

**EXPORT DIVERSIFYING EFFECTS OF FOREIGN AID AND FDI
IN DEVELOPING COUNTRIES**



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ACRONYMS AND ABBREVIATIONS

FDI	Foreign Direct Investment
TOT	Term of Trade
WTO	World Trade Organization
UN-CTAD	United Nations Conference on Trade and Development.
MDBS	Multi-Donor Budgetary Support
MNCs	Multinational Corporations
SAFTA	South Asian Free Trade Agreement
ASEAN	Association of Southeast Asian Nations
IBRD	International bank for Reconstruction and Development
IMF	International Monetary Fund
HHI	Herfindahl-Hirschmann Index
FA	Foreign Aid
VED	Vertical Export Diversification
HED	Horizontal Export Diversification
TO	Trade Openness
CTPS	Credit to Private Sector
ALP	Arable Land to Population
GDP	Gross Domestic Product

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ABSTRACT

In this study, horizontal and vertical export-diversifying effect of foreign aid and foreign direct investment (FDI) is investigated on the south Asian developing economies- notably Bangladesh, Maldives, India, Pakistan and Srilanka for the time period 1995-2015. Due to proportional nature of dependent variable fractional logit model is applied and the empirical results reveal that foreign direct investment, natural resource abundance, growth rate and trade openness have significant impact on vertical export diversification while in case of horizontal export diversification foreign direct investment and natural resource abundance have significant impact. However foreign aid remains insignificant in both horizontal and vertical export diversification. From the results of the study it can also be inferred that vertical export diversification is affected more by foreign direct investment than that of horizontal export diversification

Key words: Horizontal export diversification, vertical export diversification, foreign direct investment, foreign aid

CHAPTER NO 1

INTRODUCTION

1.1. Background of the Study

International trade leads to improved welfare and economic growth for a country if operates under suitable conditions. The openness of trade renders countries with different variety of products and technologies and assists in increasing the productivity and efficiency of the production sector that makes the country more competitive in the world market (Lincandro and Ruiz 2010). In order to maximize the benefits from trade, countries generally aim to expand and develop their export sector. However, just the expansion of the export sector, may not lead to economic growth. A structural transformation of the export sector is required to attain sustainable economic growth. Diversification of exports from traditional to nontraditional results in increasing growth rates and decreases their variability (Samen 2010).

Even if a country adopts an export-led growth strategy for development purpose, the objectives may not be fulfilled and there may be several vulnerabilities in the short and long run. It happens if exports are of lower quality, dominated by primary products and are concentrated only in a few markets. However, a county can reduce the vulnerability by diversifying the export towards varieties of products and markets. In a nutshell, a country can achieve export-led economic growth strategy by diversification of exports (Mudenda et al., 2014).

Export diversification is defined as a spread of production over many sectors. In other words, it refers to a change in the country's existing export mix of products and a progression from traditional to non-traditional exports. According to Dennis and Shehard (2007) export diversification is defined as widening of the range of products that a country exports. Diversification of export lowers the instability in the earnings from export, increase the revenue from export, add value to the products and lead to growth expansion in the country. Export diversification improves the technological capabilities, facilitates the backward and forward linkages of the goods, enhances scale economies, and brings positive externalities that led to the sophistication of the market.

There are several dimensions of export diversification and can be analyzed at various levels. The three types of diversification are vertical, horizontal and diagonal diversification.

Vertical diversification refers to diversify the products across different sectors i.e. a shift from primary¹ to secondary² to tertiary sector³ and involve increasing value-added activities such as marketing, processing and other activities (poverty and development division, UN, June 2004). The market opportunity for raw material are expanded under vertical diversification. Vertical export diversification contributes to stabilize earnings by exports because the price of primary exports fluctuates more than that of manufactured exports. (Ali et al.,1991)

Horizontal diversification refers to diversify the products within the same sector, i.e. primary, secondary or tertiary and addition of new products in the export mix basket within the same sector in order to reduce political and economic risk. It also brings forth stabilization in earnings from exports. (Al-Marhubi, 2000). Diagonal diversification refers to the shift to secondary and tertiary sector from the imported inputs

The requisites for the vertical, horizontal and diagonal diversification varies with respect to the technology, investment of capital, marketing skills and managerial competencies. However, for long term sustainable export growth, both vertical and horizontal diversification is required. In other words, movement to commodities of higher value added manufactures and addition of new products in the same sector is required for sustainable export growth. Further, study of export diversification can be done through different levels, like, region, country, farm and plant with focus on different forms of diversification (Ali et al.,1991).

Export growth is vital for any country as it generates foreign exchange, adds to the employment and growth of the country and increases the productivity of the primary, secondary and tertiary sectors (Lerchenko, 2000). The export grows more effectively if it is diversified in different sectors and further diversity reduces the economic and political risk (Samen 2010). The economic risk that gets reduced in the

¹ Primary sector refers to raw materials and basic foods.

² Secondary sector includes finished goods.

³ Tertiary sector refers to service industry.

short term are the risk of instability and volatility of foreign exchange that affects the economy at the macro level by disturbing the planning of investment, employment generation, foreign exchange inflows and outflows and other related factors. In the long run, diversification of exports reduces the risk of declining trends of terms of trade over a long period (Herzer and Lehman,2006; Prebisch 1950 and Singer 1950). The political risk that mitigates due to diversification of exports are the risk of loss occurred due to civil wars, poor governance and other instabilities in the government. (Collier, 2002)

Aid, resource endowments and the quality of infrastructure play significant role in export diversification (Osakwe). However too much dependence on foreign aid would deteriorate the export diversification (Munemo, 2007). Similarly, FDI also has significant impact on export diversification and flow of foreign direct investment would increase export diversification (Jayaweera,2009)

There is scarce literature on effects of foreign aid and FDI on horizontal and vertical export diversification in case of South Asian developing countries so this study aims at investigating the effect of foreign direct investment and FDI while accounting other explanatory variables on export diversification for south Asian developing countries which are also members of SAFTA and regional integration is also beneficial to trade diversification.

1.2 Research Questions

The present study attempts to answer following research questions

- 1.What is the impact of foreign aid and FDI on vertical export diversification?
- 2.What is the impact of foreign aid and FDI on horizontal export diversification?
- 3.Which areas of export diversification either vertical or horizontal are affected more by foreign aid and FDI?

1.3 Research Objectives

This study aims at investigating the effect of foreign direct investment and FDI on export diversification for south Asian developing countries. More specifically the objectives of the study are

- 1 To investigate the effect of foreign aid and FDI along with other explanatory variables on vertical and horizontal export diversification in case of south Asian developing countries.
1. To examine country wise impact of FDI and foreign aid along with other explanatory variables on the vertical and horizontal trade diversification

1.4 Significance of the Study

The export diversification is vital for any country growth and development and has been the area of research for many to understand the factors that affect and bring export diversification in the South Asia region and in countries belonging to this region. The concept of export diversification became more obvious due to increasing globalization and global competition especially for the developing and third world countries which are trying to climb the trajectory of growth and development. In this regard, foreign direct investment and foreign aid has always been two major source of financial assistance for economic development. However, their effectiveness varies according to several factors that have an impact on it and in this regard, several researches have been done. The present study also tries to fill the gap in the research and concentrates on its impact on Asian countries.

Although there are several studies of foreign aid and FDI effects on export diversification, few of the studies done it specifically for South Asian developing countries. Further very few studies have investigated both the impact of foreign aid and FDI together on export diversification. The literature mostly focus on overall export diversification and there is scare literature that differentiated vertical and horizontal diversification and this study contributes to existing literature by investigating the impact of FDI and foreign aid together on both horizontal and vertical export diversification of the developing countries of South Asia.

1.5 Structure of the Study

The rest of the study is organized in the following manner; Chapter 2 deals with the theoretical and empirical literature review in order to explore the gaps in those studies; Chapter 3 gives an overview of foreign aid and FDI in Asian countries and their importance for export diversification; Chapter 4 deals with methodological framework, data, data collection sources , construction and justification of variables

and estimation technique opted for this study; Chapter 5 covers the descriptive statistics, diagnostic tests, pairwise correlation and fractional logit model for both horizontal and vertical diversification with results of the study and their interpretation; Chapter 6 concludes the results and gives some policy implications on the basis of results of the study.

CHAPTER NO 2

OVERVIEW OF EXPORT DIVERSIFICATION IN SOUTH ASIA

2.1 Importance of FDI in Export Diversification

Export diversification of a country is positively affected by the flow of FDI both by direct and indirect channels. The joint ventures with foreign firms in export and production of advanced and new products have an impact on the composition of country's export bundle making it more sophisticated and diversified. Further, the entry of multinational corporations (MNCs) in the country can make the local firms more productive and indirectly affects the export composition. The local firms are now able to produce more and export more and so their capability to export more diversified products increases. Due to FDI the domestic firms are able to increase their capabilities in technological know-how, capital equipment, working practices, specific labour skills and other required skills. As foreign firms are unable to extract full value of these gains so this is an indirect effect of FDI, which is called as spill-over effects (Kokko 1994).

There has been a substantial increase in FDI flow around the world since last few decades and it has become an attractive source of additional capital inflows and creation of new employment that leads to economic growth in the country. Growth through FDI flow is relatively stable and the MNCs that enter the domestic economy bring along with it advanced physical equipment, management know-how, efficient marketing and the fruit of research and development. The advanced knowledge of production and technologies spill-over the domestic industries and enhance their productivity and bring higher growth.

There are generally two types of spillovers, horizontal and vertical spillovers. The horizontal spill over occur when due to the presence of foreign companies, domestic firm become more productive in the same sector in the form of creating competitive advantage in the market, increasing mobility of labour and investing in local research and development. Vertical spill over occurs when the forward or backward linkages are adopted by foreign firms in the country. In forward linkage, the productivity of the domestic firms increases as the intermediate inputs are supplied by

the MNCs which can be used by a domestic firm to enhance their products. In backward linkage, the MNCs makes a business contract with the local firms who produce the requisite inputs by using the technological knowledge of the foreign companies. The vertical spillover has more impact than horizontal spill over as in the latter case there is a possibility that the MNCs can prevent the linkage of information to the local firms. Vertical spill overs are more likely than horizontal spill overs (Saggi 2002). However, overall, the FDI in a country does create spillovers and enhance the productivity of the local firms and make them more competent in producing more goods to export, thus leading to export diversification.

