** Feldstein and Horioka (1980) introduced a saving-investment approach to determine capital mobility in selected OECD economies. High cointegration in saving and investment was interpreted as low capital mobility and low financial integration. Whereas in an open economy saving and investment does not depend on each other and there is enough financial integration. Graphical representation of trends on saving and investment as a ratio of GDP is given below. It is clear from the line graphs 1 that for countries like Thailand, Malaysia, Singapore, the rate of investment is more than the rate of saving. Whereas, countries like Indonesia, China, Japan, Korea, Rep., Philippines, India, Turkey are representing similar kinds of movement in both the series of saving and investment for each of them. The gap in saving and investment also depicts the current account position of the particular country. It is also viewed as if the domestic saving rate is lower than domestic investment, there is a current account deficit for that particular economy and *vice-versa.* Asia as a region always depicts current account surplus as compared to other regions of the world. Looking at the graphs it is clear that investment is always higher than saving for India. Though the rate of increase in saving is more as compare to investment. The rate of saving is more than the rate of investment of almost

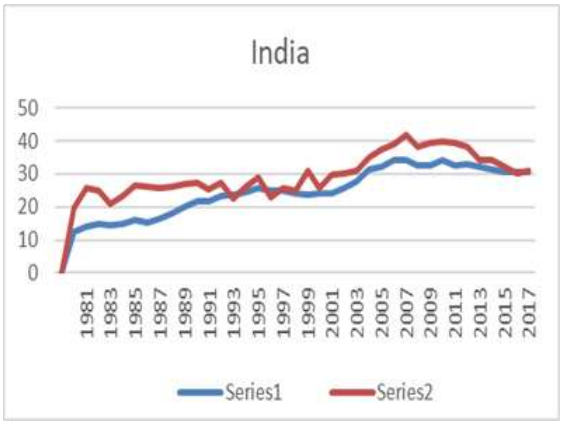
all countries in the selected panel except Turkey and the Philippines. It is also depicted that the panel as a whole ran a deficit in the current account in the pre-Asian crises period of 1997-98. During this period the saving was below investment for most of the countries in Asia. The situation took a turn after the Asian crises and investment fell behind the saving rate. The impact of the Asian crises of 1997-98 was larger on some economies as compared to other economies. Figure 1 depicts that both saving and investment have increased in post crises period. For countries like India and China, both saving and investment continue to rise in post crises period. Since 2000 the gap between both the series of saving and investment had widened and after 2014 the series are moving together for China and India.

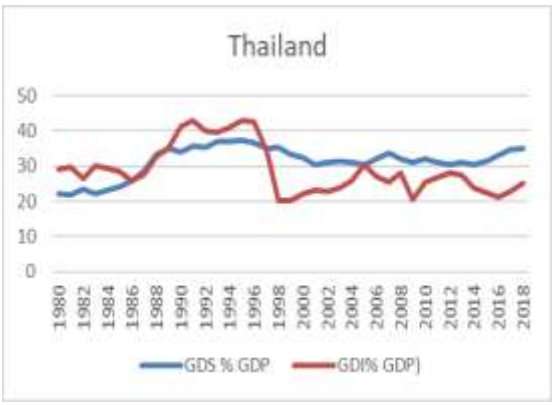
For the economy of Japan, the rate of saving and investment is moving almost in a similar direction. While economies like, Indonesia, Korea, Malaysia, the Philippines, and Thailand were the most affected Asian economies from these crises of 1997-98. There was a fall in the investment rate of all these economies increasing the current account surplus. The fall in investment was huge in Malaysia and Thailand. For Singapore, the rate of saving is much higher than the investment rate. The overall pattern of investment in these economies gives evidence of overinvestment in the pre crises period. Though the investment falls after crises and it will adjust to an equilibrium level in the future.

Table 4.8 depicts the saving-investment gap position of the selected Asian economies. This gap in both the series can also be termed as the current account position of these economies. Table 8 summarizes that in the case of India investment is always more than saving, though the saving rate has increased to reduce the current account deficit from -7.87 to -1.65 during 1980-2018. For Indonesia, the was a surplus in the current account during the 1980s. The rate of saving was more than investment initially and saving and investment was moving almost in a similar direction. But after the Asian crisis, there was a fall in the investment rate though saving remained high for some time. At present Indonesia is facing a deficit in its current account to overcome the effect of crises. Looking at China, there is always a situation of more investment and more savings and current account surplus in the economy. Japan also ran a surplus in the current account and there persist high coordination in the rate of saving and investment. Whereas there were ups and downs in the current account for Korea before the crises, but post crises period there is a fall in the investment and saving rate is a higher leading surplus on the current account.

Figure 4.1 Saving and Investment Rate (as % of GDP) in selected Asian Economies, 1980-2018







Malaysia and Thailand are the economies where the rate of investment was either equal or higher than in pre crises period, but in post crises era there is a huge fall in investment leading to a surplus on the current account. On the other hand, the Philippines and Turkey are running on deficit on the current account as the rate of saving is lesser than investment. Above all Singapore is one country which outer performed with high saving rate and high deficit on the current account. Thus, it's clear that the selected panel ran more surplus in the current account as a whole. It is clear from the above discussion that the saving-investment relationship can also interpret the current account and situation of a region and of country, which further determines the openness of an economy.

The present study used the F-H puzzle to analyze financial integration for selected Asian Economies in a panel format. Panel data is such data sets that comprise the properties and elements of both time series and cross-section data. It is considered to be a more efficient data form as it takes care of the issues related to time series and cross-section data such as; multicollinearity, individual heterogeneity, degree of freedom, and many more.

Table 4.8. Saving – Investment Gap of Selected Panel During 1980-2018

Years	India	Indonesia	China	Japan	Korea	Malaysia	Philippines	Singapore	Thailand	Turkey
1980	-7.87	8.29	-0.05	-0.97	-8.76	3.42	-2.49	-5.18	-6.88	9.13
1985	-5.88	2.23	-4.93	3.19	1.21	5.74	4.46	0.75	-3.99	17.77
1990	-6.18	-5.73	1.68	0.78	-0.46	2.04	-5.46	10.25	-7.32	-4.09
1995	-1.24	0.16	1.30	1.26	-0.67	-3.94	-7.92	17.00	-5.41	-6.57
2000	-1.65	9.57	2.08	1.43	1.97	19.21	-1.99	12.47	10.01	-3.10
2005	-5.17	2.45	4.45	1.51	2.35	21.94	-5.60	28.75	0.09	-3.40
2006	-4.91	3.30	6.78	1.41	0.70	21.79	-1.78	29.61	5.04	-4.85
2007	-7.57	3.19	8.08	1.89	1.11	19.87	-0.10	31.03	8.03	-4.85
2008	-5.64	3.14	7.37	0.45	-0.09	22.33	-2.46	19.78	3.79	-4.25
2009	-6.68	0.72	3.92	0.55	4.71	20.27	-1.13	23.60	10.32	-0.79
2010	-5.52	1.90	4.00	1.46	3.18	15.92	-1.81	26.31	6.67	-5.00
2011	-6.88	2.53	2.79	-0.54	1.49	15.57	-3.64	27.46	4.11	-8.14
2012	-5.49	-0.71	2.27	-1.55	2.79	10.76	-3.26	24.57	2.67	-4.91
2013	-1.96	-0.18	1.78	-2.32	4.98	8.54	-4.21	22.94	3.94	-5.81
2014	-2.84	-1.16	1.60	-2.47	5.25	9.27	-3.65	23.35	6.76	-3.89
2015	-1.55	-1.26	1.59	-0.42	6.76	7.65	-5.90	27.30	9.50	-2.61
2016	0.14	-1.21	1.49	0.99	6.92	6.75	-9.30	26.51	12.30	-2.89
2017	-0.95	-0.12	2.09	0.93	5.49	6.94	-9.85	25.79	12.06	-4.51
2018	-1.65	-0.51	1.99	0.87	5.08	7.11	-12.69	27.91	10.09	-1.18

Sources: *World Economic Outlook Database (IMF, 2019)*

In the case of panel data, it is a prerequisite to diagnose some time-series properties of panel data. A step-by-step analysis of the Feldstein Horioka puzzle in the panel approach is described below.

4.3.2 Unit Root Analysis

The first step related to panel data is to determine the unit root properties of data. It serves as a diagnostic test to determine the nature and properties of the data. Unit root determines the stationary and non-stationarity of the data. The output of the unit root test of stationarity for investment is described in table 4.9.

To determine cointegration between saving and investment for the selected panel of Asia countries, some time-series properties have to meet for the application of panel data. So, several panel unit root tests have been applied to meet these properties of unit root, such as; Levin, Lin and Chu (LLC)test (I'm, Pesaran and Shin (IPS) test, Fisher-type tests using Augmented Dickey-Fuller (ADF) and PP tests and Hadri tests.

Table 4.9. Unit root tests for investment Rate

Unit root tests at a level I (0)	**Individual effect**	**Individual effect and Trend**
	Stat (P-Value)	**Stat (P-Value)**
Levin, Lin and Chu	-1.58**(0.06)	-0.25**(0.40)
Im, Pesaran and Shin W-stat	-1.59**(0.06)	-0.90**(0.18)
ADF - Fisher Chi-square	27.26**(0.13)	23.59**(0.26)
PP - Fisher Chi-square	21.50**(0.36)	19.13**(0.51)
Hadri Z-stat	6.69**(0.00)	2.25**(0.01)

Sources: *Author's calculation*

Note: *** Indicates the rejection of the null hypothesis of non-stationarity at 0.05 level of significance.*

Though all the unit root test aims to check the stationarity of data and set the null hypothesis that data has a unit root, and data has no unit root as an alternative hypothesis. Whereas the Hadri test is an exception and assumes that data has no unit root as a null hypothesis. These tests determined whether the series of savings and investments are I (1) or I (0).

Table 4.9 shows the statistical values of unit root tests at level for investment rate with or without trend. Estimation of panel unit root test Levin, Lin and Chu interpreted that series of investment has a unit root at level thus data is not stationary at level. However, at first order investment has no unit root and data is stationary. Im, Pesaran, and Shin W-stat, ADF and PP (Fisher Chi-square tests) also confirmed that data is non-stationary at level and it has to be integrated at the first difference to make it stationary. Whereas the Hadri Z-test, the null hypothesis has been rejected and an alternative has been accepted. Taking the first difference in table 4.10, the null hypothesis has been accepted. Table 4.9 and 4.10 presents test statistics for investment rate to confirm time-series properties of panel data regarding unit root and integration process.

Table 4.10. Unit root tests for Investment Rate

Unit root tests at level I (1)	**Individual effect**	**Individual effect and Trend**
	Stat (P-Value)	**Stat (P-Value)**
Levin, Lin and Chu	-8.89**(0.00)	-7.35**(0.00)
Im, Pesaran and Shin W-stat	-9.93**(0.00)	-8.22**(0.00)
ADF - Fisher Chi-square	131.50**(0.00)	99.80**(0.00)
PP - Fisher Chi-square	205.42**(0.00)	174.99**(0.00)
Hadri Z-stat	1.32**(0.91)	1.03**(0.15)

Sources: *Author's calculation*

Note: *** Indicates the rejection of the null hypothesis of non-stationarity at 0.05 level of significance*

Similarly, the unit root was conducted for the saving series of the selected panel. In table 4.11 the saving rate without trend LLC, IPS, ADF, and PP test indicates that data is stationary at level as p-value is less the 0.05. However, the saving rate with trend indicates that data is not stationary at level and there is a need to integrate series. Whereas for the Hadri test also null hypothesis cannot be accepted.

Table 4.11. Unit root tests for Saving Rate

Unit root tests at level I (0)	Individual effect	Individual effect and Trend
	Stat (P-Value)	Stat (P-Value)
Levin, Lin and Chu t*	-2.53**(0.00)	-1.21**(0.11)
Im, Pesaran and Shin W-stat	-2.12**(0.01)	-0.63**(0.26)
ADF - Fisher Chi-square	33.28**(0.03)	25.12**(0.19)
PP - Fisher Chi-square	30.70**(0.05)	18.73**(0.53)
Hadri Z-stat	7.062**(0.00)	6.28**(0.00)

Sources: *Author's calculation*

Note: *** Indicates the rejection of the null hypothesis of non-stationarity at 0.05 level of significance*

Table 4.12 indicates series of saving rates has no unit root at data is stationary at I (1). As it is evident from the estimation that both the series of saving and investment are not stationary at level and both are integrated of I (1). So, to apply cointegration all the conditions of data being unit root and I (1) are met and a test of cointegration is applied to estimate the relationship between both series.

Table 4.12. Unit root tests for Saving Rate

Unit root tests at level I (1)	Individual effect	Individual effect and Trend
	Stat (P-Value)	Stat (P-Value)
Levin, Lin and Chu t*	-8.26**(0.00)	-7.43**(0.00)
Im, Pesaran and Shin W-stat	-9.71**(0.01)	-8.61**(0.00)
ADF - Fisher Chi-square	129.80**(0.00)	111.27**(0.00)
PP - Fisher Chi-square	169.80**(0.00)	489.75**(0.00)
Hadri Z-stat	70.53**(0.09)	3.24**(0.29)

Sources: Author's calculation

Note: ** *Indicates the rejection of the null hypothesis of non-stationarity at a 0.05 level of significance*

4.3.3. Panel Cointegration Tests

Given that the series or variables under consideration for the study are integrated of a higher order that is I (1), the next part is to determine the statistically significant

relationship using cointegration analysis. The basic motive to determine cointegration is to examine the problem of spurious regression arising from non-stationary data and on the other hand, cointegration determines the long-run relationship among variables related through some economic theory. Three-panel cointegration tests are used to determine cointegration between series of saving and investment such as;

- Pedroni test
- Kao Test
- The Johansen fishers' panel cointegration test

The estimated residuals for these tests are described below.

4.3.3.1. The Pedroni Test

Pedroni (1999, 2004) proposes seven tests of cointegration that allow heterogeneity in panel data. It assumes no cointegration as the null hypothesis and cointegration as an alternative hypothesis.

H_0 = No cointegration exists in saving and investment series

H_1 = Cointegration exists in saving and investment series

Table 4.13. Output table for Pedroni Panel Cointegration Test

Padroni Cointegration tests	**C**	**C & T**	**None**
Common AR coefficients (Within-dimension)	**Stat (P-value)**	**Stat (P-value)**	**Stat (P-value)**
Panel v-Statistic	1.68 (0.05)	0.66 (0.25)	2.15 (0.01)
Panel rho-Statistic	-1.75 (0.04)	-1.45 (0.07)	-2.42 (0.02)
Panel PP-Statistic	-1.70 (0.04)	-2.09 (0.02)	-2.71 (0.01)
Panel ADF-Statistic	-1.44 (0.07)	-1.82 (0.04)	-2.83 (0.01)
Individual AR coefficients. (Between-dimension)	**Stat (P-value)**	**Stat (P-value)**	**Stat (P-value)**
Group rho-Statistic	-1.45 (0.07)	-0.51 (0.31)	-1.64 (0.05)
Group PP-Statistic	-2.29 (0.01)	-2.06 (0.02)	-3.87 (0.00)
Group ADF-Statistic	-2.39 (0.01)	-2.24 (0.01)	-3.91 (0.00)

Sources: *Autor's calculation*

Note: *Estimated outputs are accepted at a 0.05 level of significance*

Pedroni panel cointegration purposes seven tests to capture within dimension statistics and between dimension statistics. The first three statistics are non-parametric tests and the fourth one is corresponding to ADF t-statistics. Whereas all group statistics are based on the grouping of the mean approach.

The results of Table 4.13 indicate that for all the statistics with constant, the p-value rejects the null hypothesis of no cointegration at 1%, 5%, and 10%. Similarly, for statistics with constant and trend, out of seven tests, five tests reject the null hypothesis and accept the alternative hypothesis of cointegration. However, all tests stat without any constant and trend reject the null hypothesis of no cointegration. So overall results of the Pedroni cointegration tests accept the alternative hypothesis and assert that the saving and investment are cointegrated for the selected panel of Asian countries. High cointegration between saving and investment can be interpreted as low financial integration for selected Asian countries. With these findings, the Feldstein-Horioka puzzle holds for selected Asia countries. Even the literature suggests that Asia as a whole is less financially integrated than other parts of the nation.

4.3.3.2 Kao test of cointegration

Kao test is the first test of cointegration that is applicable on homogenous panel. It is based on basically pooling the residuals of all cross-sections in the panel. Kao test assumes that all cointegrating vectors in every cross-section are identical. It is based on the following assumptions:

H_O = No cointegration

H_1 = Cointegration

Table 4. 14. The output of the Kao Cointegration Test

ADF	**T-Statistics (Prob).**
	-2.443016 (0.0073)
Residual Variance	7.567255
HAC Variance	7.260037

***Sources**: Autor's calculation*

***Note:** Estimated outputs are accepted at 0.05 level of significance*

The results of table Kao test in table 4.14 indicated that the p-value is less the 5 % so, saving and investment rates are cointegrated to each other. As the probability value rejects the null hypothesis of no cointegration and accepts the alternative hypothesis, it can be asserted that the selected panel of Asia countries are less financially integrated.

4.3.3.3 Johansen Fisher's test of cointegration

Fishers test (1988) is based on two approaches to determine cointegration for non-stationary series.

- Likelihood ratio trace statistics
- Maximum eigenvalue statistics

Table 4.15. Estimates of Johansen Fisher's test of cointegration

No. of CE(s)	(Trace Statistics)	Prob.	(Max-Eigen Statistics)	Prob.
None	35.07	0.0198	35.08	0.0197
At most 1	14.10	0.0256	14.10	0.0256

***Sources**: Autor's calculation*

***Note:** P-value is set at 0.05 level of significance*

Both these approaches are based on hypothesis as below:

In the case of Trace Statistics

H_0 = At most r cointegrating vectors

H_1 = r or more cointegrating vectors

In the case of Max Eigenvalue Statistics

H_0 = At most r cointegrating vectors

H_1 = r +1cointegrating vectors

The estimated output of Table 4.15 indicates that there is one cointegrating equation between saving and investment rate. The null hypothesis of no cointegration is rejected as the p-value is less the 5%.

Thus, all three-panel tests confirm the existence of cointegration between saving and investment rate resulting in less financial integration as proposed by the Feldstein-Horioka Puzzle. A high cointegration in saving and investment assert that the region is using its domestic saving to finance the needed investment and there is rather no or

limited capital inflows from outside the region. Hence the region is less financially integrated. Though there can be several factors to influence the process of integration in an economy that is not considered a part of the Feldstein-Horioka puzzle.

4.4 Vector Autoregression (VAR) Model

VAR is a multiple-time series modelling. Where all the time series are considered with their lagged values as regressors in the considered regression model. The basic idea of the model is to determine the appropriate lags of the endogenous variable in the model. There are many methods to determine the lag length for the VAR model.

Table 4.16. Estimates of VAR Model

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-2076.924	NA	3582.216	13.85949	13.85949	13.86937
1	-1330.783	1477.358	25.43521	8.911887	8.985963	8.941532
2	-1328.322	4.84071	25.69758	8.922145	9.045604	8.971553
3	-1322.699	10.98344	25.42132	8.911325*	9.084168*	8.980497*
4	1320.513	4.240128*	25.73117	8.923421	9.145648	9.012357
5	-1317.762	5.299788	25.94713	8.931749	9.203360	9.040448
6	-1315.706	3.934522	26.28665	8.944707	9.265701	9.073169
7	-1315.435	0.514797	26.94991	8.969567	9.339945	9.117793
8	-1313.275	4.074789	27.28465	8.981835	9.401597	9.149825

* Indicates lag order selected by the criterion

LR: Sequential modified LR test statistics;

FPE: Final prediction error;

AIC: Akaike information criterion;

SC: Schwarz information criterion;

HQ: Hannan-Quinn information criterion;

As it is clear from table 4.16 that there are several statistical criteria like AIC, LR, FPE, SC, and HQ to determine the appropriate lag for the model. The most common and frequently used criteria are AIC (Akaike information criterion) and SC (Schwarz information criterion). Out of all the criteria mentioned above in the table, lag 3 is considered to be appropriate based on AIC criteria. Also, the other two more criteria gave

order 3 as the minimum lag order. It is suggested to select the criteria with lowest value of lag, Once the lag is selected, we can proceed with the VECM (vector error correction model).

4.5 Vector Error Correction Model (VECM)

VECM is a multiple-time series modelling used to analyse the non-stationary series that are cointegrated to each other. It is based on ECM (error correction mechanism) to determine the value of the speed of adjustment for equilibrium in the model. All three-panel models Pedroni, Kao, and Johansen cointegration demonstrate that saving and investment are cointegrated to each other in long run. The shorn run equilibrium and dynamics of saving investment series can be expressed as VECM. The cointegration equation for the F-H puzzle is depicted below.

Table 4.17. Estimates of Cointegrating Equation

Cointegrating Eq:	**CointEq1**
GDI (-1)	1.000
GDS (-1)	-0.292**
C	-23.486

Sources: *Author's calculation*

Note: ***Denotes that statical values are accepted at a 0.05 level of significance*

From table 4.17 it is evident that each percentage-point increase in gross domestic saving (GDS) will cause a -0.292 percentage-point decrease in the investment rate. So increased saving rate implies decreased investment.

From table 4.18 it is clear that the value of r^2, AIC, and SC criteria are appropriate to depict the reasonability of the model. The value of the error correction term is -0.150, which depicts the speed of adjustment for disequilibrium in the model. A coefficient value of -0.150 indicates that any disequilibrium in saving and investment rate is corrected at a speed of 15.09% per year. All the estimated outputs from panel cointegration analysis indicate that their saving and investment are cointegrated in long run.

Table 4.18. Vector Error correction Estimates

Error Correction:	D(GDI)	D(GDS)
CointEq1	-0.1509 (0.032)	0.014 (0.021)
D (GDI (-1))	0.077 (0.053)	0.020 (0.041)
D (GDI (-2))	0.005 (0.053)	-0.004 (0.041)
D (GDS (-1))	0.119 (0.068)	-0.030 ((0.053)
D (GDS (-2))	0.213 (0.067)	-0.081(0.052)
C	-0.074 (0.147)	0.141 (0.113)
R-squared	**0.714**	**0.312**
Log-likelihood	-	-1540.167
Akaike information criterion-	-	9.171569
Schwarz criterion	-	9.385540

***Sources**: Author's calculation*

***Note:** Statical values are accepted at a 0.05 level of significance*

4.6 FMOLS and DOLS Estimates

Though panel cointegration tests only show the cointegration among variables in long run but do not provide estimates of such long-run relationships. Fully modified OLS (FMOLS) and dynamic OLS (DOLS) are two methods purposed by Kao and Chiang (2000), to estimate the values of coefficient for such a long relationship, when variables are co-integrated in long run. These estimators eliminate the problem of endogeneity and serial correlation characteristics in a long-run relationship. These two estimators (FMOLS and DOLS) are employed to determine the validity of the F-H Puzzle for selected Asian countries.

Table. 4.19. Results of FMOLS and DOLS for selected Panel of Countries

Time Period	FMOLS	DOLS
1980-1998	0.937**(0.00)	0.954**(0.00)
1998-2018	0.853**(0.00)	0.851**(0.00)

***Sources:** Author's Calculation.*

***Note:** **Denotes that statical values are accepted at 0.05 level of significance*

Table 4.19 presents the results of FMOLS and DOLS and the existence of the F-H puzzle for selected Asian countries. The entire data period (1980–2018) has been divided into two parts, 1980–1997 and 1998–2018, to determine the impact of the Asian crises on the existence of the F-H puzzle and capital mobility. The results show a rise in capital mobility for the selected countries. Before the Asian crises, these economies were less integrated in terms of capital mobility as the saving retention coefficient was high and close to 1, i.e., 0.937 and 0.954, estimated by FMOLS and DOLS. After the Asian crisis, which is considered to be the advent of financial integration in Asia, the estimated value of the saving retention coefficient came down to 0.853 and 0.851 respectively. This implies that capital mobility has increased after the crises in Asia.

Overall to sum up the estimates of panel cointegration assert that there is less financial integration in Asia as saving and investment are cointegrated to each other. The estimates of panel FMOLS and DOLS indicate that there is a fall in the value of the saving retention coefficient post-Asian crisis. Though the value of saving retention coefficient is still high indicating less financial integration in Asia. Estimates indicates that there is an increase in financial integration in the post-crisis period. Hence financial crisis in Asia accelerated the process of financial integration. Plummer et al., (2005) found similar results with respect to Asian countries.

The other important pattern observed is that there is a fall in the investment rates in all the selected Asian economies in the post-crisis period, indicating the effect of the Asian financial crisis. The saving as a percentage of GDP also increased to offset the effect crisis. Such an effect of crisis proves the interdependence of the financial system in the region and motivates to foster policy-led financial integration. It can be stated that the region is facing the issue of over-saving and under-investment. The graphical representation of data in Figure 1 indicates that saving-investment relationships are heterogenous for selected Asian economies. Countries like China, Japan, Indonesia, Korea, Turkey, and India have less gap in the saving and investments rates as a share of GDP. Whereas countries namely Singapore, Malaysia, Philippines, and Thailand have more gap in both the variables as these economies possess high saving rates as compared to investment rates. Such outlook may be attributed to high per capita income in these countries. Thus, the country-specific financial and economic structure can impact the

saving-investment relationship and capital mobility in Asia. All these results state that there is less financial integration in Asia.

4.7. Summary and Conclusion

Asian countries have performed well in the past decades with around a 5 % growth rate on average. Asia consists of the fastest growing economies in the world with a differential level of economic growth. But as far as GDP per capita is concerned it still lacks behind Europe. The above trends and outlook of FDI inflow are in favour of selected Asian economies. FDI inflows in Asia is increasing over the period and amounted to 512 US billion dollar in 2018. Asia shares in the world FDI inflow stood at 42.62 US billion dollars as against Europe which amounted to 21.31 US billion dollars in 2018. China is the largest recipient of FDI among selected economies, whereas there is a tremendous increase in the investment flows for India and Singapore. Eastern and Southeast regions of Asia are favourable destinations for foreign direct investment with 289 US billion dollars and 148 US billion-dollar respectively over the years. On the other hand, the overall FDI outflow has declined for most of the selected Asian economies. However, the region remained a significant source of FDI outflows. Asia's share in global FDI outflow has increased 41 % in 2017 to from 54% in 2018. China, India, Indonesia, Singapore, and Kore are the largest source of investment outflows from Asia to the world. The major finding of FDI pattern reveals that there is huge heterogeneity in the country-specific contribution to investment inflows and outflows. Also, China is emerging as the supreme power in international investments, which can pause a threat to other economies of Asia.

There is mixed evidence on the trends for trade openness for selected economies and regions of Asia. Countries like Singapore, Thailand, Malaysia, Korea, and Japan are more integrated than China, India, Indonesia Turkey, and the Philippines. The trade openness in Asia has declined due to unrest in the global market. Comparatively, the EU is more open to the world market than Asia for trade. While a systematic record of the current account balance explains that capital flows to Asian economies increased post-financial crises of 1997-98. Economies like Singapore, Malaysia, Korea, Japan, and Thailand are net capital exporters. Whereas, counties like India Indonesia, the

Philippines, and Turkey are net importers of capital. At present Asia is facing a negative current account balance. Also, the large diversity in the levels of economic and financial development in Asian economies, the exchange rate regimes are very diverse. Unlike the EU, Asian economies may not unite for banking and political commitment, which makes it more difficult to achieve financial integration.

For empirical estimation of financial integration in Asia, Feldstein-Horioka Puzzle was analysed for the panel of selected economies. Evidence of the state F-H puzzle states that there is high cointegration between saving and investment for the selected panel of economies. So, the conclusion about F-H can be drawn that a high correlation between saving and investment in an economy implies less capital mobility in that economy. It implies that in the case of perfect financial integration, saving and investment are not related to each other, and the value of the slope coefficient is close to zero. It is also observed that there is a change in the value of the saving-investment coefficient β during the post crises period. The value of β has decreased from 0.95 in the pre-crises to 0.85 in the post-crisis period indicating an increase in financial integration. Though the value of the saving-retention coefficient is still high, implies there is less financial integration in the region. There is a shift from deficit to surplus in the current account for selected Asian economies. The situation of current account surplus in the region indicates an excess of saving on investment as a result of financial crises in the region. This might be an outcome of increased savings in Asia in post crises period seeking investment abroad. It also implies the savings in the region have increased to mitigate the effects of the financial crisis and the region is seeking investments from abroad.

The estimated outcome is supported by the previous studies. It has been stated that financial integration in Asia was largely motivated by the financial crises of 1997-98 (Borensztein & Loungani, 2011). Overall, the above discussion state that Asia is rising beyond all barriers to increasing capital movements among economies. Though all the political, institutional, and regional differences may slow the progress of integration. Whereas literature also supports the view that Asia is less finically integrated as compared to the world (Eichengreen and Park, 2003). Asia has limited intraregional financial links as it has a strong home biasness for private financial savings to remain within the domestic economy (Ando et al., 2015). Poor capital mobility or financial

integration can lead to a setback for the economy as financial integration is a source of trade integration (Shin & Yang, 2006), trade specialization (Bos et al., 2011), FDI, and technology inward (Islamaj, 2014), and much more. There is a need to build a policy framework for keeping an eye on capital movement in the region.

*****

CHAPTER 5

TRADE INTEGRATION IN ASIA

International trade plays an important role in shaping the growth of Asian economies. Asia is the largest continent with diversity in the social, economic, the political structure of its regions, and economic integration among them seems very demanding. However, Asia's growth is faster compared to other regions of the world (Wignaraja, 2014). Lifting trade and other barriers, Asia's intra-regional trade grows gradually (Kimura & Obashi, 2017). As per a recent report by Asian Development Bank 2018, intra-regional trade in the region remained high, with 54 % of export and 57% of imports in the region. The region accounted for 40% of export and 37% of imports globally.

Unlike Europe, trade integration in Asia is market-driven and not based on institutional laws and common markets (Lambert, 2005). Though, since the Asian financial crises of 1997-1998, policy-driven integration has been visible in new regional and foreign trade agreements. Whereas, the effect of these agreements differs from country to country due to the large structural diversity in Asia. The chapter focuses on determining the extent and depth of trade integration in selected economies of Asia as a panel and bilateral trade is analyzed to determine the country-specific importance in the total panel. Various trade analysis techniques determine the nature of trade within selected countries of panel and trade of panel with the world. The data for trade analysis is collected based on HS 6-digit level for 2001 to 2018.

5.1. An overview

Asia is the largest continent globally spread over 22% of the world's total land. Table 5.1 highlights the diversity in the economic structure of the selected countries. The region consists of 58of the world's population having China and India being the largest contributor in the region. Asia accounts for 36% of global output and shares around two-fifth of the global GDP in terms of purchasing power parity. As far as country-specific contribution in GDP is concerned, countries namely China, India, and Japan contribute approximately 70% of the total GDP on PPP of the region on aggregate and 46%, 9%, and 15% respectively, on an individual basis in 2018.

Table 5.1 Key Economic Indicators of Selected Asian Economies (2018)

Country	Total land area	Total population	Gross Domestic Product (Current prices)	Gross Domestic Product Per Capita (Current prices)	International Merchandise Trade		
					Exports	Imports	Total trade
Name	**km^2**	**MM**	**US$ MM**	**US$ PPP**	**US$ MM**	**US$ MM**	**US$ MM**
China	9,388,210	1382.71	13,894,817	15,602	2,487045	2,135,905	4,622,950
India	2,973,190	1309.35	2,713,165	6,650	325,562	510,664	836,226
Indonesia	1,811,570	258.71	1,042,240	11,639	180,215	188,711	368,926
Japan	364,560	126.90	4,954,806	41,335	738,403	748,735	1,487,138
Korea	97,489	51.25	1,720,578	42,136	604807	5,35,183	1,139,990
Malaysia	328,550	31.66	358,581	28,186	247,365	217,470	464,835
Philippines	298,170	104.20	346,841	8,717	67,487	114,738	182,226
Singapore	709	5.61	373,217	100,051	412,629	370,634	783,263
Thailand	510,890	68.98	506,514	18,513	252,106	249,660	501,766
Turkey	769,630	79.82	771,350	28,139	167,967	223,046	391,013
ASIA	**29,045,288**	**4368.91**	**31,377,820**	**13,986**	**7,946,172**	**7,482,849**	**15,429,021**
WORLD	**127,343,220**	**7529.72**	**86,357,073**	**17,024**	**19,476,196**	**19,790,430**	**39,266,625**

Source: *Calculations based on data from World Bank, World Economic Outlook, United Nations Statistics Division, Key Indicators for Asia and Pacific, 2018*

All other countries in the Panel contributes less than 5% individually. There is enormous diversity even in the trade share of selected countries. Asia accounts for 40% of world export and 37% of the world's import in 2018. Whereas, the export share of Japan, India, Kore, and Singapore stood at 9%, 4% 8%, and 5% respectively. Other countries e.g., Indonesia, Malaysia, Philippines, Thailand, Turkey shared 2%, 3%, 1%, 3%, and 2% of Asia's total export. On the other hand, China accounted for the largest recipient of the world's export as 28% of the region's total import. Followed by full Japan, Korea, and India as 10% 8%, and 6% respectively. Whereas the import share for other economies of the panel received less than 5% of Asia's imports individually. Thus, it is clear from table 5.1 that Asia is large in terms of its contribution in size, GDP, population, and trade as well. It is also clear that selected countries in the panel are different in terms of their size and their contribution to the region and the world. So, it is required to study their individual and bilateral contribution in Asia.

5.2 Bilateral Trade

Asia is the fastest-growing region of the world and with growing share in world trade. Table 5.2 depicts the share of bilateral trade balance between selected Asian countries and the world. China's trade surplus with the world is increasing steadily which depicts an excess of exports over imports. China's trade surplus was $102 billion in 2005 which tripled in 2008 to $ 299 billion. The trade surplus further rose to $ 593 billion in 2015. Since then, there is a fall in the trade surplus but remained high in the absolute term (Deb et al., 2019). On the other hand, India's trade balance is always negative. India's import has always been greater than its export. India's import was $ 50 billion in 2001 which rose to $ 507 in 2018 whereas, the export was $ 43 billion that rose to $ 323 for the respective years. The widening gap in export and imports and underdeveloped production base led to a trade deficit for India (Padhi, 2020). After China, Japan is the second biggest and largest contributor to Asia's growth. Japan's trade balance is positive till 2010 and remained negative from 2011 to 2015. The trade deficit for Japan was $121 billion in 2015 and the reason is attributed to high imports during this period due to the depreciation of the Japanese yen in 2013 (Sasaki & Yoshida, 2018). Whereas, Indonesia is a trade surplus economy but the country fell for trade deficit in 2012.