According to Banga (2006), empirical studies, diversification in Indian export is due to FDI inflow from the United States and has increased the export of the country. Further, Tadesse and Shukralla (2011) have made a study on 131 countries from the period 1984 to 2004 and have found that the increase in FDI leads to diversification of exports though the magnitude of the diversification depending on its stages varies across countries.

2.2 FDI in Asian Countries

Globalization has played an important role in developing international trade between the countries and Foreign Direct Investment is one of the cornerstone through which globalization has grown over the years and FDI has become a source of development and growth of many countries. Asia is one of the main continents that has been enormously benefitted through FDI. Mostly, all the countries situated in Asia have developed over the years through the flow of FDI in their country.

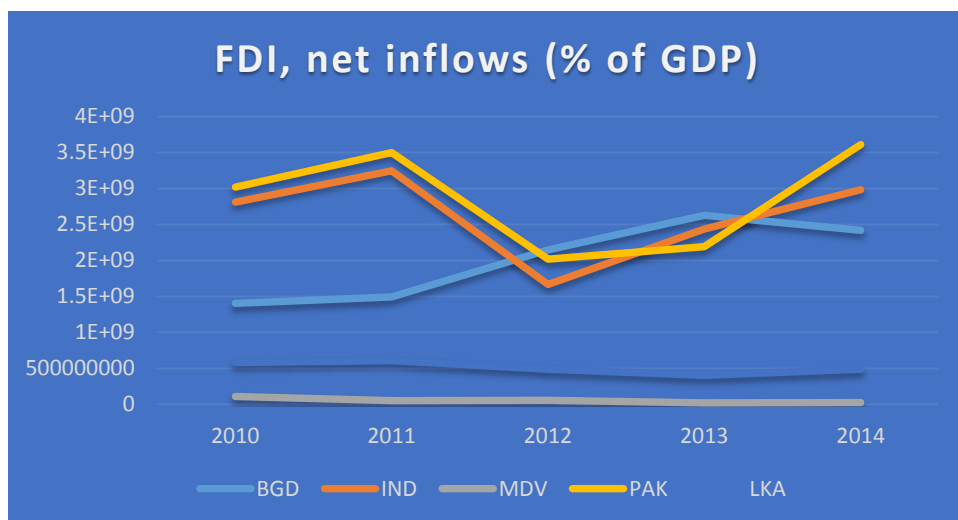
According to World Investment Report 2014, the net FDI inflows in developing Asia were \$ 382 billion in 2013 which was 4 % more than the previous year. Asia has a huge market of consumers and abundance of natural resources which has attracted the Multinational Companies from the west in large numbers. However, the flow of FDI is not uniform across all the Asian countries, China and other member countries of the Association of Southeast Asian Nations (ASEAN) are having the maximum flow of FDI, other economies are not receiving it in large numbers. Countries like, India, Japan and South Korea are hesitant to adopt FDI fully in all sectors. However, over the period the countries have become more open to FDI for growth and development

Many of the Asian countries have started to adopt a number of transformative schemes and large number of reforms is proposed to remove the barriers to FDI. In India, the limit to FDI is raised across different sectors and has contributed to 42% of growth in the country. The most attractive areas of FDI inflows are service, telecommunications, construction and pharmaceuticals. The countries through most of the FDI flows are Netherlands, Mauritius and Singapore. (Papanek 1973).

Further intra-Asian investment has become common in recent years and firms from South Korea, Japan and China are continuing to invest in emerging economies like India, Indonesia, Myanmar and Thailand to boost growth. The sectors that attract maximum FDI inflows are consumer products, energy, pharmaceuticals, technology, media and tele-communication sectors

Unites States remains an important source of FDI and a key market for exports for ASEAN countries and recent Quantitative easing program of Federal Reserve have a prominent impact on the Asian countries which has made the emerging economies to think about adopting a new financial climate in the future. ASEAN nations have always remained an attractive location for US companies to invest due to its large market and low cost of production and the Asia-Pacific Economic Cooperation has further increased the ties between Asian and Pacific region countries (Selaya and Sunesen 2012). Figure 2 represents FDI (net inflows % of GDP) from 2010 to 2015 for the countries under study.

Figure 2.1: FDI, Net Inflows (% of DGP) from 2010-15



2.3 Importance of Foreign Aid in Export Diversification

Foreign aid is generally defined as the universal transfer of goods, services and capital from the international organization or donor country to the receiver country with the objective to benefit the inhabitants of the country. The international aid has its origin in 1944 Brettonwoods conference by which the foundation of international institutions was laid for promoting international trade and financial support to the countries which are devastated in the World war. The major institutions of international aid are International bank for Reconstruction and Development (IBRD) and International Monetary Fund (IMF). The IBRD provided long term loans for reconstructions of the infrastructures that are shattered during the war periods and IMF provided fund for coordinating with monetary policies and exchange rate stabilization policies and providing loans to the countries to expand international trade to come out of the balance of payment crisis situation (Quazi *et al.*2014).

Later, in the 1960s, the major donors of international aid have been the non-governmental organizations, charities, churches, individuals, multilateral institutions and governments. There was an aid for several purposes like for political economic development, humanitarian, military, commerce etc.

Hence, Foreign aid has been used as a useful tool to expand export, economic growth and social development. Further, a new concept of Aid for Trade has been introduced in Hong Kong Ministerial Meeting of 2005 where using foreign aid for increasing the export diversification has been the major target of the countries. Foreign aid is generally used for trade promotion in developing nations as they face a number of challenges in the global regime of trade. Mainly the least developed countries are assisted with foreign aid from World Trade Organization (WTO).

According to Munemo (2011), foreign aid can impair both horizontal and vertical export diversification. In other words, it can increase the non-traditional products and also the manufactured products in the export basket. Some arguments say that foreign aid will lead to export diversification more for manufactured goods. However, other argument says that foreign aid targeted for development of few sectors may lead to diminishing returns.

According to Burnside and Dollar (2004), effectiveness of the foreign aid depends on the policy environment of the country. A good policy environment may have effective and positive results of foreign aid otherwise it may lead to negative or zero results. Further Doucouliagos and Paldem (2009) assert that since last forty years the majority of the foreign aid for development has not been productive. Foreign aid is more effective in case of developing countries which lack resources that increase export diversification. The developing countries need aid that can promote its export policies, create infrastructure, develop a favorable business environment for expanding export and diversify it in various sectors.

Effectiveness of foreign aid can be studied by analyzing its effect on growth of exports, aggregate levels of export, and changes in export- GDP ratio with the help of system-GMM techniques and dynamic panel framework. However, despite of different views regarding the importance of foreign aid for export diversification, it can be concluded that foreign aid does bring some assistance in the diversification of export, but the degree of assistance depends on the conducive environment of the country along with other individual factors (Nwaogu and Ryan 2015).

2.4 Foreign aid in Asian Countries

There are controversial findings regarding the benefit of Asian countries from foreign aid. Few studies believe that Asian countries are largely benefitted by the foreign aid for economic growth and development. On the contrary, the other argues that foreign aid inflows have a negative impact on Asian countries growth. According to Morrissey (2001), foreign aid can only contribute to economic growth through a number of mechanisms. He said that foreign aid can increase the capacity of import of technology or capital goods and can increase investment in human capital and physical goods. Further, it indirectly encourages investment or saving rates by promoting technical change and increases productivity of capital. However, despite of transfer of foreign aid since decades in developing countries, the objective of increase in social welfare and economic development remains unattainable.

Several studies have tried to measure the foreign aid effect on growth of different economies and a few have shown it has a positive effect whereas others have shown it has a negative effect. Some have said that the economic policy of countries determines the effectiveness of foreign aid on the economic growth of the country.

In Asia, Afghanistan is the largest recipient of foreign aid by the amount of \$6725 million in 2012 and \$5265 in 2013. The second largest recipient of foreign aid is Bangladesh with \$2152 million in 2012 and \$2669 billion in 2014. Besides these, most of the countries in Asia have received foreign aid from various sources for the development and growth of the country. But the question is how much effective was the foreign aid in each of the country is reaching its objective is the area of discussion. There are four major determinants that have an impact on foreign aid effectiveness. They are external and climatic conditions of a country, political conditions of a country, the quality of the institution that is providing aid and the decreasing returns obtained from aid. However, foreign aid does play an essential role towards economic development of several developing countries (Lim *et al.*2015).

A regression analysis was done in the 1950s and 1960s by taking a number of countries in Asia by Papanek (1972) to find that the foreign exchange gap and the saving-investment gap can be reduced through foreign aid and it brings a positive effect on growth. The size of the country plays a significant role in the degree of effectiveness of foreign aid. If the country size is large, its effect of aid is large and if the country size is small, the effect of aid is small, as told by Singh (1985)

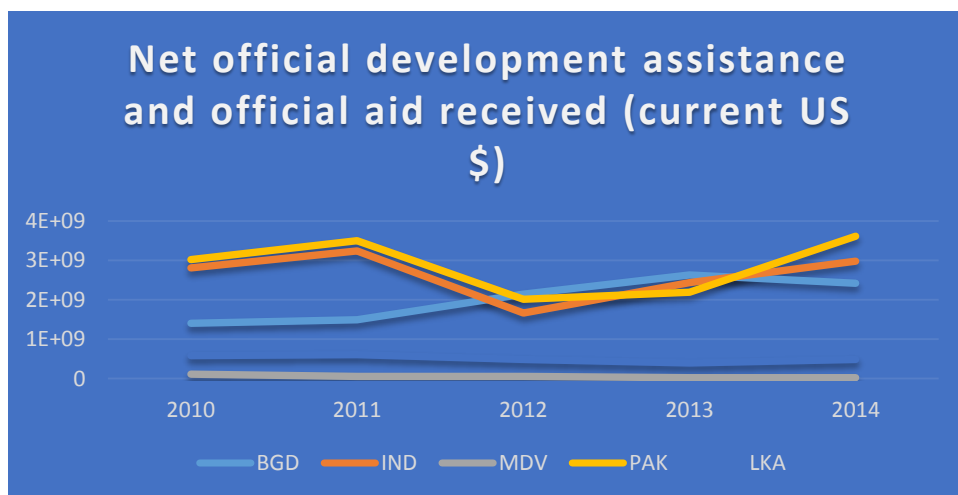
Foreign aid flows in some of the major economies in Asia like India and Srilanka has declined since the country has adopted economic reform policies since 1990s to protect the economy from financial crises. However, before that, in India, during 1960s there has a 8% share of foreign aid to GDP has increased to 10% in 1965. Since that, the flow of foreign aid has declined in India and in 2011 it is 0.5% of the GDP. On the other hand, in Srilanka, the share of foreign aid to GDP was 2.5% in the 1960s and increased further to 15% in 1979 but after that it has started decreasing and in 2011 it was 2% (Bhavan *et al.*2011)

Sri Lanka is one of those countries where foreign aid has led to economic development through financing of infrastructural projects in large scale and social development projects on education and health. Further aid has helped in financing capital intensive government expenditure of Srilanka and supported the reconstruction activities of the tsunami. The major sources of foreign aid in Srilanka are Asian Development banks (ADB), World Bank and Japan

According to Tiwari (2011), the governance of a country plays a significant role in determining the foreign aid flows in the country. He has studied it in 22 Asian countries and taken some of the major economic indicators to measure governance impact on the flow of foreign aid in the country. The six indicators taken by him in his research work are political stability, voice and accountability, government effectiveness, regulatory quality, control of corruption and rule of law. The paper concludes that regulatory quality of the country has a positive impact on the flow of aid and exports of goods and services, corruption and political stability has a negative impact on the flow of foreign aid in the country.

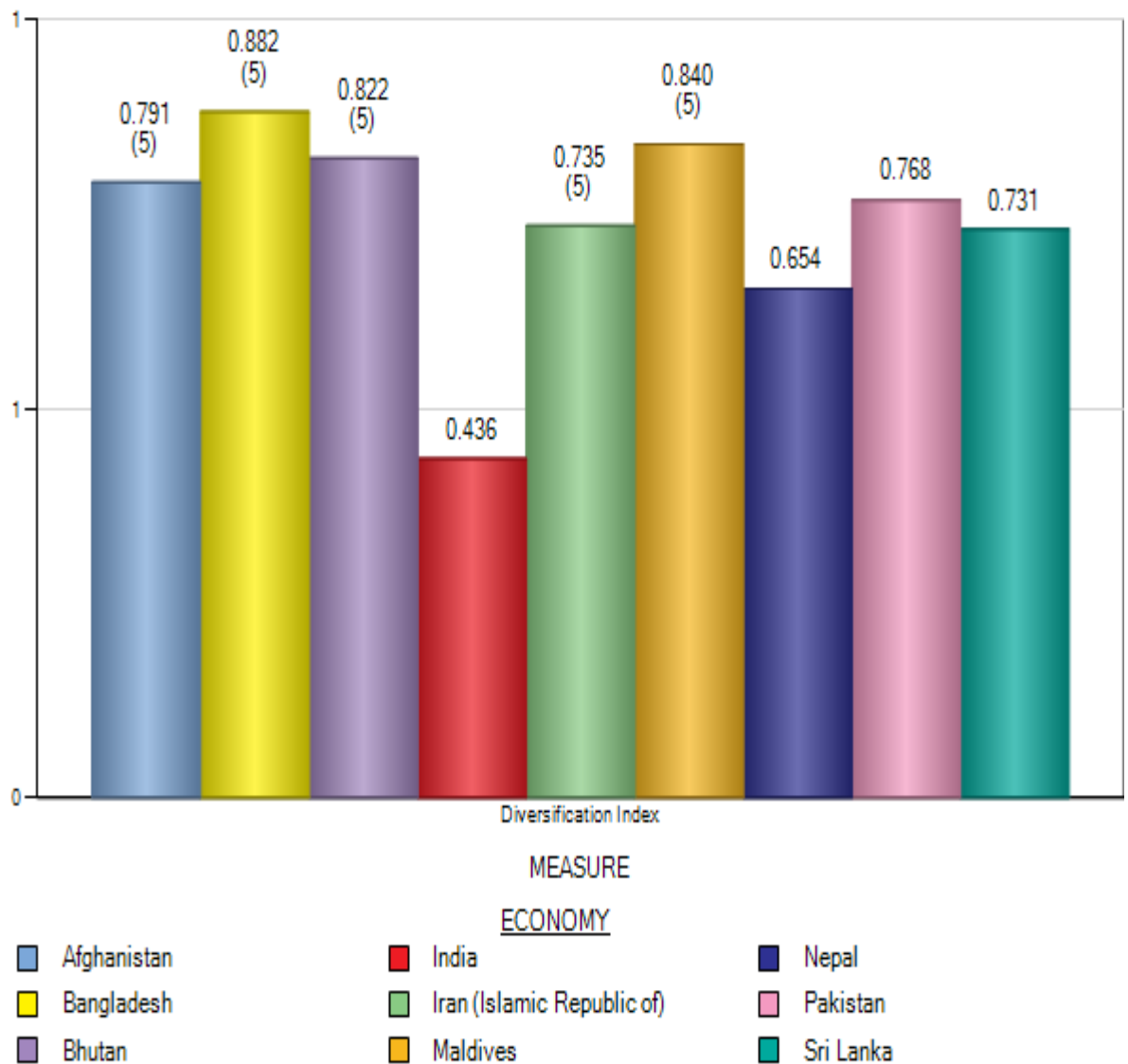
Foreign aid is generally in either grants form or concessional loans, grants are not repaid whereas concessional loans are repaid but at a lower interest rate than the bank rates, loans from United Nations, International Monetary Fund (IMF), World Bank, Regional development banks, like, Asian Development Banks, African Development Banks, Inter- American Development banks. In Asian countries, foreign aid has flown in all forms and has helped the majority of the countries for growth and development. However, in some countries, the effect of foreign aid is not magnificent due to their own countries constraints (Alesina and Weder 1999). Figure 2 shows net official development assistance (ODA) and official aid received (current US \$) from 2010 to 2014 for the countries under study.

Figure 2.2: Net Official Development Assistance and Official aid Received (Current US \$) from 2010-15



Aid, resource endowments and the quality of infrastructure play significant role in export diversification (Osakwe). However too much dependence on foreign aid would deteriorate the export diversification (Munemo 2007). Similarly, FDI also has significant impact on export diversification and flow of foreign direct investment would increase export diversification (Jayaweera 2009). Figure shows the diversification of exports in south Asian developing countries for the year 2015.

Figure 2.3: Diversification of Exports in South Asian Developing Countries



2.5. Goals of Dimensions of Export Diversification

A. Horizontal diversification

GROWTH-ORIENTED		STABILITY ORIENTED	
New commodities	Existing commodities	New commodities	Existing
New commodities are added on the basis of on the growth rates of international price and market niche.	On the basis of export earnings growth rates from individual commodities export shares are adjusted.	Existing commodities are disposed of and new commodities are added On the basis of export earning covariation from individual commodities.	Export share are adjusted basis of export sharing covariation from individual commodities

Source: Ali, Alwang and Siegal (1991)

B. Vertical diversification

GROWTH-ORIENTED		STABILTY-ORIENTED	
New commodities	Existing commodities	New commodities	Existing commodities
New commodities are chosen on the basis of import ability substitution and value-added potential. form	Import substitution and value-added activities are introduced.	New products are added to serve in national and international markets on the basis of flexibility to be marketed in raw and processed form.	Adjusting the export shares on the basis of commodity's to be marketed in processed or raw both in domestic and international market.

Source: Ali, Alwang and Siegal (1991)

2.6 Conclusion

To conclude, it can be said that export diversification is vital for any country growth and development and has been the area of research for many to understand the factors that affect and bring export diversification in the country. The concept of export diversification became more obvious due to increasing globalization and global competition especially for the developing and third world countries which are trying to climb the trajectory of growth and development. In this regard, foreign direct

investment and foreign aid has always been two major source of financial assistance for economic development. However, their effectiveness varies according to several factors that has an impact on it and in this regard, several researches have been done. The present study also tries to fill the gap in the research and concentrates on its impact on Asian countries.

CHAPTER NO 3

LITERATURE REVIEW

In this chapter the review of literature is studied in details stating different views regarding the horizontal and vertical export diversification effects of Foreign Aid and Foreign Direct Investment (FDI). The foreign aid and FDI do affect the export diversification but to what extent and whether it holds under various situations is discussed through the literature review. The review of literature helps us to identify the gap in research and find the require research work.

Romer (1993) has stated the obstacles of lack of infrastructure as object gaps and lack of knowledge as ideas gaps. Basics skills and quality education is required for reforms at institutional levels and development of infrastructure to expand exports of manufacturing products. Technological gap can only be closed by good education system in the country. Trade and investment with advanced countries helps in the acquisition of technology and brings diversification. However, in a competitive atmosphere technology acquisition is not an easy task. Hence, sharing of knowledge and linkages between companies and within industries should be favorable. A significant channel for knowledge sharing in developing countries is though FDI and imports of manufacturing products from technologically advanced countries. The review of literature explores the links between FDI and export diversification.

Manufactured exports to total exports ratio can be considered as an important indicator with the help of which forward linkages are developed in the country which alleviates the dependence of a country on primary sector. Fosu (1990) compared the effect of manufactured exports and primary exports on economic growth. The results of the study concluded that in developing economies manufactured exports has positive impact on growth of the economy. Another study by Levin and Raut (1997) also concluded that rather than primary exports, manufactured exports has significant impact on economic growth. According to Acemoglu and Zilibotti (1997), there are limited opportunities for diversification at lower development levels because of capital scarcity and investment projects indivisibility.