Table 5.2: Selected Asian Economies Trade Balance with the world for 2001-2018

(US $ billion)

Years	China	India	Japan	Indonesia	Korea	Malaysia	Philippines	Singapore	Thailand	Turkey
2001	22.55	-6.79	54.05	25.35	9.33	14.16	-2.79	5.75	2.96	-10.07
2002	30.43	-7.36	79.12	25.87	10.34	7.15	-5.88	8.74	3.46	-15.51
2003	25.47	-13.07	88.54	28.51	14.99	21.35	-6.34	23.70	4.50	-22.09
2004	32.10	-23.08	110.51	25.06	29.38	21.48	-6.42	25.05	1.85	-34.42
2005	102.00	-40.51	79.07	27.96	23.18	27.33	-8.23	29.62	-8.05	-43.30
2006	177.47	-57.01	67.66	39.73	16.08	29.54	-6.67	33.46	2.00	-54.04
2007	263.94	-72.75	92.08	39.63	14.64	29.86	-7.53	36.83	9.81	-62.79
2008	298.13	-133.85	18.88	7.78	-13.27	43.04	-11.34	18.06	-2.74	-69.94
2009	196.09	-89.64	28.73	19.68	40.45	33.62	-7.44	23.86	18.73	-38.79
2010	181.76	-129.62	75.71	22.12	41.17	34.20	-6.97	40.17	12.92	-71.66
2011	154.99	-160.92	-32.20	26.06	30.80	39.42	-15.65	43.65	0.34	-105.93
2012	230.58	-199.41	-87.41	-1.66	28.28	31.25	-13.35	29.78	-18.03	-84.08
2013	259.02	-129.43	-118.07	-4.08	44.09	22.50	-9.01	31.88	-22.18	-99.86
2014	383.06	-141.82	-121.97	-2.14	47.53	25.31	-5.91	37.48	-0.36	-84.57
2015	593.90	-126.36	-0.69	7.67	90.35	24.04	-11.51	49.87	8.85	-63.36
2016	509.72	-96.38	38.01	8.84	89.41	21.04	-29.60	46.81	17.87	-56.09
2017	419.58	-148.21	26.24	11.88	95.30	23.00	-33.18	45.56	10.87	-76.81
2018	359.24	-184.52	-10.17	-8.50	70.00	29.83	-47.55	41.14	-1.11	-55.12

Source: *Calculations based on Trade Statistics for international business development (Trade Map)*

In 2013 the trade deficit for the country was $ 4 billion. The deficit in the trade balance was attributed depreciation of currency and slow external demand in Indonesia (Rudi et al., 2018). South Korea is a huge economy in terms of its contribution to the world GDP and export to the world rose from $ 150 billion to $ 605 billion between 2001 to 2018. Similarly, the import of the country increased from $141billion to $ 535 billion for the respective time. As data depicts, the trade balance of Korea is positive for most of the time and also increasing gradually except for the year 2018 where the country faces a trade deficit of $ 13 billion. The growing trade related agreements globally has led the region to beneficial terms of trade (Irshad & Xin, (2017). For Malaysia, the trade surplus increased from $ 14 billion to $ 390 billion in 2011. Since then, there is a fall in the trade surplus due to a fall in exports, commodity prices and FDI inflows (Okafor & Teo, 2019). Singapore is considered one of the most developed free-market economies of the world in Asia. The trade surplus for the country went up from $ 5 billion in 2001 to $ 43 billion in 2011. Following a downward trend, the surplus stood at $ 41 billion in 2018. Singapore is small country but it is highly open to trade that makes it more sensitive to global shocks of 2011 which led to downfall in the country. Thailand is an export-oriented economy of Asia. The country had mostly a favorable term of trade in pre crises 2008. The country's export falls short after the 2008-09 global financial crises but recovered again. Thailand exports experienced negative growth in 2012 resulting in a negative balance of trade worth $ 18 billion and recovered then after.

A negative growth of trade has led to fall in the export-oriented performance of the country and led to negative term of trade (Nidhiprabha, 2017). The economies of Philippines and Turkey are facing a negative term of trade due to excess of import over exports. Philippines' imports increased from 34 to 115 billion dollars, whereas the export increased from 32 to 67 billion dollars from 2001 to 2018. The excess of growing import over export is leading the economy to fall under the trap deficit (Ocampo et al., 2021). On the other hand, the import of Turkey rose from $ 41billion to $ 223 billion and export increased from 31 to 167 billion dollars from 2001 to 2018 leading to a negative term of trade. The negative term of trade has become a persistence phenomenon of the country (Binatli & Sohrabji, 2009). Overall, there is diversity in the trade share of a selected Asian country to the world export and their trade balance accordingly.

Table 5.3 Bilateral trade among selected Asian Economies Pair (2001-2018)

(US $ Billions)

Countries	CHN	IND	IDN	JPN	KOR	MYS	PHL	SGP	THA	TUR
CHN	0	867.64	709.32	4393.78	3379.57	1147.29	531.39	954.22	860.96	238.56
IND	835.57	0	214.10	202.41	213.51	171.99	22.56	250.32	103.99	62.77
IDN	583.46	189.31	0	593.844	271.43	239.58	63.89	483.01	188.77	24.40
JPN	4384.22	204.68	633.17	0	530.24	610.63	328.25	504.18	819.66	48.73
KOR	2917.64	235.22	311.97	1398.24	0	252.73	163.07	362.56	170.55	79.77
MYS	761.64	164.97	227.18	621.97	241.69	0	88.94	785.13	322.73	19.12
PHL	223.44	18.55	55.62	296.45	116.74	75.73	0	147.98	93.27	2.02
SGP	1153.09	281.26	741.72	633.66	478.98	1265.37	195.60	0	360.05	15.12
THA	769.52	107.23	206.97	875.64	173.26	325.72	112.51	264.83	0	18.17
TUR	302.98	74.95	25.57	62.69	86.97	25.33	3.62	11.57	21.68	0

Sources: *Calculations based on United Nations Commodity Trade Database (UNCOMTRADE)*

Table 5.3 explains the bilateral trade among selected Asian economies for 2001-2018. China is most preferable trading partner for all the members of the selected panel. China traded largely with Japan ($ 4394 billion), Korea ($ 3379 billion), and Malaysia ($ 1147 billion). Whereas, China's trade with India, Indonesia, Philippines, Singapore, Thailand, and Turkey remains below $ 1000 billion for the entire period (2001-2018). India traded largest with China ($ 835 billion) followed by Singapore ($250 billion), Indonesia ($ 214 billion), Korea ($ 213 billion), Japan ($ 202 billion), and Malaysia ($ 171 billion). Trade of India was less than $ 100 billion with Philippines, Thailand and Turkey. In case of Indonesia, China, Japan, and Singapore are the largest trading partner with $ 583 billion, $ 593 billion, and $ 483 billion of trade and traded least with Turkey $ 24 billion.

As far as Japan is concerned, China is the biggest trading partner with $ 4384 billion followed by Thailand ($ 819 billion), Indonesia ($ 633 billion), Malaysia ($ 610 billion), and stood least with Turkey ($ 48 billion). Korea, on the other hand, traded most with China ($ 2917) and Japan ($ 1398) but with other panel members traded less than $ 400 billion during the selected period. Even countries like Malaysia and the Philippines are trading most with China, Japan Indonesia and Singapore. Singapore is a most strong economy and is trading largely with Malaysia followed by China, Indonesia, and Japan. Countries like Thailand and Turkey are the smallest in terms of their size and GDP share, though when it comes to trading China, Japan, Malaysia, and Singapore are the largest trading partner of Thailand. For Turkey, among all the panel members China, India, Japan, and Kore are the main trading partner. Overall, China and Japan are two economies from the selected panel to trade with almost every panel member on a large basis (Marukawa, 2021; Bhowmik, 2021). Though several reasons can impact the trade among countries.

Table 5.4 elucidate the volume of bilateral exports among selected economies in the Panel. China is the largest exporter among all panel members to all the selected Asian economies. Japan, Korea, and India are the three most preferred counties for China's export and total export amounted to $ 1989, $ 1178, and $ 627 US billion respectively for 2001 to 2018. On the other hand, for Japan export to only China amounted to US $ 1930 billion and export to all other panel members amounted US $ 1695 billion collectively

Table 5.4 Bilateral export among selected Asian Economies Pair (2001-2018)

(US $ Billions)

Countries	CHN	IND	IDN	JPN	KOR	MYS	PHL	SGP	THA	TUR
CHN	0.00	626.43	385.66	1988.42	1178.49	456.48	256.60	564.30	374.84	199.27
IND	180.29	0.00	55.81	69.68	54.38	56.73	16.43	140.44	40.78	47.30
IDN	243.84	142.72	0.00	375.59	155.08	119.75	53.85	204.88	73.68	16.31
JPN	1930.43	121.20	214.22	0.00	36.82	250.34	176.96	372.22	483.81	40.76
KOR	1760.62	157.48	134.27	478.52	0.00	108.43	111.48	233.48	100.00	71.10
MYS	355.25	112.19	103.93	319.59	113.08	0.00	49.03	462.73	168.02	15.92
PHL	91.13	4.71	9.64	156.76	36.68	30.16	0.00	64.78	31.53	0.75
SGP	592.54	165.84	496.13	264.31	216.83	674.86	103.00	0.00	212.79	6.83
THA	321.36	65.42	115.09	329.40	60.08	155.02	72.32	153.90	0.00	14.76
TUR	31.30	8.61	3.26	5.17	6.06	3.39	1.50	6.92	2.46	0.00

Source: *Calculations based on data from UNCTAD Database (UNCOMTRADE)*

Hence China is Japan's largest trading partner. For the Republic of Korea Republic, China, and Japan are the most preferable destinations with 1760 billion US $and 478 billion US $ of exports for 2001 to 2018. On the other hand, for Malaysia, China 355 billion US $, Japan 319 billion US $, and Singapore US $ 462 billion are the largest export market among the selected Asian economies. Philippines exported to China and Japan worth $ 91 US $ and 156 billion US $and export to all other panel members accounted for US 176 billion collectively for 2001to 2018. Unlike most of the selected Asian economies, the export pattern of Singapore is more balanced and oriented towards all the panel members. Though Singapore exported more to China (US $ 592 billion), Indonesia (US $ 496 billion), and Malaysia (US $ 672 billion) as compared to other countries. Thailand's export orientation towards is more towards China (US $ 321 billion), Japan (US $ 329), Malaysia (US $ 155 billion), Singapore (US $ 153 billion), and Indonesia (US $ 115 billion). For the economy of Japan, the preferred export destinations are China (US $ 243 billion), Japan (US $ 375 billion), and Singapore (US $ 204 billion) and all other countries in the panel fall below the range US $ 200 billion individually. Despite India being one of the largest economies in Asia it is less integrated with the selected countries than all other economies in the panel. India exported worth US $ 181 billion and US $ 141 billion to China and Singapore for the period 2001 to 2018. Whereas export to all other countries falls below the range of US $ 100 billion on an individual basis. Turkey's value of bilateral exports is least among all the selected economies in the panel and it is mostly oriented toward China with US $ 31 billion only from 2001 to 2018. Overall, from selected Asian economies, China and Japan are the most favored nations for exports from almost all Asian counties. Exports to and from these two countries are much larger as compare to other selected economies that reveal the large diversity in Asia's trading pattern.

Similar trends are observed in bilateral imports among selected Asian economies. Table 5.5 elucidate that China, Japan, and Kore are the three major economies involved in bilateral trade. Most of China’s imports are from Japan (US $ 2505 billion) and the Korea Republic (US $ 2201 billion) from 2001 to 2018. Though, Malaysia and Thailand also consist significant portion of China’s import. On the other hand, India's top import source is China (US $ 656 billion) followed by Korea (US $ 159 billion), Indonesia (US $ 158

Table 5.5 Bilateral Import among selected Asian Economies Pair (2001-2018)

(US $ Billions)

Countries	CHN	IND	IDN	JPN	KOR	MYS	PHL	SGP	THA	TUR
CHN	0.00	241.21	323.66	2405.36	2201.08	690.82	274.80	389.92	486.13	39.29
IND	655.29	0.00	158.29	132.73	159.14	115.27	6.13	109.89	63.21	15.47
IDN	339.63	46.59	0.00	218.26	116.36	119.83	10.04	278.13	115.10	8.10
JPN	2453.80	83.49	418.95	0.00	493.43	360.30	151.29	131.96	335.86	7.97
KOR	1157.03	77.75	177.71	919.73	0.00	144.31	51.59	129.08	70.56	8.68
MYS	406.40	52.78	123.25	302.38	128.62	0.00	39.92	322.41	154.71	3.20
PHL	132.32	13.85	45.99	139.69	80.07	45.58	0.00	83.20	61.75	1.28
SGP	560.55	115.43	245.60	369.36	262.15	590.52	92.61	0.00	147.26	8.30
THA	448.17	41.81	91.88	546.24	113.18	170.70	40.19	110.93	0.00	3.41
TUR	271.68	66.35	22.31	57.53	80.92	21.94	2.13	4.66	19.22	0.00

Source: *Calculations based on United Nations Commodity Trade Database (UNCOMTRADE)*

Table 5.6 Bilateral Trade Balance among selected Asian Economies Pair (2001-2018)

(US $ Billions)

Countries	CHN	IND	IDN	JPN	KOR	MYS	PHL	SGP	THA	TUR
CHN	0.00	385.22	62.00	-416.94	-1022.59	-234.34	-18.20	174.38	-111.28	159.97
IND	-475.01	0.00	-102.48	-63.04	-104.76	-58.55	10.30	30.55	-22.42	31.83
IDN	-95.80	96.13	0.00	157.33	38.71	-0.08	43.81	-73.25	-41.41	8.22
JPN	-523.37	37.71	-204.73	0.00	-456.61	-109.96	25.68	240.26	147.95	32.79
KOR	603.59	79.73	-43.44	-441.20	0.00	-35.88	59.88	104.40	29.44	62.43
MYS	-51.15	59.41	-19.33	17.21	-15.54	0.00	9.11	140.33	13.31	12.73
PHL	-41.19	-9.15	-36.35	17.07	-43.39	-15.41	0.00	-18.41	-30.22	-0.53
SGP	31.99	50.42	250.53	-105.05	-45.32	84.35	10.39	0.00	65.53	-1.47
THA	-126.81	23.60	23.21	-216.83	-53.10	-15.69	32.13	42.97	0.00	11.35
TUR	-240.37	-57.74	-19.05	-52.35	-74.86	-18.54	-0.63	2.26	-16.76	0.00

Source: *Calculations based on United Nations Commodity Trade Database (UNCOMTRADE)*

billion), Japan (US $ 132 billion), Malaysia (US $ 115 billion), Singapore (US $ 109 billion) and Thailand (US $ 63 billion). India imported the least from Turkey and the Philippines during the selected period. Similarly, Indonesia imports mainly from China (US $ 339 billion), Singapore (US $ 278 billion), and Japan (US $ 218 billion). It is less integrated with Korea, Malaysia, and Thailand and imported least from India, the Philippines, and Turkey. On the other hand, Japan's major trading partner in terms of imports is China (US $ 2454 billion) followed by Korea (US $ 493 billion), Indonesia (US $ 418 billion), Malaysia (US $ 360 billion), Thailand (US $ 335 billion), Singapore (US $ 131 billion) and Philippines (US $ 151 billion). Whereas Japan is less integrated with India and Turkey for its imports. The economy of Korea largely depends on China (US $ 1157 billion) and Japan (US $ 919 billion) for its imports as compared to other countries in the panel. Imports in Malaysia largely come from China, Japan, and Singapore. Even countries like the Philippines, Thailand, and Turkey import largely from China, Japan, and Korea as compared to other Asian economies in the panel. Singapore's major import partners are China (US $ 560 billion), Indonesia (US $ 245 billion), Korea (US $ 262 billion), and Malaysia (US $ 590 billion). India and Thailand also constitute an important source of Singapore's import. Overall, it can be concluded that economy of China, Japan, and Korea are ruling over other countries in the panel for their trade requirements. These three countries are also the largest trading partner for each other among selected Asian economies. Only China has emerged as the most significant trading partner for most of the Asian economies. The export pattern of these economies has been changing from manufactured goods to technology-intensive products. The trade pattern of these economies will affect not only regional but global trade as well.

Table 5.6 exhibits the bilateral trade balance for selected Asian economies from 2001 to 2018. The country-specific bilateral trade asserts that China, Korea, and Japan are the largest trading partners within the panel and their volume of the trade balance is high within themselves and other Asian countries. China recorded a trade deficit with Japan (US$ 416 billion), Korea (US$ 1022 billion), the Philippines (US$ 234 billion), and Thailand (US$ 111 billion). Whereas, China has positive trade balance with India, Indonesia, Singapore, and Turkey over the years. On the other

hand, the trade balance for India is not favorable with most of the selected Asian economies except the Philippines, Singapore, and Turkey. India has a huge trade deficit with China (US$ 475 billion) due to high trade dependency. The economy of Indonesia shares favorable terms of trade with most of the Asian economies except China (US$ 95 billion), Singapore (US$ 73 billion), and Thailand (US$ 41billion). Japan's imports exceed imports from its major trading partners resulting negative trade balance with China (US$ 523 billion), Indonesia (US$ 204 billion), Korea (US$ 456 billion), and Malaysia (US$ 109 billion). Korea has emerged as a major country in the development of North-East Asia. Korea's trade balance with Japan (US$ 441 billion), is high as compare to Malaysia (US$ 35 billion), and Indonesia (US$ 43 billion). The country shares positive terms of trade with China and all other Asian economies.

Out of all the Asian economies Malaysia is considered to be one of the most open economies to trade. Malaysia does not possess a high trade deficit with a selected panel of economies except with China (US$ 51 billion), Indonesia (US$ 19 billion), and Korea (US$ 15 billion) as these economies are both main customers and suppliers to the country. On the other hand, the Philippines is considered as one of the consistently growing economies in Asia, however, the country remains in deficit with most of its trading partners due to a fall in the global commodity prices and lowering demand by trade partners. Despite its small size Singapore has benefitted from its large trade network and free trade assess to ASEAN economies and duty-free imports from Indonesia, Malaysia, the Philippines, and Thailand. Singapore's trade balance was negative only with Japan (US$ 105 billion), and Korea (US$ 45 billion) as export exceeds imports from these countries. Thailand is a newly industrialized and export-oriented economy. Thailand has a negative term of trade China (US$ 126 billion), Japan (US$ 216 billion), Malaysia (US$ 15 billion), and Korea (US$ 53 billion) as these are among the largest trading partners of the country. Turkey is a larger free-market and industrialized economy. The country has a trade deficit with all Asian economies except Singapore. The reason is that most of the exports of the country go to non-Asian economies and China, India and Korea constitute the main supplier to Turkey.

Overall large diversity within and between Asian economies, has led to the formation of various trading and regional blocks to reap the benefit of rising bilateral trade in Asia. Despite all efforts, few countries can take advantage of globalization in trade. China, Japan, and Korea are the most engaged economies in the Asian trade market. Whereas, India is still facing the problem of a large trade deficit. Countries as a part of regional or trading block are performing better in the trade as compared to other economies not a part of any trading block. Thus, it is necessary to understand the importance of regional and trading blocks to improve bilateral as well as regional trade in Asia.

5.3 Intra-regional trade.

For the last few years, the global trading pattern is going through cyclical fluctuations. The global financial crises of 2008 and 2009 have led to a global slow down whereas Asia performed better than the world. The share of Asia in world trade has increased over the period and interregional trade has played a huge role in booming up international trade share. As postulated in table 5.7 below, intra-regional trade in a panel of selected Asian economies is low as compared to the panel's total trade. Panel's trade with the world has increased from $ 2401 billion in 2001 to $ 10777 billion in 2018. There is a continuous increase in the total trade of the panel except for few years 2009, 2015, and 2016, where the total trade fall below its previous years share and the percentage growth of the total trade remained negative -19%, -12%, and -5% for the respective years. Whereas, despite an increase of intraregional trade of the panel from $ 820 billion to $ 3659 billion, the share of the panel in total trade of the panel has not improved.

The intraregional trade share of the panel increased from 34 percent in 2001 to 36 percent in 2011 to 34 percent in 2018. It is also evident that the global crises of 2008 and 2009 had a significant impact on the total and regional trade of the panel. The results indicates that Asian integration is increasing globally and regionally (Pangestu & Westland, 2018). Though, Asian economies are less integrated within themselves than with the world. The major obstacle in the regional integration is large diversity in political, cultural, and economic differences. Lack of basic infrastructure,

poor governance, and corruption are weaknesses in the path of regional integration in Asia (Ramirez & Pooittiwong, 2016; Olah et al., 2017).

Table 5.7. Trends in Selected Asian Economies Trade

	Panel Trade with World		Panel Intra-regional Trade		Intra-regional trade Share
Year	**Volume**	**Growth (%)**	**Volume**	**Growth (%)**	**Share of Panel (%)**
2001	2401.96	-	819.68	-	34.13
2002	2602.82	8.36	909.49	10.96	34.94
2003	3140.86	20.67	1135.73	24.88	36.16
2004	3987.97	26.97	1447.64	27.46	36.30
2005	4659.19	16.83	1680.14	16.06	36.06
2006	5473.16	17.47	1940.59	15.50	35.46
2007	6365.74	16.31	2251.63	16.03	35.37
2008	7548.18	18.58	2626.63	16.65	34.80
2009	6095.74	-19.24	2161.27	-17.72	35.46
2010	8009.85	31.40	2894.81	33.94	36.14
2011	9693.07	21.01	3436.37	18.71	35.45
2012	9987.89	3.04	3461.82	0.74	34.66
2013	10201.52	2.14	3426.14	-1.03	33.58
2014	10254.85	0.52	3405.22	-0.61	33.21
2015	9027.55	-11.97	3061.43	-10.10	33.91
2016	8599.49	-4.74	2955.78	-3.45	34.37
2017	9730.48	13.15	3336.96	12.90	34.29
2018	10777.59	10.76	3659.51	9.67	33.95

Sources: *Author's calculation*

Note: *Term Panel refers to selected Asian Economies; values in $ bn*

Table 5.8 further exhibits that even the share of intra-regional trade of selected Asian economies has not improved over the years, but there is an increase in the intraregional trade in absolute terms for all countries since 2001. India has recorded the highest average annual growth rate (18 percent), followed by Turkey (17 percent), China (13 percent) Indonesia (12 present), Thailand (10 percent), Korea (10 percent),

Philippines (9 percent), Singapore (9 percent), Whereas, Malaysia (8 percent) and Japan (7 percent) recorded the least growth among selected Asian economies. As evident from the table, there is a diversity in country-specific intra-regional trade ranging from 32 percent for China to 2 percent for Turkey in 2018. China Japan and India are the largest countries in the panel in terms of their size and GDP share, though the share of these countries in intra-regional trade differs largely as 32 percent, 16 percent, and 6 percent respectively.

The table also elucidates that for some countries in the panel intra-regional share is falling while for some are increasing. The intra-regional trade share of China (20 percent to 32 percent), Indonesia (5 percent to 6 percent), India (2 percent to 6 percent), and Turkey (0.58 percent to 1.39 percent) has increased over the years. Whereas, intra-regional trade share falls for Japan (26 percent to 15 percent) and Singapore (13 percent to 10 percent). Trade share of countries like Korea, Malaysia, Philippines, Thailand and Indonesia has changes either 1 percent or less then that over the time span for 2001 to 2018.This clearly indicated that China and Japan are largest contributor in intra-regional trade in selected Asian economies. The share of India's regional trade has grown over the years.

The study by Jain (2019) also reports similar findings. Moreover, most of the East-Asian economies are centre of trading pattern of Asia (Baldwin, 2009). The reason for China and Japan being the most favourable destinations for regional trade is that where former is a major export station for most of the east Asian economies and later serve to the demand of ASEAN (Indonesia, Malaysia, Philippines, Singapore, and Thailand). Also, both these economies constitute a large share to world import from Asia (Athukorala, 2009).

Moreover, figures indicate the need for policy initiatives to foster regional integration in Asia. Intra-regional trade is essence of economic integration in Asia. Though the intra-regional trade in Asia is mostly market driven rather than institutional. As per the estimated outputs there are mixed evidence on the intra-regional trade for selected Asian economies.

Table No. 5.8. Trends in Intra-regional trade of Selected Asian Economies (US $ Billions)

Year	Respective Country's Share (%) in Total Panel Intra-Regional Trade									
	JPN	**Share %**	**CHN**	**Share %**	**SGP**	**Share %**	**KOR**	**Share %**	**MYS**	**Share %**
2001	214.21	26.13	165.81	20.23	107.84	13.16	107.36	13.10	79.61	9.71
2002	223.68	24.59	202.38	22.25	112.46	12.37	121.41	13.35	87.25	9.59
2003	270.02	23.77	278.73	24.54	148.26	13.05	150.92	13.29	95.17	8.38
2004	330.75	22.85	371.99	25.7	187.49	12.95	196.55	13.58	117.32	8.10
2005	360.90	21.48	439.9	26.18	215.89	12.85	230.79	13.74	130.55	7.77
2006	395.59	20.38	522.63	26.93	259.93	13.39	264.14	13.61	148.98	7.68
2007	439.71	19.53	631.11	28.03	289.81	12.87	306.17	13.6	167.85	7.45
2008	504.68	19.21	724.70	27.59	332.03	12.64	355.01	13.52	189.18	7.2
2009	408.57	18.90	625.49	28.94	254.97	11.80	291.03	13.47	152.68	7.06
2010	543.35	18.77	836.50	28.9	335.90	11.60	383.84	13.26	200.85	6.94
2011	628.68	18.29	992.39	28.88	387.64	11.28	457.15	13.3	230.88	6.72
2012	619.79	17.90	1007.89	29.11	390.56	11.28	447.11	12.92	240.73	6.95
2013	563.21	16.44	1033.88	30.18	386.2	11.27	450.39	13.15	245.94	7.18
2014	547.04	16.06	1058.71	31.09	378.4	11.11	450.72	13.24	245.93	7.22
2015	474.21	15.49	1001.86	32.73	319.86	10.45	400.98	13.10	212.15	6.93
2016	468.51	15.85	956.25	32.35	303.53	10.27	375.85	12.72	200.11	6.77
2017	515.50	15.45	1060.33	31.78	345.59	10.36	431.14	12.92	231.08	6.92
2018	555.40	15.18	1172.22	32.03	368.56	10.07	471.24	12.88	257.14	7.03
Average Annual Growth (%)	**6.57**		**13.1**		**8.57**		**9.98**		**7.86**	

Cont…….

Years	Respective Country's Share (%) in Total Panel Intra-Regional Trade									
	THA	**Share %**	**IDN**	**Share %**	**PHL**	**Share %**	**IND**	**Share %**	**TUR**	**Share %**
2001	53.84	6.57	43.72	5.33	27.57	3.36	14.96	1.82	4.77	0.58
2002	59.17	6.51	45.56	5.01	32.59	3.58	18.9	2.08	6.09	0.67
2003	72.33	6.37	50.44	4.44	35.95	3.17	24.7	2.17	9.2	0.81
2004	89.97	6.21	64.2	4.43	40.32	2.79	35.07	2.42	13.98	0.97
2005	108.56	6.46	82.3	4.9	42.47	2.53	50.05	2.98	18.71	1.11
2006	120.66	6.22	92.04	4.74	47.3	2.44	66.07	3.4	23.25	1.2
2007	140.9	6.26	108.91	4.84	50.67	2.25	86.02	3.82	30.47	1.35
2008	162.62	6.19	160.77	6.12	51.55	1.96	111.12	4.23	34.97	1.33
2009	130.73	6.05	126.83	5.87	40.47	1.87	103.36	4.78	27.15	1.26
2010	180.41	6.23	181.63	6.27	58.82	2.03	135.84	4.69	37.66	1.3
2011	216.38	6.3	238	6.93	58.56	1.7	176.76	5.14	49.93	1.45
2012	231.78	6.7	238.77	6.9	61.96	1.79	176.42	5.1	46.82	1.35
2013	224.39	6.55	229.3	6.69	64.55	1.88	176.36	5.15	51.93	1.52
2014	213.31	6.26	212.21	6.23	70.42	2.07	175.47	5.15	53.01	1.56
2015	195.52	6.39	172.68	5.64	69.34	2.26	164.24	5.36	50.6	1.65
2016	196.06	6.63	164.92	5.58	81.72	2.76	156.81	5.3	52.03	1.76
2017	218.15	6.54	198.14	5.94	91.72	2.75	191.46	5.74	53.84	1.61
2018	239.1	6.53	227.31	6.21	103.87	2.84	213.66	5.84	51.01	1.39
Average Annual Growth (%)	**10.04**		**11.88**		**8.85**		**18.22**		**16.87**	

Source: *Author's calculation*

Table 5.9 elucidate the uneven pattern of share of intra-regional trade in total trade for selected economies. There are some economies in the panel contribution more than 60 percent of their total trade while on the other hand some economies in the panel are contributing less than 15 percent. Indonesia Malaysia and Philippines are such economies to carry more than fifty percent of their total trade within the region and intra-regional share for these economies has risen from 50 percent to 60 percent, 50 percent to 55 percent and 41 percent to 56 percent respectively. On the other hand, share of intra-regional trade for Singapore, Thailand and Korea falls in the range of 40 percent to 50 percent and the share is increasing over the period of time. The intra-regional trade share of Japan and India is also increasing but it is just 38 percent and 26 percent share of the total trade for both the economies respectively. Turkey is the one panel member to carry out least of trade (13 percent) within the region.

It is most surprising to see the intra-regional share of China is just 25 percent of its total trade in 2018. There is fall in the trade share of China towards region reason being United States and Europe are the largest trading partner of China. Countries namely Indonesia Malaysia and Philippines, Singapore, and Thailand are part of group called ASEAN and the reason for their large share in the regional trade is confined to their interdependence in the trading pattern. These economies are largely dependence within the region for their trade requirements (Kawai & Naknoi, 2015). Whereas large economies of Asia such as China and Japan are integrating in the global market (Caporale et al., 2015; Podoba et al., 2021). The Overall, there are disparities in the share of Intra-regional trade in total trade for selected Asian economies.

Table 5.10 shows the trend of the intra-regional trade intensity for selected Asian economies and the other four regional groups (ASEAN, NAFTA, EU-27, SAARC). It is observed that all the four groups and selected Asian economies are trading more within themselves as the value of the index is more than unity. Among all the regional groups ASEAN is most biased toward trading within the region. On the other hand, trends for NAFTA, EU-27 have not changed much and their intra- trade is less biased as compared to other regions.

Table 5.9. Country's Share of Intra-regional trade in Total Trade (%)

Years	IDN	MYS	SGP	THA	PHL	KOR	CHN	JPN	IND	TUR
2001	50.09	49.18	45.35	42.43	41.09	36.82	32.53	28.46	15.82	6.55
2002	51.51	48.62	46.54	44.57	42.71	38.59	32.60	29.65	17.56	7.01
2003	53.88	50.46	50.04	46.32	45.61	40.50	32.75	31.56	18.74	7.88
2004	54.35	50.61	50.37	47.18	47.01	41.09	32.21	32.39	20.05	8.69
2005	57.40	51.01	50.08	47.55	46.80	42.29	30.93	32.49	20.75	9.83
2006	56.86	51.05	50.63	46.55	46.60	41.60	29.68	32.27	22.06	10.32
2007	57.75	52.11	51.16	47.38	46.72	42.03	29.01	32.89	23.59	10.98
2008	60.38	53.38	49.99	45.43	47.08	41.41	28.27	32.68	22.33	10.46
2009	59.44	54.37	49.19	45.66	47.99	42.38	28.33	36.07	23.32	11.168
2010	61.89	55.27	50.41	47.76	53.48	43.05	28.12	37.11	23.81	12.57
2011	62.47	55.69	49.13	47.31	52.41	42.34	27.25	37.45	23.13	13.28
2012	62.55	56.82	48.73	48.57	52.80	41.88	26.06	36.79	22.66	12.03
2013	62.11	56.65	47.79	46.82	52.73	41.88	24.85	36.37	21.97	12.86
2014	59.91	55.51	47.69	46.83	54.36	41.02	24.61	36.41	22.58	13.25
2015	58.92	56.36	49.71	47.36	53.83	41.61	25.34	37.92	25.06	14.41
2016	58.86	55.92	49.52	47.90	57.45	41.69	25.94	37.42	25.41	15.25
2017	60.82	56.02	49.33	47.30	53.76	40.97	25.81	37.62	25.87	13.77
2018	61.61	55.33	47.06	47.75	56.90	41.32	25.32	37.36	25.72	13.04

Source: *Author's calculation*

The region SAARC is showing a declining trend for regional biasness and increasing share of the world trade. In the case of selected Asian economies, the index is showing a decreasing pattern. It indicates world trade share is growing faster than intra-regional trade for selected Asian economies.

Table.5.10. Intra-Regional Trade Intensity Index

Years	Selected Asian Economies	ASEAN	NAFTA	EU-27	SAARC
2001	1.76	3.81	2.17	1.70	4.16
2002	1.75	3.81.	2.20	1.70	4.13
2003	1.75	4.26	2.35	1.69	4.50
2004	1.68	4.22	2.44	1.69	3.60
2005	1.62	4.22	2.40	1.74	2.87
2006	1.57	4.20	2.41	1.74	2.61
2007	1.55	4.30	2.52	1.72	2.64
2008	1.49	4.16	2.61	1.73	2.17
2009	1.45	3.95	2.61	1.76	1.80
2010	1.37	3.74	2.63	1.86	1.91
2011	1.33	3.67	2.70	1.89	1.65
2012	1.28	3.62	2.67	1.97	1.63
2013	1.24	3.62	2.76	1.97	1.65
2014	1.22	3.57	2.71	1.96	2.30
2015	1.25	3.47	2.49	1.96	2.11
2016	1.29	3.34	2.48	1.93	2.22
2017	1.26	3.18	2.54	1.92	2.09
2018	1.24	3.14	2.57	1.91	2.12

Sources: *Author's calculation*

Though, these trends can be the result of political, geographical, and institutional factors. Also, the increasing global integration of China, Japan and Korea to large extent may be the sufficient reason of falling trade intensity index. Overall, the results postulate the integration level of trade within and outside the region for selected Asian economies. It can be asserted that selected Asian economies are integrated well within and outside the region and increasing global integration can be attributed to largest countries among the selected Asian economies.

5.4 Trade intensity Index (TII)

Trade intensity is the ratio of a trading partner's share to a country/region's total trade and the share of world trade with the same trading partner. Table 5.11 explains the trade intensity of China with their respective Panel members. Overall, the trade index of China with most of the selected Asian economies is more than one except India and Turkey, indicating higher trade flow between China and other Asian countries.

Table 5.11. Trade Intensity Index of China with Respective Partners

Years	THA	SGP	PHL	MYS	KOR	JPN	IDN	IND	TUR
2001	1.40	1.36	1.07	1.28	3.07	2.85	1.77	0.86	0.30
2002	1.36	1.44	1.29	1.57	2.99	2.84	1.72	0.91	0.33
2003	1.46	1.52	1.77	1.66	3.09	2.80	1.37	0.95	0.40
2004	1.44	1.54	1.99	1.66	3.08	2.64	1.34	1.13	0.34
2005	1.43	1.50	2.25	1.61	3.06	2.45	1.35	1.14	0.38
2006	1.47	1.49	2.51	1.57	2.92	2.35	1.27	1.13	0.49
2007	1.52	1.44	2.77	1.64	2.87	2.30	1.33	1.22	0.54
2008	1.50	1.34	2.47	1.65	2.83	2.24	1.34	1.22	0.47
2009	1.54	1.38	2.07	1.77	2.69	2.33	1.34	1.17	0.47
2010	1.47	1.19	1.87	1.75	2.45	2.13	1.38	1.10	0.52
2011	1.49	1.09	1.96	1.79	2.36	2.08	1.49	1.03	0.50
2012	1.43	1.08	2.00	1.75	2.27	1.87	1.50	0.84	0.47
2013	1.38	1.12	1.96	1.80	2.30	1.79	1.51	0.81	0.50
2014	1.41	1.13	2.06	1.69	2.33	1.79	1.43	0.84	0.50
2015	1.52	1.28	2.19	1.78	2.41	1.82	1.42	0.97	0.52
2016	1.58	1.29	2.22	1.75	2.37	1.86	1.51	1.02	0.50
2017	1.51	1.26	2.09	1.67	2.26	1.94	1.59	1.02	0.49
2018	1.50	0.90	2.59	1.99	2.33	1.87	1.78	0.98	0.47

Sources: *Author's calculation*

Japan and the Korean Republic are the two major traders of China followed by Indonesia, Thailand, Singapore, the Philippines, and Malaysia. Whereas, TII of China was less than

one with India and Turkey, indicating lesser trade orientation. Despite Korea and Japan being the highest trading partners of China, there is a fall in the TII from 3.07 in 2001 to 2.33 in 2018and 2.85 in 2013 to 1.85 in 2018 respectively. The value of TII for Singapore has also fallen from 1.38 in 2001 to 0.90 in 2018. Though the trade integration of China has increased with Thailand, the Philippines, and Malaysia. China's trade with India remained fluctuating throughout the period as TII was below one for 2001 to 2003 and above one for 2004 to 2011 and stood at 0.98 as of 2018. There is not much significant trade in China and Tukey, though the TII value has risen from 0.30 in 2001 to 0.47 in 2018.

Table 5.12. Trade Intensity Index of India with Respective Partners.