Melitz (2002) based his study on heterogenous firms in dynamic industry model to show the reallocation of international trade among firms. It tries to give

exposure to the productive firms to enter export markets, whereas other less productive firms should produce for the home country. The graduation concept suggests that the process of graduation of a status of a country from developing to developed is interlinked with diversification of exports. (Amin Gutierrez de Pineros and Ferrantino 1997)

Similarly, some research paper by Ancharaz (2003) for Mauritius and Harding and Javorcik (2007) for Central and Eastern European (CEE) nations identifies positive FDI contributions to the export diversification. However, a paper by Bebczuk and Berrettoni (2006) identifies no statistically significant impact of FDI on diversification of export.

Balaguer and Cantauella-Jorda (2004) expounded that one of the key factor involved in the economic development of Spain is structural transformation of its export composition. Further the study also inferred that resources that are allocated towards the industrialized sectors of exports effects the economy in a positive manner. A study conducted by Ram (2004) examines the foreign aid effect on poverty and economic growth. Keeping in view the recipient country's policies, the study does not support the leading belief that when foreign aid is directed towards countries with good policy will alleviate poverty and increase growth.

Gomanee, Girma, and Morrissay (2005) directly study the methods of aid that affect the growth. By studying 25 Sub-Saharan African countries with time span 1970 to 1997, the author concludes that foreign aid has a notable positive effect on economic growth and investment is the major transmission mechanism for growth and development. Further, mathematically, on average, each one percentage point increase in the aid/GNP ratio accord one-quarter of one percentage point to the growth rate. Thus, other factors along with foreign aid should also be considered for growth in Africa.

Quartey's (2005) in his research has not used large data for different countries rather have concentrated on effectiveness of financial aid in Ghana by innovative ways. The author concluded that the success of MDBS (multi-donor budgetary support) plans of the government Ghana depends on how the government and their partners plan better and harmonize their efforts. The author suggests that the success of MDBS also depends on project aid synchronization and the large predictable

inflows. Moreover, the government should keep an eye on reducing its debt burden and should never use aid inflows to service its debt.

Mathiyazhagan (2005) in research paper, namely "Impact of Foreign Direct Investments on Indian Economy: A Sectoral Level Analysis" studied the long-term association of FDI with the Gross Output, Exports and Labor Productivity in different sectors of the Indian economy. The data are taken from the period 1990-2000. Panel Co-integration test was employed and concluded that the flow of Foreign Direct Investments into the sectors elevate the output labor productivity and export in some sectors. However, it is expected that at sectoral level there is a better role of Foreign Direct Investments. The findings of the paper also reveal the absence of significant co-integrating relationship among the variables like Foreign Direct Investments, LPR and others in core sectors of the economy. The study indicates the increase in the export, labor productivity and output productivity of the sectors do not depend the advent of Foreign Direct Investments. Hence the paper infers that the advent of Foreign Direct Investments fail to have a positive impact on the Indian economy at the sectoral level. The considerable proposition of this study was that for further opening of the economy, it is necessary to open up the export oriented sectors and the growth of these sectors in turn will help to achieve higher growth of the economy.

McGillivray (2005) infers that foreign aid to African countries helped in increasing growth and reducing poverty. The study explored the vital fact that continuously rising poverty, especially in sub-Saharan African countries affect the goals of MDGs (Millennium Development Goals). The study analysis the time series data for the period 1968-1999. The findings of the paper states that the amount of aid provided to the country is influenced by the policy regimes of each nation, such as trade openness and inflation.

Ouattara (2006) studies the effects of foreign aid on the major fiscal variables in Senegal. The study uses the data covering the time span from 1970 to 2000 and mainly explained the relation between debt and aid. The author identifies three main outcomes of his study. Firstly, a remarkable portion of aid flow is there and around 20% of the resources from government are devoted to for serving debt and 41%, are used to finance the debt of Senegal. Secondly, that the inflow of aid has an insignificant impact of on domestic expenditures, and thirdly the domestic

expenditure is negatively affected by debt servicing. Hence, the suggestion given by the paper is that it's better to concentrate more on making policies for the attaining reduction of debt rather than obtaining additional loans.

Besedes and Prusa (2006) conclude that the main factor that helps to attain a higher total growth of export are related and discussed at the firm level by comparing and investigating countries based on their intensive and extensive export growth margins. The intensive margin refers to the intensity of international trade capturing the trade value. The extensive margin refers to the extent of international trade capturing the country's trade partners.

A study conducted by Agosin (2006) shows that export diversification does not only refer to manufactured goods exports but it can also be done in terms of primary commodities evolving into natural resource based industries instead of manufactures. Production of goods with higher skills and knowledge intensity should be exported. Such production and export of goods can be termed as export diversification.

Banga (2006) in one of the empirical study namely "The export diversifying impact of Japanese and US Foreign Direct Investments in the Indian Manufacturing sector" enlighten the export-diversifying impact of FDIs in a developing economy. According to this study, "Foreign Direct Investment results in export diversification in the host country if it can correctly bring intensity in the export industries whose share is less in world exports. Indirectly, Foreign Direct Investments may increase the diversification of export through spillover effects: that is, the presence of Foreign Direct Investments in an industry may enhance the export intensity of the firms located in the country. The results from empirical study shows Foreign Direct Investments from the US has led to diversification of India and its exports, both directly and indirectly in the post-liberalization period of Indian economy. But it should be noted that Foreign Direct Investments from Japan has had no significant impact on India and its exports".

Sahoo (2006) found that " positive changes has been taken in policies with respect to Foreign Direct Investments as more efforts were put towards bilateral trade agreements and to provide investment incentives to foreign investors in South Asian nations (Pakistan, India, Bangladesh, Nepal and Sri-Lanka)".However, there is still

delay in proceedings, and reservation of industries is practiced where investment from foreign investors is not allowed and ceilings have been put in many industries/sectors for different countries”. This study showed that “the indicators, inclusive of the infrastructure, in all above five South Asian countries do not have adequate infrastructure facilities and good governance. Hence it is required that, more effective public investment on social and economic infrastructure along with stable economic policies to develop an enabling environment that brings more Foreign Direct Investment. Assessment of Foreign Direct Investments flows to South Asian countries revealed that there has been a rising trend of Foreign Direct Investments into South Asian countries. However, except India, the share of Foreign Direct Investment inflow is negligible to these countries”. An Analysis of Foreign Direct Investment inflows to different sectors shows that “Foreign Direct Investment is largely domestic market oriented in India and Pakistan, whereas it is concentrated in a few export-oriented industries in Sri Lanka and Bangladesh. The results of Foreign Direct Investments impact on growth show that Foreign Direct Investment has a positive and significant impact on growth for four South Asian Countries. Therefore, South Asian countries need to improve their Domestic investment, exports and infrastructure facilities, along with more foreign investment, to achieve higher growth. Further, Foreign Direct Investment has a positive impact on export growth through its positive spillovers for South Asian countries”. “Though Foreign Direct Investments does not affect domestic investment in the current period, it has a positive and significant impact affect over time through dynamic effects. The results of panel co-integration estimation reveal that Foreign Direct Investments and all its potential determinants have a long run equilibrium relationship”. According to this study the major determinants of “Foreign Direct Investments in South Asia are labor force growth, market size, infrastructure index and trade openness. Authors suggested that overall in South Asian countries growth momentum has to be maintained to improve the market size, improve infrastructure facilities, frame policies for better use of the abundant labor force, and follow more open trade policies to attract increased Foreign Direct Investments”.

Klinger and Lederman (2006) show in their findings that there is an increase in diversification as income up to in the country. The factors that are major obstacles for export diversification are location and trade barriers of an economy that need to be

overcome through prudent policies and management. Stanley and Bunnag (2001) found that diversification alone is not necessary for an economy. The new products with novelty also contribute to stability of export earnings.

A study by Karras (2006) examines the correlation between foreign aid and growth in per capita GDP. The study used annual data with sample size 71, from the time span 1960-1997 for aid-receiving developing countries. The study propounds that the foreign aid has a positive and permanent effect on economic growth and is statistically significant. More particularly, a \$20 per person increase in permanent foreign aid results in 0.16% increase in the growth rate of real GDP per capita. It is noted that the results do not include the effects of government policies.

Kosack et al. (2006) explored that in world's poorer countries FDI and aid are not correlated, further emphasizing that in developing countries foreign aid flow especially in the form of supporting government budget, human capital development and humanitarian activities; making the sense that foreign aid unlikely crowd out FDI. On the contrary, Boone (1995) also stated that aid rather increases the size of the government and the investment and growth are not increased that significantly.

Kasuga (2007) found that foreign direct investment and foreign aid of a country financial structure, income level and government infrastructure. Caselli et al., (2007) infers that flow of foreign aid to developing countries lowers the marginal product of capital in such countries. Foreign aid and FDI are substitute rather than being complements. Taylor (2008) expounded that social capabilities and economic size are major hurdles in export diversification in U.S region. Other obstacles in export diversification in case of developing countries are technological gap and limited capabilities to acquire knowledge.

Haskel et al., (2007) in a paper examined "the efficiency overflows from Foreign Direct Investment to home firms and how much should recipient countries be eager to pay to attract Foreign Direct Investment A plant-level panel covering U.K. manufacturing from 1973 through 1992 was used to examine this issue. Consistent with spillovers, they estimated a forceful and considerably optimistic correlation between foreign-affiliate share domestic plant's TFP and the of in that plant's industry. Typical estimates suggested that TFP of that industry's domestic plants raise by about 0.5% with a 10-percentage-point rise in foreign occurrence in a U.K.". Chousa et al.,

(2008) in his paper examined the association between the quantum of FDI in a firm and the quality of capital market growth of that firm. The period of study was from 1987 to 2006. After a comparative study of “both the stock market variables and the financial and regulatory reforms variables, they observed that the coefficients were higher than other variables. They concluded that higher reforms in capital markets may result into higher increase in firm level Foreign Direct Investment”. Moreover, the results are found to be enormously forceful when they “replaced stock market variables with squared values of the same, reconfirming the fact that bigger is the escalation, better is the inflow of firm level Foreign Direct Investment”.