Years	CHN	JPN	IDN	KOR	MYS	PHL	SGP	THA	TUR
2001	0.71	0.58	2.17	0.72	1.58	0.61	1.26	1.06	0.50
2002	0.81	0.63	2.78	0.72	1.40	0.95	1.36	1.01	0.57
2003	0.84	0.54	3.59	0.95	1.64	0.64	1.39	0.94	0.51
2004	0.93	0.50	3.25	0.96	1.48	0.67	1.68	0.89	0.54
2005	1.06	0.48	2.67	0.94	1.22	0.66	1.73	0.86	0.51
2006	1.08	0.50	2.74	0.92	1.66	0.64	1.78	0.91	0.48
2007	1.20	0.52	2.73	0.83	1.80	0.53	1.80	0.99	0.76
2008	1.06	0.48	2.22	0.92	1.92	0.58	1.68	0.85	0.68
2009	1.05	0.49	2.80	0.98	1.71	0.70	1.41	0.88	0.66
2010	1.05	0.48	2.59	0.81	1.40	0.58	1.31	0.86	0.55
2011	0.95	0.48	2.55	0.75	1.48	0.62	1.44	0.82	0.57
2012	0.84	0.53	2.49	0.79	1.60	0.65	1.26	0.89	0.58
2013	0.77	0.54	2.62	0.74	1.61	0.72	1.23	0.95	0.63
2014	0.81	0.51	2.69	0.81	1.71	0.69	1.03	0.97	0.84
2015	0.91	0.57	2.89	0.88	1.95	0.72	1.20	1.08	0.77
2016	0.98	0.57	2.85	0.91	1.87	0.72	1.20	1.06	0.86
2017	0.99	0.53	2.95	0.94	1.69	0.65	1.29	1.05	0.74
2018	0.92	0.55	2.68	0.88	1.73	0.61	1.51	1.14	0.90

Sources: *Author's calculation*

Table 5.12. explains the trade intensity index of India with selected Asian economies. The index elucidates that India shares an intense relationship with Indonesia, Malaysia, Singapore, and Thailand. Whereas the TII with all other selected economies remained less than one. India's trade intensity with China remained less than one for most of the time except 2005 to 2010. On the other hand, the trade orientation towards Japan has not improved and remained less than one. India's trade relations with Korea, the Philippines, and Turkey have

Table 5.13. Trade Intensity Index of Japan with Respective Partners

Years	CHN	IND	IDN	KOR	MYS	PHL	SGP	THA	TUR
2001	2.88	0.72	4.02	1.03	2.43	3.59	1.39	2.90	0.20
2002	2.83	0.64	3.99	0.91	2.14	3.39	1.37	3.08	0.20
2003	2.77	0.62	4.49	0.91	2.25	3.62	1.22	3.18	0.24
2004	2.64	0.59	4.26	0.90	2.09	3.77	1.18	3.27	0.25
2005	2.50	0.52	3.95	0.90	2.00	3.48	1.10	3.14	0.24
2006	2.37	0.56	3.85	0.91	1.94	3.30	1.03	3.03	0.24
2007	2.27	0.59	3.94	0.86	2.10	3.50	1.06	3.08	0.24
2008	2.19	0.55	3.55	0.78	2.34	3.52	1.09	2.94	0.22
2009	2.32	0.50	3.22	0.76	2.32	3.83	1.14	2.94	0.18
2010	2.11	0.54	3.13	0.72	2.31	3.59	1.04	3.04	0.21
2011	2.06	0.51	2.95	0.84	2.58	3.92	0.99	2.95	0.21
2012	1.88	0.49	3.02	0.88	2.61	3.96	0.88	3.09	0.17
2013	1.82	0.48	3.03	0.86	2.53	3.77	0.86	2.95	0.18
2014	1.80	0.49	2.87	0.82	2.46	3.89	0.91	2.93	0.18
2015	1.81	0.53	2.84	0.80	2.37	3.79	1.15	3.11	0.21
2016	1.89	0.54	2.72	0.80	2.12	3.51	1.15	2.99	0.26
2017	1.88	0.50	2.66	0.76	2.02	3.18	1.16	2.94	0.25
2018	1.81	0.53	2.68	0.80	1.87	3.14	1.12	3.03	0.27

***Sources**: Author's calculation*

improved as there is an increase in the value of TII from 0.72 in 2001 to 0.88 in 2018, 0.61 in 2001 to 0.65 in 2017, and 0.50 in 2001 to 0.90 in 2018. It is evident from the table 5.12 that India is less oriented than most of the selected Asian economies. Whereas the country shares good trade integration with Indonesia. Most surprisingly India's trade orientation with China and Japan is not admirable even though these two economies are the most developed countries in the region. The reasons could be political or institutional for lesser trade integration of India with selected Asian economies.

Table 5.13 elucidates the IIT of Japan with selected Asian economies. Overall TII of Japan with selected Asian economies is more than one except for India and Turkey from 2001 t0 2018. The Philippines is the most prominent trading partner with an index value of 3.14 in 2018. It is evident from the table that the value of TII of Japan for most of the selected Asian economies is falling throughout the period. Though the trade orientation towards Thailand has improved. Despite turkey being the least trading economy in the panel, the value of TII of Japan with it has increased from o.20 in 2001 to 0.27 in 2018. Still Indonesia, China and Philippines are more integrated with Japan as compared to other Asian economies in the selected panel.

Table 5.14. explains trade intensity index of Indonesia with selected Asian economies. The index elucidates that Indonesia share intense relationship with most of the selected Asian economies as TII is more than one. Whereas the TII with Turkey remained less than one. Indonesia shares high trade orientation towards Singapore but the value of TII has reduced over the period of time. Whereas, trade relationship with Malaysia, Thailand and Philippines has improved over the years. On the other hand, Indonesia's trade with Japan and Korea had fallen for over the selected time span. Most surprisingly Indonesia's TII towards China and India is less than other Asian economies and it has not improved over the years. Indonesia shares least trading relations with Turkey from the selected Asian economies. Overall, Indonesia is highly integrated with selected Asian economies.

Table 5.14. Trade Intensity Index of Indonesia with Respective Partners

Years	CHN	IND	JPN	KOR	MYS	PHL	SGP	THA	TUR
2001	1.13	2.32	3.35	2.92	2.45	1.93	5.10	2.30	0.40
2002	1.26	2.66	3.21	2.69	2.52	1.72	5.76	2.68	0.44
2003	1.29	2.96	3.38	2.55	3.01	2.32	5.23	3.21	0.43
2004	1.18	2.93	3.38	2.22	3.17	2.68	5.08	3.90	0.40
2005	1.29	2.38	3.28	2.67	3.19	2.80	5.87	3.65	0.49
2006	1.27	2.40	3.33	2.49	3.74	2.49	5.53	3.28	0.53
2007	1.24	2.66	3.34	2.19	5.28	3.02	5.31	3.65	0.95
2008	1.27	2.46	3.37	2.27	5.26	3.11	6.33	3.39	0.76
2009	1.35	2.55	2.94	2.20	5.21	4.09	5.83	3.21	0.61
2010	1.26	2.40	3.03	2.36	5.14	3.66	5.28	3.30	0.48
2011	1.29	2.21	3.03	2.60	4.94	3.90	5.38	3.41	0.51
2012	1.28	2.09	3.04	2.45	5.37	3.71	5.21	3.66	0.42
2013	1.29	2.17	3.06	2.19	5.65	3.84	5.35	3.58	0.72
2014	1.19	2.22	2.85	2.18	4.95	3.77	5.63	3.64	0.67
2015	1.27	2.50	2.83	1.89	4.86	4.05	5.40	3.73	0.45
2016	1.48	2.42	2.67	1.74	4.60	4.93	4.84	3.95	0.45
2017	1.57	2.68	2.64	1.69	4.58	4.80	4.63	3.73	0.48
2018	1.67	2.40	2.68	1.74	4.13	4.54	4.68	3.78	0.49

***Sources**: Author's calculation*

Table 5.15 illustrates the trade intensity index of Korea with selected Asian economies in the panel. Overall Korea's trade index with Asian countries has remained more than one indicating high trade orientation of Korea with selected Asian countries. Though the value of the Index has a declining trend for most of the Asian countries in the panel. Korea had more intense trade relations with Indonesia in 2001 but had declined over the years as TII reduces from 3.79 (2001) to 1.87 (2018). Similarly, Indonesia's trade orientation towards China, Japan, Singapore, and Malaysia has also decreased over the years. Korea's trade intensity index remained more than one from 2001 to 2010 but remained less than one since 2010. Similarly, TII towards Thailand also went below one

after 2008 and continued since then. Korea does not share a good trade relationship with Turkey as the TII is always below during the study period. Although Korea is highly integrated with most of the selected Asian economies trade intensity has declined over the years and that might be due to global and regional financial crises.

Table 5.15. Trade Intensity Index of Korea with Respective Partners

Years	CHN	IND	JPN	IDN	MYS	PHL	SGP	THA	TUR
2001	2.63	1.13	2.44	3.79	1.78	2.77	1.27	1.15	0.48
2002	2.74	1.01	2.47	3.68	1.68	2.61	1.31	1.26	0.47
2003	2.73	1.26	2.55	3.74	1.75	2.55	1.20	1.15	0.51
2004	2.66	1.21	2.57	3.29	1.69	2.48	1.05	1.14	0.59
2005	2.72	1.07	2.50	3.54	1.59	2.34	1.13	1.02	0.59
2006	2.56	1.17	2.44	3.23	1.63	2.30	1.14	1.11	0.55
2007	2.55	1.18	2.37	3.02	1.68	2.42	1.27	1.06	0.60
2008	2.47	1.18	2.18	2.72	1.67	2.79	1.40	1.06	0.47
2009	2.32	1.00	2.29	2.60	1.54	3.11	1.51	0.99	0.46
2010	2.16	1.02	2.15	2.66	1.47	2.89	1.18	0.96	0.49
2011	2.04	0.91	2.17	2.73	1.36	3.30	1.28	1.02	0.53
2012	1.92	0.84	2.12	2.68	1.43	3.39	1.40	0.98	0.46
2013	1.93	0.77	2.15	2.36	1.59	3.58	1.42	0.97	0.55
2014	1.88	0.80	1.97	2.30	1.45	3.55	1.52	0.98	0.63
2015	1.98	0.86	1.97	1.97	1.50	3.10	1.23	0.94	0.69
2016	2.05	0.91	2.05	1.90	1.50	2.64	1.12	0.96	0.64
2017	1.98	0.92	2.03	1.87	1.38	2.84	0.99	0.93	0.60
2018	2.00	0.89	1.97	1.87	1.42	2.95	0.87	0.97	0.63

Sources: *Author's calculation*

Table 5.16 explains the trade intensity index of Malaysia with selected Asian economies. It is evident from the Country shares good trade relations with all countries in the panel except Korea and Turkey. The value of TII is more than one for most of the selected nations except two of them. Although Trade intensity has a declining trend for most of the Asian economies except Thailand and Turkey. Malaysia shares more intense trade

relations with Singapore as the value of TII is 6.48 (2018), followed by Thailand, Indonesia, the Philippines, and Japan. Malaysia's trade towards China has improved as the index value increased from 1.15 (2001) to1.42 (2018). Whereas, for India, the value of the index has declined from 1.91 2001) to 1.58 (2018). Korea and Turkey are the least preferred areas for trade as TII is less than unity. There is a wide disparity in the trade intensity of Malaysia towards selected Asian economies.

Table 5.16. Trade Intensity Index of Malaysia with Respective Partners

Years	CHN	IND	JPN	IDN	KOR	PHL	SGP	THA	TUR
2001	1.15	1.91	2.64	3.35	0.06	3.58	7.81	3.80	0.43
2002	1.34	1.63	2.38	3.58	0.08	3.74	7.67	3.91	0.23
2003	1.34	1.96	2.40	4.36	0.09	4.65	7.16	4.35	0.25
2004	1.30	1.93	2.32	4.91	0.10	4.43	6.56	4.94	0.22
2005	1.29	1.73	2.21	4.39	0.11	4.70	6.73	4.89	0.26
2006	1.30	1.79	2.14	4.63	0.12	4.15	6.48	5.02	0.26
2007	1.36	1.89	2.27	5.23	0.13	4.30	6.47	4.79	0.31
2008	1.39	1.92	2.40	4.61	0.13	4.16	6.32	4.64	0.26
2009	1.46	1.42	2.43	4.78	0.13	3.29	6.10	4.96	0.22
2010	1.29	1.32	2.36	4.22	0.15	5.05	5.69	4.63	0.22
2011	1.32	1.44	2.49	4.22	0.13	4.04	5.88	4.41	0.28
2012	1.32	1.49	2.44	4.33	0.14	3.67	6.18	4.33	0.23
2013	1.35	1.45	2.42	4.56	0.16	3.17	6.16	4.52	0.24
2014	1.26	1.52	2.38	4.37	0.16	3.46	6.39	4.57	0.21
2015	1.33	1.62	2.32	4.66	0.16	3.48	6.73	4.74	0.37
2016	1.42	1.71	2.09	4.43	0.16	3.10	6.63	4.59	0.54
2017	1.42	1.67	2.03	4.48	0.14	3.00	6.55	4.30	0.62
2018	1.42	1.58	1.87	4.09	0.16	2.99	6.48	4.41	0.52

Sources: *Author's calculation*

Table 5.17 illustrate the trade intensity index of the Philippines with selected Asian economies. It is evident from the table that the Philippines share intense trade relations with Thailand, Singapore, Malaysia, Korea, Indonesia, and Japan. Whereas India and Turkey are a less preferable destination for the Philippines trade. Trade orientation

towards China fluctuated over the years. Thailand Indonesia and Japan are the most favourable trade destination of the Philippines and trade intensity with these economies have increased over the years. Whereas trade relations with Korea, Malaysia, and Singapore have not groomed much over the years. Overall Philippines trade intensity with selected Asian economies shows a high degree of intensity for the entire period of study. Surprisingly the Philippines do not share encouraging trade relations with India and China, despite both being major Asian economies. It can be interpreted that any common regional block or policy frame is more efficient to determine trade ties among economies.

Table 5.17. Trade Intensity Index of Philippines with Respective Partners

Years	CHN	IND	JPN	IDN	KOR	MYS	SGP	THA	TUR
2001	0.68	0.67	2.97	2.02	2.06	2.57	3.51	3.42	0.05
2002	0.74	0.88	2.99	1.97	2.42	3.07	3.63	2.89	0.04
2003	0.93	0.63	3.17	2.44	2.07	4.13	3.47	3.40	0.06
2004	1.02	0.49	3.39	2.51	1.79	3.84	3.58	3.08	0.06
2005	1.17	0.44	3.26	2.53	1.60	3.89	3.52	2.88	0.07
2006	1.15	0.43	3.04	2.11	1.79	3.93	3.75	3.23	0.11
2007	1.18	0.53	2.79	2.57	1.83	3.89	4.33	3.29	0.10
2008	1.15	0.50	2.83	2.44	1.94	3.78	3.92	3.71	0.10
2009	0.94	0.49	3.13	3.19	2.15	3.32	3.66	3.96	0.11
2010	0.99	0.48	2.86	2.75	1.95	3.08	5.30	4.31	0.11
2011	1.13	0.46	3.09	2.70	2.07	3.04	3.89	3.95	0.14
2012	1.08	0.42	3.14	3.10	2.24	2.70	3.73	4.01	0.14
2013	1.16	0.40	3.51	3.19	2.42	2.68	3.27	3.53	0.11
2014	1.24	0.49	3.77	3.24	2.06	2.87	3.36	3.81	0.11
2015	1.17	0.65	3.95	3.29	1.89	3.08	3.42	4.18	0.11
2016	1.36	0.67	3.96	4.28	1.94	2.92	3.44	4.90	0.08
2017	1.26	0.61	3.30	4.75	2.17	2.73	2.87	4.32	0.10
2018	1.45	0.61	3.02	4.46	2.65	2.88	2.90	4.58	0.12

Sources: *Author's* calculation

Table 5.18 elucidate the trade intensity index of Singapore with selected Asian economies. The country is known as one of the wealthiest and trade-dependent economies. Singapore's trade intensity index is more than one with all the selected Asian economies except with Turkey having TII below one.

Table 5.18. Trade Intensity Index of Singapore with Respective Partners

Years	CHN	IND	JPN	IDN	KOR	MYS	PHL	THA	TUR
2001	1.29	2.12	1.76	0.00	1.52	13.31	4.39	4.31	0.16
2002	1.37	1.90	1.68	0.00	1.63	12.93	3.92	4.52	0.15
2003	1.28	1.76	1.50	13.20	1.52	12.05	3.94	3.83	0.12
2004	1.36	1.98	1.49	12.10	1.50	11.20	4.72	3.76	0.11
2005	1.38	2.02	1.39	11.19	1.49	11.00	4.73	3.62	0.08
2006	1.44	2.03	1.34	11.72	1.45	10.84	4.99	3.69	0.11
2007	1.38	2.30	1.33	11.78	1.59	11.21	5.42	3.49	0.13
2008	1.23	2.05	1.36	10.02	1.73	10.89	5.42	3.39	0.20
2009	1.14	1.63	1.33	9.23	1.87	10.25	5.83	3.09	0.14
2010	1.07	1.81	1.28	7.87	1.66	9.90	6.80	2.78	0.14
2011	1.03	1.72	1.25	7.87	1.60	10.05	5.36	2.58	0.22
2012	1.00	1.47	1.15	7.90	1.83	10.00	4.86	2.52	0.14
2013	1.05	1.20	1.16	7.98	1.77	9.98	4.50	2.41	0.13
2014	1.10	1.21	1.18	7.73	1.67	9.58	4.36	2.54	0.12
2015	1.17	1.29	1.40	7.52	1.75	9.71	4.39	2.69	0.16
2016	1.19	1.34	1.45	7.36	1.84	9.88	4.14	2.55	0.16
2017	1.23	1.26	1.39	6.72	1.59	9.66	3.87	2.41	0.16
2018	1.08	1.18	1.42	6.55	1.31	9.47	4.34	2.39	0.15

Sources: *Author's calculation*

The country shares highly intense trade relations with Malaysia and Indonesia followed by the Philippines and Thailand. The reason behind this is regional and geographical proximity. Though trade intensity is following a declining trend as TII for Malaysia and Indonesia has declined from 13.31 (2001) to 9.47 (2018) and 13.20 (2003) to 6.55 (2018) respectively. Whereas for Thailand index has declined from 4.31 (2001) to 2.39 (2018).

Singapore's trade intensity with the Philippines, China, India Japan, and Korea have not altered much and remained more than one over the selected time of the study. Turkey is the least preferable destination for Singapore's trade. Overall trends are very encouraging and Singapore comparatively is a more integrated economy in the region.

Table 5.19. Trade Intensity Index of Thailand with Respective Partners

Years	CHN	IND	JPN	IDN	KOR	MYS	PHL	SGP	TUR
2001	1.26	1.20	3.08	3.06	1.13	3.51	3.33	3.33	0.19
2002	1.34	1.09	3.23	3.59	1.22	3.54	3.02	3.43	0.24
2003	1.34	1.12	3.37	4.21	1.18	4.34	3.67	3.00	0.25
2004	1.28	1.14	3.40	4.55	1.10	4.54	3.82	2.91	0.26
2005	1.31	1.06	3.39	4.54	1.03	4.94	3.98	2.73	0.31
2006	1.35	1.07	3.23	3.92	1.14	4.84	4.35	2.58	0.37
2007	1.37	1.27	3.38	4.40	1.10	4.81	4.39	2.63	0.37
2008	1.28	1.10	3.15	3.99	1.11	5.01	4.77	2.34	0.36
2009	1.31	0.97	3.14	3.46	1.05	5.04	4.97	2.24	0.30
2010	1.24	0.94	3.21	3.57	1.05	4.71	5.32	1.85	0.34
2011	1.27	0.85	3.14	3.65	1.02	4.75	5.24	1.94	0.31
2012	1.28	0.86	3.35	3.91	1.00	4.66	5.00	1.80	0.26
2013	1.23	0.85	3.22	4.04	1.00	4.77	4.94	1.90	0.28
2014	1.22	0.92	3.17	3.93	0.98	4.77	5.42	1.91	0.28
2015	1.31	0.96	3.27	3.91	0.92	4.68	5.17	1.97	0.27
2016	1.41	0.98	3.22	4.05	0.99	4.51	5.02	1.87	0.31
2017	1.39	1.09	3.08	3.85	0.94	4.16	4.61	1.79	0.30
2018	1.36	1.17	3.18	3.84	0.95	4.22	4.86	1.71	0.28

***Sources**: Author's calculation*

Table 5.19 Illustrate trade intensity index of Thailand with selected Asian economies. The table elaborates the increasing trade orientation of Thailand with Malaysia, the Philippines, and Indonesia. The TII with Indonesia has increased from 3.06 to 3.84, Malaysia has increased from 3.51 to 4.22 and the Philippines has risen from 3.33 to 4.86 from 2001 to 2018.

Table 5.20. Trade Intensity Index of Turkey with Respective Partners

Years	CHN	IND	JPN	IDN	KOR	MYS	PHL	SGP	THA
2001	0.38	0.78	0.32	0.46	0.48	0.29	0.12	0.15	0.26
2002	0.39	0.89	0.32	0.60	0.45	0.33	0.12	0.14	0.27
2003	0.48	0.78	0.32	0.69	0.48	0.43	0.14	0.10	0.33
2004	0.49	0.78	0.32	0.66	0.64	0.35	0.20	0.08	0.38
2005	0.58	0.69	0.33	0.64	0.72	0.36	0.18	0.08	0.35
2006	0.63	0.65	0.31	0.74	0.63	0.37	0.18	0.13	0.41
2007	0.66	0.73	0.30	0.82	0.62	0.42	0.22	0.12	0.44
2008	0.65	0.58	0.27	0.62	0.49	0.44	0.21	0.15	0.43
2009	0.66	0.54	0.27	0.61	0.50	0.40	0.22	0.11	0.39
2010	0.66	0.72	0.25	0.60	0.58	0.38	0.16	0.12	0.40
2011	0.64	0.92	0.26	0.57	0.61	0.41	0.19	0.15	0.36
2012	0.59	0.81	0.22	0.51	0.55	0.32	0.24	0.08	0.30
2013	0.64	0.81	0.23	0.56	0.57	0.32	0.24	0.08	0.30
2014	0.61	0.91	0.22	0.61	0.69	0.31	0.18	0.08	0.31
2015	0.65	0.90	0.26	0.60	0.75	0.43	0.16	0.12	0.32
2016	0.71	0.98	0.32	0.57	0.72	0.61	0.15	0.12	0.38
2017	0.58	0.86	0.31	0.49	0.62	0.76	0.15	0.14	0.42
2018	0.51	1.05	0.31	0.44	0.64	0.54	0.16	0.10	0.33

Sources: *Author's calculation*

Singapore has remained a favourable trade destination for Thailand but the intensity of trade is declined from 3.33 in 2001 to 1.71 in 2018. For China, the intensity of trade has remained poised at 1.36 (2018) from 1.26 (2001). For India TII went below one from 2009 to 2016 and it remained 1.17 in 2018. For Japan TII hovered from 3.08 in 2001 to 3.18 in 2018. Thailand's trade intensity with Korea remained more than one till 2013 and declined afterward. Whereas, TII value always remained less than one with Turkey. Overall, Thailand is very integrated with selected Asian economies and share favourable trade intensity.

Table 5.20 elaborated the trade intensity index of Turkey. The country has emerged as a geopolitical actor for the neighbouring countries and global economy as well. Since the economic crises of 2008, Turkey has been more interested to integrate

with Asian economies than China. The following figures elucidate that Turkey does not share a very intense relationship with most of the selected Asian economies. Though trade intensity with India is highest among all the panel members and it has increased from 0.78 in 2001 to 1.05 in 2018. India shares a historical and commercial relationship with turkey and both are a member of the G20. Similarly, Trade intensity with China has also improved from 0.38 in 2001 to 0.51 in 2018. Both of these countries have signed eight cooperation agreements on 7th Oct 2010 to improvise economic ties and both are members of the Shanghai Cooperation Organization (SCO). On the other hand, Indonesia is the largest trading partner with Turkey in Asia-Pacific and both economies are working to improve their economic and political linkages. The improved relationship of Turkey with Thailand is a result of previous trade agreements and the recently signed Free Trade Agreement (FTA) in 2017. Tukey's trade intensity with Singapore, Korea, Malaysia, and the Philippines has also improved over the years. Overall, Turkey's integration with Asian economies is increasing and Turkey has elevated its partnership with six countries in Asia: China, Japan, Indonesia, Korea, Malaysia, and Singapore.

5.5 Summary and Conclusion

Economic integration has increased in Asia over the last few decades. Trade has been an engine of growth for most of the Asian economies. However, Asian countries follow an uneven pattern of trade integration at inter and intra-regional levels. The people's Republic of China is playing a pivot role in Asia's trade pattern. It has emerged as a large exporter with 40 % of export to the global market and with a 31% share in Asia's export to the world. Similarly, China is the largest market to the global suppliers. The bilateral trade between the world and selected Asian economies also presents the fact that China's trade surplus is huge as its exports to the global market exceeds imports over the years. Countries like Korea, Japan, Singapore, and Malaysia also share favourable terms of trade in the global market. On the other hand, India, the Philippines, and Turkey are facing negative terms of trade.

India's imports grew faster than export leading to a widening trade deficit. China, Japan, and Korea are major trading partners for the country among the selected Asian economies. Despite the political unrest and negative term of trade between China and

India, the bilateral trade between them is considered to be the most important trade relationship in the global market (Naidu & Kumar, 2013). India's trade with Japan has declined with Japan over the years but still, imports are more than exports leading to an unfavorable term of trade for the country. South Korea is another leading trade partner with the country and the trade ties are going stronger as there is no geopolitical issue and the least risk of economic cooperation. On the other hand, India's trade with ASEAN countries (Singapore, Indonesia, Philippines, Thailand, Malaysia) has bloomed over the years.

The bilateral trade data assert that China, Japan, and Korea are the three largest trading partners with almost every Asian economy in the selected panel. These three East-Asian economies are largely interdependent in the field of their trade requirements. Recent decisions to form China, Japan, and Korea FTA was the first initiative to enhance economic integration in Asia (Lim, 2003). In 2000 an initiative was taken to form ASEAN+3 (China, Korea, and Japan) regional cooperation under the Chiang Mai Initiative (CMI) to increase economic cooperation including trade, investment resource development, etc. These three economies are among the top four trading partners for each other. The trade among Korea-China and Japan-China has increased over the years (Lim, 2004). These economies are taking over the trade and development process of Asia.

As far as the trade intensity index is concerned, most of the selected Asian economies in the panel share intense trade relationship with each other. Though the country-specific results outlay some interesting facts regarding the intensity of the trade relationships. China shares intense trade relationships with all selected countries except India and Turkey and the country follows decreasing trends of intensity with most of the larger economies. On the other hand, India shares an intense relationship with ASEAN (Indonesia, Malaysia, Singapore, and Thailand). India's trade intensity with China remained less than one for most of the time and the trade orientation towards Japan has not improved and remained less than one. Most surprisingly India's trade orientation with China and Japan is not admirable although these all three economies are the most developed countries in the region. Similarly, the economy of Japan is more integrated with Asian economies except for India and Turkey but the intensity of trade is falling over the period. Indonesia, China, and the Philippines are more integrated with Japan as

compared to other Asian economies in the selected panel. Malaysia and the Philippines are integrated well within the region with all countries except Korea and Turkey and India and Turkey respectively. From the above analysis, it is also evident that most of the ASEAN economies (Singapore, Thailand, and Indonesia) and Korea share intense trade relations with all the selected countries in the region. The only least integrated country is turkey as TII is below one with all Asian countries but the index has an upward trend. Overall, the selected panel of countries is well integrated and share favourable terms of trade within the region.

Intra-regional trade is the essence of the growing integration of production networks and technology exchange for better trade orientation among countries. Intra-regional trade trends reveal that trade within the panel of selected Asian economies is low as compared to the panel's total trade. Panel's trade with the world has increased from but the intra-regional share of the panel in total trade has not improved. Intra-regional trade comprised around 32 % of the panel's total trade. Data also exhibits that even the share of intra-regional trade of selected Asian economies has not improved over the years, but there is an increase in the intraregional trade in absolute terms for all countries. India has recorded the highest average annual growth rate (18 percent) and Japan recorded the least growth for the region. The country-specific intra-regional trade has huge diversity ranging from 32 percent for China to 2 percent for Turkey in 2018. China, Japan, and India are the largest countries in the panel in terms of their size and GDP share, though the share of these countries in intra-regional trade differs largely as 32 percent, 16 percent, and 6 percent respectively. The table also elucidates that the intra-regional share is of China, Indonesia, India, and Turkey has increased over the years. Whereas, trade share Japan and Singapore has fallen. There is little or no change in the trade share in Korea, Malaysia, the Philippines, Thailand, and Indonesia. Thus, China and India are the largest contributors to intra-regional trade in selected Asian economies.

On the other hand, countries like Indonesia, Malaysia, and the Philippines carrying more than fifty percent of their total trade within the region and their regional share is rising. While Singapore, Thailand, and Korea share more than 40 percent of their trade within the region. The share of Japan and India is also increasing, whereas China's share was less than all other panel members. If we compare ASEAN, NAFTA, EU-27,

SAARC, all the four groups, and selected Asian economies are biased towards trading within themselves. In the case of selected Asian economies, the intra-regional trade intensity index is less than all other four groups and it is showing a decreasing pattern. Thus, world trade share is growing faster than intra-regional trade for selected Asian economies.

Overall, it can be concluded that selected Asian economies are well integrated within the region and outside the region as well. Global integration of the region has increased over the years (Pangestu & Westland, 2018). As far as bilateral trade is concerned it largely revolves around China, Japan, Korea, and India are with large share in Asia's overall trading pattern. Number of studies support these trends of trading pattern of selected Asian countries. It is stated that East-Asia economies growing global supply chain has deepened the trade integration in Asia (Aaditya & Ruta, 2015; Hartmann et al., 2020). China plays a pivot role as provide a large market to ASEAN exports and regions global imports. Also, country's trade orientation is more towards Japan and Korea (Athukorala & Kohpaiboon, 2009). Whereas, the unlikable economic circumstances of demonetization, reforms of goods and services tax, and high crude oil prices led to downfall in the India's exports and its trading pattern (Venkatesh & Grover, 2018). There is huge gap in the actual and potential integration of India in the global market (Saraswat et al., 2018). The falling share of intra-regional trade in the panel is attributed to growing global trade of major ASEAN economies (Kimura & Ando, 2005). Also, there is decline regional dependency on China for most of the selected economies due to growing extra-regional trade in the region (Ando& Kimura, 2013). There is substantial increase in the both intra-Asia and intra-regional trade of South-East Asian economies (Singapore, Thailand, Malaysia, the Philippines, Indonesia) from the region (Shimada, 2019). It is important to understand that there is large diversity in political, geographical, and institutional factors within Asia. Integration is still a market driven phenomenon and there is lack of any regional leader to promote trade integration. There is need for policy led integration in Asia.

*****

CHAPTER: 6
TRADE SPECIALIZATION, TRADE INTEGRATION AND FINANCIAL INTEGRATION NEXUS

6.1 Introduction

Adam Smith in his seminal work "The Wealth of Nations" explain that freedom to produce and exchange at domestic and international markets will promote division of labour according their skill, which in turn increase specialization in the product market. It was also propounded that when an economy specializes in the production, the cost will fall and it will lead to more prosperity of consumer and producers. There are different theories of trade to assert that why some countries are producing particular product and exporting in the world market? The traditional theories of trade stated that efficiency in production of one country may differ from another country due to factor endowment differences (Ohlin, 1933) leading to comparative advantage in trade (David Ricardo, 1817). Whereas, the new trade theories assert that two countries may specialization for the same product even when the comparative cost profit is absent. New trade theories assets that rising economies of scale in particular industry (Krugman, 1979) and agglomeration of industries towards particular product (Krugman, 1991) are causing concentration and specialization pattern in the few industries. Trade specialization is largely determined by the pattern of trade integration, which in turn depends on the level of economic integration in that particular economy.

Economic integration is a process to eliminate political and economic barriers between two or more countries to achieve greater productivity and economic interdependence. It is important to understand the linkages between international trade and financial integration for policy implications (Montinari & Stracca, 2016). Removal of exchange rate barriers will increase the capital flow among counties and integration in the international financial markets. This increased financial integration will enhance the efficiency of factors of production on one hand and reduce the cost of investment on the other hand (Capiro & Honhan, 1999). International trade provides a competitive environment for goods market and helps to absorb the surplus output in an economy. Whereas, financially integrated market increases the ability of the investors to borrow

from and lend in the international market for optimum utilization of their money. Countries with higher financial integration are able to reduce intermediation cost and achieve higher efficiency in trade. Both openness to trade and liberalized financial market are likely to induce specialization. The last few years have witnessed accelerated pace of economic integration owing to increasing trade and capital flows in the world market, but given the huge economic diversity it is not easy to achieve integrated market in Asia.

This chapter determined the mechanism of economic integration based on trade and financial integration linkages. Also, the nexus between trade specialization, trade integration and financial integration is solved on empirical grounds using econometric techniques. Various analytical tools are used to determine country specific trade specialization and level of intra industry trade. In this chapter, trade indices are calculated at HS 6-digit level and products are classified into technological and factor intensities such as: (a) Resource – Intensive Manufactures (RIM); (b) Technological Intensive- high, medium and low (HSTIM, LSTIM, MSTIM); (c) Mineral fuels (MF); (d) Non-Fuel primary commodities (NFPC); (e) Unclassified products (UP) (Basu & Das, 2011). An effort has been made to determine the specialization pattern of selected Asian economies based on these product classifications. It will give an insight on specialization pattern of each selected economy.

The GLI index is calculated to determine the effect of intra industry trade on specialization pattern. Similarly, the role of financial development is accessed in determining financial integration. In the last section of the chapter the nexus the nexus between trade specialization, trade integration and financial integration is solved with ARDL model and Sobel test of mediation and moderation. The first section of the chapter portrays the trade specialization index calculated for all the selected Asian economies on individual basis. In the second section intra industry index is calculated. The third section of the chapter elucidate the results of ARDL model and the last part of the chapter describe the estimates of GMM model to unravel the relationship of TI, FI and TS.

6.2 Trade Specialization and concentration Index

In this section, Herfindal-Hirschman Index (Hirschman, 1964) is calculated to evaluate the concentration and diversification of traded manufactured commodities for selected Asian economies for the period of 2001 to 2018. HHI is a statistical measure of market concentration initially used by The U.S. Department of Justice and Federal Reserve to analyze the competitive effect of mergers in the firms (Department of Justice, 2015). The index summaries the concentration in the market by larger firms. The value of the index lies between 0 to 1. The higher the value of index, there will be less competition and more specialization in the market. The recommended range of the index is as follow;

- HHI $\leq$ 0.01 or 100 points depicts highly diversified index
- HHI range between 0.01 to 0.15 or 100 to 1500 points depicts unconcentrated or diversified index
- HHI range between 0.15 to 0.25 or 1500 to 2500 points depicts moderately concentrated index.
- HHI $\geq$ 0.25 or 2500 points depicts highly concentrated index

The corresponding table 6.1 represents specialization index (HHI) and the share of classified products in total trade concentration of Japan. It is evident from the table that the range of calculated HHI lies between 1859 in 2009 to 2039 in 2004. It indicates the country's trade is moderately concentrated as the HHI range between 1500 to 2500 points. The figures point out the country hold high share of medium and high skill technology intensive manufactures in total trade concentration. The share of low skill technology intensive lies between 6 percent in 2003 to 8.29 percent in 2009. But over the period of time the share of low skill technology products has not altered much. Similarly, the share of products under mineral fuels category has not changed over selected time span. In contrast, the percentage the share of Non fuel primary commodities has increased from 8.34 percent in 2001 to 11.09 in 2018. Even resource intensive manufactures contribute a high share of product concentration in total HHI. The share of this category products was lowest at 16.05 percent and highest was 23.42 percent in 2013. But the share these products has declined from 18.34 percent in 2001

Table 6.1: Herfindahl-Hirschman Index (HHI) for Japan's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	20.47	6.14	28.85	4.22	8.34	18.34	13.64	1877
2002	22.68	6.17	30.15	4.17	8.03	16.49	12.31	1945
2003	23.11	6.00	30.34	4.04	7.83	16.88	11.80	1978
2004	23.01	6.20	30.53	4.02	7.82	16.62	11.79	2039
2005	22.11	6.17	30.03	4.08	7.77	18.59	11.26	1982
2006	21.30	6.13	30.13	4.13	8.14	19.41	10.76	1939
2007	18.72	7.44	31.74	4.11	8.16	18.47	11.36	1959
2008	17.69	7.46	30.12	3.84	7.85	21.79	11.25	1958
2009	19.69	8.29	27.75	4.60	8.83	19.07	11.77	1859
2010	19.20	7.87	29.95	4.15	8.58	19.03	11.23	1904
2011	19.02	7.35	29.04	3.76	8.82	21.49	10.52	1910
2012	18.61	6.91	27.84	3.49	10.27	23.13	9.76	1932
2013	18.67	6.56	27.22	3.66	10.72	23.42	9.74	1905
2014	18.80	6.45	27.44	3.81	10.85	22.89	9.76	1892
2015	20.14	6.97	29.99	4.59	11.20	16.80	10.31	1884
2016	19.80	7.04	31.23	4.71	10.92	16.05	10.25	1912
2017	19.85	6.84	30.77	4.76	10.82	16.42	10.54	1933
2018	19.77	6.68	30.33	4.51	11.09	17.64	9.98	1919

Sources: Author's Calculation

Table 6.2: Herfindahl-Hirschman Index (HHI) for China's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	24.09	6.24	17.72	1.66	10.43	22.34	17.52	1851
2002	26.10	6.51	19.53	1.69	10.08	21.53	14.47	1887
2003	26.06	6.59	19.43	1.48	10.05	19.35	17.03	1868
2004	26.51	6.72	19.26	1.49	10.81	17.3	17.90	1858
2005	27.33	6.72	18.33	1.49	10.64	17.04	18.44	1874
2006	26.77	6.89	18.86	1.43	10.57	16.89	18.58	1864
2007	23.03	8.39	20.86	1.24	12.59	17.31	16.57	1770
2008	21.85	8.62	20.96	1.22	13.23	16.10	18.01	1752
2009	22.30	7.64	21.17	1.36	13.77	16.90	16.86	1765
2010	22.00	7.60	21.12	1.43	14.57	15.59	17.69	1758
2011	20.43	7.85	20.98	1.80	15.49	15,42	18.04	1725
2012	20.41	7.81	21.16	2.49	13.06	15.81	19.25	1723
2013	20.29	7.50	21.43	2.66	13.00	16.79	18.32	1721
2014	20.00	8.11	21.71	2.96	11.93	17.37	17.91	1711
2015	21.25	9.22	22.52	2.21	11.32	18.30	15.18	1742
2016	21.11	8.66	23.24	2.02	11.81	18.11	15.04	1759
2017	20.91	8.35	23.06	1.77	12.45	16.56	16.90	1757
2018	20.51	8.05	22.42	1.72	11.98	15.30	20.03	1770

Sources: Author's Calculation

to17.64 percent in 2018. The group of unclassified products (electric current, Cinematograph films, exposed & developed, printed matter, coin, gold etc.) contributed 13.64 percent in 2001in HHI, which has fallen to 9.98 percent in 2018. The share of high skill technology intensive manufacturers has declined from 23.11 percent in 2003 to 19.77 percent in 2018. Whereas, country is most concentrated in the trade of medium skill technology products. The percentage share of this group of products was 28.85 percent in 2001, 27.22 percent in 2013 and 30.33 percent in 2018.

Thus, overall Japan's trade is moderately concentrated and it constitute high share of medium and high skill technology products in its specialization index. The estimated results are in line with the results conducted by Xie and Zheng (2019). There is high and medium complexity in Japan's exported items and high technological structure in the country (He and Tian, 2012).

Similarly, table 6.2 elucidated the calculated specialization index (HHI) and respective share of product classification for China. It is evident from the figures that value of index ranged between 1874 as highest in 2005 to 1711 as lowest in 2018. Overall, Japan's trade is moderately concentrated. Figures indicate that country is more concentrated in the trade of high technology intensive and medium technology intensive manufactures and share 20 percent and 22 percent respectively in total trade specialization index in 2018.

The share of resource intensive manufactures has decreased from 23 percent in 2001 to 16 percent in 2018. Whereas the low skill technology products have increased its share from 6.24 percent to 8.05 percent. The portion of non-fuel primary commodities did not alter much and mineral-fuel products contributed minimal to the index. There is fall in the high-tech manufactured from 27.33 percent in 2005 to 20.55 percent in 2018. China's middle-tech trade has grown from 17.72 percent in 2001 to 22.42 percent in 2018 and its manufactures include products like; aircrafts, computer, computer equipment's, electronic and medical equipment's etc. Overall, the economy has moderately concentrated Herfindal index.

Table 6.3: Herfindahl-Hirschman Index (HHI) for India's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	14.60	4.03	8.15	1.94	15.20	27.28	28.79	2175
2002	14.97	4.56	8.40	1.98	14.84	27.89	27.36	2129
2003	16.47	4.96	9.46	2.38	13.93	26.42	26.38	1988
2004	16.46	5.68	9.85	3.02	13.77	23.07	28.15	1982
2005	16.46	5.81	10.65	2.53	13.47	21.63	29.45	1987
2006	17.37	6.39	11.49	2.69	13.94	17.08	31.04	1970
2007	16.13	6.41	12.35	2.52	14.58	16.34	31.68	2018
2008	18.75	6.95	12.37	1.61	12.86	14.19	33.27	2079
2009	15.91	5.87	12.36	4.24	13.32	17.11	31.19	1940
2010	14.18	6.21	11.73	2.36	13.71	18.42	33.39	2056
2011	13.34	5.94	11.05	2.97	13.25	17.91	35.54	2188
2012	13.38	5.86	10.87	4.01	13.93	13.67	38.28	2240
2013	14.34	5.92	10.76	2.06	13.63	16.65	36.64	2274
2014	15.12	6.18	11.09	2.37	13.72	16.01	35.51	2198
2015	17.05	6.50	12.82	1.99	14.57	17.39	29.68	1982
2016	17.57	6.41	14.26	2.44	14.14	19.23	25.95	1867
2017	16.25	6.33	13.12	2.13	14.19	18.07	29.91	1955
2018	16.50	6.05	14.09	2.21	12.25	16.15	32.75	2081

Sources: Author's Calculation

Table 6.4: Herfindahl-Hirschman Index (HHI) for Indonesia's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	15.28	4.24	11.98	0.93	20.73	17.99	28.85	1992
2002	14.38	3.83	11.97	0.95	20.99	17.18	30.70	2048
2003	13.65	3.41	11.32	0.97	22.05	16.27	32.33	2091
2004	13.14	3.72	12.44	0.81	22.18	14.19	33.53	2166
2005	11.63	4.26	12.66	0.75	22.76	13.06	34.88	2253
2006	11.87	4.59	11.25	0.79	25.69	12.30	33.52	2267
2007	11.29	4.14	11.33	0.76	26.34	10.60	35.55	2352
2008	14.75	5.54	14.70	0.78	21.83	9.68	32.72	2160
2009	13.07	5.25	13.65	0.84	25.76	9.82	31.61	2191
2010	12.21	4.84	14.62	0.86	26.90	9.06	31.51	2229
2011	12.91	4.97	16.91	0.83	25.58	8.99	29.82	2141
2012	13.75	5.60	18.92	0.93	22.53	9.51	28.76	2064
2013	13.21	5.71	18.60	1.65	21.87	10.09	28.85	1995
2014	13.62	5.77	18.97	2.18	23.19	11.08	25.20	1872
2015	13.97	5.89	19.32	2.77	23.45	11.91	22.69	1804
2016	12.82	5.66	17.96	2.11	25.60	11.38	24.47	1906
2017	12.80	6.44	17.81	1.75	23.95	11.29	25.96	1906
2018	12.86	6.89	16.88	1.78	23.17	11.14	27.28	2094

Sources: Author's Calculation

Over the past few decades China's lower middle technology complexity exports has made an advantage over other technology complexity exports and this downfall in high-tech exports can be attributed to trade war between China and the USA (Hu and Zheng, 2019). Table 6.3 elucidate the specialization index (HHI) for India. The overall index value lied between 2274 as highest in 2013 to 1867 as lowest in 2016. The country has moderately concentrated specialization index economy. The share of resource intensive manufactures was highest in India's specialization index which decreased from 27.28 percent in 2001 to 16.15 percent in 2018. Whereas, non-fuel primary commodities also have declining trends (15.20 percent in 2001to 12.25 percent in 2018) in the specialization index. The country has an upward trend for specialization share in mineral fuel commodities from 1.94 percent in 2001 to 2.21 percent in 2018.

It is clearly evident that the India is changing its specialization pattern from resource intensive manufactures to technology intensive manufactures as the share of low-medium-high skill technology products are increasing in its trade specialization index. The share of low-skill technology intensive manufactures has increased from 4.03 percent in 2001 to 6. 95 percent in 2008 and declined to 6.05 percent in 2018. The specialization shares of medium-skill technology intensive manufactures shoot up from 18.15 percent in 2001 to 14.09 percent in 2018. India is driving toward specialization in high-skill technology intensive manufactures as the share in the index has increased from 14.60 percent 2001 to 17.57 percent 2016. The share of other unclassified products has also gone up over the years.

Overall, India is shifting from less specialized economy to more specialized and competitive economy as the share of technology led manufactures has increased over the years. There is shift from low technology products to high-technology products and tremendous change in specialization pattern of for India (Alam, 2015).

Table 6.4 explains the specialization index for Indonesia. The value of the index ranged between 2352 as highest to 1804 as lowest. The economy is moderately concentrated in trade specialisation. Resource intensive manufactures and non-fuel primary commodities constitute highest share in calculated specialization index. The share of non-fuel primary commodities has increased from 20.73 percent in 2001 to 23.17 percent in 2018.

Table 6.5: Herfindahl-Hirschman Index (HHI) for People's Republic of Korea's total trade (Based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	28.73	7.18	18.23	1.29	8.91	9.44	26.22	2067
2002	25.67	8.47	22.45	1.35	9.86	8.78	23.43	1960
2003	26.11	8.19	23.38	1.44	9.44	7.57	23.87	2014
2004	26.82	9.14	23.48	1.20	9.38	6.07	23.91	2052
2005	26.82	9.35	23.73	1.17	9.11	5.49	24.34	2077
2006	26.17	9.40	23.41	1.12	10.05	5.08	24.77	2063
2007	23.32	11.55	25.40	0.79	11.55	5.06	22.32	1981
2008	21.07	13.46	22.98	0.79	10.81	4.26	26.62	1998
2009	23.58	14.59	24.18	0.72	10.18	4.53	22.22	1972
2010	24.37	13.01	24.41	0.62	10.81	4.41	22.36	1996
2011	21.87	12.58	24.28	0.54	11.82	4.26	24.64	1991
2012	22.08	10.83	25.99	0.56	10.32	4.30	25.92	2078
2013	22.79	10.35	27.29	0.59	9.91	4.65	24.41	2088
2014	22.88	11.01	26.93	0.58	10.02	4.78	23.78	2059
2015	23.90	11.89	29.80	0.70	9.92	5.29	18.49	2070
2016	24.67	11.53	30.19	0.83	10.16	5.71	16.90	2076
2017	24.67	11.82	26.58	0.96	10.18	5.25	20.54	2009
2018	25.60	8.61	25.66	0.77	10.45	5.49	23.41	2076

Sources: Author's Calculation

Table 6.6: Herfindahl-Hirschman Index (HHI) for Malaysia's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	28.72	4.23	23.25	1.30	14.07	15.34	13.10	1990
2002	31.00	4.75	25.18	1.39	15.27	14.36	8.05	2124
2003	32.78	4.51	23.42	1.44	15.44	15.29	7.12	2168
2004	31.82	4.87	22.04	1.40	17.04	15.59	7.24	2110
2005	29.86	5.03	22.03	1.30	17.96	15.62	8.20	2038
2006	28.83	5.02	22.59	1.36	18.37	15.21	8.61	2012
2007	28.06	5.40	21.88	1.37	18.85	15.80	8.64	1977
2008	24.05	5.01	27.56	1.20	15.87	17.40	8.90	1998
2009	23.46	5.32	23.82	1.31	21.74	15.81	8.55	1943
2010	23.66	5.08	24.10	1.48	20.68	16.69	8.30	1944
2011	22.63	4.88	23.01	1.58	21.61	17.44	8.86	1917
2012	21.79	5.33	25.01	1.71	21.51	15.33	9.31	1916
2013	22.52	5.30	23.08	1.56	23.86	14.50	9.17	1934
2014	22.75	5.15	22.62	1.46	24.41	14.18	9.43	1943
2015	22.82	5.20	23.88	1.30	24.34	14.20	8.25	1982
2016	22.78	5.65	24.35	1.37	23.34	14.65	7.87	1967
2017	21.38	5.45	24.71	1.25	23.64	15.11	8.46	1958
2018	21.29	5.31	24.12	1.36	24.23	14.76	8.93	1950

Sources: Author's Calculation

Whereas there is fall in the share of resource intensive manufactures from 17.99 percent in 2001 to 11.14 percent in 2018. The share of medium skill technology intensive manufactures has also gone up 11.98 percent to 19.32 percent Ain 2015 and fall to 16.88 percent by 2018. Though the manufactures under high skill technology intensive manufactures have continuously declined from 15.28 percent to 12.86 percent over the years. The product specialization share of low technology products has risen from 4.24 percent to 6.89 percent during the period. Whereas mineral fuel manufacture contributes lest to the specialization index of the country.

Overall, Indonesia's specialization pattern has improved as the share of low and medium-skill technology intensive manufactures are increasing. Though, the country is more specialized in non-fuel primary commodities as it is largely indulged in the manufactures related to agriculture, palm oil, mining, natural gases etc. Indonesia has more comparative advantage in the export of resource-intensive and labour-intensive products (Hasanah, 2020).

People's Republic of Korea (South Korea) is one of the highly developed economies of East Asia. Table 6.5 elucidate the specialization index (HHI) for the economy of South Korea. The value of the index ranges between 2088 as highest to 1960 as lowest. The economy is moderately concentrated in trade specialization. The figures assert that Korea is largely specialized in the technology intensive manufactures. High skill technology intensive manufactures share the largest part in specialization index of the economy. Though the share has declined from 28.73 percent in 2001 to 25.60 percent in 2018.

Whereas the share of medium skill technology manufactures has increased from 18.23 percent to 25.66 percent over the period. There is slight increase in the share of low tech manufactures from 7.18 percent to 11.82 percent during the time span. The products manufactured in the category of non-fuel primary commodities also constitute minimum of 10 percent share in the specialization index. On the other hand, resource-intensive manufacture's share has declined from 9.44 percent to 5.49 percent. The product specialization under the category of mineral fuel is declining and contribute less than 1 percent in HHI since after 2007.

Overall, trade specialization index of South Korea is largely dominated by technology intensive manufacturers. The country has more advantage in the manufactures of technology intensive products (Ervani, et al. (2018). The comparative advantage of the country has also shifted from textile industry to machinery based-manufactures (Hyun and Hong, 2011).

Similarly, Table 6.6 explains the trade specialization index for Malaysia. It has moderately concentrated specialization trade pattern index value lies within the range of 2168 as highest to 1916 as lowest. It is evident from the outcome that high and medium technology skill intensive manufactures share the largest part in trade specialization index. Though there is fall in high-technology skill intensive products share from 28.72 in 2001percent to 24.05 percent in 2008 to 21.29 percent in 2018. On the other hand, the specialization content of medium skill technology intensive product has increased from 23.25 percent in 2001 27.56 percent in 2008 to 24.12 in 2018.

There is slight increase in the share of Low-technology skill intensive manufactures from 4.23 percent to 5.31 percent over the period. Also, the share of mineral fuel had not altered significantly during the time period. Product share in the category of resource intensive manufactures initially increased from 15.34 percent in 2001 to 17.40 percent in 2008 to 14.76 percent in 2018. Whereas non-fuel primary commodities is the only category with rising share in the specialization index. The contribution of this category manufactures has increased from 14.07 percent in 2001 to 15.87 percent in 2008 to 24.23 percent in 2018 and constitute the highest share in specialization index as in 2018.

Overall, Malaysia specialization in technology intensive manufactures has declined over the years. Malaysia has more comparative advantage in low technology products (electronic equipment's) and agriculture-based products. Though the share technology intensive manufactures is also sinking over the years (Zam and Yakob. 2017).

Table 6.7: Herfindahl-Hirschman Index (HHI) for Philippines's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	39.26	2.09	12.12	0.62	9.52	8.81	27.57	2622
2002	43.11	1.92	11.06	0.54	8.41	7.47	27.49	2867
2003	43.44	2.18	11.07	0.58	8.72	6.94	27.08	2872
2004	43.36	2.07	13.50	0.56	9.20	6.21	25.10	2820
2005	47.65	2.31	13.90	0.56	9.28	6.50	19.80	2990
2006	45.08	2.36	12.92	0.54	9.90	7.12	22.08	2841
2007	38.64	2.93	15.16	0.58	14.02	7.19	21.48	2442
2008	33.47	2.98	16.34	0.60	16.60	6.70	23.31	2260
2009	34.48	3.48	17.38	0.63	17.00	6.97	20.05	2243
2010	34.18	3.60	19.00	0.60	18.22	6.08	18.33	2247
2011	24.15	4.48	19.99	0.80	20.90	8.41	21.26	1963
2012	29.34	4.79	22.68	0.70	16.72	7.58	18.18	2066
2013	30.30	4.54	20.62	0.74	18.08	8.81	16.89	2055
2014	29.90	5.14	19.72	0.79	18.32	9.02	17.10	2020
2015	32.65	5.82	21.91	0.80	15.94	9.02	13.87	2108
2016	30.76	6.39	24.34	0.93	15.69	8.72	13.18	2076
2017	24.65	7.57	30.15	0.75	16.51	6.55	13.83	2081
2018	27.84	7.92	28.35	0.78	14.49	6.32	14.29	2097

Sources: Author's Calculation

Table 6.8: Herfindahl-Hirschman Index (HHI) for Singapore's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	31.95	2.35	15.32	1.63	4.61	4.19	39.95	2898
2002	40.79	3.09	20.23	2.00	5.96	5.24	22.69	2664
2003	41.76	3.22	21.03	2.48	5.50	5.15	20.86	2695
2004	42.75	3.24	21.06	2.43	5.50	4.66	20.36	2754
2005	36.32	4.12	24.61	1.91	5.81	5.72	21.51	2474
2006	37.68	4.27	24.81	1.80	6.72	4.43	20.28	2533
2007	35.14	5.45	26.01	2.09	7.60	4.51	19.20	2392
2008	36.28	5.95	24.30	2.16	6.88	3.78	20.66	2435
2009	37.61	5.07	25.51	2.40	7.31	4.08	18.02	2492
2010	38.73	4.80	24.62	2.79	7.00	3.71	18.36	2537
2011	36.06	5.62	23.18	2.50	7.50	3.73	21.39	2404
2012	34.97	5.40	23.43	2.87	6.83	3.71	22.80	2389
2013	33.71	4.71	22.74	3.03	7.07	4.38	24.36	2348
2014	34.90	4.54	22.60	2.95	7.70	4.69	22.62	2351
2015	38.50	4.72	24.78	3.19	8.52	4.91	15.39	2462
2016	39.13	3.90	25.18	3.33	8.45	5.38	14.62	2506
2017	37.42	3.37	22.94	2.71	7.68	4.77	21.10	2472
2018	36.25	3.30	24.65	2.44	7.77	4.59	20.99	2461

Sources: Author's Calculation

The specialization index value of Philippines is much higher than the specialization index of other Asian countries in the panel. Table 6.7 elucidate the trade specialization index of Philippines. The country is highly concentrated economy as the value of index lies under 2990 as highest and 1963 as lowest. Though there is a fall in the HHI value since 2007. It is clear that country is highly specialized in technology intensive manufactures. High-skill technology intensive manufactures constitute 39.26 percent of share in 2001 in total index of specialization. Though the share of manufactures under this category has declined from 33.47 percent in 2007 to 27.84 in 2018. On the other hand, the share of medium-skill technology intensive manufactures is increasing and has risen from 12.12 percent in 2001 to 15.16 percent in 2007 to 28.35 in 2018. The percentage share of low skill technology has also increased from 2.09 percent to 7.92 percent. Non-fuel primary commodities have also increased its share from 9.52 percent to 14.49 percent over the years. whereas, resource intensive manufacture has declining trend for its share in specialization index.

It can be asserted that Philippines is more concentrated economy as compare to other Asian economies in terms of trade specialization. Though the share of high-tech skill intensive manufactures has fallen and there is increase in the product category under medium skill technology. The country is highly specialized in the trade of high-tech industries. Philippines has more comparative advantage in technology intensive manufactures export as it constitutes more than 50 percent of their total export (International Monetary Fund. Asia and Pacific Dept, 2020).

Singapore is highly trade-oriented economy. Table 6.8 explains the pattern of trade specialization index of the country. It is evident that Singapore is highly concentrated economy for its trade specialization as the value of index ranges between 2898 as highest to 2348 as lowest. Though there is fall in the value of HHI since 2007. High skill technology intensive manufactures share the highest percentage in specialization index. Though the share of high-tech manufactures has declined from 42.75 percent in 2004 to 36.25 in 2018. Whereas the specialization in medium skill technology intensive manufactures have increased from 15.32 percent to 24.65 over the period. Specialization under low skill technology manufactures and mineral fuel has also altered

a little and these two contribute approximately 6 percent and 3 percent respectively in trade specialization index. On the other hand, there is no significant change in resource intensive manufactures share in specialization index and the same contribute less than 5 percent to specialization index of the country. Country has also improved in the specialization of non-fuel primary commodities as the contribution of product under this category has risen from 4.61 percent to 7.77 percent over the years.

Overall, Singapore's trade specialization has decline over the years as the value of concentratio index is falling since 2007. Also, there is fall in the product specialization under high-tech technology intensive manufactures. Whereas the specialization under category of medium-technology intensive manufactures has increased. Ervani et al. (2019) asserted that specialization pattern of Singapore was dominated by primary products till 1995, though it has changed to technology intensive manufactures and there is a persistence of dominance of specialization under high and medium technology manufactures.

Table 6.9 elucidate the trade specialization index of Thailand. The country is one of the emerging economies of Asia. Thailand is highly export oriented and newly industrialised economy. The country has more diversified and moderately concentrated trade specialization as the value of HHI falls between 1811 as highest to 1412 as lowest. Though the specialization in trade has increased over the years. HHI value for product under high technology has fallen from 17.62 percent to 12.58 percent over the time. On the hand, there is tremendous increase in the index value for specialization in medium-skill technology products.

There is shift in specialization pattern from high-skill technology intensive manufacture to medium-skill technology intensive manufactures. Specialization index value in low technology products has also increased from 4.30 percent in 2001 to 7.32 percent in 2018. Whereas the percentage share of resource intensive manufacture has declined from 12.17 to 6.51 over the years. The product specialization share of mineral fuels and non-fuel primary commodities did not change much.

Table 6.9: Herfindahl-Hirschman Index (HHI) for Thailand's total trade (based on HS-Commodity classification)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	17.62	4.30	20.18	1.75	14.72	12.17	17.56	1412
2002	16.11	5.16	22.09	1.85	15.18	11.90	17.41	1453
2003	15.79	5.55	23.00	1.75	15.61	10.64	18.40	1508
2004	15.32	6.35	23.84	1.70	15.54	9.83	19.16	1551
2005	14.75	6.74	23.30	2.24	14.02	8.88	22.90	1611
2006	14.26	6.14	22.89	2.22	15.15	8.31	23.57	1624
2007	13.94	7.11	24.26	1.73	16.01	7.72	22.31	1650
2008	13.38	7.62	23.39	2.09	16.41	6.89	24.63	1712
2009	13.87	7.06	23.78	2.41	16.49	7.02	23.06	1667
2010	12.78	6.88	25.79	2.29	16.44	6.55	22.47	1699
2011	12.22	7.09	23.65	2.59	17.75	6.41	23.47	1673
2012	13.06	8.01	27.57	1.64	13.75	5.74	24.32	1811
2013	13.04	7.67	26.93	1.60	13.65	5.92	24.82	1794
2014	13.02	7.52	28.00	1.73	14.15	6.38	22.12	1743
2015	13.44	7.64	29.91	1.82	14.24	6.63	19.64	1769
2016	13.27	7.84	30.83	1.90	14.42	6.72	18.47	1786
2017	13.15	7.63	29.37	1.83	14.72	6.53	20.53	1778
2018	12.85	7.32	29.23	1.79	14.01	6.51	21.91	1795

Sources: Author's Calculation

Table 6.10: Herfindahl-Hirschman Index (HHI) for Turkey's total trade (based on HS-Commodity classification).

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	HHI
2001	15.28	8.34	21.27	1.62	13.47	22.54	17.49	1753
2002	14.86	7.76	23.46	1.58	13.20	22.73	16.41	1794
2003	14.47	7.58	25.55	1.45	13.46	21.38	16.10	1820
2004	15.09	8.74	27.58	1.36	12.61	18.51	16.12	1828
2005	13.85	9.08	27.45	1.33	12.92	17.67	17.71	1822
2006	14.10	9.31	27.99	1.23	13.57	16.38	17.42	1826
2007	12.88	10.40	29.29	1.37	14.81	15.61	15.64	1842
2008	13.20	13.78	28.75	1.34	16.71	14.76	11.46	1821
2009	14.17	11.64	28.96	1.30	16.27	16.59	11.06	1839
2010	15.11	10.43	29.23	1.34	18.08	15.92	9.89	1871
2011	14.85	10.56	29.42	1.33	18.84	14.67	10.33	1876
2012	14.66	10.63	27.65	1.59	16.90	14.16	14.43	1789
2013	14.74	10.25	29.06	1.86	16.25	14.70	13.14	1823
2014	15.87	10.10	29.04	2.19	16.67	15.69	10.44	1835
2015	15.98	9.57	30.35	2.07	15.71	15.30	11.02	1875
2016	16.14	8.73	31.77	2.04	14.78	14.66	11.88	1925
2017	15.37	9.33	29.81	1.99	15.58	13.19	14.73	1849
2018	14.57	9.90	30.32	2.25	16.52	13.69	12.75	1858

Sources: Author's Calculation

The results concluded that trade specialization in Thailand has increased over the years. Though the share of high-tech manufactures has fallen and medium-tech products constitutes the largest share in HHI of the country. The results are in line with the Asian Economic Integration report (2015).

Similarly, 6.10 presents the trade specialization index of Turkey. The country has moderately concentrated trade specialization and the value of index lies between 1925 as highest to 1753 as lowest. The specialization index of the country constitutes largest share of medium skill technology products and the percentage share of manufactures under this category increased from 21.27 percent in 2001 to 30.31 percent to 2018 percent. The share of low-skill technology products has also increased from 8.34 (2001) percent to 13.78 (2008) percent to 9.90 (2018) percent over the time span. Whereas, there was little change in the percentage share of high skill technology products from 15.28 percent to 14.57 percent. There is huge decline in the trade specialization of resource intensive manufactures 22.54 percent in 2001 to 13.69 in 2018. On the other hand, the percentage share of non-fuel primary commodities has risen from 13.47 to 16.52 over the years. The product category under mineral fuels contribute least to the specialization index. Overall, the index of trade specialization of country is presenting increasing trends.

It can be asserted that, Turkey is moderately concentrated in its specialization patterns of trade. Since joining custom unions, the specialization pattern of turkey's exports has changed from primary, research-intensive, labour-intensive to scale intensive manufactures (Yilmaz, 2008)

6.3 Intra-Industry Trade (IIT)

Intra-regional trade among Asian economies has grown up largely in the past few decades. Intra-regional trade in industries can take place in similar products with different varieties and in differential products with different range of price and quality. Intra-regional trade can take place in intermediate goods as well as final goods depending on the economic and geographical structure of the economy. Integration among Asian economies largely depends on trade. Growing industrialization of production system and fragmented product market is leading to increased intra-regional trade (Athukorala & Yamashita, 2006). Classical and neo-classical theories have explained the concept of international trade

as a cause of comparative cost. The theory of comparative advantage suggest that an economy should trade and specialize in the products with low comparative opportunity cost and exchange these products in international market (Abd-el-Rahman, 1991). This is basically inter-industry trade. However, the with the boost of international product market industries have moved on to intra-industry trade. Trade defined as two-way exchange of goods within similar industry is called intra-industry trade. Such type of trade will increase the range of products produced within the industry and benefit both consumer as well as producer. Intra-industry trade will induce innovation and specialization arising from increased economies of scale and competitive advantages (Sisili, 2017).

As far as measurement aspect is concerned, Grubel and Llyod Introduced the concept of Intra-industry trade in his book "The Theory and Measurement of International Trade in Differentiated Products". They developed index to measure intra-industry trade which is below:

$$GL_i = 1 - \frac{|X_i - M_i|}{X_i - M_i} \quad ; \; 0 \leq GL_i \leq 1$$

The value of the index lies between 0 to 1. If calculated Index value is close to 0 there is complete inter-industry trade, otherwise a value of 1 depicts intra-industry trade. The value of computed index IIT for selected Asian economies is explained below.

There is evidence of increasing intra-industry trade in Asia. This section explains the extent of intra-industry trade for selected Asian economies based of technological product classification by Basu & Das (2011). This will illustrate the extent of intra-industry trade in products according to the content of technology embodied in them.

Corresponding table 6.11 elucidate the output of Grubel Llyod Index for Japan. The overall index value ranges from 0.88 as lowest to 1.07 as highest. It is also evident that the intra-industry trade of the country is largely composed of products under the category of resource intensive and non-fuel primary commodities. The composition for resource intensive manufactures has increased from 1.79 to 1.84 over the period. Though there is fall in the product share under non-fuel primary products category. On the other hand, there is rise in the share of high skill and technology intensive manufactures in intra-industry trade from 0.80 to 1.08. The trade integration is of inter-industry type for products

under the category of mineral-fuels and medium skill and technology intensive manufactures as the value of index remained 0.38 and 0.39 as on 2018 respectively.

It can be asserted that Japan is largely involved in intra-industry trade. The heavy burden of large population is letting the country involved in import and export of primary and resource intensive products. These product categories also serve the role of intermediated products, on the other hand large trade in parts and components of electronic and machinery equipment's is leading to increase in intra-industry trade in high-tech products (Dean et al., 2009). Thus, the extent of intra-industry trade is largely determined by the factor endowment and other geographical parameters.

Similarly, GLI trends are calculated for China and presented in table 6.12. The calculated index value of intra-industry trade falls between 0.81 to 0.95. As the range of index is close to 1 it can be asserted that China is also largely involved in intra-industry trade. It is evident from the result that composition of non-fuel primary commodities is highest and increasing in country's intra-industry trade index. The share of IIT under this category product has increased from 1.24 to 1.58 over the period. On the other hand, high-skill technology intensive manufactures also contribute to larger extent in intra-industry trade the value of index has declined from 1.16 to 1.09 over the years. Intra-industry index value has declined from 0.63 to 0.27 for the category of low skill technology intensive manufactures. China's pattern of trade is of inter-industry type for mineral fuels and resource intensive manufactures as the value of GLI is less than one.

Overall, results of Grubel Llyod index for China indicates that intra-industry trade is moderate for mineral fuels and resource intensive, high for technology intensive manufactures and non-fuel primary commodities. These results are justified as China is highly into trade of intermediate and final goods containing technology intensive skill. Also, primary commodities are needed to serve the growing population of the country. Whereas, mineral fuels and resource intensive manufactures trade are inter-industry type as they are source of fuel and raw material for high tech industries China.

Table 6.11: Japan's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	0.80	0.75	0.44	0.64	1.67	1.79	0.65	0.92
2002	0.70	0.69	0.40	0.56	1.68	1.76	0.91	0.88
2003	0.68	0.70	0.40	0.52	1.67	1.79	0.94	0.89
2004	0.67	0.68	0.41	0.49	1.65	1.79	0.93	0.88
2005	0.71	0.68	0.43	0.50	1.63	1.81	0.93	0.91
2006	0.72	0.68	0.43	0.46	1.59	1.84	0.93	0.93
2007	0.97	0.90	0.39	0.44	1.55	1.83	0.56	0.92
2008	1.01	0.86	0.39	0.46	1.55	1.86	0.55	0.97
2009	0.99	0.84	0.43	0.41	1.53	1.82	0.58	0.95
2010	0.98	0.83	0.39	0.40	1.52	1.83	0.58	0.93
2011	1.03	0.83	0.43	0.45	1.55	1.86	0.61	1.00
2012	1.06	0.84	0.36	0.49	1.62	1.88	0.62	1.03
2013	1.06	0.92	0.39	0.46	1.63	1.89	0.64	1.06
2014	1.07	0.95	0.41	0.46	1.65	1.89	0.67	1.07
2015	1.08	1.00	0.40	0.42	1.64	1.84	0.66	0.99
2016	1.05	1.01	0.38	0.40	1.62	1.82	0.67	0.96
2017	1.07	1.03	0.38	0.37	1.61	1.83	0.66	0.96
2018	1.08	1.02	0.39	0.38	1.63	1.84	0.66	0.99

Sources: Author’s Calculation

Table 6.12: China's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	1.16	0.63	1.11	0.37	1.24	0.40	1.21	0.95
2002	1.12	0.65	1.15	0.38	1.22	0.32	1.02	0.91
2003	1.12	0.67	1.17	0.40	1.30	0.29	0.96	0.92
2004	1.10	0.58	1.13	0.43	1.41	0.26	0.92	0.92
2005	1.04	0.52	1.01	0.45	1.42	0.22	0.91	0.87
2006	1.08	0.42	0.96	0.46	1.40	0.19	0.89	0.83
2007	1.14	0.37	0.97	0.29	1.51	0.18	0.99	0.87
2008	1.09	0.34	0.86	0.28	1.57	0.16	1.07	0.88
2009	1.13	0.46	0.91	0.31	1.61	0.17	1.08	0.91
2010	1.11	0.36	0.94	0.27	1.63	0.18	1.11	0.94
2011	1.11	0.31	0.92	0.21	1.65	0.19	1.21	0.95
2012	1.13	0.28	0.85	0.16	1.64	0.18	1.25	0.92
2013	1.14	0.28	0.82	0.18	1.64	0.2	1.25	0.91
2014	1.12	0.26	0.82	0.16	1.59	0.27	1.25	0.89
2015	1.08	0.23	0.75	0.23	1.54	0.20	1.13	0.81
2016	1.09	0.26	0.75	0.26	1.53	0.21	1.14	0.82
2017	1.10	0.28	0.76	0.28	1.58	0.20	1.21	0.87
2018	1.09	0.27	0.75	0.31	1.58	0.22	1.35	0.91

Sources: Author’s Calculation

The GLI index calculated for India is presented in table 6.13. The value of index in case of India is more as compare to China and Japan. The calculated index value of intra-industry trade falls between 1.07 to 1.34. The range of GLI is more than 1 for entire period. It can be concluded that India's trade is more of intra-industry type. It is evident from the outcome that technology intensive manufactures (both low and high technology) constitute the largest share of intra-industry trade. The composition of non-fuel primary commodities is less than one initially but increasing since 2008 in country's intra-industry trade index. The share of IIT under this category product has increased from 0.97 to 1.22 over the period. On the other hand, intra-industry trade in low-skill technology intensive manufactures has also shifted from moderated to high as the index value has changed from 0.66 to 0.91 over the period. GLI value for mineral fuels is low and it has declined from 0.47 to 0.30 over the years. Intra-industry trade in resource intensive manufactures is moderate but its share has increased from 0.47 to 0.71 for the period.

The output is justified as India is largely involved in export and import of technology-based manufactures. India's trade is revolving around electronics, electricals, automobiles and pharmaceutical and medical equipment (EXIM Bank, 2014). Trade in technology is the main reason for high vertical intra-industry trade in India (Bagchi & Bhattacharyya, 2019).

Similarly, the GLI for Indonesia is calculated and presented in table no. 6.14. The calculated index value of intra-industry trade falls between 0.63 to 1.05. The outcome depicts that it is moderately involved in intra-industry trade. It is evident from the result that composition of technology intensive (high, medium and low technology) manufactures is highest in intra-industry trade. Whereas, mineral fuels and non-fuel primary commodities are moderately involved in intra-industry trade. The country is less involved in the intra-industry trade of resource intensive products but the index value of products under this category has increased from 0.23 to 0.53.

Overall, Indonesia's involvement in intra-industry trade is not high as compare to other Asia countries and it is still dominated by inter-industry trade (Widodo, 2009).