Chousa et al., (2008) studied the obstacles to Foreign Direct Investment inflows in East and South Asian economies. The paper has used time series cross section data covering 17 South and East Asian countries. The period under analysis is 1996 to 2005. The term, quality of Foreign Direct Investment is defined in terms of function of higher per capita Foreign Direct Investment inflows, higher bilateral investment treaties between the recipient country and the rest of the world and lower volatility in Foreign Direct Investment inflows. It has been assessed against the common set of obstruction, including, socio-economic, policy, labor and institutional barriers using pooled regression analysis. The findings of the paper suggest that the quality of Foreign Direct Investment is negatively affected by the possible set of barriers. The paper has thus identified that there is need to address these set of barriers which acts as stumbling block in hindering the Foreign Direct Investment actual potential in the South and East Asian economies.

Selaya et al., (2008) states that by financing inputs such as human capital investment and public infrastructure projects and other complementary inputs foreign aid enhances the marginal productivity of capital. On the contrary, if foreign aid is in the form of physical capital flow then it crowds out productivity of private investments. Further, the study concludes that the total effect of different types of aid on FDI is always positive though may be small. Naude and Rossouw (2008) examined the two parallel concepts i.e. diversification and specialization in order to answer the question that either diversification is better for south African developing countries or specialization. The study covers the time span 1962-2000 and concluded that export diversification is more beneficial than export specialization as there is more growth in export volume in case of diversification.

Alemu (2008) checked the FDI effect on export diversification by employing the FGLS (Feasible Generalized Least Squares) estimation method with corrected autocorrelation and heteroscedasticity problems in the model. The paper states that increase in export diversification both the vertical and horizontal in East Asia is mainly due to FDI. However, in case of Sub-Saharan Africa (SSA) the paper concludes the similar effects but only in case of vertical export diversification.

Jayaweera (2009) examined the association between export diversification and rise in the levels of FDI by using instrumental variable estimation technique. The analysis of the study covers 29 low income countries and concluded that the FDI effect on export diversification depends on the mix of exported products by a country. This is true for the countries that export high proportion of mineral and oil resources. Changbio (2009) scrutinized the major determinants of exports in China specifically for electronic industry. The study covers the time span from 1999 to 2002 and from the results of the study it can be inferred that foreign direct investment plays a significant and positive role in export growth of China.

Kimura et al., (2009) asserted that there is no significant effect of foreign aid on FDI after studying in details the effects of foreign aid flows in the flow of FDI into less developed countries. On the contrary, Asiedu et al. (2009) asserts that foreign aid decreases the risk of FDI in the country i.e. the changes in laws and regulations and violation of contractual agreements. Supporting this suggestion, Karakaplan et al. (2005) showed that the countries which get foreign aid also become more likely to receive FDI, but this happens predominantly in case of financial market development and good governance. Another study by Serverine (2005) states that the foreign aid from Japan has notable supportive impact on private investors in China.

According to Das (2012), the problems of income inequality and poverty can be decreased if there is sufficient spread out of knowledge and technology from north. The paper has developed a general equilibrium model to explain the effect of technological spillovers on the productivity growth of the south. The growth in productivity will help in reducing the income inequality and poverty in developing countries. The developing country can grow in terms of better institutions, governance and increased capability of human capital through the spillover effects.

Iwamoto and Nabeshima, (2012), uses show the impact of FDI stock and inflow on the diversification of exports by using the dynamic data model. The study has shown the effects of both sophistication and export diversification. Further, it is stated that FDI is positively linked to export diversification. However, under what condition this link is possible is the major concern.

Narayana (2012) explained that one of the major concerns of planners and policy makers in India is attracting more and more Foreign Direct Investment. The study analyzed the Foreign Direct Investment and its flows into India and highlighted the basic constraints to Foreign Direct Investment in particular and investment in general.

Love (1983) suggests that shifting to manufactures from primary products should not be considered as best development strategy because some manufactured commodities are more sensitive to price variations and are volatile than the traditional exports. So, exports of such non-traditional commodities would result in instability. Another study by Ferdous (2011) on determinants of export diversification covering the time span 2000-2008 for eight countries (East Asian Economies) revealed that GDP growth and economic integration in these economies enhances export diversification whereas tariff and exchange rates alleviates the export diversification.

Parteka and Tamberi (2013) has concluded through their studies that income is positively related to trade diversification both in exports and imports by using several measures of diversification indices like relative Gini index, relative Theil index and Dissimilarity index with respect to the world structure of trade. In their paper "Product diversification, relative specialization and economic development: Import-export analysis" The papers compare the changes of export and import on the economic development of the country. It uses trade statistics of 163 countries and concluded that all developing countries generally follows the similar path of development process though there are differences in the export and import structures.

Ongba (2014) has mentioned that for the oil producing countries, the institutions on export diversification is very important. According to his findings there is a positive relation between export diversification and the distance between and political independence starting dates and oil production. Ben Hammouda et al (2006) conducted the study on 18 African countries for the time span 1996-2001. The

results of the study shows that investment is one of the major determinant of diversification.

Hodey et al., (2015) examined the relationship between export diversification and economic growth. The study covers 42 Sub-Saharan African countries and time span of the study is 1995-2010. The results of the study indicate that export diversification is positively associated with growth. Another study by Mudenda et al., (2014) also presented the same result that export diversification and economic growth are positively associated. The study covers the time series data ranging from 1980 to 2010 and country under analysis was South Africa. Moreover, using the estimation technique vector error correction model the study also concluded that along with export diversification trade openness also affects economic growth in same manner as export diversification.

Lwesya (2016) examined the impact of export diversification on export growth and along with that checked the relationship between non-traditional products and export growth in case of Tanzania. The time span of the study is 1980-2012. The results of the study revealed that the aggregate non-traditional products effect export growth significantly in short run whereas traditional products relates to export growth insignificantly. However, there is no evidence of relationship between these variables in the long run.

Using panel data Tekce and Dogruel scrutinized the relationship between trade liberalization and export diversification in MENA countries. The study revealed that there is dual effect on export diversification by trade liberalization i.e. multilateral liberalization with the help of WTO and regional trade agreements enhance these countries efforts to diversify exports whereas the membership with GCC and association agreement with EU fosters the specialization in export of certain products instead of diversifying the exports.

Fonchamnyo and Akame (2017) scrutinized the export diversification determinants in 32 Sub-Saharan African countries during the period 1995-2013. The study conclude that FDI, GDP per capita, openness, value added in manufacturing and agriculture sector are significant determinants of export diversification whereas official exchange rate, domestic investment and official development assistance are insignificant.

3.1 Conclusion and Research Gaps Identification

This chapter gives an extensive review of literature. Several conclusions can be drawn from the review. The literature makes it clear that there are detailed studies on the effect of foreign aid and foreign direct investment on the growth prospects of the country. Several studies have shown that both foreign aid and foreign direct investment increases growth and bring development in the country. Few studies have examined effects of FDI on export diversification which some have concluded to be positive.

A good number of literature is available that shows the importance of FDI and aid for the development of the country and the countries in which domestic industries have ability to exploit the comparative advantage is present are more likely to be chosen by foreign investors to start up their business. Nevertheless, we can't generalize or conclude that the FDI stock in a given country fosters the diversification of exports.

The literature has seen some common limitations. The FDI policy should be correctly designed to increase its inflow in the country. It should be a continuous process to change the policy according to the requirement of the country. If the requirements are not met, then inflows may result in negative returns.

The potential of a country to enhance products to be exported in numbers rises with the flow of FDI by fostering the product differentiation in different sectors and also by declining the entry cost into the world market. A country can also diversify its exports in vertical manner or dimension and in context of technological contents embedded with the exports i.e export sophistication rather than only horizontal dimension diversification. As the above-mentioned outcomes are possible with or without the other so the impact of FDI on the horizontal export diversification is considered to be a matter of an empirical question.

The literature review has shown that there is an extensive study on foreign aid effects for export diversification. Several studies have drawn econometric models to show the positive impact on export diversification due to the availability of foreign aid in the country. However, few have pointed out that foreign aid is used more for

removing economic hurdles in the country, like poverty, inequality, illiteracy and poor infrastructure facilities.

Though there are several studies of foreign aid and FDI effects on export diversification, few of the studies have done it specifically for developing countries. Further, very few studies have done to examine the impact of foreign aid and FDI together on export diversification. Hence, the study attempts to study the impact of FDI and foreign aid together on the export diversification of the developing countries.

CHAPTER No 4

DATA AND METHODOLOGY

This chapter presents the methodological framework and data and data sources used for analysis

4.1 Methodology

4.1.1 Theoretical background

Following theories are used to form the methodology

Prebisch-Singer hypothesis

According to this hypothesis countries that are more dependent on primary products are more vulnerable to commodity shocks and these shocks may include price fluctuations or declining term of trade (TOT) (Herzer and Lehman, 2006; Prebisch 1950 and Singer 1950). As income elasticity in case of primary commodities is low so this hypothesis suggests that countries that are in developing phase should decrease or reduce their dependence on production and export of primary commodities and should change their export structure by moving towards manufactured products from primary products. This change in structure can be named as vertical diversification.

Endogenous Growth Theory

According to this theory a country should specialize keeping in view the nature of sector because returns to scale depends on the sector itself and countries should diversify their exports from primary to high technology goods which in turn will lead to positive spillovers in other sectors of economy so this theory is also in the favor of export diversification.

Portfolio Theory

According to this theory the risk averse countries due to co-variability of various export goods world prices should diversify their exports (Brainard and Cooper 1968).

The Product Life Cycle Theory

According to this theory there are three stages of product development i.e. new product stage, maturing stage and standardized stage. During new product stage, no international trade takes place and demand for the product is equal to total domestic demand (Ederington and McCalman 2009). At the maturing stage, foreign demand for the product starts and production may also take place in foreign countries. During standardized stage, most products are produced to move to the developing countries and international trade continues to grow (Appleyard et al., 2010). So, this theory also proposed that high export diversification leads to increased economic growth.

Heckscher-Ohlin Theory

According to Heckscher-ohlin theory if a country specializes and exports the product in which it has a comparative advantage then it will gain from trade. Due to specialization both countries are able to consume and produce beyond production possibility frontier (PPF). So we can conclude that export diversification is a natural phenomenon for countries that are enriched with natural resources.

The Imitation Lag Hypothesis

This hypothesis is based on the fact that there are technological differences among countries. It also states that in order to circulate technology among countries we require some time and identical technology is a rare phenomenon (Appleyard, Field and Cobb, 2010). So, in order to diversify the exports the nation must engage itself in continual research and innovation.

4.1.2 Empirical Specification of Model

To examine the export diversification two categories of export diversification are considered: horizontal and vertical export diversification. The horizontal diversification is measured by Herfindahl-Hirschman Index and vertical diversification refers to manufactured exports to total exports ratio. The above literature review suggests that export diversification is effected by foreign direct investment, foreign aid, GDP, natural resource abundance, financial development and trade openness. The FDI effects trade diversification because capital inflows diminish credit constraints and allow investors to undertake more productive investment as a

result of which productivity increases which in turn support export diversification (Acemoglu and Zilibotti, 1997). Foreign aid is positively related with export diversification (Munemo et al., 2007). GDP also plays a significant role in export diversification (Ferdous 2011). Natural resource abundance effects export diversification because the low income countries with resource abundance could diversify by processing the primary commodities with resource based manufacturing rather than using low skill manufacturing path (Bonaglia and Fukasaku 2003). Trade openness also influence export diversification as the study conducted by World Bank (1993) on 51 countries covering the time span 1980-1989 reveal that trade openness has positive relation with total factor productivity growth therefore openness is positively linked with export diversification. Financial development improves trade, diversification and risk management (Levine 2004).

The following empirical model to be estimated as suggested by Fonchamnyo and Akame (2017):

$$ED_{it} = X_{it}\beta + \varepsilon_{it} \dots\dots\dots(1)$$

Where

ED_{it} = Export diversification which is further bifurcated into horizontal and vertical export diversification.

β = vector of regression coefficient to be estimated.

X_{it} = Matrix of regressors including FDI, foreign aid, trade openness, arable land per capita, growth rate and credit to private sector.

Linear form of eq 1 for horizontal and vertical export diversification can be written as

$$HED_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 FA_{it} + \beta_3 GDP_{it} + \beta_4 ALP_{it} + \beta_5 TO_{it} + \beta_6 CTPS_{it} + \varepsilon_{it} \dots\dots\dots(1.1)$$

$$VED_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 FA_{it} + \beta_3 GDP_{it} + \beta_4 ALP_{it} + \beta_5 TO_{it} + \beta_6 CTPS_{it} + \varepsilon_{it} \dots\dots\dots(1.2)$$

Where FDI is foreign direct investment

FA is foreign aid

GDP is gross domestic product

ALP is arable land to population

TO is trade openness

CTPS is credit to private sector

β s are parameters to be estimated and ε_{it} is random error term.

4.1.3 Estimation Technique

In this study for estimation of equation 1.1 and 1.2, fractional logit model is employed and it is quasi-likelihood method (Papke and Wooldridge 1996). The fractional logit model is suitable choice as the dependent variable is fraction. Hausman and Leonard (1994) have recently applied the methods suggested here to estimate a model for Nielsen ratings for telecasts of NBA basketball games. The quasi-log likelihood for observation i is exactly same as for the logit binary response model and it is presented as

$$0 \leq y_{it} \leq 1 \dots\dots\dots (2)$$

Where

$h(X_{it}\beta)$ = logistic cumulative distribution function and $y_{it} \in [0,1]$

The expected form is then specified as

$$y_{it} = h(X_{it}\beta) \dots\dots\dots (3)$$

For regressand the boundary probabilities are specified as

$$\Pr (y_{it} = 0|X_{it}) > 0$$

$$\Pr (y_{it} = 1|X_{it}) > 0$$

4.2 Construction and Justification of Variables

Horizontal Export Diversification

Horizontal export diversification in this study is measured by Herfindahl-Hirschman Index. Concentration index, also called as Herfindahl-Hirschmann Index (Product HHI) measures the degree of product concentration. The following normalized HHI is used in order to obtain values that lie between 0 and 1

$$H_j = \frac{\sqrt{\sum_{i=1}^n \left(\frac{x_{ij}}{X_j}\right)^2} - \sqrt{1/n}}{1 - \sqrt{1/n}}$$

where

$$X_j = \sum_{i=1}^n x_{ij}$$

x_{ij} = value of export for country j and product i

H_j = country or country group index

and

n = number of products (SITC Revision 3 at 3-digit group level).

An index value close to 1 represents that a country's exports or imports are highly concentrated on a few products. On the contrary, values that are close to 0 indicate exports or imports are distributed more homogeneously among a series of products. In other words, the country dependence on a limited group of exports is high when the value of the Herfindahl-Hirschman Index is near to one whereas a value that is close to zero represents a higher degree of export diversification.

Vertical Export Diversification

Vertical export diversification is measured by manufactured exports to total exports ratio i.e.

Where

VED = Vertical export diversification

ME = Manufactured exports. Manufactures in this study refer to chemicals, iron and steel, other semi-manufactures, textiles, transport equipment and machinery, clothing and other consumer goods.

TE = Total Exports

Foreign Direct Investment

Foreign direct investment is captured by net inflows as a percentage of GDP. According to neo-classical model trade openness generates flow of capital towards capital-scarce countries from capital abundant countries and accelerates convergence i.e. short term growth in poor countries. In other words, due to capital inflows credit constraints diminish and allow investors to undertake more productive investment as a result of which productivity increases (Acemoglu and Zilibotti, 1997).

Due to FDI competition in the host economy increases as a result of which efficiency of domestic companies increases and accelerates sectoral and product diversification. However, FDI yields higher productivity only when there is minimum threshold stock of human capital in the host country. Thus, we can say that FDI has export diversifying effects only when there is sufficient absorptive capability of the advanced technology is present in the host economy.

Foreign Aid

Foreign aid is taken as net official development assistance and official aid received in current US \$. The relationship between export diversification and foreign aid is always debatable. The traditional justification is that resource constraint in developing countries releases due to foreign aid (Munemo et al., 2007).

So, foreign aid is considered to be positively related with export diversification. However, on the other side foreign aid can also deteriorate export diversification in context of its impact on exchange rate. As increase in aid has potential to increase the price of non-traded goods as a result of which there is appreciation in real exchange rate and decrease the export competitiveness. Such type of effect is more severe in economies where there are imperfections in capital market and also in manufacturing sector with externalities like learning by doing (Osakwe, 2007). Keeping in view above arguments it can be inferred that foreign aid can affect export diversification both in positive and negative manner.

Natural Resource Abundance

Natural resource abundance in this study is proxied by arable land to population ratio i.e. arable land per capita. New knowledge and technological progress comes with natural resource abundance (World Bank 2002) whereas Sachs and Warner (2001) conclude that there is inverse relationship between growth and resource abundance.

According to Rybcznski theorem when there is development of new resources then there is alleviation in development of other lines of production i.e. manufactures through “Dutch Disease” effect. There is an economic irony that countries with greater natural resources endowments has slower growth than that of resource poor counterparts (Sachs, 2001). But this negative relationship can’t be generalized as Bonaglia and Fukasaku (2003) find that low income countries with resource abundance could diversify by processing the primary commodities with resource based manufacturing rather than using low skill manufacturing path.

Trade Openness

Trade openness variable is constructed by adding exports of goods and services as a percentage of GDP and imports of goods and services as a percentage of GDP. The graduation approach in trade liberalization expounded that the countries with inherent constraints are not able to develop a comparative advantage in order to export new commodities in short time.

The catching up theory states that keeping other things constant if there are innovation at faster rate in advance economies then the scope of growth in laggard

economies would be higher due to imitation. When the technology flows towards follower from the leader with the help of trade and if the degree of trade liberalization is higher than diffusion process will be faster (Baumol et al., 1991).

Credit to Private Sector

Credit to private sector as a percentage of GDP represents financial development. Credit to private sector can be used as proxy for financial development (Esso 2010). It improves production, monitoring and implementation of corporate governance, exchange of goods and services. In addition to these it also improves trade, diversification and risk management (Levine 2004).

GDP

GDP is taken in form of GDP growth (annual %). There is homogeneous export structure in poor countries i.e. they export goods belonging to few group of products or few sectors (Parteka and Tamberi). Ferdous (2011) while investigating the determinants and patterns of export diversification in East Asian economies concludes that GDP growth rate promote export diversification. Another study on 53 African countries finds that per capita income plays significant role in export diversification (Elhiraika and Mbate (2014).

4.3 Data Collection

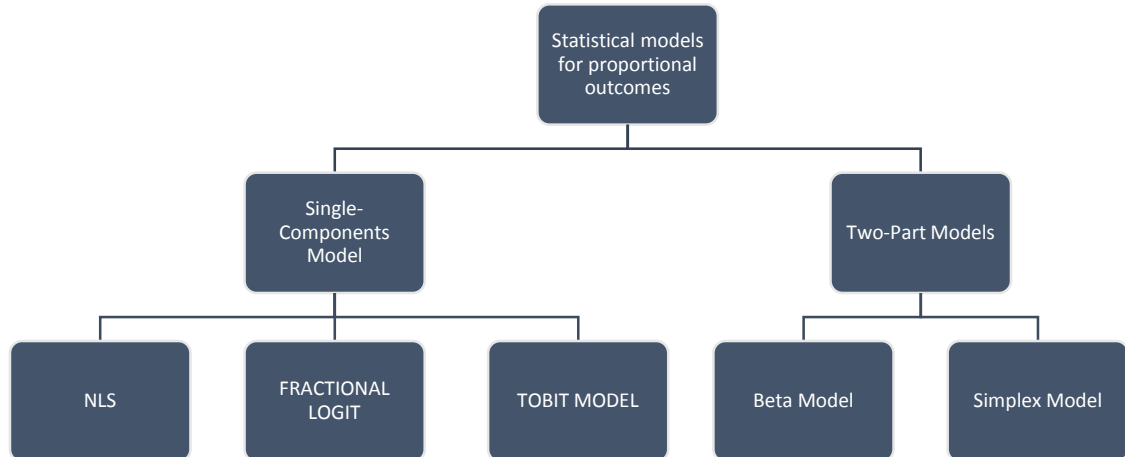
The data used in this study covers the time period from 1995 to 2015 for south Asian developing countries. Initially the analysis includes 7 countries but due to limitation of data the analysis is reduced to 5 countries i.e. Bangladesh, India, Maldives, Pakistan and Srilanka. The type of data used in this study is secondary. Data on horizontal export diversification is collected from UN-CTAD and manufactured exports data is collected from WTO. Data on all other variables i.e. foreign direct investment, foreign aid, gross domestic product, credit to private sector, per capita arable land and trade openness is collected from WDI.