Table 6.13: India's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	1.60	0.66	1.16	0.47	0.97	0.47	1.74	1.08
2002	1.61	0.76	1.17	0.42	0.89	0.52	1.72	1.07
2003	1.64	0.75	1.16	0.38	0.96	0.53	1.83	1.12
2004	1.63	0.75	1.18	0.29	0.90	0.58	1.88	1.16
2005	1.66	0.85	1.19	0.33	0.88	0.60	1.88	1.20
2006	1.68	0.92	1.24	0.36	0.93	0.51	1.89	1.25
2007	1.66	0.92	1.29	0.41	0.97	0.51	1.89	1.26
2008	1.71	0.89	1.27	0.36	0.96	0.60	1.90	1.33
2009	1.65	0.91	1.27	0.19	1.04	0.63	1.91	1.27
2010	1.64	0.82	1.21	0.25	0.98	0.78	1.91	1.29
2011	1.61	0.81	1.25	0.23	1.07	0.74	1.92	1.31
2012	1.61	0.92	1.21	0.50	1.01	0.65	1.94	1.34
2013	1.57	0.85	1.08	0.34	1.06	0.59	1.89	1.27
2014	1.58	0.83	1.07	0.32	1.12	0.62	1.89	1.28
2015	1.61	0.90	1.09	0.38	1.18	0.59	1.83	1.23
2016	1.60	0.92	1.09	0.28	1.14	0.63	1.80	1.18
2017	1.62	0.81	1.08	0.53	1.14	0.75	1.82	1.25
2018	1.61	0.91	1.09	0.30	1.22	0.71	1.87	1.29

Sources: Author’s Calculation

Table 6.14: Indonesia's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	0.87	1.44	1.30	0.40	0.71	0.23	0.56	0.70
2002	0.89	1.34	1.21	0.44	0.64	0.21	0.58	0.68
2003	0.86	1.28	1.13	0.40	0.56	0.18	0.56	0.63
2004	1.06	1.32	1.16	0.43	0.56	0.19	0.65	0.70
2005	1.08	1.24	1.22	0.38	0.47	0.19	0.75	0.73
2006	1.05	1.29	1.08	0.37	0.43	0.20	0.76	0.70
2007	1.16	1.14	1.11	0.50	0.47	0.21	0.71	0.71
2008	1.49	1.55	1.51	0.81	0.68	0.50	0.98	1.05
2009	1.34	1.37	1.26	0.70	0.45	0.40	0.65	0.78
2010	1.29	1.33	1.31	0.81	0.50	0.39	0.36	0.70
2011	1.41	1.42	1.37	0.80	0.70	0.48	0.49	0.86
2012	1.45	1.50	1.43	0.89	0.58	0.49	0.56	0.90
2013	1.39	1.45	1.39	0.55	0.63	0.50	0.64	0.91
2014	1.46	1.44	1.39	0.41	0.68	0.50	0.76	0.96
2015	1.41	1.38	1.31	0.37	0.60	0.49	0.69	0.90
2016	1.38	1.29	1.26	0.51	0.51	0.49	0.54	0.80
2017	1.41	1.15	1.29	0.57	0.58	0.50	0.55	0.83
2018	1.46	1.26	1.25	0.60	0.63	0.53	0.61	0.73

Sources: Author’s Calculation

Corresponding table 6.15 elucidate the output of Grubel Llyod Index for Korea. The overall index value ranges from 0.94 as lowest to 1.09 as highest. It can be visualized from figures that country largely involved in intra-industry trade. It is also evident that the intra-industry trade of the country is largely composed of products under the category of resource intensive and non-fuel primary commodities and mineral fuels. The composition for resource intensive manufactures and mineral fuels manufactures has increased from 0.65 to 1.39 and 0.67 to 1.14 over the period. Though there is fall in the index value of non-fuel primary products category. Technology intensive manufactures (low, medium and high technology) possess moderate index value for intra-industry. Overall, Korea's intra-industry trade has increased since 90s and its association with Asian countries has increased after labialization.

Overall, the composition of technology-based manufactures is lesser in the intra-industry trade of South Korea. The results are justified as Kore is majorly involved in the export and import of crude petroleum, refined petroleum, iron, zinc, coal, parts and components of ships, other resource based and labour based primary products. As the country does not have any international oil and natural gas pipeline, so it is largely dependent on import for meeting its energy-based requirements.

The Grubel Llyod Index for Malaysia is represented ion table no. 6.16. The calculated index value of intra-industry trade falls between 0.89 to 1.07. The index has declining trend for the entire period. It is evident from the result that composition of technology intensive manufactures is highest with deckling trends in country's intra-industry trade index. The share of IIT under this category product has increased from 1.24 to 1.58 over the period. On the other hand, mineral fuel manufactures contribution to index value has increased from 0.67 to 0.83 over the years. Intra-industry index value has declined from 0.72 to 0.66 for the category of non-fuel primary commodities.

Overall, Malaysia is highly involved in the intra-industry trade pattern of technology-based manufactures. Jambol and Ismail (2013) found that machinery and high technology manufactures are the major components of intra-industry trade in Malaysia. These trends can be attributed to growing electronic industries and lesser growth of primary sector manufactures in the country.

Table 6.15: People's Republic of Korea's Intra-Industry Trade (Grubel Lloyd Index)

Year	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	0.89	0.47	0.73	0.67	1.56	0.65	1.29	0.97
2002	0.77	0.50	0.75	0.74	1.56	0.84	1.35	0.96
2003	0.73	0.56	0.73	0.72	1.54	0.89	1.35	0.95
2004	0.67	0.60	0.70	0.84	1.54	0.92	1.40	0.94
2005	0.69	0.60	0.68	0.90	1.55	1.02	1.52	0.98
2006	0.69	0.55	0.68	1.02	1.53	1.13	1.56	1.00
2007	0.77	0.62	0.64	1.17	1.55	1.24	1.72	1.05
2008	0.77	0.61	0.65	1.03	1.56	1.25	1.75	1.09
2009	0.74	0.48	0.68	1.02	1.52	1.25	1.67	1.00
2010	0.73	0.53	0.62	1.06	1.53	1.29	1.67	1.00
2011	0.77	0.48	0.58	1.10	1.53	1.31	1.71	1.03
2012	0.76	0.53	0.56	1.01	1.49	1.30	1.72	1.03
2013	0.74	0.55	0.58	1.01	1.50	1.29	1.73	1.02
2014	0.74	0.56	0.58	1.06	1.49	1.31	1.71	1.01
2015	0.78	0.52	0.59	1.01	1.46	1.33	1.62	0.95
2016	0.80	0.52	0.58	1.07	1.44	1.35	1.57	0.93
2017	0.77	0.48	0.62	0.90	1.44	1.37	1.54	0.96
2018	0.79	0.63	0.63	1.14	1.44	1.39	1.61	1.03

Sources: Author's Calculation

Table 6.16: Malaysia's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	1.47	1.04	1.01	0.67	0.72	0.30	1.66	1.07
2002	1.34	1.15	1.01	0.75	0.76	0.33	1.58	1.03
2003	1.27	1.11	0.94	0.71	0.66	0.23	1.55	0.95
2004	1.31	1.19	1.00	0.63	0.71	0.25	1.57	0.98
2005	1.30	1.17	1.04	0.58	0.66	0.22	1.62	0.97
2006	1.32	1.16	0.99	0.55	0.72	0.22	1.62	0.98
2007	1.27	1.21	1.01	0.49	0.80	0.22	1.64	0.98
2008	1.45	1.25	0.76	0.57	0.99	0.20	1.71	0.97
2009	1.43	1.18	0.91	0.71	0.75	0.23	1.53	0.96
2010	1.44	1.08	0.90	0.84	0.85	0.22	1.60	0.97
2011	1.39	1.08	0.87	0.86	0.91	0.22	1.65	0.96
2012	1.35	1.09	0.91	0.84	0.89	0.25	1.65	0.98
2013	1.37	1.11	0.97	0.76	0.76	0.28	1.67	0.98
2014	1.37	1.05	0.94	0.80	0.72	0.28	1.68	0.96
2015	1.32	1.03	0.92	0.86	0.74	0.39	1.60	0.95
2016	1.31	1.09	0.93	0.86	0.71	0.41	1.58	0.95
2017	1.30	1.05	0.89	0.86	0.70	0.33	1.63	0.92
2018	1.26	0.98	0.85	0.83	0.66	0.33	1.64	0.89

Sources: Author's Calculation

The GLI index calculated for analysing the Philippines's Intra-Industry trade and it is presented in table 6.17. The value of index in case of Philippines is very high and remained more than 1 for the entire period. The calculated index value of intra-industry trade falls between 1.04 to 1.31. It can be concluded that Philippines's trade is more of intra-industry type. It is evident from the outcome that intra-industry trade index value is more than 1 for all the six categories of manufactures as in 2018. Though the low technology manufacture constitutes largest index value for intra-industry trade. The composition of resource intensive manufactures is less than one initially but increasing over the years. The share of IIT under this category product has increased from 0.69 to 1.32 over the period. Medium-skill technology intensive manufactures is the only category where intra-industry trade has fallen from 1.26 in 2001 to 1.13 in 2018.

Overall Philippines is highly involved in Intra-Industry trade. Though there is no specific classification associated with the pattern of intra-industry. The results are justified as the country's major export constitutes Gold, Bananas, Coconut oil, Copper, integrated circuit and machinery parts and components. Whereas, the import consists of crude and refined oil, wheat, coal, integrated circuit and machinery equipment's. There is trade of similar kind of products in Philippines.

Similarly, the GLI is calculated for the economy of Singapore. The estimates of intra-industry trade of the country is presented in table 6.18. The GLI estimates depicts that country is indulged in high intra-industry as the value falls between 0.96 to 1.08. It is evident that the index value is more than 1 for all the categories except high skill and technology intensive manufactures. The GLI value for high tech manufactures has further decreased from 0.93 to 0.83 over the period. The composition of resource intensive manufactures is highest in intra-industry trade.

It can be asserted that Singapore does involve in intra-industry trade to large extent but with declining trend in most of the classification used. The primary products consist of minor fraction of Intra-industry trade as Singapore largely export raw cured oil and reexport then in refined form.

Table 6.17: Philippines's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	1.31	1.56	1.26	0.98	1.22	0.69	0.58	1.04
2002	1.41	1.56	1.20	1.01	1.26	0.70	0.53	1.08
2003	1.38	1.61	1.25	1.00	1.17	0.71	0.55	1.08
2004	1.37	1.55	0.97	1.08	1.15	0.72	0.65	1.08
2005	1.21	1.53	0.97	0.91	1.17	0.71	0.93	1.09
2006	1.14	1.44	0.97	0.89	1.05	0.66	1.08	1.07
2007	1.51	1.50	1.00	0.87	1.03	0.60	0.98	1.18
2008	1.45	1.59	0.97	1.10	1.14	0.60	1.13	1.19
2009	1.33	1.34	1.02	1.09	1.23	0.64	0.93	1.13
2010	1.40	1.38	1.11	1.11	1.20	0.75	1.24	1.23
2011	1.16	1.30	1.17	1.12	1.06	0.76	1.41	1.17
2012	1.33	1.02	0.91	1.04	1.10	0.71	1.32	1.13
2013	1.33	1.12	0.98	1.11	0.97	0.66	1.26	1.11
2014	1.34	1.12	1.00	1.09	0.93	0.69	1.17	1.10
2015	1.34	1.21	1.15	1.20	1.09	0.78	1.12	1.17
2016	1.40	1.50	1.36	1.31	1.23	0.95	1.13	1.29
2017	1.45	1.44	1.11	1.30	1.18	1.15	1.12	1.23
2018	1.48	1.58	1.13	1.22	1.26	1.32	1.26	1.31

Sources: Author's Calculation

Table 6.18: Singapore's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	0.93	1.20	1.16	1.02	1.16	1.21	0.92	0.99
2002	0.94	1.24	1.15	1.09	1.15	1.20	0.87	1.01
2003	0.89	1.15	1.03	1.01	1.13	1.14	0.90	0.96
2004	0.87	1.15	1.07	0.99	1.13	1.15	1.01	0.98
2005	0.85	1.10	1.03	0.95	1.15	1.16	1.18	1.01
2006	0.85	1.13	1.04	0.90	1.17	1.19	1.24	1.03
2007	0.78	1.22	1.04	1.00	1.11	1.21	1.30	1.02
2008	0.85	1.21	1.04	0.96	1.15	1.26	1.43	1.08
2009	0.82	1.08	1.05	0.93	1.20	1.31	1.33	1.03
2010	0.76	1.06	1.05	0.91	1.10	1.34	1.33	1.00
2011	0.76	0.99	1.02	0.93	1.12	1.32	1.42	1.03
2012	0.75	1.16	1.03	1.02	1.12	1.34	1.42	1.04
2013	0.76	1.10	1.03	0.96	1.06	1.26	1.38	1.04
2014	0.76	1.11	1.03	0.97	1.07	1.24	1.40	1.03
2015	0.79	1.12	1.01	0.96	1.01	1.30	1.33	0.99
2016	0.78	1.19	1.01	0.97	1.02	1.24	1.27	0.98
2017	0.79	1.18	1.02	0.96	1.01	1.24	1.28	1.00
2018	0.83	1.15	1.02	0.94	0.90	1.23	1.36	1.02

Sources: Author's Calculation

Thailand's Intra-Industry trade and it is presented in table 6.19. The GLI value of in case of Thailand is close to for the entire period. The calculated index value of intra-industry trade falls between 0.95 to 1.07. It can be concluded that Philippines's trade is of intra-industry type. It is evident from the outcome that intra-industry trade index value is more than 1 for high and low technology intensive manufactures. Whereas, the intra-industry index value of medium skill technology intensive has decreased from 1.08 to 0.79 over the period. The composition of resource intensive manufactures has shifted from moderate (0.52) to high (0.86) over the period. is less than one initially but increasing over the years. The intra industry trade in non-fuel primary commodities has increased from 0.72 to 0.79. The mineral fuel product category shares moderate intra-industry trade.

Overall, Thailand is fairly involved in Intra-Industry trade. The results are justified as the country's major export consist of integrated circuit cars and machinery parts and components. Whereas, the import consists of crude oil, integrated circuit and machinery equipment's. There is large trade of intermediate products in Thailand.

Similarly, the GLI is calculated for the economy of Turkey. The estimates of intra-industry trade of the country is presented in table 6.20. The GLI estimates depicts that country is indulged in high intra-industry as the value falls between 1.07 to 1.21. It is evident that the index value is highest for than 1 high skill and technology intensive manufactures. The GLI value medium skill tech manufactures has further decreased from 1.21 to 0.97 over the period. There is sharp decline in the composition of mineral fuels manufactures in intra-industry trade from 1.03 to 0.56 over the time span. Intra-industry trade in nonfuel primary commodities has increased from 0.95 to 1.19 during the selected period. The GLI for resource intensive manufactures is moderate and primary commodities has favourable value in intra-industry trade. It can be asserted that Turkey is largely involved in intra-industry trade as the value of index is more than 1 for entire period. Cestepe et al. (2017) analysed the intra-industry trade in turkey and concluded that machinery consist of larger part in IIT index. Whereas, the primary and mineral based products have declining trend of intra-industry trade for the country.

Table 6.19: Thailand's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	1.10	1.31	1.08	0.48	0.72	0.52	1.23	0.99
2002	1.09	1.34	1.08	0.54	0.71	0.50	1.24	0.99
2003	1.11	1.30	1.06	0.54	0.70	0.52	1.18	0.99
2004	1.12	1.35	0.99	0.54	0.73	0.55	1.24	1.00
2005	1.16	1.39	0.98	0.86	0.77	0.56	1.28	1.05
2006	1.11	1.29	0.92	0.93	0.75	0.56	1.25	1.00
2007	1.09	1.28	0.85	0.39	0.75	0.58	1.25	0.98
2008	1.14	1.32	0.86	0.45	0.78	0.63	1.37	1.03
2009	1.08	1.16	0.88	0.42	0.68	0.58	1.22	0.95
2010	1.07	1.33	0.87	0.40	0.72	0.63	1.29	0.98
2011	1.03	1.32	0.89	0.34	0.68	0.69	1.46	1.02
2012	1.07	1.28	0.96	0.55	0.76	0.73	1.40	1.07
2013	1.05	1.27	0.88	0.54	0.75	0.73	1.52	1.07
2014	1.03	1.29	0.83	0.50	0.75	0.70	1.45	1.01
2015	1.06	1.27	0.82	0.51	0.75	0.73	1.35	0.98
2016	1.04	1.25	0.80	0.57	0.75	0.77	1.21	0.95
2017	1.07	1.26	0.78	0.62	0.76	0.83	1.30	0.98
2018	1.05	1.25	0.79	0.63	0.79	0.86	1.39	1.01

Sources: Author's Calculation

Table 6.20: Turkey's Intra-Industry Trade (Grubel Lloyd Index)

Years	HSTIM	LSTIM	MSTIM	MF	NFPC	RIM	UC	GLI
2001	1.65	0.91	1.21	1.03	0.95	0.46	1.60	1.11
2002	1.74	0.82	1.24	0.92	1.17	0.47	1.60	1.15
2003	1.72	0.81	1.24	0.82	1.20	0.48	1.60	1.16
2004	1.75	0.76	1.25	0.84	1.23	0.52	1.57	1.19
2005	1.76	0.84	1.23	0.80	1.16	0.56	1.62	1.20
2006	1.73	0.81	1.18	0.86	1.22	0.60	1.64	1.21
2007	1.70	0.84	1.11	0.81	1.28	0.61	1.77	1.20
2008	1.69	0.74	1.04	0.82	1.33	0.60	1.47	1.12
2009	1.67	0.79	1.05	0.81	1.18	0.59	1.25	1.07
2010	1.68	0.85	1.12	0.81	1.25	0.67	1.48	1.16
2011	1.69	0.88	1.16	0.80	1.32	0.69	1.52	1.20
2012	1.64	0.82	1.11	0.69	1.26	0.62	1.13	1.11
2013	1.63	0.89	1.12	0.66	1.19	0.63	1.57	1.16
2014	1.63	0.88	1.06	0.56	1.19	0.62	1.45	1.12
2015	1.63	0.96	1.10	0.54	1.13	0.61	1.23	1.10
2016	1.65	0.95	1.11	0.51	1.13	0.57	1.24	1.11
2017	1.62	0.96	1.06	0.52	1.20	0.58	1.45	1.14
2018	1.57	0.82	0.97	0.56	1.19	0.52	1.46	1.07

Sources: Author's Calculation

6.4 Trade Integration Financial Integration and Specialization interconnection

In order to measure the relationship between trade integration, financial integration and specialization the ARDL model is applied. The estimated ARDL model is expressed as below:

$$TSi = \beta 0 + \beta 1TI + \beta 2FI + \mu ti$$

Where trade specialization (TSi) is a function of trade integration (TI) and financial integration (FI). Term μti defines the error term in the model. The analysis begins with the estimations of some basis properties related to stationarity of data. After unit rrot estimations, VAR model is estimated for appropriate lag selection. Both short run and long run estimates of Panel ARDL are described in the following sections.

6.4.1 : Panel Unit Root

Most of the data series are regarded as non-stationary at their initial stage. Such series may generate meaningless results. In order to determine the cointegration among selected series, it is mandatory to diagnose the time series properties of selected data. To processed with cointegration, one must know the stationarity of the data. That implies data must have no unit root. A data is said to be stationary if mean and variance of the selected series do not change or remain constant over time. Estimation of data with non-stationary series may lead to spurious regression and misleading results. Stationarity of the data is determined using Levin, Lin & Chu (2002), Im, Pesaran and Shin (2003), Augmented dicky fuller and Phillips-Perron and results are depicted as below.

Table No 6.21: Panel unit root test I (0)

Unit root tests	TS	TI	FI
Levin, Lin & Chu	-3.262** (0.000)	-1.186** (0.117)	-2.013** (0.023)
Im, Pesaran and Shin W-stat	-2.260** (0.071)	-0.005** (0.497)	-2.014** (0.024)
ADF - Fisher Chi-square	33.151** (0.062)	16.272** (0.699)	34.216**(0.028)
PP - Fisher Chi-square	41.009** (0.003)	16.681**(0.673)	37.740**(0.009)

Note: P values (**) for all the unit root tests are reported at 5% level

Table 6.21 elucidate the results of panel unit root test at level for the series of trade specialization (TS), trade integration (TI) and financial integration (FI). The results

indicates that series of TS has no unit root according to Levin and PP test, whereas according to Pesaran and Fishers test data has unit root and it is not stationary. On the other hand, all the four tests confirm the stationarity of FI series at level. The TI series is not stationary at level and it has unit root. As the series of TI is not stationary at level, we will proceed with taking the first order difference of series to determine unit root process.

Table 6.22. presents the unit root test of series at first difference. The outcome of the analysis indicates that null hypothesis of presence of unit root in all the three series is

Table No 6.22. Panel unit root test I (1)

Unit root tests	TS	TI	FI
Levin, Lin & Chu t*	-5.061** (0.000)	-5.195**(0.000)	-5.893**(0.000)
Im, Pesaran and Shin W-stat	-5.180** (0.000)	-4.328**(0.000)	-5.713**(0.000)
ADF - Fisher Chi-square	63.435** (0.000)	55.514**(0.000)	70.099**(0.000)
PP - Fisher Chi-square	129.395** (0.000)	107.737**(0.000)	137.182**(0.000)

Note: P values (**) for all the unit root tests are reported at 5% level

rejected at 5% level. All the four-panel unit root test confirm the stationarity of data at first difference. As the three selected series has mix order of integration at I (0) and I (1). Once we know the order of integration of selected data series, we can proceed with suitable model to determine the cointegration among selected series.

6.4.2 : Lag order Selection Estimates

Choosing an appropriate lag length is another important property related to time series data. The lag length should be selected based on some appropriate information criterion. There are several criteria like AIC (Akaike information criterion), SC (Schwarz information criterion), FPE (Final prediction error), LR sequential modified LR test statistic, HQ: Hannan-Quinn information criterion etc. All these criterions give different lag length. Whereas, AIC and SIC are the most commonly used criterions to selected optimal lag length in VAR model. The output of estimated VAR is presented in table 6.23.

The results of the VAR model indicate that AIC, SC and FPE are giving lag 3 as optimal lag fir model estimation. Whereas, according to HQ and LR are selecting lag 4 as optimal lag of VAR model. As literature suggest to use criterion having lowest lag length. Three out of five criterions mentioned above choose 3 as optimal lag length model specification, hence lag 3 is selected as optimal lag using AIS and SC criterions. Also, most commonly used criterions to select lag length are AIC (Akaike information criterion) and SC (Schwarz information criterion). Hence, we can proceed with lag 3 for model estimation.

Table No. 6.23. VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-547.455	NA	12.1275	11.0091	11.0872	11.0407
1	-204.953	657.604	0.01538	4.33906	4.65168	4.46558
2	-188.624	30.3722	0.01329	4.19247	4.73956	4.41389
3	-179.662	16.1298	0.01332*	4.19325*	4.97481*	4.50956
4	-175.547	7.16150*	0.01472	4.29094	5.30695	4.70214*

* Indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

6.4.3 Panel Auto Regressive Distributed Lag (ARDL) Model

The estimated outputs of unit root test confirms that data series of the selected variable has mixed order of integration at I (1) and I (0). Also, none of the series is having I (2) order of integration. In case of mixed order of integration ARDL model is best applicable to analyse the cointegration among variables. Panel ARDL provides reliable short-run and long-run cointegration estimates even if the sample size is small. It also estimates short-run dynamics of the model. The estimates of ARDL are based on OLS properties and it provide more consistence and reliable estimates. The panel ARDL

equation to identify the relationship in Trade Specialization (TS), Trade Integration (TI) and Financial Integration (FI) is represented as below.

$$lnTS_{it} = \alpha_i + \sum_{j=i}^{p} \alpha_{1,}ij\, lnTS_{i,t-j} + \sum_{j=0}^{q1} \alpha_{2,}ij\, lnTI_{i,t-j} + \sum_{j=0}^{q2} \alpha_{3,}ij\, lnFI_{i,t-j} + \varepsilon_{it}$$

Where i = 1,2,3…. N and t = 1,2, 3…. T, α_i is the fixed effect. Whereas α_i α_2 and α_3 are the lagged coefficient of the predicted variable and the regressors. is ε_{it} the white noise error term in the model. The p and q are the lags of dependent and independent variable. In panel ARDL model ECM (error correction term) is represented as below.

$$ln\Delta TS_{it} = \alpha_i + \sum_{j=i}^{p} \alpha_{1,}ij\, ln\Delta TS_{i,t-j} + \sum_{j=0}^{q1} \alpha_{2,}ij\, ln\Delta TI_{i,t-j} + \sum_{j=0}^{q2} \alpha_{3,}ij\, ln\Delta FI_{i,t-j} + \beta_{1,ij}\, lnTS_{i,t-1} + \beta_{2,ij}\, lnTi_{i,t-1} + \beta_{3,ij}\, lnFI_{i,t-1} + \varepsilon_{it}$$

Where Δ represents the first order difference of the selected variables. The short-run and long-run coefficients of the selected variables TS, TI and FI are represented as $\alpha_{1,}\ \alpha_{2,}\ \alpha_{3,}$ and $\beta_1\ \beta_2\ \beta_3$ respectively. If there exist a long-run relationship among depended and independent variables the above equation for panel Error Correction Term can be represented as below

$$ln\Delta TS_{it} = \alpha_i + \sum_{j=i}^{p} \alpha_{1,}ij\, ln\Delta TS_{i,t-j} + \sum_{j=0}^{q1} \alpha_{2,}ij\, ln\Delta TI_{i,t-j} + \sum_{j=0}^{q2} \alpha_{3,}ij\, ln\Delta FI_{i,t-j} + \phi_i ECM_{i,t-1} + \varepsilon_{it}$$

Where ϕ_i represent the value of error correction term which define the speed of adjustment to long-run equilibrium. literature suggest that the value of ECM must be negative.

6.4.3.1 Panel ARDL Estimates

ARDL is applied to determine the long-run association among selected variables of the study. Table 6.24 elucidate the output of Panel ARDL model for trade specialization as depended variable on trade integration and financial integration. Optimal lag length of 3 is selected using AIC criterion and panel ARDL with (3,3,3) is chosen for specification of the model.

How trade and financial integration effect trade specialization? The answer of the precise question is elaborated though the output of Panel ARDL in table in 6.24.

Table No. 6.24. Panel ARDL long Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Trade integration (TI)	-5.842146	4.332556	-1.350628	0.1907*
Financial integration (FI)	0.013622	0.000509	7.119705	0.0000*

Note: (*) represents level of significance at 5 percent

The results of the model illuminates that there is negative relationship between trade integration and trade specialization. Though the relationship is not significant as the p-value is more than 0.05. On the other hand, there is positive and significant association between trade specialization and financial integration. In other words, if there is 1 percent increase in financial integration will lead to 1.3 percent increase in trade specialization. Whereas, negative relationship between trade integration and specialization is not significant statically. Though the negative relation between trade specialization and trade integration can be attributed to diversified industrial structure as a result of increasing trade openness. Also, there may be case of increasing comparative cost with rising trade integration as, theory of comparative cost ignores the effect of cost of trade, difference in prices of factors of production, technological base and many other factors to effect comparative cost advantage of rising trade integration. Damuri et al., (2006) asserted mixed evidence of effect of trade integration on trade specialization. Whereas, positive association in trade specialization and financial integration can be attributed to positive effect of later on the risk diversion in national and international investments and dealing efficiently with business cycle co-movement.

6.4.3.2 Short-Run Dynamics of Panel ARDL

The table below (6.25) precents the coefficients of short-run dynamics of the selected panel model. The short-run estimates of the panel ARDL are different from long-run estimates portrayed in the previous table. In long run the effect of trade integration (TI) on trade specialization (TS) was negative and insignificant but at first order lag TI is

positively associated with TS. Though the relationship is insignificant as the p-value is more than 0.05. Similarly, the association of TI and TS is negative using 2 lags and positive using 3 lags. Trade integration has positive and significant impact on trade specialization only after 3 lags. Thus, trade integration does impact significantly trade specialization in short run. The results are entirely apposite from long-run estimates of ARDL model.

As far as the association of Trade specialization (TS) and financial integration (FI) is concerned, the results of long run ARDL estimates are different from short run coefficients of the estimate. Financial integration was positively and significantly related to trade specialization in long-run but the short-run coefficients portrayed entirely different picture of the relationship between two variables. In short-run financial integration is negatively associated with trade specialization pattern of the Asian economies. Though the effect of FI on TS is only significant with lag three in short-run. The lagged value of trade specialisation (TS) also effecting its current value, but the relationship is not significant.

Table No.6.25. Panel ARDL Short Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
COINTEQ01	-0.189257	0.181742	-1.041348	0.0309
D(TS(-1)	-0.106954	0.188449	-0.567550	0.5720
D(TS(-2)	0.037958	0.160769	0.236106	0.8140
D(TI)	0.000197	0.000193	1.021664	0.3101
D(TI(-1)	-0.000256	0.000179	-1.429754	0.1568
D(TI(-2)	0.000376	0.000209	1.802515	0.0753
D(FI1)	-0.000582	0.000460	-1.266759	0.2090
D(FI1(-1)	-0.000661	0.000428	-1.542565	0.1270
D(FI1(-2)	-0.000815	0.000489	-1.666111	0.0997
C	0.037043	0.034425	1.076046	0.2852

Note: (*) represents level of significance at 5 percent

ECM is defined as the speed of adjustment to disequilibrium in long-run. The value Error correction term must be negative and significant at 5 percent. The Value of error

correction term (ECM) is -0.189257, which is significant at 5 percent level as the probability value is 0.0309. In this model error correction term implies that if there is disequilibrium in the long run it will revert back to equilibrium at the speed of 18.92 percent. It can be asserted that there exists long-run relationship among dependent and independent variables.

6.4.3.3 Country Specific Short-Run ARDL Estimates

Panel ARDL not only provide panel specific results but it also lay out the estimates of cross section short-run coefficients and error correction for each country in the panel. Table 6.26 lay out the short-run estimates of panel ARDL with ETC for each country of the panel.

Table No. 6.26. Cross Section Short-Run Coefficients for ARDL Model

Country	ETC-Coeff	Std. Error	t-Statistic	Prob.*
China	0.634574	0.045674	13.90380	0.0008*
India	-0.776937	0.278030	-2.794433	0.0682***
Indonesia	-0.294173	0.007683	-38.29045	0.0000*
Japan	-1.159236	0.112785	-10.27828	0.0020*
Korea	-0.716664	0.040120	-17.86251	0.0004*
Malaysia	0.164446	0.004287	-38.35960	0.0000*
Philippines	-0.022456	0.008708	-2.578904	0.0819***
Singapore	-0.555929	0.043451	12.79439	0.0510**
Thailand	-0.190772	0.003472	-54.94899	0.0000*
Turkey	-0.087280	0.018680	-4.672294	0.0185*

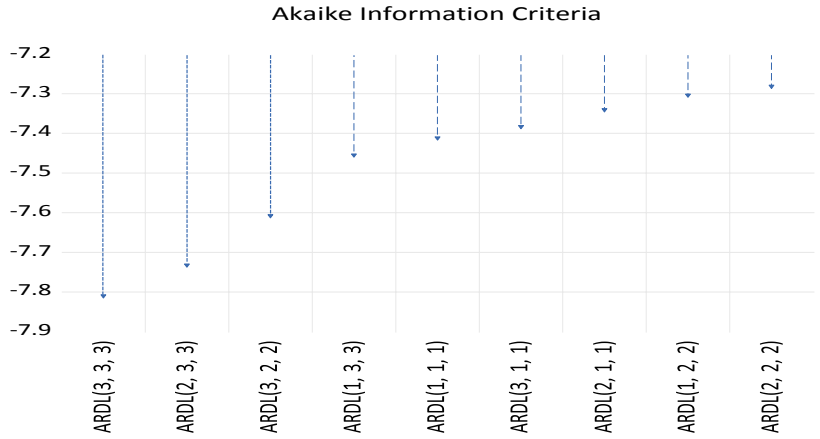
Note: (*) (**) (***) represents significance at one percent, five present and Ten percent respectively

The estimated results specifies that error correction term for each country is negative (except China and Malaysia) and significant at 10 percent level of p-value. A negative

value of ECT implies that if there is disequilibrium in the model, it will revert back to equilibrium in long-run for selected Asian economies. For the economy of China and Malaysia the value of ECM is positive but Significant. For all the countries the ECT is significant at 5 percent and 10 percent level which denotes that for selected Asian economies there exists a long run association in trade specialization, trade integration and financial integration.

The overall results of ARDL model elaborated the existence of short as well as long run association of TS, TI and FI with the model specification of ARDL (3,3,3). The graph below represents the optimum model selection criterion.

Graph No. 6.1: ARDL Model Selection Criterion.



6.4.4 : Toda-Yamamoto Causality output

If there exists a long-run relationship between the variables of study, the next step is to determine the direction of that relationship using causality analysis. The estimates of ARDL model tells wheatear the variables are associated to each other or not but it does not provide the direction of causal relationship among variables. To estimate the causal relationship, one need to apply causality test. These causal relationships can be neutral, unidirectional and bidirectional. A causality is said to be bidirectional if both the variables granger-cause each other. On the other hand, a causal relationship is unidirectional if only one variable granger-cause another variable. If both the variables are not causing each-other it is said have neutral relationship. The test of causality is based on the assumptions of X does not granger cause Y. where X and Y are two

variables of the model. The estimates of ARDL exhibits that there exists a negative and non-significant association between trade specialization and trade integration. Whereas financial integration and trade specialization are positively and significantly associated with each other. The direction of these associations among selected variables are examined using Toda-Yamamoto Causality test. The results are shown in table 6.27 as below.

The most common test to determine causality among variables is Granger-Causality given by Granger (1969). The test is based on zero restrictions on the estimates of lags of other (subset) variables. Also, it is specifically designed for stationary data. All these assumptions can lead to misleading results or spurious regression and problem in specification of the model (Gujarati, 2006). Dealing with the issue, Toda and Yamamoto (1995) proposed a technique to determine causality irrespective of the order of integration and other assumptions of cointegration. This proposed method is based estimating VAR using Modified Wald to ensure asymptotic distribution of $\chi 2$ statistics.

Table No.6.27. Toda-Yamamoto Causality (modified WALD) Test Result

Null Hypothesis	Chi-sq.	P-value	Granger Causality
TS does not granger cause TI	2.280582	0.51634	No Causality
TI does not granger cause TS	3.887412	0.27395	No Causality
TS does not granger cause FI	14.24179	0.00264	Causality
FI does not granger cause TS	3.180866	0.36461	No Causality
TI does not granger cause FI	15.42667	0.00151	Causality
FI does not granger cause TI	20.04175	0.0002	Causality

The estimates of Toda-Yamamoto Causality (modified WALD) asserts that there is no causal relationship between trade specialization and trade integration for Asian countries. Whereas, there is unidirectional relationship in trade specialisation and financial integration running from TS to FI. Though the causal relationship between trade

integration and financial integration is unidirectional. Both are causing each other in long run. The results are in line with existing literature where it is asserted that TI and FI both cause each other, whereas the relationship TS and TI is largely influenced by the strength of other variables in the system. Also, increase in specialization will foster financial integration, but later may ensure under specific circumstances.

6.3.5 Impulse Response Function (IRF)

The estimates of granger causality are limited to selected time period and it do not provide any future forecasting of the relationship among selected series that can actually describe the strength of existing relationship. The graphs of impulse response functions represent the process of transmission among variable from one to another. It also analyses the effect of one variable (dependent) on another variable (independent). Graph 6.2 represents the estimation of impulse response function graphically. The graphs represent the response of one variable after giving shock to another variable. It actually determines the impact of one variable on another variable. In this study the period of ten year is selected to determine the response of TS on TI and FI for Asian countries. IRF will determine how all these three indicators will impact each other during next ten years. The graphical representation of impulse response is described as below.

For every variable, the horizontal axis is representing the time period for which the impulse response function is has been generated and vertical axis are the response of the variable. The impulse response of TS to TS is presented for upcoming ten years when a standard shock is given to TS (trade specialization). The impact of TS to TS is highly positive in the beginning years declined gradually with time but remained positive over the entire period. Similarly shock to TI (trade integration) will affect TS (trade specialization) positively for next ten years. Also, the impact of shock to TI is increasing gradually over the years. On the other hand, one slandered shock to FI (financial integration) will impact negatively to TS in preceding ten years. Though the negative impact is constant from period 4 to period 7 and rising then after.