4.4. Estimation Technique

In this study, we employ fractional logit model because the dependent variable is in proportion and this technique was proposed by Papke and Wooldridge in 1996. Further in fractional response models there is no need of special transformation

of the values that are observed at the bounds, the non-linearity of data is accounted in these models.

Figure 4.1: Schematic Diagram of Statistical Models for Fractional Outcome



Under the generalized linear model assumptions it is fully robust and direct recovery of regression function is allowed for regressand given the set of predictors (Gallani and Krishnan). Even by ignoring the bounded nature of regressand, the OLS estimator, the instrument variable IV estimator and GMM of linear model may provide consistent estimates but they don't ensure that their fitted values lie within the unit interval and also partial effect estimates for the predictors extreme values are not good (Nam, 2014)

CHAPTER NO 5

RESULTS AND INTERPRETATION

The empirical results and their interpretation is discussed in this chapter.

5.1 Descriptive Statistics

In descriptive statistics, basic features of the data are described. Here one of the measure of central tendency i.e. mean is used to describe the data.

TABLE 5.1: Summary Statistics

Country Variable	All countries	Bangladesh	India	Maldives	Pakistan	Srilanka
VED	0.640	0.896	0.693	0.117	.802	0.702
HED	0.297	0.384	0.146	0.526	0.213	0.219
FDI	2.156	0.762	1.364	6.127	1.264	1.264
FA	1.34e+09	1.40e+09	1.86e+09	4.00e+07	1.83e+09	5.38e+08
GDP	5.731	5.556	6.950	6.776	3.980	5.397
TO	66.544	35.389	38.145	158.384	32.946	67.856
ALPOP	7.23e-06	4.49e-07	4.81e-08	0.00003	2.66e-07	8.50e-07
CTPS	31.366	30.753	38.549	32.850	22.966	31.714

Table 5.1 represents the descriptive statistics of variables. The average of horizontal trade diversification for all countries is 0.297 and vertical trade diversification is 0.64 while in context of individual countries the statistics represent that the most vertically diversified countries are Bangladesh, Pakistan and Srilanka with statistics 0.895, 0.80 and 0.70 respectively whereas Maldives and India are less vertically diversified with statistics 0.12 and 0.69 respectively. In case of horizontal export diversification, the most diversified countries are India (0.15), Pakistan (0.21) and Srilanka (0.22) whereas Bangladesh and Maldives are less diversified with statistics 0.38 and 0.53 respectively.

In terms of foreign direct investment which is taken in % of GDP the mean for all countries is 2.15 % while Maldives received a lion share among all countries with

6.13 %. India, Pakistan and Srilanka on average received 1.36, 1.26 and 1.26 % respectively and Bangladesh received the least with 0.76 % on average. The average foreign aid stands at 1.34e+09 with Srilanka, India and Pakistan topping the list with 5.38e+08, 1.86e+09 and 1.83e+09 \$ respectively while Maldives (4e+07) have least foreign aid received followed by Bangladesh (1.40e+09). Looking at GDP growth rate, the summary statistics indicate that average value for all countries is 5.73%. India (6.96%) and Maldives (6.78) tops the list followed by Bangladesh (5.56%), Srilanka (5.40%) and Pakistan (3.98%).

The trade openness on average for all countries is 66.54 while most open economies are Maldives (158.38) and Srilanka (67.86) followed by India (38.15), Bangladesh (35.39) and Pakistan (32.95). In case of natural resource abundance measured by arable land per capita on average its value is 7.23e-06 for all countries while the most natural resource abundant country is Maldives (0.0000345) and then afterwards we have Srilanka (8.50e-07), Bangladesh (4.49e-07), Pakistan (2.66e-07) and India (4.81e-08). Looking at financial development measured by credit to private sector, on average value for all countries is 31.37 while India tops the list with 38.55, followed by Maldives (32.85), Srilanka (31.71), Bangladesh (31.37) and Pakistan (22.97).

With the help of summary statistics, it is not possible to infer the key relationship between FDI, foreign aid export diversification (both horizontal and vertical diversification).

5.2 Pairwise Correlation

Table 5.2 represents a pairwise correlation among the variables for all countries. The correlation results indicate that with the increase in FDI as a percentage of GDP both horizontal vertical diversification of exports decreases. However, in case of foreign aid the results are in opposite manner both horizontal and vertical export diversification increases with the increase in foreign aid.

TABLE 5.2: Pairwise Correlation among all Variables

	VED	HED	FDI	LFA	GDP	CTPS	LALP
VED	1						
HED	-0.623	1					
FDI	-0.774	0.742	1				
LFA	0.864	-0.635	-0.632	1			
GDP	-0.165	0.041	0.026	-0.170	1		
CTPS	-0.240	0.274	0.426	-0.025	0.140	1	
LALP	-0.796	0.731	0.585	-0.922	0.105	-0.037	1
TO	-0.916	0.699	0.777	-0.903	0.150	0.220	0.871

5.2.1 Pairwise Correlation of HED with FA and FDI

In table 5.3 (a) the correlation coefficient between horizontal export diversification and foreign direct investment indicates that increase in FDI as a percentage of GDP will decrease horizontal export diversification in case of Bangladesh, India, Maldives and Pakistan whereas in case of Srilanka, the increase in FDI will lead to increase in horizontal export diversification.

The correlation coefficient between horizontal export diversification and foreign aid represents that in case of Bangladesh, India and Maldives the increase in foreign aid is associated with decrease in horizontal export diversification whereas in Pakistan and Srilanka there is positive association between horizontal export diversification and foreign aid i.e. increase in foreign aid will increase diversification horizontally.

TABLE 5.3 (a) Correlation of HED with FDI and FA

Country	Correlation-coefficient between HED and FDI	Correlation coefficient between HED and FA
Bangladesh	0.708	0.118
India	0.361	0.595
Maldives	0.799	0.273
Pakistan	0.246	-0.722
Srilanka	-0.016	-0.568

5.2.2 Pairwise Correlation of VED with FA and FDI

In table 5.3 (b) the correlation coefficient between vertical export diversification and foreign direct investment indicates that only in case of Bangladesh the increase in FDI will lead to increase in vertical diversification of exports while the case is different for rest of the countries. From correlation coefficient between vertical export diversification and foreign aid we infer that with the increase in foreign aid, vertical diversification of exports decreases in all countries.

TABLE 5.3 (b) Correlation of VED with FDI and FA

Country	Correlation-coefficient between VED and FDI	Correlation coefficient between VED and FA
Bangladesh	0.416	-0.017
India	-0.748	-0.538
Maldives	-0.749	-0.549
Pakistan	-0.047	-0.714
Srilanka	-0.046	-0.703

5.3 Stationarity Test

Levin-Lin-Chu panel unit root test is applied with

Null hypothesis H_0 : Panels contain unit root

Alternative hypothesis H_1 : Panels are stationary

The results of the test are presented in table 5.4 which indicate except foreign aid and trade openness all other variables i.e. vertical export diversification, horizontal export diversification, foreign direct investment, growth rate, natural resource abundance and financial development are stationary at level as p-value is less than 0.05 so we reject null hypothesis whereas foreign aid and trade openness are stationary at first difference. The country wise stationarity is also checked by applying time series augmented dickey fuller unit root test.

Table 5.4: Unit Root Test

VARIABLES	LEVEL			FIRST DIFFERENCE		
	Unadjusted t value	Adjusted value	t p-value	Unadjusted t value	Adjusted value	t p-value
VED	-3.74	-1.674	0.0470	-7.783	-3.760	0.000
HED	-3.988	-1.983	0.0237	-7.675	-3.436	0.000
FDI	-3.682	-1.671	0.0473	-10.375	-7.308	0.000
LFA	-4.939	-0.644	0.260	-9.908	-4.964	0.000
GDP	-6.084	-3.350	0.004	-9.827	-6.205	0.000
LALP	-3.687	-2.694	0.000	-7.028	-3.816	0.000
TO	-2.778	-3.669	0.189	-7.868	-3.629	0.000
CTPS	-1.907	-0.631	0.264	-5.368	-2.041	0.021

5.4 Fractional Logit Model for Vertical Export Diversification

Table 5.5 (a) represent the results of fractional logit model in case of vertical diversification for all countries. Robust standard errors are presented along with coefficients. The results indicate that in case of panel analysis foreign direct investment, growth rate, natural resource abundance and trade openness are

statistically significant and rest of the variables i.e. foreign aid and credit to private sector are insignificant.

Foreign direct investment, growth rate and natural resource abundance are negatively associated with vertical export diversification whereas trade openness is positively associated. Specifically, the results indicate that on one hand increase in foreign direct investment, growth rate and natural resource abundance will decrease the likelihood of a country to diversify vertically whereas on the other hand trade openness will increase the likelihood of a country to diversify vertically. More specifically an increase in foreign direct investment, growth rate and natural resource abundance by one percent will decrease the likelihood to vertical diversification by 0.523, 0.057 and 0.513 % respectively whereas one percent increase in trade openness will increase the likelihood of vertical export diversification by 0.012 %. So, we can conclude that vertical export diversification is affected by foreign direct investment but not by foreign aid.

Table 5.5 (a): Fractional regression for vertical export diversification in all countries

Variable	Coefficient	Robust Standard Error
FDI	-.522*	.0752
LFA	.214	.316
GDP	-.0571*	.023
CTPS	-.0295	.026
LALP	-.513*	.107
TO	.0122**	.006
CONS	-1.214***	.742

Note: The *, **, *** represent 1%, 5% and 10% level of significance.

Table 5.5 (b) represents country wise results. In case of Bangladesh natural resource abundance is the only significant variable. In India and Maldives foreign direct investment and natural resource abundance play a significant role in diversification of exports vertically but in India an increase in natural resource abundance will increase likelihood of diversification whereas in Maldives it will

decrease likelihood of diversification. An increase in foreign direct investment by one percent will decrease the likelihood of vertical diversification of exports by 0.133 and 0.629 % respectively.

In Pakistan, foreign aid, financial development and trade openness are significant factors. One percent increase in foreign aid and trade openness will decrease the likelihood of vertical diversification by 0.06 and 0.042 % respectively while one percent increase in financial development will increase likelihood to diversify by 0.092%. growth rate, natural resource abundance and trade openness plays a significant role in diversification of exports in Srilanka. One percent increase in growth rate and natural resource abundance will decrease likelihood of diversification by 0.026% and 1.935% respectively whereas one percent increase in trade openness will increase likelihood of diversification by 0.013%. So, significance of variables varies from country to country.

Table 5.5 (b)

Fractional regression for vertical export diversification for individual countries

Variables	Coefficient (Robust S.E)				
	Bangladesh	India	Maldives	Pakistan	Srilanka
FDI	-0.294 (0.529)	-0.133* (0.051)	-0.629* (0.127)	-0.060 (0.057)	0.029 (0.041)
LFA	-0.116 (0.261)	-0.048 (0.198)	0.051 (2.241)	0.570** (0.288)	0.059 (0.144)
GDP	-0.219 (0.180)	0.002 (0.020)	-0.052 (0.080)	0.027 (0.031)	-0.026** (0.011)
CTPS	0.093 (0.099)	0.010 (0.025)	-0.067 (0.050)	0.092* (0.029)	0.003 (0.008)
ALP	-10.929*** (6.422)	5.608* (1.568)	-12.555** (5.531)	3.745 (16.643)	-1.935* (0.511)
TO	0.026 (0.036)	-0.011 (0.014)	0.006 (0.008)	-0.042** (0.021)	0.013** (0.006)
CONS	-65.961 (40.240)	42.077* (11.402)	-55.008** (24.247)	1.469* (0.216)	-10.763* (3.096)

Note: The robust standard errors are reported in parenthesis. The *, **, *** represent 1%, 5% and 10% level of significance.

5.5 Fractional logit model for horizontal export diversification

The results presented in the table 5.6 (a) indicates that foreign direct investment and natural resource abundance plays significant role in horizontal export diversification. More specifically one percent increase in foreign direct investment and natural resource abundance will increase the likelihood of concentration i.e. decrease in horizontal export diversification. In terms of statistics if there is one percent increase in foreign direct investment then there is increase in likelihood of concentration by 0.095%.

Table 5.6 (a): Fractional regression for horizontal export diversification in all countries

Variable	Coefficient	Robust Standard Error
FDI	.095*	.028
LFA	-.086	.177
GDP	-.004	.016
CTPS	.019	.015
LALP	.391**	.061
TO	.002	.005
CONS	1.291	.449

Note: The *, **, *** represent 1%, 5% and 10% level of significance.

Table 5.6 (b) represents the country-wise results. starting from Bangladesh growth rate, financial development, natural resource abundance and trade openness are significant. Growth rate and natural resource abundance are positively associated with horizontal diversification of exports whereas financial development and trade openness are negatively associated with horizontal export diversification i.e. one percent increase in financial development and trade openness will increase likelihood of concentration by 0.013 and 0.004 % respectively which means decrease in horizontal export diversification.

In case of India financial development and natural resource abundance plays significant role in horizontal export diversification. Both of these are negatively associated with likelihood of concentration resulting into increase in horizontal export

diversification. Moving forward to Maldives one percent increase in foreign direct investment, growth rate and financial development will increase the likelihood of concentration i.e. decrease in horizontal export diversification by 0.201, 0.031 and 0.056% respectively whereas one percent increase in trade openness will decrease the likelihood of concentration by 0.013%.

In case of Pakistan and Srilanka growth rate, natural resource abundance and trade openness are significant. Growth rate, natural resource abundance and trade openness are positively associated with likelihood of concentration which means when there is increase in above mentioned variables then export diversification decreases whereas in Srilanka one percent increase in growth rate and natural resource abundance will increase the likelihood of horizontal export diversification by 0.015 and 0.875 % respectively and one percent increase in trade openness will decrease likelihood of diversification by 0.004%. the significance of variable varies from country to country due to difference in their economic structure and economic policies.

The results of the study indicate that significance of variable is consistent with the previous findings but the direction is reverse. As FDI is significant variable as in previous studies by Ancharaz (2003) and Jovorcik (2007) but negative relationship to export diversification is contrary to these studies. The significance of growth rate is consistent with previous studies by Mundenda et al (2014) and Hodey et al (2015). The results of trade openness effect is contrary to many previous studies (Agosin et al.,2011, Kamuganga,2012 and Omgba,2013) but is consistent with the study by Alaya (2012) on Middle East and North African countries which concluded that trade openness fosters export diversification.

Table 5.6 (b)**Fractional regression for horizontal export diversification for individual countries**

Variables	Coefficient (Robust S.E)				
	Bangladesh	India	Maldives	Pakistan	Srilanka
FDI	0.027 (0.035)	-0.013 (0.02)	0.201** (0.032)	-0.0007 (0.027)	-0.006 (0.022)
LFA	-0.021 (0.032)	0.04 (0.131)	-0.296 (0.298)	-0.004 (0.065)	0.076 (0.077)
GDP	-0.039* (0.013)	-0.006 (0.013)	0.031* (0.015)	0.014* (0.005)	-0.015** (0.005)
CTPS	0.013** (0.006)	-0.027*** (0.015)	0.056** (0.021)	0.0002 (0.005)	-0.004 (0.003)
ALP	-1.467* (0.537)	-3.171* (0.699)	-3.368 (3.380)	1.477** (0.190)	-0.875*** (0.243)
TO	0.004* (0.002)	0.007 (0.007)	-0.013 (0.005)	0.007* (0.003)	0.004* (0.002)
CONS	-9.611 (3.354)	-24.902 (5.072)	-16.463 (14.960)	8.367 (1.241)	-6.489 (1.488)

Note: The robust standard errors are reported in parenthesis. The *, **, *** represent 1%, 5% and 10% level of significance.

CHAPTER NO 06

CONCLUSION AND POLICY IMPLICATIONS

The study examined the effect of foreign direct investment and foreign aid on horizontal and vertical export diversification for five south Asian economies i.e. Bangladesh, Maldives, India, Pakistan and Srilanka. Horizontal export diversification is measured by Herfindahl-Hirschman index ranging from 0 to 1 while vertical diversification is measured as a ratio of manufactured exports to total exports. The study covers the time span 1996-2015. In addition to panel analysis, the study also presents the country wise results. Using the estimation technique fractional logit model the results of the study indicate that foreign direct investment, growth rate, natural resource abundance and trade openness are significant determinants of vertical diversification whereas in case of horizontal diversification foreign direct investment and natural resource abundance are significant.

Empirically an increase in foreign direct investment in terms of percentage of GDP will decrease the likelihood of both horizontal and vertical export diversification i.e. it encourages specialization hence promoting a more homogeneous structure of exports. In the same way, an increase in natural resource abundance and growth rate will also decrease export diversification whereas an increase in trade openness promotes both horizontal and vertical export diversification. However foreign aid, another key variable of interest in this has no significant impact both in horizontal and vertical export diversification. The negative relationship can be justified as countries instead of diversifying their export structure try to specialize in the same commodities that they are exporting keeping the export structure homogeneous i.e. increase in concentration and it can also be justified as there is increase in inflow of foreign direct investment the countries rely more on imports rather than focusing on improvement in export sector.

Another important research question to be answered in this study is which dimension of export diversification is more affected by the key variables of the study. So, from the results of the study it can be inferred that vertical export diversification is affected more by foreign direct investment than that of horizontal export diversification. Empirically one percent increase in foreign direct investment will

decrease likelihood of vertical export diversification by 0.52% whereas one percent increase in foreign direct investment in case of horizontal diversification will decrease it by 0.095%. The second variable of interest i.e. foreign aid has no significant impact on both horizontal and vertical export diversification. It can be justified as in most cases, the aid in forms of economic bail out has been seen as a form of economic exploitation and defective as it tends to rather deteriorate existing economy as in the IMF-related fiscal target always compel the recipient to adopt measures with harmful effects at a long run. During the loans processing, conditionality such as government's withdrawal in social services delivery, hinders government services' expansion and so therefore productivity. Workers are only contracted on part-time basis without being on payroll. As the aid, does not come all at once, there is always lacuna in its efficacy. Delays in implementation of projects are due to aid's volatility and unpredictability. It fails have a positive impact as can't be used for a long-term investment. Carlos and Nicholas, assert that as it passes through a lengthy bureaucratic process where corruption, mismanagement and misuses make the given aid quite useless.

The above results have some policy implications. Although foreign direct investment has negative relationship with both horizontal and vertical export diversification but it is significant in both cases. So foreign direct investment should be invested or directed towards export sector not just for an increase in traditional export goods production which will increase the concentration resulting into decrease in diversification but it should be directed with conditions to bring diversification in this sector resulting into production of commodities. Similarly, countries with high growth rate and that which are rich in natural resources should try to diversify their export structure by bringing changes in traditional export and this change can be in the form of new technology or by improving the productivity skills etc. so that exports become more competitive in the world market and bring more revenues. Foreign aid has no significant impact on both horizontal and vertical export diversification so discussion on this variable is not worth mentioning here. Another finding of the study is that trade openness plays a positive and significant role in export diversification so the government should avoid trade restrictions to foster export diversification horizontally and vertically. Further research can be done on the same data set to investigate the determinants of export diversification at extensive and intensive margins.

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