Similar impulse response is calculated for TI by giving shocks to TS, FI and TI itself. As it is clear from the graph that one slandered shock to TS will have negative impact on trade integration in the initial 3 period and positive impact after 3 periods

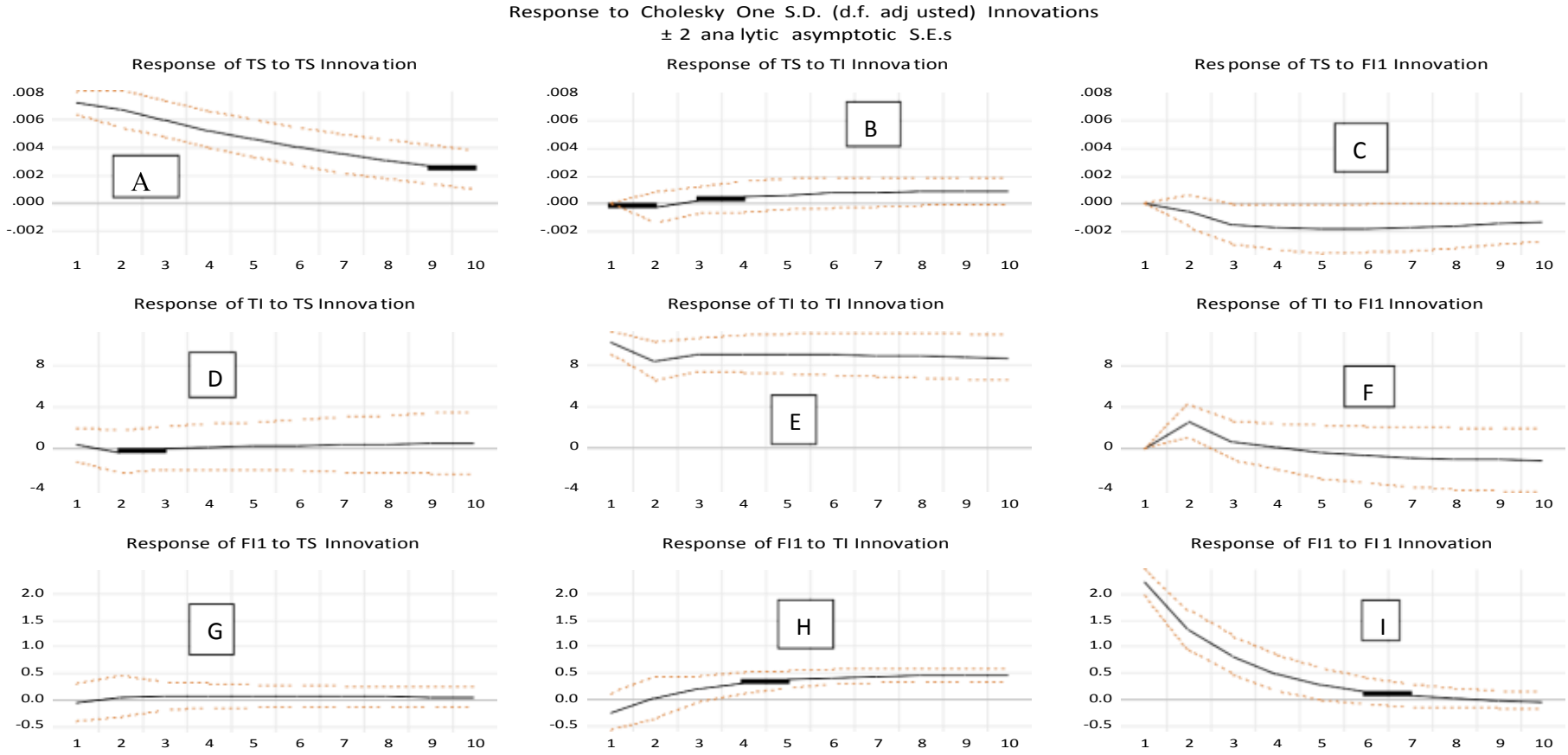
onwards. Though the impact of TS on TI is not very high as the graph line is close to zero for most of the period. On the other hand, one standard shock to FI is causing positive impact on TI for the initial four periods but fourth period onward the impact of FI on TS is negative. The impact of shock to TI is positive but stagnant over the period of ten year.

The impulse response function for FI (financial integration) is drawn giving shock to TI, TS and FI itself. One standard shock to TS is impacting positively to FI for entire period but the impact is not very high as the graph line of impulse response is close to zero for most of the period. Similarly, one shock to TI (trade integration) is causing positive impact on FI for second period onwards and the impact is increasing over the period. On the other hand, one standard shock to financial integration will cause high and positive but declining impact of FI up-to period 8 and it approaches to zero then after.

6.4.6 Variance Decomposition Analysis or Forecast Error Variance Decomposition (FEVD).

Variance decomposition analysis determines the forecast error variance of each that is assigned to shocks in itself and other variables in the system. It evaluates the contribution of information provided by each variable to other variables of the model. It also verifies the output of impulse response function. First part of the Table 6.28 describes the variance decomposition of TS (trade specialization) for upcoming ten years. The error forecast variation of TS is largely determined by its own shock of TS both in short as well as long run. Trade specialization, trade integration and financial integration contributed 99.78 percent, 0.12 percent and 0.09 percent respectively of the fluctuations in trade specialization in the second year. Whereas, in the longer period of the ten years TS, TI and FI contribution remained 94.99 percent, 1.77 percent and 3.22 respectively in the fluctuations of trade specialization. It can be asserted that trade specialization fluctuations are explained by its own shocks rather than shocks in the trade integration and financial integration. It is also evident that the shocks of TI and FI are explaining more of fluctuations in the TS in long-run.

Graph no. 6.2 Impulse Response Function of Trade specialization, Trade integration and Financial Integration



6.28. Table Variance Decomposition results of TS, TI and FI

Variance Decomposition of TS				
Period	**S.E.**	**TS**	**TI**	**FI**
1	0.007158	100.0000	0.000000	0.000000
2	0.009874	99.77583	0.125366	0.098802
3	0.011663	95.22073	1.180367	3.598905
4	0.012671	94.55641	1.391926	4.051662
5	0.013453	94.81946	1.303274	3.877263
6	0.014047	94.95741	1.338406	3.704188
7	0.014480	95.00695	1.426272	3.566779
8	0.014816	95.04495	1.523780	3.431268
9	0.015084	95.04868	1.634635	3.316681
10	0.015298	94.99737	1.775507	3.227119
Variance Decomposition of TI:				
Period	**S.E.**	**TS**	**TI**	**FI**
1	10.05581	0.310495	99.68950	0.000000
2	13.02077	0.188755	95.72561	4.085630
3	15.94124	1.436375	94.73379	3.829835
4	18.54235	1.570738	95.31776	3.111498
5	20.82537	1.581110	95.95069	2.468198
6	22.80074	1.553449	96.38691	2.059639
7	24.55652	1.520306	96.68511	1.794579
8	26.17066	1.459343	96.91668	1.623973
9	27.64209	1.388158	97.09967	1.512173
10	28.99534	1.319104	97.24596	1.434939

Cont.…

Variance Decomposition of FI:				
Period	**S.E.**	**TS**	**TI**	**FI**
1	2.147931	0.475760	3.735683	95.78856
2	2.515973	1.017308	2.767852	96.21484
3	2.713124	0.896992	5.188072	93.91494
4	2.820106	0.855887	6.496022	92.64809
5	2.894601	1.029977	8.107901	90.86212
6	2.944527	1.156640	9.941176	88.90218
7	2.984871	1.242791	11.90842	86.84879
8	3.019357	1.305580	13.68651	85.00792
9	3.050916	1.360290	15.34366	83.29605
10	3.081071	1.395301	16.92533	81.67937
Cholesky ordering: TS TI FI				

Similar results of variance decomposition are drawn for TI for upcoming ten years in the second part of table 6.28. It is evident from the output that any shock or innovation to trade integration is causing 95.72 percent fluctuation in trade integration (own shock) in the 2nd year. Whereas the innovation in TS and FI only causes 0.18 percent and 4.08 percent fluctuation in trade integration in the short period of two year. If the time period is extended for ten years the shock in TI is causing 97.24 percent fluctuation in TI itself. On the other hand, innovation and shock in TS and FI caused 1.31 percent and 1.43 percent fluctuation respectively in trade integration in the 10th year. It can be asserted that in long run trade integration is largely influenced by its own shock and the role of trade specialization in explaining fluctuations has increased over years.

The third part of the table 6.28 examined the variance decomposition of financial integration for ten years. It is evident from the table that any shock in the financial integration will generate 93.91 percent of fluctuation in FI (own shock) in the short period of 3 years. Whereas, the shocks or innovation in the TS and TI is causing 0.89 percent 5.18 percent of fluctuation respectively in trade integration in the 3rd year. Even in the

long (10 years) 81.67 percent of disturbance in FI is caused by innovation ion FI itself. On the other hand, innovation in TS and TI is causing 1.39 percent and 16.92 percent of fluctuation respectively for FI in the 10^{th} year. It can be asserted that in long run rather than trade specialization the impact of trade integration is more impactful in explaining the long run fluctuations in financial integration in long-run rather.

6.5 GMM Estimates

To unravel the relationship between trade specialization, trade integration and financial integration and to understand how one of them intervein the interaction of other two variables, GMM model is applied and presented below.

Model Specification

The basic model to determine the relationship between trade specialization trade integration and financial integration is described as below:

$$TS_{it} = u_i + \beta_1 TI_{it} + \beta_2 FI_{it} + \beta' Z_{it} + \varepsilon_{it} \qquad \text{(I)}$$

Where TS, TI and FI are trade specialization and trade integration and financial integration respectively. Where i stands for country and t represents for time. The u_i is the country specific fixed effect, β_1 *and* β_2 are the estimates of TI and FI independent variables. The value of β' is a $N \times 1$ parameter vector; Z is an $N \times 1$ vector of controlled variable. The ε_{it} represents error term.

Most of the classical theories predict that trade integration leads to more specialization and there is positive association in TS and TI. Similarly, financial integration will induce investment though risk sharing. Hence, β_1 and β_2 is expected to be positive. Economic development measured in terms of GDP per capita is used as controlled variable (Z). As the level of economic development increase, it is likely to induce more specialization in that economy.

The above (I) equation determined the effect of TI and FI on TS independently. But these variables are interconnected to each other. Hence, in order to determine the role of FI in determining the effect of TI on TS and vice-versa, the interaction term of independent variables is introduced in (1) equation and it can be written as;

$$TS_{it} = u_i + \beta_1 TI_{it} + \beta_2 FI_{it} + \beta_3 TI_{it} \times FI_{it} + \beta' Z_{it} + \varepsilon_{it} \quad \text{(II)}$$

It is more important to understand the magnitude of one type of integration in determining the effect of other type of integration on trade specialization. Empirically it is determined with the help of following equation:

$$\frac{\partial TS_{it}}{\partial TI_{it}} = \beta_1 + \beta_3 FI_{it} \quad \text{(IIa)}$$

$$\frac{\partial TS_{it}}{\partial FI_{it}} = \beta_2 + \beta_3 TI_{it} \quad \text{(IIb)}$$

There is sufficient literature to state that both trade integration and financial integration cause and affect each other. Trade openness will foster demand for capital movement in form of FDI and other financial flows. Similarly, financial integration will create more opportunities to exchange technology and goods beyond borders. Though the other factors that determine the relationship of financial integration and trade integration with trade specialization. To determine the role of Intra-industry trade and financial development in determining the effect of trade and financial integration on trade specialization the equation (1) can be written as below;

$$TS_{it} = u_i + \beta_1 TI_{it} + \beta_2 FI_{it} + \beta_3 TI_{it} \times IIT_{it} + \beta_4 IIT_{it} + \beta' Z_{it} + \varepsilon_{it} \quad \text{(III)}$$

$$TS_{it} = u_i + \beta_1 TI_{it} + \beta_2 FI_{it} + \beta_3 FI_{it} \times FD_{it} + \beta_4 FD_{it} + \beta' Z_{it} + \varepsilon_{it} \quad \text{(IV)}$$

The above equation (III) and (IV) explains the Trade specialization, trade integration and specialization introducing interaction terms and index for intra-industry trade (IIT) and financial development (FD). Classical trade theories asserted that trade integration will lead to more specialization if trade is IIT. Whereas, intra-industry trade will lead to less concentration of products for specialization. Thus β_3 in equation (III) is predicted to have negative sign with trade specialization if trade is more of intra-industry trade. Similarly, financial development fosters financial integration for having positive association with trade specialization, so β_3 in equation (IV) is expected to have positive sign.

Empirical Estimates of GMM

The Generalized Method of Moments (GMM) is a dynamic panel data estimator. system to deal autoregression in the dependent variable model when lagged values are introduced as explanatory variables. This econometric technique controls for the endogeneity aspect of lagged dependent variable in case explanatory variable and error term in the dynamic panel model. In these circumstances Ordinary Least Square (OLS) estimates can lead to misleading results. The two-step system GMM estimates are more appropriate to deal with the issue of reverse causality, country specific heterogeneity and non-stationarity of the data. The issue of endogeneity is solved taking lagged value of the dependent variable it is called System-GMM.

There are some diagnostic tests to consider to determine consistence estimates from GMM. To determine the endogeneity of variable (trade integration), Durbin Wu-Hausman test is applied. The instruments in the model are only valid if lagged values of dependent variable are uncorrelated with the error term. The validity of instruments is determined with Hansen test of overidentifying restriction. To determine the issue of reverse causality this condition Arellano-Bond serial correlation test is performed. The test of Aderson-Rubin is applied to check the relevance of endogenous regressor. The test of Kleibergen-Paprk test is used to examine whether the endogenous regressor is well-identified by the instruments. Descriptive analysis of the selected variables is described as below:

6.29 Descriptive statistics

Variables	Mean	Median	Max	Min	Std
TS	0.2027	0.1977	0.299	1.1412	0.0283
TI	103.72	60.47	473.32	19.798	98.789
FI	5.253	3.175	27.143	0.0246	5.767
IIT	1.0151	1.001	1.341	0.6312	0.137
FD	98.066	94.223	231.31	29.038	53.361
GDP (per capita)	15050.27	7229.44	59260.57	851.61	16698.73

Sources: Author's compilation

Table No. 6.30. Description of Sources

Description	Calculation	Sources
TS (trade specialization)	Herfindal-Hirschman index	ITC Trade Map
TI (trade integration)	Trade openness as percentage of GDP	WDI
FI (financial integration)	Current account as percentage of GDP	WDI
IIT (intra-industry trade)	Grubel-Lloyd index	ITC Trade Map
FD (Financial development)	Liquid Liabilities as percentage of GDP	WDI
GDPpc (GDP per capita)	WDI	WDI

Note: ITC Trade Map refers to International Trada centre Database, WDI refers to World Development Indicator

The empirical estimation of the model starts with the construction of indices and index's to be used in the model estimation. The empirical estimation starts with equation (I) to analyse the relationship between trade specialization trade integration and financial integration, keeping specialization a dependent variable.

It is evident from the table 6.31 that trade integration is negatively and significantly (at 5%) associated with trade specialization. It implies that increase in trade integration will result fall in specialization as latter will lead to more diversification of industrial technology and output. Once the difference in cost of factor of production is equalized among regions, further integration may not benefit specialization. Whereas, financial integration is positively and significantly (at 5%) related to trade specialization. It asserts an increase in financial integration will lead to increase in trade specialization. Such relationship may assert as financial integration pave a way to specialization via risk sharing (Kalemi-Ozcan et al., 2003).

Also, financial integration provides more access to financial markets, foreign investors and capital movement. Financial integration beings in cost effective technology and production channels to optimise specialization. The magnitude of negative association in trade specialization and trade integration is higher than the positive impact of financial integration on trade specialization.

Table. No. 6.31. GMM Estimates

Specification of Terms	**equation (I)**	**equation (II)**	**equation (III)**	**equation (IV)**
TI	-0.527**	-0.382***	-1.321**	-0.415**
	(0.213)	(0.153)	(0.432)	(0.139)
FI	0.123**	-0.476**	0.112***	0.267***
	(0.032)	(0.195)	(0.026)	(0.098)
TI*FI		0.136**		
		(0.028)		
TI*IIT			1.261**	
			(0.532)	
FI*FD				-0.038**
				(0.012)
IIT			-4.626***	
			(2.631)	
FD				0.201**
				(0.101)
GDP	-0.392**	-0.395**	-0.546**	-0.293***
	(-0.254)	(0.172)	(0.325)	(0.267)
GDP (PC^2)	0.102***	0.063**	0.051**	0.068**
	(0.041)	(0.031)	(0.069)	(0.059)
DIAGNOSTIC TEST				
Durbin-Wu-Hausman test	0.003	0.075	0.027	0.023
Arellano-Bond Test of Serial Correlation	0.051	0.021	0.067	0.089
Hansen J Test	0.834	0.043	0.251	0.258

***Sources**: Author's calculation*

Note: TI (trade integration), FI (financial integration), TS (trade specialization), IIT is intra-industry trade, FD is financial development, GDP and GDP (PC^2) is gross domestic product. All the diagnostic test Durbin-Wu-Hausman test (test of endogeneity), Arellano-Bond Test of Serial correlation (test of serial correlation) and Hansen J Test (test of over identification) are accepted at 5% p-value (**) and 10% p-value (***).

As, one standard deviation increase in trade integration resulted in 1.9 standard deviation decrease in trade specialization. On the other hand, one standard deviation

increases in financial integration results in increase in trade specialization of 0.59 standard deviation. With regard to the controlled variable GDP per capita income is positively associated with trade specialization and specialization is increasing with increase in per capita income. Though at initial level of per capita income country is not specialized and it is negative association in both. It is only after a certain level of income that specialization is increasing with the increase in per capita income. The threshold level of 22000 level of per capita income trade specialization start to reoccurs again. These estimates are in line with the estimates of Rizal Damuri et al. (2006) in context of East-Asian countries. Moreover, U shaped Relationship in per capita income can be defined as initial increase in income will create more diversified product demand that will lead to less specialization. It is only after a certain level of income the association between per capita income and trade specialization is increasing. The similar results are found by Naude (2008) found association in the pattern of trade specialization and income per capita. The Hausman test of endogeneity postulate that TI is an endogenous variable. The problem of serial correlation is rejected by AR (1) and AR (2) assert presence of second order serial correlation. Further, Hansen J-test accept the over-identifying restrictions to confirm the validity of instruments.

So far, we have determined the individual effect of TI and FI on trade specialization. In order to determine the joint effect, the interaction effect of both (TI and FI) on TS are mentioned in (II) equation. These results are mentioned in column (2) of table 6.31. The coefficient of interaction effect (0.136***) is positive and significant to assert the association of financial and trade integration. It implies that both the variables impact each other positively and it assert that one type of integration enhance other type of integration. Though it is important to understand the strength of both trade and financial integration in determining their individual effect on trade specialization. The magnitude of one type of integration is assessed through analysing its conditional marginal effect on the other type of integration. The equation (IIa) analyses the effect of financial integration in determining the relationship of trade integration and trade specialization. Similarly, (IIb) analyses the effect of trade integration in determining the relationship of financial integration and trade specialization. The estimation equations are represented as below:

$$\frac{\partial TS_{it}}{\partial TI_{it}} = \beta_1 + \beta_3 FI_{it} \qquad \text{(IIa)}$$

For mean value of financial integration	-0.156
For minimum value of financial integration	-0.885
For maximum value of financial integration	0.066

The estimates for the equations (IIa) represents the effect of TI on TS for different level of FI (Mean, Minimum and maximum). The estimated marginal effect of trade integration on specialization for mean value of financial integration is -0.156. Though, for the minimum value of financial integration the marginal effect of trade integration on trade specialization becomes -0.885. Increasing the financial integration to its maximum point the effect of trade integration is 0.066. These estimates suggest that trade integration and specialization are negatively related to each other when the level of financial integration is low. Whereas, after certain level of financial integration the trade openness may lead to positive association of trade integration and specialization. The results are justified as trade openness may lead to high market volatility in income and consumption of the resident in case there is not enough of financial integration in the markets to absorb risk associated with rising industrial diversity.

$$\frac{\partial TS_{it}}{\partial FI_{it}} = \beta_2 + \beta_3 TI_{it} \qquad \text{(IIb)}$$

For mean value of trade integration	0.155
For minimum value of trade integration	-0.070
For maximum value of trade integration	0.361

Similarly, equation (IIb) represents the effect of FI on TS for different levels of TI. For the mean of TI, the marginal effect of FI on TS is 0.155. Whereas for the at low level of TI the effect of FI on TS is -0.070. As the value of trade openness is at highest, financial integration effect on trade specialization is 0.361. From the estimated output it can be asserted that the positive association between trade integration and specialization more efficient when countries are open to trade. The results are justified as growing trade

integration will create more demand for financial flows to further induce trade specialization. Also, trade openness provides better investment opportunities to diversify risk associated with funds utilization. Though the effect of GDP per capita is negative in this equation asserting that interaction of trade and financial integration on trade specialization for the given level of GDP per capita is not sufficient to support this integration.

Overall, financial integration is more effectively related to trade specialization then trade integration as the marginal effect of former is -0.156 and for the latter the value is 0.155. The result also asserts that only at higher level of FI the effect of TI on TS is positive. On the other hand, effect of FI on trade specialization is effective for both mean and maximum level of trade integration. It implies both trade and financial integration further enhance trade specialization individually and mutually. The value of Hausman test confirm the endogeny of interaction in trade integration and trade specialization.

Having determine the linkages of trade, finance and specialization, the next part is to estimate the role of IIT and FD in explaining the proximity of TI and FI andTS. Column (III) describes the role of IIT in explaining the association between TI and TS. For this purpose, the Intra-Industry trade index and its interaction value with trade TI is introduced in the model. The interaction term is positive and significant at 5% level whereas the term IIT is negative and significant at 5% level. The output asserters that there is negative association in trade integration and intra-industry trade. The initial results of equation (I) asserted a negative association between TI and trade TS.

Though, trade integration in form of intra-industry trade will further enhance trade specialization. It is justified as intra-industry promotes the trade of similar goods and services. On the other hand, inter-industry trade will dilute the specialization pattern of trade in the country. The coefficient of financial integration is positive and significant to assert the role of financial openness in achieving trade specialization. Similarly, the role of FD in explaining the effect of FI on TS is presented in column (IV). The term FD and its interaction term with FI is introduced in equation (IV). The coefficient of financial integration its interaction term with financial integration is positive and significant. It asserts that financial development promotes financial integration to effect positively trade

specialization. GDP per capita term is also negative and significant which represents the effect of interaction term. All the diagnostic test confirms the model stability and specification.

Overall analysis of the linkages between trade, finance and specialization asserted that all the three variables are interrelated to each other in one or another way. Though there can be number of other factors to determine of effect the connectivity of trade integration, financial integration and trade specialization. Keeping in view the output, there is need to further explore on the nexus among three of them.

6.6 Summary and Conclusion

This chapter presents the investigation of trade integration financial integration and trade specialization proximity. Various conclusions can be drawn based on the estimated output. The chapter begins with the estimation of index of trade specialization and intra-industry trade. The country specific index is calculated based on HS-6 product classification and products are classified into technological and factor intensities such as: (a) Resource – Intensive; (b) technological Intensive- high, medium and low; (c) Mineral fuels; (d) non-Fuel primary commodities; (e) Unclassified products (Basu and Das, 2011). Herfindal-Hirschman Index (HHI) is calculated to determine the pattern of trade specialization and Grubel Llyod index is calculated to estimate intra-industry trade for selected Asian economies. The linkages of trade finance and trade specialization are estimated using econometric tools. Number of conclusions are drawn from the overall estimations.

First of all, the specialization index for selected Asian economies assert that all the selected economies have moderately concentrated trade specialization pattern (except Singapore and Philippines). Two countries in the panel Singapore and Philippines are have highly concentrated trade specialization pattern as the value of GLI is more than 2500 points.

The estimates of technological and factor intensities classification further assert that China and Japan both constitutes large share of technology and resource intensive manufactures in total specialization index. Though the overall specialization index for

China has fallen over the years. In case of India there is a shift in the trade specialization pattern of the country from non-fuel primary commodities and resource-intensive manufactures to technology intensive manufactures. Overall, the country has shifted from less specialized economy to more specialized economy. As far as the specialization index of Indonesia is concerned, it constitutes largest share of non-fuel primary commodities with declining share of primary and high-tech products share. Though there is slight increase in the specialization of low and high technology manufactures.

The trade specialization index of South Korea is dominated by technology intensive manufacturers. The country is more engaged in the manufactures of technology intensive products. There is shift from resource-based manufactures to machinery based-manufactures. Even for Malaysia technology intensive manufactures still constitutes large share in specialization index but with declining trends. Whereas, the share of non-fuel primary commodities has almost doubled during the time period. On the other hand, for Philippines the value of specialization index is much higher as compare to other Asian economies. Though the share of high-tech skill intensive manufactures has fallen and there is increase in the product category under medium skill technology. The country is highly specialized in the trade of high-tech industries.

Singapore's trade specialization has decline over the years as the value of concentration index is falling since 2007. Also, there is fall in the product specialization under high-tech technology intensive manufactures. Whereas the specialization under category of medium-technology intensive manufactures has increased and there is a persistence of dominance of specialization under high and medium technology manufactures. The results concluded that trade specialization in Thailand has increased over the years. Though the share of high-tech manufactures has fallen and medium-tech products constitutes the largest share in HHI of the country. It can be asserted that, Turkey is moderately concentrated in its specialization patterns of trade. Since joining custom unions, the specialization pattern of turkey's exports has changed resource intensive to technology intensive manufactures. Similarly, country specific trends for intra-industry trade are calculated for selected Asian economies.

It can be asserted that Japan is largely involved in intra-industry trade of primary and resource intensive products to meet the requirements of large population. Also growing intra-industry trade is electronic and machinery equipment is required to serve the demand for intermediate products. Thus, the extent of intra-industry trade is largely determined by the factor endowment and other geographical parameters. On the other hand, IIT of China indicates that intra-industry trade is moderate for mineral fuels and resource intensive, high for technology intensive manufactures and non-fuel primary commodities. Such pattern of IIT exists for the demand of intermediate and final goods containing technology intensive skill. IIT in primary commodities are needed to serve the growing population of the country and in mineral fuels and resource intensive manufactures serve as a source of fuel and raw material for high tech industries of China. Whereas, India's is largely involved in intra-industry trade of technology intensive manufactures (both low and high technology) and there are increased for non-fuel primary commodities over the period. Also, the GLI index of intra-industry trade in low-skill technology intensive and resource-intensive manufactures has increased and decreased for mineral fuels.

Similarly, the GLI for Indonesia asserts that country is moderately involved in intra-industry trade. It is evident that country is largely into intra-industry trade of technology intensive manufactures and moderately into mineral fuels and non-fuel primary commodities. Indonesia' total trade is dominated by inter-industry trade. Whereas, Korea's intra-industry trade is largely in the category of primary and fuel-based manufactures. Technology based manufactures constitutes moderate share in the intra-industry trade index. On the other hand, Malaysia is largely involved in technology-based manufactures and moderately into primary manufactures. These trends can be attributed to growing electronic industries and lesser growth of primary sector manufactures in the country.

In case of Philippines there is no specific pattern of Intra-Industry trade. There is trade of similar kind of products in the country. Singapore does involve in intra-industry trade to large extent but with declining trend in most of the classification used. The primary products and low technology-based products consist of major fraction of Intra-industry trade. Thailand is fairly involved in Intra-Industry trade of technology-based manufactures. There is large trade of intermediate products in Thailand for machinery and technology-based manufactures. Turkey's intra-industry revolves around high skill technology and

resource intensive manufactures. Whereas, the low-technology and mineral-fuel based products have declining trend of intra-industry trade for the country.

Overall, it can be asserted that there is no uniformity in the pattern of intra-industry trade and specialization pattern of the selected Asian economies. Though, most of the Asian economies are moderately specialized as per the HHI estimates. The GLI output also assert difference in the pattern of trade specialization. But most of the economies are shifting from primary product base to technology-based manufactures over the years.

These indices of intra-industry trade and specialization are further used two unravel the relationship in trade integration (TI), financial integration (FI) and trade specialization (TS) for selected Asian economies. The proximity among these three (TS, TI and FI) variables is assessed though various econometric tools. The estimates of panel unit root asserts that there all these three series have mixed order of integration, so it is advisable to use panel ARDL model. To proceed with further analysis, it is mandatory to determine the lag order. Choosing optimal lag length, the estimated output of panel ARDL model upheld a negative but insignificant relationship between trade integration and trade specialization. Whereas, financial integration is positively associated with trade specialization at significant P-value. Short ARDL estimates assert a positive association between TI and TS after three lags of the former. Similarly, there is negative association in TS and FI short run. The error correction term is also negative and significant to correct any disequilibrium in the model in long run.

The estimates of Toda-Yamamoto Causality (modified WALD) assert no causal relationship between trade specialization and trade integration and unidirectional relationship in trade specialisation and financial integration running from TS to FI. Also, the causal relationship between trade integration and financial integration is unidirectional. Both are causing each other in long run. The results are in line with existing literature where it is asserted that TI and FI both cause each other, whereas the relationship TS and TI is largely influenced by the strength of other variables in the system. Also, increase in specialization will foster financial integration, but later may ensure under specific circumstances.

The above results indicate trade Integration and specialization pattern are negatively associated and a positive association between financial integration and specialization is found. The results are in line with Kalemli- Ozcan et al. (2003). Though it is a complex phenomenon to unravel the relationship between trade integration and financial integration. Estimated of GMM model assert that negative association between trade specialization and trade integration is stronger than the positive association financial integration on trade specialization. The join effect of TI and FI is postulated in equation (II) of the model. The coefficient of interaction term of TI and FI is found to be positive and significant. It is also found that both the variables impact each other significantly and complement each other.

The role of FI (TI) on determining the relationship between TI (FI) and trade specialization is also estimated. The joint effect of trade and financial integration on specialization is also determined. The coefficient of interaction term is positive and significant. It implies that both the variables complement each other and financial integration will enhance trade integration and vice versa. Both type of integration will enhance trade specialization. It was found that trade integration is positively associated with trade specialization only at higher level of financial integration. Similarly, financial integration will lead to more specialization if countries are more open to trade. The relationship between FI and TS is positive at maximum value of TI. The degree of negative influence of TI on specialization is stronger than positive impact of financial integration on specialization.

In the last, the role of IIT and FD is accessed in the determining the nexus between trade integration, specialization, financial integration. It was found that higherlevel of intra-industry trade significantly determines the relationship between trade integration and specialization to large extent. Similarly, financial integration will promote specialization in the countries which are not financially developed. Thus, countries with higher level of intra-industry trade and lower level of financial development will reap the benefits from increased integration.

To sum up the linkages of trade integration, financial integration and specialization, it can be concluded that Asian countries are largely involved in intra-industry trade (Zhang & Li, 2006; Thorpe & Zhang, 2005). There is a shift in the

specialization pattern from primary to manufacturing production pattern (Alam, 2015; Xie & Zheng, 2019; Ervani et al, 2018). It is also concluded that trad integration is negatively associated with trade specialization as former may result in unwanted cyclical fluctuation and threat to infant firms. It can lead to the problem of inflation and exchange rate imbalances (Cooke, 2010; Vlastou, 2010). On the other side a positive association in trade specialization and financial integration is a latter provides the benefits of risk sharing, generate investments, innovations and new technology from within and across borders (Islamaj, 2014; Eichengreen et al, 2011; Andrews & Criscuolo, 2013). Moreover, intra-industry trade is leading to more specialization in the region as this is the basis of trade in Asia (Pratiwi, 2018). Also, the developing economies are not able to take advantage of international product fragmentation and involve in intra-industry trade (Damuri et al, 2006). The negative association of financial integration on specialization in the attributed to less financial development in Asia (Didier & Schmukler, 2014). Thus, it can be asserted that economic integration and specialization are interrelated and there is need to understand this mechanism to maximise the benefits and minimise the risk associated with it.

*****

CHAPTER 7

SUMMARY AND CONCLUSION

Economic integration has increased worldwide through minimal trade barriers and increased capital movements across borders. It facilitates the easy flow of goods and services; instead, it promotes the easy flow of capital across regions. Trade and financial integration are essential tools of economic integration. Economically integrated markets are more synchronized in their trade and money-related restrictions. Well-integrated markets remove the discrepancies at national borders to facilitate everyday needs, trade agreements, and the free flow of capital between regions. It further enhances the specialization pattern of the economy via increased productivity and efficient use of resources. It is essential to understand the relationship between economic integration and the specialization pattern of the region.

For the last three decades, economic integration in Asia has increased the trade and investment share of the region in the world. The process of trade integration liberalization started in the 1990s. In contrast, financial integration was more like an outcome of the financial crises of 1997-98 in the region. Since the arrival of financial crises, Asian countries have realized their financial interdependence as financial crises resulted from massive capital inflow in the region. European Union is considered the most successful example of economic integration based on the policy-led institutional framework. Unlike the EU, the integration process in Asia is entirely defensive and lacks any institutional framework to foster regionalism. Secondly, there is a vast diversity in the economic and political structure of the Asian economies, which makes it more complicated to determine the path of economic integration. Despite these issues, Asian integration is increasing in the form of expanded trade and investment. Regional integration has doubled the number of trading blocks, and global value chains are helping develop the world market. The path of integration in Asia is patchy. The role of regional blocks is yet to achieve. East- Asia is the most integrated region in Asia. However, the process of integration is only confined to trade integration. On the other hand, South Asian countries are barely integrated globally.

Under such diversity and the lack of a designed framework, it seems to be impossible to achieve the goal of economic integration in Asia. Also, it is more complicated to determine the pattern of specialization in the region. The study attempts to solve the nexus between economic integration and specialization for selected Asian countries. It explores the extent and level of trade and financial integration in Asia. It also analyzed the role of trade and financial integration in determining the specialization pattern of the region. Also, the interconnection between trade and financial integration is estimated.

7.1 Main Findings

Based on the estimated outputs, several conclusions and fining are stated below.

- Asia consists of the fastest growing economies globally with a differential level of economic growth. But as far as GDP per capita is concerned, it still lacks behind Europe.
- The trends of foreign direct investments (FDI) are quite impressive for selected Asian economies. FDI inflows in Asia have increased and amounted to 512 US billion dollars in 2018. Asia shares 42.62 US billion dollars in the world FDI inflow against Europe, which amounted to 21.31 US billion dollars. China is the largest recipient of FDI, with 139 $ billion in investment flow worldwide. India and Singapore are increasing their word share in investment inflows. East Asian countries are the largest recipient of investment inflows, including China as the largest FDI receiver.
- Asia's world share of FDI outflow (55 $ billion) is more than the EU's investment outflows (39 $ billion), and it has increased over the years. China, Japan, Kore, and Singapore are the leading countries in FDI inflows. East Asia surpassed all other Asian regions for investment outflows with 414 $ billion investment outflows in 2018.
- Due to global unrest, there is a decline in the trade openness for all the selected Asian economies. Also, Asia lags behind the EU in terms of trade openness. Countries like Singapore, Thailand, Malaysia, Korea, and Turkey are more open to trade than China, India, Indonesia, Japan, and the Philippines.

- Asia possesses a negative current account balance, which depicts the region as a net borrower. It also represents the excess saving and investment outflows. Economies like China, Singapore, Malaysia, Korea, Japan, and Thailand are net capital exporters. At the same time, counties like India, Indonesia, the Philippines, and Turkey are net importers of capital and possess a negative balance on the current account.
- Asian economies do not follow a united exchange rate regime, which can foster regional financial integration. Where most of the EU members follow free-floating exchange rate arrangements, Asian countries have diversity in their exchange rate arrangements
- The empirical estimates of the Feldstein-Horioka Puzzle state high cointegration between saving and investment for the selected panel of economies. Which asserts that there is less financial integration in Asia. The value of the saving-investment coefficient (β) is also high, which depicts the low level of integration in Asia
- Also, the value of saving investment correlation coefficient β has changed from 0.954 during the pre-crises period to 0.851 in the post-crisis period. The value of β has decreased, indicating an increase in financial integration.
- Being the largest continent globally, Asia contributes nearly 36 % of the global output. Only China, India, and Japan share 70% of Asia's GDP on purchasing power parity, and other panel members contribute approximately 5% in aggregate.
- Asia shares 40% of the world's export and 37% of the global import. China shares massive export, nearly 31% from Asia to the world, followed by Japan (9%), Korea (8%), Singapore (5%), India (4%), Indonesia (2%), Malaysia (3%), Philippines (1%), Thailand (3%), Turkey (2%) respectively.
- Similarly, China is the largest recipient of the world's export and shares nearly 28% of Asia's imports, followed by Japan (10%), Korea (8%), and India (6%), respectively. All other panel members share less than 5% of Asia's imports.
- China, Korea, Malaysia, and Singapore are countries with a positive trade balance for the entire period. In contrast, countries' trade balances, namely Japan, Indonesia, and Thailand, seem to be negatively affected in the post-crisis period.

India, the Philippines, and Turkey are the only countries with a negative trade balance for the entire period.

- China is the most desirable trading partner for all selected Asian economies in the panel. However, the country traded most with Japan, Korea, and Malaysia and less with India, Indonesia, Philippines, Singapore, Thailand, and Turkey.
- Also, China, Korea, Malaysia, and Japan are preferable destinations for bilateral trade for all the Asian counties in the panel. East-Asian economies (China, Japan, and Korea) are interdepended for their trade requirements. Even smaller countries like Singapore, Thailand, and the Philippines play a significant role in bilateral trade. Despite India being one of the most critical contributors to Asia's GDP, its bilateral trade is lesser than other countries in the panel.
- The output of the trade intensity index asserts that Asian economies share intense trade relationships. The country-specific estimates elucidate that China shares intense trade relationships with all selected countries as the index value is more than 1, except for India and Turkey.
- India's trade intensity is more toward ASEAN countries (Indonesia, Malaysia, Singapore, and Thailand). India's trade relationships with China and Japan are not impressive. Similarly, Japan's trade intensity towards India is not admirable, and it is more integrated with all Asian economies.
- Indonesia. Korea and Malaysia's intensity index value is more than 1 with all the selected countries except Turkey.
- Intra-regional trade trends reveal that trade within the panel of selected Asian economies is low compared to the panel's total. In selected economies, global trade has increased, but intra-regional trade within the panel has not altered much. The Asian crises of 1997-98 and the Global crises in 2011 harmed global and regional trade in Asia.
- Even the share of global trade has not improved over the years, but there is an increase in intra-regional trade in absolute terms for all countries. The highest average annual intra-regional growth rate is recorded for India (18%), followed by Turkey (16%), China (16%), and Thailand (10%), respectively. At the same time,

all other countries in the panel recorded less than 10 % average annual growth for intra-regional trade, with Japan occupying the last position.

- Country-specific share in the panel's intra-regional trade varies across selected countries. China contributes the largest share of intra-industry trade with an increasing trend over the period. India's share has also increased over the years. Countries like Japan, Singapore, Korea, Malaysia, and the Philippines have reduced their share of regional trade. Whereas Turkey, Thailand, and Turkey's share in regional trade has not changed with time.
- Further, the share of regional trade in total trade differs among Asian countries. Countries, namely Indonesia, Malaysia, and the Philippines, carry more than 55 percent of their total trade within the region. Whereas Singapore, Thailand, and Korea also contribute nearly 50 percent of their trade in the region. Japan, India, and China are the largest economies in Asia, but their share of intra-regional trade remained at 38 %, 26%, and 25 %, respectively.
- Intra-regional trade intensity index of major regional blocks, namely ASEAN, NAFTA, EU-27, SAARC, and the panel of selected Asian economies, assert home biasness for trading within the region. However, the index value of regional trade for the selected panel of Asian economies is less than all other four panels. It exhibits that the fixed panel is more integrated with global trade.
- Most of the selected Asian economies have a high intensity to trade with each other. Country-specific estimates portray that China and Japan are more integrated with all the counties except India and Turkey. However, the trade intensity of both countries in the region is falling over the period.
- India has more intense trade relations with ASEAN (Indonesia, Malaysia, Singapore, and Thailand) than China and Japan. Countries, namely Malaysia and the Philippines, are integrated well within the region with all countries except Korea, Turkey, and India. Most of the ASEAN economies (Singapore, Thailand, and Indonesia) and Korea are more integrated than all the selected countries in the region. Turkey is the least integrated country in the panel.
- Asian economies are trading well-integrated nationally and with the world market. Countries like China, Japan, Kore, and India dominate Asia's overall trading

pattern. In comparison, smaller countries like Singapore, Thailand, Malaysia, Philippines, Indonesia, and Turkey contribute more to intra-regional trade in the economy.

- Specialization Index (HHI) asserts that most selected Asian economies have a moderately concentrated trade specialization pattern. Whereas Singapore and the Philippines have highly concentrated trade specialization pattern as the value of HHI is more than 2500 points.
- Technological and factor intensities classification of products and estimated output asserts that China and Japan constitute a large share of technology and resource-intensive manufacturers in the total specialization index. Though, the HHI value for China has fallen over the years.
- Technology-intensive manufacturers largely dominate South Korea's production pattern. There is a shift from resource-based manufacturers to machinery based-manufactures.
- India's trade specialization shifts from non-fuel primary commodities and resource-intensive manufacturers to technology-intensive manufacturers. Overall, the country has moved from a less specialized economy to a more specialized economy.
- As far as the specialization index of Indonesia is concerned, it constitutes the largest share of non-fuel primary commodities with a declining share of primary and high-tech products share. There is a slight increase in the specialization of low and high-technology manufacturers.
- For Malaysia technology, intensive manufacturers still constitute a significant share in the specialization index but with declining trends. At the same time, the share of non-fuel primary commodities has almost doubled during the period.
- On the other hand, for the Philippines, the specialization index's value is much higher than in other Asian economies. Though the share of high-tech skill-intensive manufacturers has fallen, there is an increase in the product category under medium skill technology. The country is highly specialized in the trade of high-tech industries.

- Singapore's trade specialization has declined over the years as the value of the concentration index has been falling since 2007. Also, there is a fall in product specialization under high-tech technology-intensive manufacturers. Whereas the specialization under the category of medium-technology intensive manufacturers has increased, there is a persistence of dominance of specialization under high and medium technology manufacturers.
- The results concluded that trade specialization in Thailand has increased over the years. Though the share of high-tech manufacturers has fallen, medium-tech products constitute the largest share of the HHI in the country.
- Turkey's trade specialization patterns are moderately concentrated. Since joining custom unions, the specialization pattern of turkey's exports has changed from resource-intensive to technology-intensive manufactures
- Similarly, country-specific trends for intra-industry trade (GLI) for selected Asian economies asserted that Japan is involved mainly in intra-industry trade of primary and resource-intensive products to meet the requirements of a large population.
- IIT of China indicates that intra-industry trade is moderate for mineral fuels and resource-intensive, high for technology-intensive manufactures and non-fuel primary commodities. Such a pattern of IIT exists for the demand for intermediate and final goods containing technology-intensive skills. IIT in primary commodities serves the growing population of the country.
- India's intra-industry trade is not specific to any single product classification. The country is largely involved in intra-industry trade of technology-intensive manufactures (both low and high technology), and there has been an increase in non-fuel primary commodities over the period. Also, the GLI index of intra-industry trade in low-skill technology-intensive and resource-intensive manufacturers has increased and decreased for mineral fuels.
- GLI for Indonesia asserts that country is moderately involved in intra-industry trade. It is evident that the country is mainly into intra-industry trade of technology-intensive manufactures and moderately into mineral fuels and non-fuel primary commodities. Indonesia's total trade is inter-industry type.

- Korea's intra-industry trade is mainly in the category of primary and fuel-based manufacturers. Technology-based manufacturers constitute a moderate share of the intra-industry trade index.
- On the other hand, Malaysia is primarily involved in technology-based manufacturers and moderately into primary manufacturers. These trends attribute to growing electronic industries and the country's lesser growth of primary sector manufacturers.
- In the case of the Philippines, there is no specific pattern of Intra-Industry trade. There is a trade of similar kinds of products in the country.
- Singapore is involved in intra-industry trade, but with a declining trend in most classifications. The primary and low technology-based products consist of a significant fraction of Intra-industry trade.
- Thailand is fairly involved in the Intra-Industry trade of technology-based manufacturers. There is large trade of intermediate products in Thailand for machinery and technology-based manufacturers.
- Turkey's intra-industry revolves around high-skill technology and resource-intensive manufacturing. At the same time, the low-technology and mineral-fuel-based products have a declining trend of intra-industry trade for the country.
- Overall, there is no uniformity in the pattern of intra-industry trade and specialization pattern of the selected Asian economies. However, most Asian economies are moderately specialized as per the HHI estimates. The output of specialization test also asserts a difference in the pattern of trade specialization. But the, most economies are shifting from primary product base to technology-based manufacturers over the years.
- Various econometric tools evaluate the nexus between trade specialization, trade integration, and financial integration. The diagnostic tests of panel unit root assert that all these three variables (TS, TI, and FI) are not stationary at the level and have a mixed order of integration.
- The estimated output of the panel ARDL model upheld that trade integration and trade specialization have a negative but insignificant relationship. At the same

time, financial integration associate positively with trade specialization at a significant P-value.

- Short-run estimates of ARDL assert a positive association between TI and TS after three lags of the former. Similarly, there is a negative association between TS and FI short run. The error correction term is also negative and significant to correct any disequilibrium in the model in the long run.
- Toda-Yamamoto Causality (modified WALD) test estimates assert no causal relationship between trade integration and specialization. There is a unidirectional relationship between trade specialization and financial integration running from TS to FI. Also, the causal relationship between trade integration (TI) and financial integration (FI) is unidirectional. Both variables are causing each other in the long run.
- The GMM estimates indicate that trade Integration and specialization pattern are negatively associated. At the same time, there is a positive association between financial integration and specialization. The magnitude of the negative association between trade specialization and trade integration is higher than the positive impact of financial integration on trade specialization.
- The model presents the impact of GDP on trade specialization. At the initial level of per capita, income country is not specialized, and it is negatively associated with specialization pattern. Only after a certain level of income does specialization increase with increased per capita income.
- The combined effect of trade and financial integration in determining trade specialization is also determined. The coefficient of interaction (0.136***) term of trade and financial integration is positive and significant. It implies that both variables positively impact each other, and it asserts that one type of integration enhances a different kind of integration. Both trade and financial integration complement each other.
- Financial integration (trade integration) on determining the relationship between trade integration (financial integration) and trade specialization is also estimated. Also, trade integration is positively associated with trade specialization only at a higher level of financial integration. Similarly, financial integration will lead to

more specialization if countries are more open to trade. The relationship between FI and TS is positive at the maximum value of TI.

- In the last section, the estimates present how intra-industry trade and financial development determine the nexuses between trade integration, specialization, and financial integration. For this purpose, the model introduced the terms Intra-Industry trade index and its interaction term with trade integration. The interaction term is positive and significant at a 5% level, whereas the term IIT is negative and significant at a 5% level. The output asserts a negative association between trade integration and specialization. Whereas, trade integration in form of industry trade will further enhance trade specialization.
- The role of financial development in explaining the effect of financial integration on trade specialization is also estimated. Financial development is positive and significant to present its positive impact on specialization. At the same time, its interaction term with financial integration is negative and significant. It asserts that the effect of financial integration in promoting specialization is larger in countries with the less developed financial system. And smaller than those with more developed financial systems.

7.2 Conclusion and Policy Implications

Globalization has fostered economic integration worldwide. In the initial periods of globalization, economic integration as liberal trade and financial markets was only confined to developed markets, e.g., the EU. Unlike those developed markets, economic integration in Asia started with the export-led policies of the industrial revolution. The process of financial integration in Asia was initiated only after the advent of the financial crisis of 1997-98. But the idea of complete economic integration in the region is nearly impossible as Asia is one of the most heterogeneous regions comprising a range of diverse economies with a difference in trade and financial development. There is a great deal of heterogeneity in financial markets, from countries with a sophisticated financial system to countries lacking the fundamental of a developed financial system. Similarly, trade integration is partial and concerned to a few countries in the region. The estimated outputs assert Asia is less integrated financially. Though, the integration is growing in the post-crisis period. The results from the Feldstein-Horioka Puzzle assert that saving and

investments rate are cointegrated and there is less dependence on external investments in the region. The rising gap in saving and investment rates indicates the room for external capital flows in the region. The Feldstein-Horioka Puzzle is an indicator of current account imbalances, and it can give direction on the surplus saving and undesired capital inflows. As far as trade integration is concerned, it mostly confines to East-Asian economies. ASEAN countries are also contributing most to regional trade. The overall trade integration in the region is satisfactory. The estimates also indicate that trade, finance, and specialization are interrelated. Trade specialization has a positive association with financial integration and negatively relates to trade integration. Trade integration in the presence of intra-industry trade effect positively specialization patterns. In contrast, financial integration impacts more specialization having an underdeveloped financial system. All three variables (trade integration, trade specialization, and financial integration) are interrelated. Thought, the issue related to each of them are needed to address specifically. In light of the results, some policy implications are addressed below;

- Unlike the EU, financial crises are less effective and vulnerable to Asian economies as capital accounts openness makes countries more prone to financial crises. There is a need for policy implications to check capital account openness.
- Falling trade openness in the region during the post-crisis period indicates the shattered trust in the open international trading system. Thus, inter-linkages of trade and financial integration must be an agenda of policymakers.
- A high correlation between saving and investment in the region indicates less financial integration. Also, there is an excess of saving on investment in the region, meaning a substantial current account surplus, specifically during the post-crisis period. There was a rise in the saving rate as a precautionary measure to offset the impact of financial crises. In post-crisis periods, the excess of saving on investment may not necessarily indicate underinvestment. So, there is a need to focus on the policies regarding promoting consumption to deal with capital account imbalances.
- A decline in investment during post crises indicates a lack of an institutional framework to deal with vulnerability and risk associated with capital flows. Policy

implications for improving public and corporate governance are needed to promote new investment and cope with the risk associated with those investments.

- Lack of overall financial development is the main reason for slow investment and capital flows across regions. An efficient financial system not only mobilizes savings and boosts investments instead, it promotes productivity by enhancing the efficiency of investment. There is a need to develop deeper, broader, and more liquid financial markets.
- The Government can play a bridging role in filling the gap between rising savings and falling investment. It is possible by making new productive investments by the Government or guaranteeing the private sector investment to minimize the risk.
- Trade integration in the region is partial and confined to east Asian economies. There is a need to formulate policies to foster equal participation of all the countries in the region's regional trade. The rise of China as a dominant power can seriously threaten the political and security environment of the other countries. India, Japan, and Korea need to construct a multilateral mechanism to act as a middle power to deal with regional and global insecurity.
- The other reason for patchy trade integration in Asia is the political rivalry between India and China and between China, Korea, Japan, etc. There is a need to formulate a regional anchor as a balancing power in political rifts as political factors are an essential determinant of trade agreements.
- There is a need to foster bilateral and pan-Asian trade agreements as it provides more comprehensive coverage of trade-related regulations and harmonizes ROO (rule of origin). Lowering tariff rates is another policy implication to enhance bilateral trade.
- There can-not be any single policy framework to speed up trade integration in Asia. But, economic zones, regional blocks, trade-related agreements, and financial development are the prerequisites to fostering trade integration.
- Resource-intensive and medium-technology-based products dominate the content of industrial specialization in Asia. The burden of excess population and lack of an efficient industrial structure cause prevailing specialization in the region.

- Uneven specialization patterns among selected Asian economies indicate differential institutional arrangements and government interventions. Industrialization in Japan, Kore, and Singapore is the outcome of public sector intervention. China s industrialized based on its state-led developmental policies and the crucial role of small and medium enterprises. In contrast, Thailand, Malaysia, and Indonesia followed the industrialization process of China, Japan, and Korea. In the case of India, the removal of trade controls with unselective support to domestic industries led coherent development strategy. Industrial development in technology-based industries did not pay off to save labour.
- There is a need for a policy framework to induce industrialization for job creation. There is a need to focus on research and development and investment in human capital to absorb surplus labour in technology-based industrialization.
- There is a need to study the interdependence between trade, finance, and specialization to minimize the risk associated with global integration.

7.3 Limitation and Future Scope

The study is an attempt to determine specialization and integration in selected Asian economies in a panel format. The work can be extended for country specific analysis. There is good scope to determine trade and financial integration with different indicators.

*****

REFERENCES & BIBLIOGRAPHY

Abd-el-Rahman, K. (1991). Firms' competitive and national comparative advantages as joint determinants of trade composition. *Review of World Economics,* 127(1), 83-97. https://doi.org/10.1007/bf02707312

Agénor, P. (2003). Benefits and costs of international financial integration: Theory and facts. *The World Economy,* 26(8), 1089-1118. https://doi.org/10.1111/1467-9701.00564

Aghion, P., & Howitt, P. (1998). Market structure and the growth process. *Review of Economic Dynamics*, *1*(1), 276-305. https://doi.org/10.1006/redy.1997.0007

Ahmad, I., Kunroo, M. H., & Sofi, I. A. (2018). An RCA analysis of India–China trade integration. *Foreign Trade Review, 53*(1), 49-58. https://doi.org/10.1177/0015732516681885

Ahmed, A. D., & Suardi, S. (2009). Macroeconomic volatility, trade, and financial liberalization in Africa. *World Development*, *37*(10), 1623-1636. https://doi.org/10.1016/j.worlddev.2009.03.009

Aizenman, J., & Noy, I. (2006). FDI and trade—two-way linkages? *The Quarterly Review of Economics and Finance*, *46*(3), 317-337. https://doi.org/10.1016/j.qref.2006.02.004

Aizenman, J., & Noy, I. (2009). Endogenous financial and trade openness. *Review of Development Economics*, *13*(2), 175-189. https://doi.org/10.1111/j.1467-9361.2008.00488.x

Akram, Q. F., Rime, D., & Sarno, L. (2009). Does the law of one price hold in international financial markets? Evidence from tick data. *Journal of Banking & Finance, 33*(10), 1741-1754. https://doi.org/10.1016/j.jbankfin.2008.10.012

Alam, M. I. (2015). Indo-Asean Trade Relation: An Analysis. J*ournal of International Economics* (0976-0792), 6(1), 73-106.

Allen, F., & Gale, D. (2000). Financial contagion. *Journal of political economy*, 108(1), 1-33. https://doi.org/10.1086/262109

Amador, J., Cabral, S., & Ramos Maria, J. (2007). *International trade patterns over the last four decades: how does Portugal compare with other cohesion countries*? (MPRA working paper No. 5996). https://mpra.ub.uni-muenchen.de/id/eprint/5996

Amiti, M. (1999). Specialization patterns in Europe. *Weltwirtschaftliches Archiv*, *135*(4), 573-593. https://doi.org/10.1007/bf02707385

Ando, M., & Kimura, F. (2014). Evolution of machinery production networks: Linkage of North America with East Asia. Asian Economic Papers, 13(3), 121-160.

Ando, M., & Kimura, F. (2005). The formation of international production and distribution networks in East Asia. *International Trade in East Asia*, 177-213. https://doi.org/10.7208/chicago/9780226379005.003.0007

Andrews, D. & Criscuolo, C. (2013). *Knowledge-based capital, innovation and resource allocation* (OECD Economics Department Working Papers, No. 1046). OECD Publishing. http://dx.doi.org/10.1787/5k46bj546kzs-en

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, 58(2), 277-297. https://doi.org/10.2307/2297968

Artis, M. J., & Bayoumi, T. (1992). Global capital market integration and the current account. *Money and Financial Markets, Cambridge, MS and Oxford: Blackwell*, 1992, 297-307.

Artis, M. J., & Hoffmann, M. (2007). *Declining home bias and the increase in international risk sharing: Lessons from European integration*. CEPR Discussion Paper No. DP6617. https://ssrn.com/abstract=1140546

Asian Development Bank. (2015). *How can special economic zones catalyze economic development*? Asian economic integration report 2015: Asian Development Bank. http://portal.gms-eoc.org/uploads/resources/1898/attachment/asian-economic-integration-report-2015.pdf

Athukorala, P. C., & Kohpaiboon, A. (2009). *Intra-regional trade in East Asia: The decoupling fallacy, crisis, and policy challenges* (ADBI working paper No. 177). https://www.researchgate.net/publication/46457446

Athukorala, P. C., & Yamashita, N. (2008). Patterns and determinants of production fragmentation in world manufacturing trade. *In Globalisation, regionalism and economic interdependence*, 45-72. Cambridge University Press.

Athukorala, P., & Yamashita, N. (2006). Production fragmentation and trade integration: East Asia in a global context. *The North American Journal of Economics and Finance*, *17*(3), 233-256.

Baele, L., Ferrando, A., Hördahl, P., Krylova, E., & Monnet, C. (2004). Measuring European financial integration. *Oxford review of economic policy*, *20*(4), 509-530.

Bagchi, S., & Bhattacharyya, S. (2019). Country-specific determinants of intra-industry trade in India. *Foreign Trade Review*, *54*(3), 129-158. https://doi.org/10.1177/0015732519851630

Bai, Y. (2005). *Financial integration and international risk sharing*. [Doctoral dissertation, University of Minnesota]. Retrieved from: https://www.proquest.com/openview/1144b2d1e6475dfeb12efb343bcdec21

Balassa, B. (1961). *The Theory of Economic Integration*. George Allen & Unwin Ltd. London. Retrieved from: https://doi.org/10.4324/9780203805183

Balassa, B. (1965). Trade liberalisation and "revealed" comparative advantage. *The manchester school*, *33*(2), 99-123. https://doi.org/10.1111/j.1467-9957.1965.tb00050.x

Balassa, B. (1977). Revealed comparative advantage revisited: An analysis of relative export shares of the industrial countries, 1953–1971. *The Manchester School*, *45*(4), 327-344. https://doi.org/10.1111/j.1467-9957.1977.tb00701.x

Baldwin, R. (2009). *The spoke trap: hub and spoke bilateralism in East Asia. Swiss National Centre of competence, Geneva* (Working Paper, No 2009/28). Retrieved from: https://www.researchgate.net/publication/228380146

Baltzer, M., Cappiello, L., De Santis, R. A., & Manganelli, S. (2008). *Measuring financial integration in new EU member states*. ECB Occasional Paper, (81). Available at http://dx.doi.org/10.2139/ssrn.1084908

Banerjee, A., & Zanghieri, P. (2003). *A new look at the Feldstein-Horioka puzzle using an integrated panel* (CEPII, Working paper No 2003-22). Retrieved from https://www.researchgate.net/publication/5004395

Bank, E. X. I. M. (2014). *Outward Direct Investment from India: Trends, Objectives, and Policy Perspectives*. Occasional Papers, (165). Retrieved from: https://www.eximbankindia.in/Assets/Dynamic/PDF/Publication Resources/Research Papers/5file.pdf

Bank, A. D. (2008). *Emerging Asian regionalism: A partnership for shared prosperity*. Asian Development Bank. Retrieved from http://hdl.handle.net/11540/4725

Bank, A. D. (2015). *Asian economic integration report 2015: How can special economic zones catalyze economic development?* Asian Development Bank. Retrieved from: https://www.adb.org/publications/asian-economic-integration-report-2015

Basile, R., & Girardi, A. (2010). Specialization and risk sharing in European regions. *Journal of Economic Geography*, *10*(5), 645-659.

Basu, S. R., & Das, M. (2011). Export structure and economic performance in developing countries: Evidence from nonparametric methodology. *United nations publication*, ISSN 1607-8291. Retrieved from: https://ideas.repec.org/ p/unc/blupap/48.html

Batra, A., & Khan, Z. (2005). *Revealed comparative advantage: An analysis for India and China* (Working paper No. 168). Retrieved from: https://www.econstor.eu/handle/10419/176190

Baxter, M., & Crucini, M. J. (1993). Explaining saving-investment correlations. *American Economic Review,* 83(3), 416-436. https://www.jstor.org/stable/2117526

Bayoumi, T. (1989). *Saving-investment correlations: Immobile capital, government policy or endogenous behavior*? (IMF Working Paper, 89–66). Washington D.C: IMF. Retrieved from: https://papers.com/abstract_id=884916

Beck, T. (2002). Financial development and international trade: Is there a link? *Journal of international Economics*, 57(1), 107-131. https://doi.org/10.1016/S0022-1996(01)00131-3

Beine, M., & Coulombe, S. (2007). Economic integration and the diversification of regional exports: Evidence from the Canadian-U.S. free trade agreement. *Journal of Economic Geography,* 7 (1), 93–111. https://doi.org/10.1093/jeg/lbl022

Beine, M. A., & Coulombe, S. (2004). Economic integration and regional industrial specialization: Evidence from the Canadian-U.S. FTA experience. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.588223

Bernard, A. B. & Jensen, J.B. (2004). Exporting and productivity in the USA. *Oxford Review of Economic Policy, 20*(3), 343-357. https://doi.org/10.1093/oxrep/grh020

Bhattacharya, A. & Ghosh, A. (2016). Short Term Determinants of International Financial Integration of Middle-Income Countries. *International Journal of Research on Social and Natural*, 1(1), 2455-5916. http://www.katwacollegejournal.com

Bhowmik, R., Zhu, Y., & Gao, K. (2021). An analysis of trade cooperation: Central region in China and ASEAN. *Plos one*, 16(12), e0261270. https://doi.org/10.1371/journal.pone.0261270

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115-143. https://doi.org/10.1016/s0304-4076(98)00009-8

Borensztein, M., & Loungani, M. (2011). *Asian financial integration: Trends and interruptions* (IMF Working Paper No. 11/4). http://dx.doi.org/10.2139/ssrn.1738062

Bos, J. W. B., Economidou, C., & Zhang, L. (2011). *Specialization in the Presence of Trade and Financial Integration: Explorations of the Integration- Specialization Nexus*. Maastricht University School of Business and Economics, Working paper no. 26. DOI: 10.1007/s00181-019-01652-1

Brainard, W.C. & Cooper, R.N. (1968). Uncertainty and diversification in international trade. *Food Research Institute Studies*, 8(3), 1-29.

Britannica, T. Editors of Encyclopaedia (2021, December 13). *Heckscher-Ohlin theory 1933*. *Encyclopedia Britannica*. https://www.britannica.com/topic/Heckscher-Ohlin-theory

Brouwer, G. (2005). Monetary and financial integration in Asia: Empirical evidence and issues. In Asian Development Bank *(*Ed.1). *Asia Economic Cooperation and Integration Progress, Prospects, Challeng (*pp. 269-293). Available at: https://researchprofiles.anu.edu.au/en/publications/monetary-and-financial-integration-in-asia-empirical-evidence.

Busse, M. & Groizard, J.L. (2008). Technology trade in economic development. *World Economy*, 31(4), 69-592. https://doi.org/10.1111/j.1467-9701.2007.01066.x

Cadot, O., Carrere, C. & Strauss Kahn, V. (2013). Trade diversification, income, and growth: what do we know? *Journal of Economic Surveys*, 27(4), 790-812. https://doi.org/10.1111/j.1467-6419.2011.00719.x

Capannelli, G., (2011). Shaping Asia's institutional architecture for economic and financial integration: Opinion leaders' views. *International Economic Journal*, 25(4), 593-616. https://doi.org/10.1080/10168737.2011.636624

Caporale, G. M., Sova, A., & Sova, R. (2015). Trade flows and trade specialisation: The case of China. China Economic Review, 34, 261-273. Retrieved from: https://doi.org/10.1016/j.chieco.2015.03.010

Caprio, G. & Honohan, P. (1999). Restoring banking stability: beyond supervised capital requirements. *Journal of economic perspectives*, 13(4), 43-64. https://www.jstor .org/stable/2647012

Caprio, G. & Howard, D.H. (1984). *Domestic saving, current accounts, and international capital mobility* (International Finance Discussion No. 244). https://www.federalreserve.gov/pubs/ifdp/1984/244/ifdp244.pdf

Carmignani, F. & Chowdhury, A. (2005). *The Impact of Financial Openness on Economic Integration: Evidence from the Europe and the CIS* (University of Milano-Bicocca, Working Paper No. 88). Retrieved from: https://ideas.repec.org/ p/mib/wpaper/88.html

Cestepe, H., Ergun, H. & Zorlu, S. (2017). The level and structure of Turkey's intra-industry trade with countries of organization of the Black Sea Economic cooperation. *Bartın Universities İ.İ.B.F. Dergisi*, 8 (15), 343-362. https://dergipark.org.tr/en/download/article-file/326783

Chambet, A. & Gibson, R. (2008). Financial integration, economic instability and trade structure in emerging markets. *Journal of International Money and Finance*, 27(4), 654-675.

Cheng, K.J.G. & Daway, S.L.S. (2018). The role of domestic financial and economic development in financial integration. *Applied Economics Letters*, 25(2), 119-124. https://doi.org/10.1080/13504851.2017.1302054

Chinn, M.D. & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of development economics*, 81(1), 163-192. https://doi.org/10.1016/j.jdeveco.2005.05.010

Choi, I. (2001). Unit root tests for panel data. *Journal of international money and Finance*, 20(2), 249-272. https://doi.org/10.1016/S0261-5606(00)00048-6

Chow, H.K., Kriz, P.N., Mariano, R.S. & Tan, A.H. (2005). *Trade, Investment, and Financial Integration in East Asia* (SMU-SESS Working Paper No, 06-2005). https://www.researchgate.net/publication/228388806

Coakley, J., Hasan, F. & Smith, R. (1999). Saving, investment, and capital mobility in LDCs. *Review of International Economics*, 7(4), 632-640. https://doi.org/10.1111/1467-9396.00188

Coakley, J., Kulasi, F. & Smith, R. (1996). Current account solvency and the Feldstein--Horioka puzzle. *The Economic Journal*, 106(436), 620-627. https://doi.org/10.2307/2235567

Colacito, R. & Croce, M.M. (2013). International asset pricing with recursive preferences. *The Journal of Finance*, 68(6), 2651-2686. https://www.jstor.org stable /42002578

Comerford, D., & Rodríguez Mora, J. V. (2019). The gains from economic integration. *Economic Policy*, *34*(98), 201-266. https://doi.org/10.1093/epolic/eiz004

Cooke, D. (2010). Openness and inflation. *Journal of Money, Credit and Banking, 42*, 267–287. Retrieved from: 10.1111/jmcb.2010.42.issue-2-3

Cowen, D., Salgado, R., Shah, H.C., Teo, L. and Zanello, A. (2006). *Financial integration in Asia: recent developments and next steps* (IMF Working Paper No. 06/196). Available at SSRN: http://dx.doi.org/10.2139/ssrn.934455

Crabbe, K., Beine, M. & Vandenbussche, H. (2007). *Trade, institutions and export specialization in Central Europe*. In Proceedings Spring 2007 Midwest Trade Meeting (pp. 1-31). Twin Cities Campus of the University of Minnesota; Minnesota. https://lirias.kuleuven.be/1712141?limo=0

Dalum, B., Laursen, K. & Verspagen, B. (1999). Does specialization matter for growth? *Industrial and corporate change*, 8(2), 267-288. https://doi.org/10.1093/icc/8.2.267

Damuri, Y.R., Atje, R. & Gaduh, A.B. (2006). *Integration and trade specialization in East Asia (*Centre for Strategic and International Studies (Jakarta), Working Paper No. 94). Retrieved from: http://www.csis.or.id/papers/wpe094

De Benedictis, L., Gallegati, M. & Tamberi, M. (2009). Overall trade specialization and economic development: countries diversify. *Review of World Economics*, 145(1), 37-55. https://link.springer.com/article/10.1007/s10290-009-0007-4

De Gregorio Rebeco, J. (1999). Financial integration, financial development, and economic growth. *Estudios de Economía*, 26(2), 137-161.

De Melo, J., Panagariya, A. & Rodrik, D. (1992). *The new regionalism: a country perspective*. CEPR Discussion Papers 715. World Bank Publications. Retrieved from: https://ideas.repec.org/p/cpr/ceprdp/715.html

Dean, J.M., Lovely, M.E. & Mora, J., 2009. *Decomposing PRC-Japan-US trade: Vertical specialization, ownership, and organizational form* (ADBI Working Paper No. 159). Retrieved from: http://hdl.handle.net/10419/53661

Deb, M. P., Gjonbalaj, A., & Hannan, M. S. A. (2019). *The drivers, implications and outlook for China's shrinking current account surplus* (International Monetary Fund, Working Paper No. 2019/244). Retrieved from: https://www.imf.org/en /Publications/WP/Issues/2019/11/08/

Dee, P. & Gali, J. (2005). *The trade and investment effects of preferential trading arrangements. NBER Chapter, In: International Trade in East Asia (pp. 133-176).* University of Chicago Press. Retrieved from: URL: http://www.nber.org/ chapters/c0193

Didier, T., & Schmukler, S. (2014). *Financial Development in Asia: Beyond Aggregate Indicators* (World Bank Policy Research Working Paper No. 6761). Available at SSRN: https://ssrn.com/abstract=2386355

Dooley, M., Frankel, J. & Mathieson, D.J. (1987). International capital mobility: What do saving-investment correlations tell us?. *IMF Econ Rev*, 34(3), 503-530. Retrieved from: https://doi.org/10.2307/3867094

Dornbusch, R., Fischer, S., Samuelson, P. A. (1977). Comparative advantage, trade, and payments in a Ricardian model with a continuum of goods. *The American Economic Review*, 67 (5), 823–839. https://www.jstor.org/stable/1828066

Drysdale, P. (2005). *Regional Cooperation in East Asia and FTA Strategies*. Pacific Economics Paper No. 344. Canberra: Australia National University. Retrieved from: http://hdl.handle.net/1885/43125

Edison, H. J., Levine, R. Ricci, L., & Slok, T., 2002. *International financial integration and economic growth* (Working Paper No. 9164). Retrieved from http://www.nber.org/papers/w9164

Edwards, S. (2001). *Capital Mobility and Economic Performance: Are Emerging Economies Different*? (NBER Working Paper No. 8076). Retrieved from: http://www.nber.org/papers/w8076.pdf

Edwards, S. (2007). Capital controls, sudden stops, and current account reversals. *In capital controls and capital flows in Emerging Economies: policies, practices, and consequences (pp. 73-120)*. University of Chicago Press.

Eichengreen, B. & Park, Y.C. (2003). *Why has there been less financial integration in Asia than in Europe*? (Department of Economics, working paper series qt6823v94). Department of Economics, Institute for Business and Economic Research, UC Berkeley.

Eichengreen, B. (2009). *Out of the box Thoughts about the International Financial Architecture* (IMF Working Paper No. 09/116). Retrieved from: https://ssrn.com/abstract=1415173

Eichengreen, B., Gullapalli, R. and Panizza, U. (2011). Capital account liberalization, financial development and industry growth: A synthetic view. J*ournal of International Money and Finance*, 30(6), 1090-1106. https://doi.org/10.1016/j.jimonfin.2011.06.007

Eiling, E. & Gerard, B (2015). Emerging equity market comovements: trends and macroeconomic fundamentals. *Review of Finance*, 19(4), 1543-1585. https://doi.org/10.1093/rof/rfu036

Epaulard, A. & Pommeret, A. (2005). *Financial integration, growth, and volatility* (International Monetary Fund Working Pape No. 067). https://doi.org/10.5089/9781451860863.001

Epstein, G.A. & Schor, J.B. (1992). Structural determinants and economic effects of capital controls in OECD countries. *In Financial openness and national autonomy: Opportunities and constraints*, (136-161). https://doi.org/10.1093 /acprof:oso/9780198283645.003.0006

Ervani, E., Widodo, T. & M Purnawan, E. (2018). *East Asia's Pattern of Export Specialization: Does Indonesia Compete with Japan, China, Hong Kong, Korea and Singapore (*MPRA working paper No. 85259). https://mpra.ub.uni-muenchen.de/85259/

Ervani, E., Widodo, T. & Purnawan, M.E. (2019). Comparative advantage and trade specialization of East Asian countries: do East Asian Countries specialize on product groups with high comparative advantage. *International Business Research*, 12(2), 113-134.

ESCAP, UN. (2020). Preferential trade agreements in Asia and the Pacific: trends and developments (Report No. 2020/2021). United Nations. https://www.unescap.org/kp/2020/preferential-trade-agreements-asia-and-pacific-trends-and-developments-20202021

Eyraud, L., Singh, M.D. & Sutton, M.B.W. (2017). *Benefits of global and regional financial integration in Latin America* (International Monetary Fund Working Paper No. 2017/001). https://www.imf.org/en/Publications/WP/Issues/2017/01/18/

Feeney, A. J. (1994). Goods and Asset Market Interdependence in a Risky World. *International Economic Review*, 35(3), 551–563. https://doi.org/10.2307/2527073

Feldstein, M. (1983). Domestic saving and international capital movements in the long run and the short run. *European Economic Review*, 21(1-2), pp.129-151. https://doi.org/10.1016/S0014-2921(83)80012-9

Feldstein, M., & Horioka, C. (1980). Domestic saving and international capital flows. *The Economic Journal*, *90*(358), 314. https://doi.org/10.2307/2231790

Ferrarini, B. & Scaramozzino, P. (2011). *Indicators and patterns of specialization in*

international trade (NCCR Trade Regulation Working Paper No 2011/10). https://econpapers.repec.org/paper/wtipapers/148.htm

Fieleke, N.S. (1982). *National Saving and International Investment. In Saving and Government Policy*. Proceedings of a conference held at Melvin village, New Hampshire: Conference Series No. 25. Reserve Bank of Boston.

Fornaro, L. and Romei, F. (2019). The paradox of global thrift. *American Economic Review*, *109*(11), 3745-79. DOI: 10.1257/aer.20180608

Frankel, J. and Cavallo, E. (2004). *Does Openness to Trade Make Countries Less Vulnerable to Sudden Stops. Using Gravity to Establish Causality* (NBER working paper No. 10957). http://www.nber.org/papers/w10957

Frankel, J.A. and Romer, D.H. (1999). Does trade cause growth? *American economic review*, *89*(3), 379-399. DOI: 10.1257/aer.89.3.379

Frankel, J.A. and Rose, A.K. (1998). The endogenity of the optimum currency area criteria. *The economic journal*, *108*(449), 1009-1025. DOI 10.3386/w5700

Fujita, M., Krugman, P.R. and Venables, A. (1999). *The spatial economy: Cities, regions, and international trade*. MIT press. https://mitpress.mit.edu/books/spatial-economy

Fukao, K., Okubo, T. & Stern, R.M. (2003). An econometric analysis of trade diversion under NAFTA. *The North American Journal of Economics and Finance*, *14*(1), 3-24. https://doi.org/10.1016/S1062-9408(02)00118-3

Fukuda, S. I. (2011). *Regional and global short-term financial market integration in Asia: evidence from the interbank markets under the crises.* The Dynamics of Asian Financial Integration: Facts and Analytics. Routledge Oxford. https://www.taylorfrancis.com/chapters/edit/10.4324/9780203834053-15

Garali, W. & Othmani, S. (2015). The determinants of international financial integration in the MENA area. *Procedia Economics and Finance*, *26*, 535-541. http://creativecommons.org/licenses/by-nc-nd/4.0/.

Gaulier, G., Lemoine, F. & Ünal-Kesenci, D. (2007). China's integration in East Asia: Production sharing, FDI & high-tech trade. *Economic Change and Restructuring*, *40*(1), 27-63. DOI: 10.1007/s10644-007-9013-5

Gehringer, A. (2015). Uneven effects of financial liberalization on productivity growth in the EU: Evidence from a dynamic panel investigation. *International Journal of Production Economics*, *159*, 34-346. https://doi.org/10.1016/j.ijpe.2014.05.003

Golovko, A. & Sahin, H. (2021). Analysis of international trade integration of Eurasian countries: gravity model approach. *Eurasian Economic Review*, 11(3), 519-548.

Gourinchas, P.O. & Jeanne, O. (2004). The elusive gains from international financial integration (IMF Working Paper No. 04/74). https://isni.org/isni/000000040 4811396

Granger, C.W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: journal of the Econometric Society*, 424-438. https://doi.org/10.2307/1912791

Granger, C.W. (1988). Some recent development in a concept of causality. *Journal of econometrics*, *39*(1-2), 199-211. https://doi.org/10.1016/0304-4076(88)90045-0

Grilli, V. & Milesi-Ferretti, G.M. (1995). Economic effects and structural determinants of capital controls. *Staff Papers*, *42*(3), 517-551.

Grossman, G.M. & Helpman, E. (1991). Trade, knowledge spillovers, and growth. *European economic review*, *35*(2-3), 517-526. https://doi.org/10.1016/0014-2921(91)90153-A

Grubel, H.G. & Lloyd, P.J. (1971). The empirical measurement of intra-industry trade. *Economic record*, *47*(4), 494-517. https://doi.org/10.1111/j.1475-4932.1971. tb00772.x

Guha, P., Oak, H., Bhupal, G., Gulati, R. & Daga, S. (2004). *International Financial Markets Integration or Segmentation: Case Study on Equity Markets* (Working Paper No. 0412013). https://ideas.repec.org/p/wpa/wuwpfi/0412013.html

Guru, B.K. & Yadav, I.S. (2021). Financial Integration in Asia: A Macroeconomic Perspective. *The Developing Economies*, *59*(1), 64-101. https://doi.org/10.1111/ deve.12264

Hadri, K. (2000). Testing for stationarity in heterogeneous panel data. *The Econometrics Journal*, *3*(2), 148-161. https://doi.org/10.1111/1368-423X.00043

Hartmann, D., Bezerra, M., Lodolo, B., & Pinheiro, F. L. (2020). International trade,

development traps, and the core-periphery structure of income inequality. Economia, 21(2), 255-278. https://doi.org/10.1016/j.econ.2019.09.001

Hasanah, R.S. (2020). *Mapping Indonesia's Competitiveness and Specialization with Its Major Trading partners*. (*Working Papers, 3*(1), 101-108). https://doi.org/10.47266/bwp.v3i1.59

He, M., Tian, W. & Cassey, A. (2012). Technical Structure and Evolution of Agricultural Products Export Trade between China, Japan and Korea: An Empirical Study Based on Export Complexity. *Journal of Agrotechnical Economics*, *5*, 104-113.

Helpman, E., Melitz, M. & Rubinstein, Y. (2008). Estimating trade flows: Trading partners and trading volumes. *The quarterly journal of economics*, *123*(2), 441-487. http://nrs.harvard.edu/urn-3:HUL.InstRepos:3228230

Herfindahl, O., 1950. *Concentration in the U.S. Steel Industry* (*Publication No.* 0002112*.)* [Doctoral dissertation, Columbia University]. Ann Arbor, University Microfilms. Proquest Dissertations and Theses Global.

Higgins, M. & Klitgaard, T. (1998). Viewing the current account deficit as a capital inflow. *Current Issues in Economics and Finance; New York, 4 (13),* 1-6. www.newyorkfed.org/medialibrary/media/research/current_issues/ci4-13.pdf

Hildebrandt, A. & Wörz, J. (2004). *Determinants of industrial location patterns in CEECs.* (WIIW Working Paper, No. 32). https://wiiw.ac.at/determinants-of-industrial-location-patterns-in-ceecs-p-531.html

Ho, N.W. (2009). Financial Integration: Concepts and Impacts. *Research and Statistics Department*, *Monetary Authority of Macao*. Available online at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.578.4238&rep=rep1&type=pdf

Hoxha, I. (2013). The market structure of the banking sector and financially dependent manufacturing sectors. *International Review of Economics & Finance*, *27*, 432-444. https://doi.org/10.1016/j.iref.2013.01.004

Hu, Y. and Zheng, X. (2019). Analysis of export technology complexity structure of high-tech manufacturing industry in China and the US. In *2018 International Symposium on Social Science and Management Innovation (SSMI 2018)* (pp. 85-91). Atlantis Press. Retrieved from: https://www.atlantis-press.com/proceedings/ssmi-18/55913101

Huang, Y. and Temple, J. (2005). *Does external trade promote financial development?* (CEPR Discussion Paper No. 5150). Available at SSRN: https://ssrn.com/abstract=785244

Hyun, J.T. and Hong, J.Y. (2011). Comparison of Comparative Advantage of Korea and China by Technology Level. *Journal of International Logistics and Trade*, *9*(2), 119-148. DOI: 10.24006/jilt.2011.9.2.006

Im, K.S., Pesaran, M.H. and Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of econometrics*, *115*(1), 53-74. https://doi.org/10.1016/S0304-4076(03)00092-7

Imbs, J. & Wacziarg, R. (2003). Stages of diversification. *American economic review*, *93*(1), 63-86. DOI: 10.1257/000282803321455160

Imbs, J. (2004). Trade, finance, specialization, and synchronization. *Review of economics and statistics*, *86*(3), 723-734.

International Monetary Fund. (2020). *Philippines selected issues*. IMF Country Report No. 20/37. https://www.elibrary.imf.org/view/journals/002/2020/037/article-A001-en.xml

Irshad, M. S., & Xin, Q. (2017). The gravity behind South Korea's international trade: A panel data approach. *The Myanmar Journal*, *4*(2), 76-89.

Islamaj, E. (2014). Industrial specialization, financial integration and international consumption risk sharing. *The BE Journal of Macroeconomics*, *14*(1), 477-509. https://doi.org/10.1515/bejm-2012-0128

Islamaj, E., (2009). *Financial Liberalization and Consumption Smoothing: Bridging Theory and Empirics*. (Publication No. 3359448. [Doctoral dissertation, University of Georgetown]. ProQuest Dissertations and Theses Global.

Jain, H. (2019). Implications of SAFTA for Indian economy: Trade, compatibility and welfare effects. *Foreign Trade Review*, *54(4),* 355-374. https://doi.org/10.1177%2F0015732519874218

Jain, S. and Bhanumurthy, N.R. (2005). Financial markets integration in India. *Asia Pacific Development Journal*, *12*(2), 15-32.

Jambol, A.B.H. and Ismail, N.W. (2013). Intra-industry trade in Malaysian manufacturing sector. In *Proceedings of PERKEM VIII (National Conference on the Malaysian Economy VIII)* (Vol. 1, pp. 119-129).

Jappelli, T. & Pagano, M. (2008). *Financial market integration under EMU*. CEPR Discussion Paper No. DP7091. Retrieved from: SSRN: https://ssrn.com/abstract=1344670

Johansson, A. and Olaberria, E. (2014). *Long-term Patterns of trade and specialisation*. (OECD Working Paper No. 1136). http://dx.doi.org/10.2139/ssrn.2555625

Kahnert, F., Richards, P., Stoutjesdijk, E., & Tomopoulos, P. (1969). *Economic Integration Among Developing Countries*. Paris: Development Canter of the Organization for Economic Co-operation and Development (OECD). Retrieved from: https://www.cabdirect.org/cabdirect/19701801797

Kalemli-Ozcan, S., Sørensen, B. E., & Yosha, O. (2003). Risk sharing and industrial specialization: Regional and international evidence. *American Economic Review*, 93(3), 903-918. DOI: 10.1257/000282803322157151

Kalemli-Ozcan, S., Sørensen, B.E. and Yosha, O. (2001). Economic integration, industrial specialization, and the asymmetry of macroeconomic fluctuations. Journal of International Economics, 55(1), 107-137. https://doi.org/10.1016/S0022-1996(01)00097-6

Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of econometrics*, *90*(1), 1-44. https://doi.org/10.1016/S0304-4076(98)00023-2

Kao, C. and Chiang, M.H. (2001). On the estimation and inference of a cointegrated regression in panel data. In *Nonstationary panels, panel cointegration, and dynamic panels*, 15, 179-222. Emerald Group Publishing Limited, Bingley. https://doi.org/10.1016/S0731-9053(00)15007-8

Kathuria, S. ed. (2018). *A glass half full: The promise of regional trade in South Asia*. World Bank Publications. https://doi.org/10.1596/978-1-4648-1294-1

Kawai, M., & Naknoi, K. (2015). ASEAN economic integration through trade and foreign direct investment: Long-term challenges (ADBI Working Paper No. 545). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2672782

Kawecka-Wyrzykowska, E. (2009). *Evolving pattern of intra-industry trade specialization of the new Member States (NMS) of the EU: the case of automotive industry*. European Economy - Economic Papers No. 364. Directorate General Economic and Financial Affairs (DG ECFIN), European Commission. Available at: https://ideas.repec.org/p/euf/ecopap/0364.html

Kim, D.H. (2011). Trade, growth and income. *The Journal of International Trade & Economic Development*, *20*(5), 677-709.

Kinoshita, Y. and Campos, N.F. (2003). *Why does FDI go where it goes? New evidence from the transition economies* (IMF Working Paper No. 2003/228). https://www.imf.org/en/Publications/WP/Issues/2016/12/30/Why-Does-Fdi-Go-Where-it-Goes-New-Evidence-From-the-Transition-Economies-16954

Koren, M. and Tenreyro, S. (2004). *Diversification and Development* (RBI of Boston, Working Papers 03-3(2003). https://dx.doi.org/10.2139/ssrn.556369

Kose, M. A., Prasad, E. S. and Terrones, M. E. (2006). How do trade and financial integration affect the relationship between growth and volatility? *Journal of international Economics*, 69(1), 176-202.

Kose, M.A., Prasad, E.S. & Terrones, M.E. (2009). Does financial globalization promote risk sharing? *Journal of Development Economics*, *89*(2), 258-270. https://doi.org/10.1016/j.jdeveco.2008.09.001

Kose, M.A., Prasad, E.S. and Taylor, A.D. (2011). Thresholds in the process of

international financial integration. *Journal of International Money and Finance, 30*(1), 147-179.

Kraay, A. (1998) In search of the macroeconomic effects of capital account liberalization. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.12.7999&rep=rep1&type=pdf

Krueger, Anne O. (1997). Trade Policy and Economic Development: How We Learn? *American Economic Review*, 87(1), 1-21. https://doi.org/10.1142/9789814374330_0003

Krugman, P. & Venables, A.J. (1996). Integration, specialization, and adjustment. *European economic review*, *40*(3-5), 959-967. https://doi.org/10.1016/0014-2921(95)00104-2

Krugman, P. (1980). Scale economies, product differentiation, and the pattern of trade. *The American Economic Review*, *70*(5), 950-959. https://www.jstor.org/stable/1805774

Krugman, P. (1981). Industrial specialization and the gain from trade. *The journal of political economy*, 89(5), 959-973. https://www.jstor.org/stable/1830815

Krugman, P. (1991). Increasing Returns and Economic Geography. *The Journal of Political Economy*, 99 (3), 483-99.

Krugman, P.R. (1979). Increasing returns, monopolistic competition, and international trade. *Journal of international Economics*, *9*(4), 469-479.

Krugman, P.R. (1993). On the relationship between trade theory and location theory. *Review of international economics*, *1*(2), 110-122. https://doi.org/10.1111/j.1467-9396.1993.tb00009.x

Lamberte, M. B. (2005). An overview of economic cooperation and integration in Asia. *Asian Development Bank (Ed.) Asian Economic Cooperation and Integration, Manila: Asian Development Bank, 3-44*. Retrieved from: www. adb. org/Documents/Books/Asian-Economic-Cooperation-Integration/chap1. pdf.

Lane, P. R. (2000). International Investment Position: A Cross Sectional Analysis. *Journal of International Money and Finance*, 19, 513–534. https://doi.org/10.1016/S0261-5606(00)00019-X

Lane, P.R. and Milesi-Ferretti, G.M. (2003). International financial integration. *IMF Staff Papers*, 50(1), 82-113.

Laparde, L.P. (2001). Measuring of International Specialization. *International Applied Economic Review*, 7, 173-183. DOI: 10.1007/BF02296007

Łapinska, J. (2016). Determinant factors of intra-industry trade: The case of Poland and its European Union trading partners. *Equilibrium. Quarterly Journal of Economics and Economic Policy, 11*(2), 251-264.

Le, H-G. (2000). *Financial openness and financial integration*. Asia Pacific School of Economics and Management. Working papers, Australia National University: Asia Pacific Press.

Lee, S.B. & Kim, K.J. (1993). Does the October 1987 crash strengthen the co-movements among national stock markets?. *Review of Financial Economics*, *3*(1), 89-102. https://doi.org/10.1002/j.1873-5924.1993.tb00574.x

Lemmen, J.J.G. and Eijffinger, S.C. (1993). The degree of financial integration in the European Community. *De Economist*, 141(2), 189-213.

Levchenko, A.A. and Mauro, P. (2007). Do some forms of financial flows help protect against "sudden stops"?. *The World Bank Economic Review*, *21*(3), 389-411. https://doi.org/10.1093/wber/lhm014

Levin, A., Lin, C.F. and Chu, C.S.J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of econometrics*, *108*(1), 1-24. https://doi.org/10.1016/S0304-4076(01)00098-7

Lewer, J.J. and Berg, H.V.D. (2003). How large is international trade's effect on economic growth?. *Journal of Economic Surveys*, *17*(3), 363-396. https://doi.org/10.1111/1467-6419.00198

Lewis, W.A. (1980). The slowing down of the engine of growth. *The American Economic Review*, *70*(4), 555-564. https://www.jstor.org/stable/1803555

Liebscher, K., Christl, J., Mooslechner, P. and Ritzberger-Grünwald, D. eds. (2007). *Financial development, integration and stability: evidence from Central, Eastern and South-Eastern Europe*. Edward Elgar Publishing.

Lim, Y.T. (2003). Korea–China industrial and technological cooperation and further development strategy. *journal of Asian economics*, *14*(2), 283-309. https://doi.org/10.1016/S1049-0078(03)00025-3

Lim, Y.T. (2004). Economic Relationship of China-Korea-Japan and their technological cooperation in the IT industry. *Korea and the World Economy*, *5*(2), 109-169.

Lothian, R. J. (2001). Financial Integration over the Past Three Centuries (Independent Institute Working Paper Number 26). Chromeextension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.independent.org/pdf/working_papers/26_financial.pdf

Maddala, G.S. & Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and statistics*, *61*(S1), 631-652. https://doi.org/10.1111/1468-0084.0610s1631

Markusen, J. & Venables, A. (1999). Multinational production, skilled labor, and real wages. *Dynamic Issues in Commercial Policy Analysis. Cambridge: CUP*, 138-172.

Martin, P. (2011). Regional and global financial integration: an analytical framework. *In The Dynamics of Asian Financial Integration* (pp. 44-76). Routledge.

Martincus, C.V. & Sanguinetti, P. (2005). South-South Integration Agreements and the Dynamics of Regional Specialization: Do Preferential Tariffs Matter?. In *Bonn: Center for European Integration (CEI) Research Seminar*.

Marukawa, T. (2021). Dependence and competition: trade relationship between Asian countries and China. *Journal of Contemporary East Asia Studies*, 10(2), 246-261. https://doi.org/10.1080/24761028.2021.1937841

Marvel, P. H., & Ray, J. H. (1987). Intra-industry Trade: Sources and Effects on Protection. *Journal of Political Economy*, 95(6), 1278-1291.

McCombie, J.S. & Thirlwall, A.P. (2002). Growth in an international context: a Post Keynesian view. In *Foundations of international economics* (pp. 45-100). Routledge.

Menyah, K., Nazlioglu, S. & Wolde-Rufael, Y. (2014). Financial development, trade openness and economic growth in African countries: New insights from a panel

causality approach. *Economic Modelling*, *37*, 386-394.

Mezo, I. (2007). Vertical and horizontal Intra-industrial trade between the EU 15 and the 2004 enlargement countries. In *ETSG2007 Athens, Ninth Annual Conference* (pp. 13-15). https://www.etsg.org/ETSG2007/papers/mezo.pdf

Miniane, J. (2004). A new set of measures on capital account restrictions. *IMF Staff Papers*, *51*(2), 276-308.

Mishkin, F.S. (2009). Globalization and financial development. *Journal of development Economics*, *89*(2), 164-169.

Mody, A. & Murshid, A.P. (2005). Growing up with capital flows. *Journal of international economics*, *65*(1), 249-266.

Montinari, L. & Stracca, L. (2016). Trade, finance or policies: What drives the cross-border spill-over of business cycles?. *Journal of Macroeconomics*, *49*, 131-148.

Morrison, A.D. & White, L. (2004). *Financial liberalisation and capital regulation in open economies* (Oxford Financial Research Centre Working Paper, no. 2004-FE-10). https://dx.doi.org/10.2139/ssrn.539983

Mougani, G. (2012). *An analysis of the impact of financial integration on economic activity and macroeconomic volatility in Africa within the financial globalization context*. African Development Bank Group, Office of the Chief Economist. Retrieved from: https://www.afdb.org

Murphy, G. R. (1984). Capital mobility and the relationship between saving and investment in OECD countries. *Journal of International Money and Finance*, 3(3), 327 – 342.

Muryani, M. & Pratiwi, A.D. (2018). Intra-Industry Trading Factors and Patterns in ASEAN-5 Region. *Global Strategis*, *12*(2), 41-52.

Musila, J.W. & Yiheyis, Z. (2015). The impact of trade openness on growth: The case of Kenya. *Journal of Policy Modeling*, *37*(2), 342-354.

Neal, L. (1991). *The Rise of Financial Capitalism.* Cambridge University Press. Retrieved from: https://doi.org/10.1017/CBO9780511665127

Ng, F. & Yeats, A.J. (2003). *Major trade trends in East Asia: what are their implications for regional cooperation and growth*? (Policy research working paper No. 3084). *Available at SSRN 636446*.

Nidhiprabha, B. (2017). The rise and fall of Thailand's export-oriented industries. *Asian Economic Papers*, *16*(3), 128-150. https://doi.org/10.1162/asep_a_00556

Obashi, A. & Kimura, F. (2017). Deepening and widening of production networks in ASEAN. *Asian Economic Papers*, *16*(1), 1-27.

Obstfeld, M. & Rogoff, K. (2000). The six major puzzles in international macroeconomics: is there a common cause? *NBER macroeconomics annual*, *15*, 339-390. https://www.journals.uchicago.edu/doi/pdf/10.1086/654423

Obstfeld, M. (1986, January). Capital mobility in the world economy: Theory and measurement. In *Carnegie-Rochester Conference Series on Public Policy* (Vol. 24, pp. 55-103). North-Holland.

Obstfeld, M. (1994). Evaluating risky consumption paths: The role of intertemporal substitutability. *European economic review*, *38*(7), 1471-1486.

Ocampo, L. V. G. (2021). Impact of Export and Import on 40 years Economic Growth in the Philippines. *Turkish Journal of Computer and Mathematics Education*, 12(3), 5607-5613. https://doi.org/10.17762/turcomat.v12i3.2232

Ogus Binalti, A., & Sohrabji, N. (2009). *Elasticities of Turkish exports and imports* (Working Papers in Economics). https://core.ac.uk/display/6258082

Ohlin, B. (1933). *Interregional and International Trade*. Harvard University Press. Cambridge. Available at: file:///C:/Users/HP/Downloads/GIPE-010300%20(1).pdf

Okafor, L. E., & Teo, W. L. (2019). 2018 WTO trade policy review of Malaysia. *The World Economy*, *42*(12), 3447-3463. DOI: 10.1111/twec.12846

Olah, J., Gy, K., Mate, D., Grabara, J. K., & Popp, J. (2017). The effect of acquisition moves on income, pre-tax profits and future strategy of logistics firms. Journal of International Studies, 10(4). DOI: 10.14254/20718330.2017/10-4/18

Padhi, S. P. (2019). Depreciation and Trade Deficits in India: Problems of Foreign Exchange and Domestic Industrialisation Base. *The Indian Economic*

Journal, *67*(3-4), 258-278. https://doi.org/10.1177/0019466220949161

Pangestu, M., & Armstrong, S. (2018). *Asian economic integration: The state of play*. Asian Economic Integration in an Era of Global Uncertainty, 15. Retrieved from: https://press-files.anu.edu.au/downloads/press/n4106/html/ch02.xhtml

Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and statistics*, *61*(S1), pp.653-670.

Penati, A., & Dooley, M. (1984). Current account imbalances and capital formation in industrial countries 1949-1981. *International Monetary Fund Staff Papers*, 31(1), pp.1-24.

Petri, P.A. (2006). Is East Asia becoming more interdependent?. *Journal of Asian Economics*, 17(3), 381-394.

Phutkaradze, Z., Tsintsadze, A. & Phutkaradze, B. (2019). Financial Integration and Economic Growth: Empirical Evidence from the Republic of Georgia. *European Journal of Sustainable Development*, *8*(2), 232-232.

Podoba, Z. S., Gorshkov, V. A., & Ozerova, A. A. (2021). Japan's export specialization in 2000–2020. Asia and the Global Economy, 1(2), 100014.

Pomfret, R. (1997). *The economics of regional trading arrangements*. OUP Oxford. Retrieved from: https://books.google.co.in

Pomfret, R. (2019). *Different Paths to Economic Integration in Europe and Asia* (ADBI Working Paper Series No. 1063). Available Online at: https://www.think-asia.org/bitstream/handle/11540/11450/adbi-wp1063.pdf?sequence=1

Pongsaparn, M.R. & Unteroberdoerster, M.O. (2011). *Financial integration and rebalancing in Asia*. International Monetary Fund. https://doi.org/10.5089/9781463922641.001

Pooittiwong, A., & Ramirez, B. (2016). *The Feasibility of Monetary and Financial Integration in ASEAN: Policy Considerations for Enhancing Integration Feasibility. The Feasibility of Monetary and Financial Integration in ASEAN:* Policy Considerations for Enhancing Integration Feasibility (October 10, 2016). Retrieved from: https://ssrn.com/abstract=2850710

Prasad, E., Rogoff, K., Wei, S.-J., & Kose, M. A. (2003). Effects of Financial Globalisation on Developing Countries: Some Empirical Evidence. *Economic and Political Weekly*, 38(41), 4319–4330. http://www.jstor.org/stable/4414133

Pukthuanthong, K. & Roll, R. (2009). Global market integration: An alternative measure and its application. *Journal of Financial Economics*, 94(2), 214-232.

Quinn, D. (1997). The correlates of change in international financial regulation. *American Political science review*, *91*(3), 531-551.

Quinn, D., Schindler, M. & Toyoda, A.M. (2011). Assessing measures of financial openness and integration. *IMF Economic Review*, *59*(3), 488-522.

Quinn, D.P. & Jacobson, R. (1989). Industrial policy through the restriction of capital flows: A test of several claims made about industrial policy. *American Journal of Political Science*, 700-736.

Quinn, D.P. & Toyoda, A.M. (2008). Does capital account liberalization lead to growth?. *The Review of Financial Studies*, *21*(3), 1403-1449.

Radelet, S., Sachs, J. D., Cooper, R. N., & Bosworth, B. P. (1998). The East Asian financial crisis: diagnosis, remedies, prospects. *Brookings papers on Economic activity*, 1998(1), 1-90. Retrieved from: http://links.jstor.org/sici?sici=0007-2303%281998%291998%3A1%3C1%3ATEAFCD%3E2.0.CO%3B2-5

Razeen, S. (2010). *Regional Economic Integration in Asia: the track record and prospects.* ECIPE Occasional Paper No. 2/2010. http://hdl.handle.net/10419/174708

Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*. Available online at: http://socserv.mcmaster.ca/econ/ugcm/3ll3/ricardo/Principles.pdf

Rodrik, D. (1998). Who needs capital-account convertibility?. Essays in international finance, 55-65.

Ronci, M. (2004). *Trade finance and trade Flows: panel data evidence from 10 Crises* (International Monetary Fund working paper 04/225). Retrieved from: https://www.imf.org/external/pubs/ft/wp/2004/wp04225.pdf

Rose, Andrew, K. A., & Spiegel, M. M. (2002). *A Gravity Model of International*

Lending: Trade, Default and Credit (NBER Working Paper No. 9285). Retrieved from: http://www.nber.org/papers/w9285.pdf

Ruffin, R.J. (1974). Comparative advantage under uncertainty. *Journal of International Economics*, *4*(3), 261-273.

Sachs, J.D., Cooper, R.N. & Fischer, S. (1981). The current account and macroeconomic adjustment in the 1970s. *Brookings papers on economic activity*, *1981*(1), 201-282.

Salim, R., Islam, A. and Bloch, H. (2018). Patterns and determinants of intra-industry trade in Southeast Asia: evidence from the automotive and electrical appliances sectors. The Singapore Economic Review, 63(03), 647-665. https://doi.org/10.1142/S0217590815500836

Sanguinetti, P. & Martincus, C.V. (2005). Does trade liberalization favor spatial de-concentration of industry.

Sapkota, J.B. (2020). *Integrating South Asia into Asia: Evidence from Trade Statistics* (MPRA Working Paper No. 106097). https://mpra.ub.uni-muenchen.de/106097.

Sasaki, Y., & Yoshida, Y. (2018). Decomposition of Japan's trade balance. *International Review of Economics & Finance*, *56*, 507-537.

Schularick, M. and Steger, T.M. (2006). *Does financial integration spur economic growth? New evidence from the first era of financial globalization* (working paper no. 1691). https://www.econstor.eu/bitstream/10419/19155/1/cesifo1_wp1691.pdf

Sen, S. (2010). *International trade theory and policy: A review of the literature* (Working Pape No. 635). https://www.econstor.eu/bitstream/10419/57042/1/642320969.pdf

Shafaeddin, M.S. (2005). *Trade liberalization and economic reform in developing countries. In United Nations Conference on Trade and Development* (Discussion paper No. 179). Retrieved from: /https://unctad.org/system/files/official-document/osgdp20053_en.pdf

Sheer, A. (1981). A survey of the political economy of customs unions. *Law & Contemp. Probs.*, 44, 33. Retrieved from: https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=3624&context=lcp

Shimada, R. (2019). Southeast Asia and International Trade: Continuity and Change in Historical Perspective. In Paths to the Emerging State in Asia and Africa (pp. 55-71). Springer, Singapore. https://doi.org/10.1007/978-981-13-3131-2

Shin, K. and Yang, D.Y. (2006). *Complementarity between bilateral trade and financial integration* MPRA Paper No. 694. https://mpra.ub.uni-muenchen.de/694/

Shirani Fakhr, Z. and Tayebi, S.K. (2009). Determinants of financial integration in the East Asia-Pacific region. *Iranian Economic Review, 14*(23), 155-173.

Sims, C.A. (1980). Macroeconomics and reality. *Econometrica: journal of the Econometric Society*, 48, 1. https://www.jstor.org/stable/1912017

Sinha, T. and Sinha, D., (2004). The mother of all puzzles would not go away. *Economics Letters*, *82*(2), 259-267.

Sisili, D.T. (2017). Intra Industry Trade between India and ASEAN 5 Nations. *IJARIIEISSN (O)-2395, 4396*. Retrieved from: http://ijariie.com/ AdminUploadPdf/Intra_Industry_Trade_between_India_and_ASEAN_5_Nations _ijariie5105.pdf

Srinivasan, T.N. and Bhagwati, J. (2001). Outward-orientation and development: are revisionists right?. In *Trade, development and political economy* (pp. 3-26). Palgrave Macmillan, London.

Stavarek, D., Repkova, I. and Gajdosova, K. (2011). *Theory of financial integration and achievements in the European Union*. MPRA Paper 34393, University Library of Munich, Germany.

Stiglitz, J.E. (2000). Capital market liberalization, economic growth, and instability. *World development*, 28(6), 1075-1086.

Summers, L.H. (2000). International Financial Institutions Reform: Renewed global focus on the world's poor. *Vital Speeches of the Day*, 67(1), p.2.

Tesar, L. L. (1991). Savings, Investment and International Capital Flows. *Journal of International* Economics, 31(1-2), 55-78.

Thirlwall, A.P. (2000). Trade, trade liberalisation and economic growth: theory and evidence. *Economic Research Papers No. 63*. African Development Bank.

Thorpe, M., & Zhang, Z. (2005). Study of the measurement and determinants of intra-industry trade in East Asia. *Asian Economic Journal*, *19*(2), 231-247.

Tobin, J. (1983). The conservative counter-revolution in economic policy. *The Journal of Economic Education*, *14*(1), 30-39.

Toda, H.Y. & Yamamoto, T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of econometrics*, *66*(1-2), 225-250.

Torki, L., & Tayebi, S., & Sharifi, S. (2011). The role of financial reform on economic growth and creation of convergence among selected Islamic states. *Journal of Economic Modeling Research,* 1(2), 65-86. https://www.sid.ir/en/journal/View Paper.aspx?id=227636

Traistaru, I., Nijkamp, P. & Longhi, S. (2003). Specialization of regions and concentration of industries in EU accession countries. *The emerging economic geography in EU accession Countries*, 331-372. Routledge.

Verdoorn, P. J. (1960). The Intra-Bloc trade of Benelux. *Economic Consequences of the Size of Nations*, 291-329. https://doi.org/10.1007/978-1-349-15210-0_19

Viner, J. (1982). The economics of customs unions. *In International Economics Policies and their Theoretical Foundations (pp. 163-164).* Academic Press.

Vlastou, I. (2010). Forcing Africa to open up to trade: Is it worth it? *The Journal of Developing Areas, 44*, 25–39.10.1353/jda.0.0086

Vo, X.V. & Daly, K.J. (2007). The determinants of international financial integration. *Global Finance Journal*, *18*(2), 228-250.

Vo, X.V. (2005b). A new set of measures on international financial integration. *In 3rd Financial Markets Asia-Pacific Conference,* Sydney. Retrieved from: https://ssrn.com/abstract=932180

Wei, S.J. and Wu, Y. (2002). Negative alchemy? Corruption, composition of capital flows, and currency crises. In *Preventing currency crises in emerging markets* (pp. 461-506). University of Chicago Press. Retrieved from: https://www.nber.org/system/files/chapters/c10642/c10642.pdf

Widodo, T. (2009). Dynamics and convergence of trade specialization in East Asia. *The Asia Pacific Journal of Economics & Business*, *13*(1), 31.

Wignaraja, G. (2014). The determinants of FTA use in Southeast Asia: A firm-level analysis. *Journal of Asian Economics*, *35*, 32-45.

Wood, J., Li, Y. and Wu, J. (2021). An Analysis of The Trends and Determinants Of Intra-Industry Trade Between China And Asia-Pacific Economic Cooperation Member Countries. The Singapore Economic Review, 66(03), 743-766. https://doi.org/10.1142/S0217590819500486

Wright, M.L. (2005). On the gains from international financial integration. *Economics Letters*, *87*(3), 379-386.

Xie, G. and Zheng, S. (2019). A Comparative Analysis on Export Complexity and Export Technology Structure of Mechanical and Electrical Products between China, Japan and Korea. Modern Economy, 10(09), 2120.

Yeyati, E.L., Schmukler, S.L. & Van Horen, N. (2009). International financial integration through the law of one price: The role of liquidity and capital controls. Journal of Financial Intermediation, 18(3), 432-463.

Yildirim, D. & Orman, E.E. (2018). The Feldstein–Horioka puzzle in the presence of structural breaks: evidence from China. Journal of the Asia Pacific Economy, 23(3), 374-392.

Yilmaz, B. (2008). Foreign Trade Specialization and International Competitiveness Of Greece, Portugal, Spain, Turkey and the EU 12 (CES Working Papers Series 166).

Zam, N. & Yakob, N.A. (2017). The Comparative Advantage of Malaysia Manufactured Exports. Saudi Journal of Business and Management Studies, 2, 521-531.

Zhang, Z., & Chuan, LI (2006). Country-specific factors and the pattern of intra-industry trade in China's manufacturing. Journal of International Development: The Journal of the Development Studies Association, 18(8), 1137-1149.

Research Publications

Kaur, H., & Sarin, V. (2018). An Evidence of Feldstein-Horioka puzzle in selected Asian economies. International Journal of Business and Globalisation, 21(4), 454-463.

Kaur, H., & Sarin, V. (2020). Agile Saving–Investment Relationship among Selected Asian Economies. Business Agility in Volatile Times. 978-93-87034-86-0 (ISBN).

Kaur, H., & Sarin, V. (2021). The saving–investment cointegration across East Asian countries: Evidence from the ARDL bound approach. Global Business Review, 22(4), 1010-1018.

Research Publications

Kaur, H., & Sarin, V. (2018). An Evidence of Feldstein-Horioka puzzle in selected Asian economies. International Journal of Business and Globalisation, 21(4), 454-463.

Kaur, H., & Sarin, V. (2020). Agile Saving–Investment Relationship among Selected Asian Economies. Business Agility in Volatile Times. 978-93-87034-86-0 (ISBN).

Kaur, H., & Sarin, V. (2021). The saving–investment cointegration across East Asian countries: Evidence from the ARDL bound approach. Global Business Review, 22(4), 1010-1018.