Effect of Financial Development on Trade of Manufacturing Goods of India

A Dissertation Submitted to Central University of Haryana for the Partial Fulfilment of the Award of the Degree of

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Supervisor

Dr. Ranjan Aneja

Assistant Professor

Department of Economics

Submitted by

Naseeb Singh

Roll No: 8038

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SCHOOL OF ARTS, HUMANITIES AND SOCIAL SCIENCES

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DECLARATION

I hereby declare that the work presented in this dissertation entitled, "**Effect of Financial Development on Trade of Manufacturing Goods of India"** in partial fulfilment for the award of Degree of **"Master of Philosophy**" in **Economics** and submitted to Department of Economics, Central University of Haryana is a record of my own investigations carried under the guidance of **Dr. Ranjan Aneja**, Assistant Professor, Department of Economics, Central University of Haryana, Mahendergarh. The material presented in this Dissertation is not submitted anywhere before for the award of any other degree.

Date: **Name: Naseeb Singh**

Place: Mahendergarh, Haryana **Enrolment No: 8038**

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List of Abbreviation

- FD- Financial Development
- FDI- Financial Development Index
- ME- Manufacturing Exports
- MI- Manufacturing Imports
- TB- Trade Balance
- BrM- Broad Money
- MC- Market Capitalization
- PC- Private Credit
- FIN- Financial Innovation
- IMF- International Monetary Fund

Chapter 1

Introduction

1.1 Meaning of Finance

The concept of finance includes capital, funds, money, and amount. But each word is having unique meaning. Studying and understanding the concept of finance become an important part of the business concern. The word “finance” is originally a French word, which implies the management of money. As an academic discipline finance has greater significance and has emerged out as an organized branch of Economics. Finance is concerned with allocation, management, acquisition and investment of resources and is defined as the commercial activities through which banks, financial institutions generate and distribute fund for capital building of industries. It works as a bridge between the fund seekers and fund savers and the success of it helps financial system to perform its functions that lays road to achieve broader national objectives.

According to Oxford dictionary, the word ‘finance’ connotes ‘management of money’. Webster’s Ninth New Collegiate Dictionary defines finance as “the Science on study of the management of funds’ and the management of fund as the system that includes the circulation of money, the granting of credit, the making of investments, and the provision of banking facilities.

1.2 Financial System

Funds in bulk amounts lend and borrowed by creditors and debtors respectively, for a particular period of time at a stipulated rate of interest is known as finance. In other words, finance refers to the funds of monetary recourses required by people, business homes and by the Government. Hence all those activities managing finance are organized in a system referred to as the “Financial System or financial Sector”. A

financial system includes monetary establishments markets and instruments that along kind the essential framework for mobilization and allocation of savings, the main role of any financial system is to act as passage for the transfer of financial recourses from net savers to borrowers. Financial markets can matter either by affecting the quantity of savings available to finance investment (Bencivenga and smith (1991); or by increasing the productivity of that investment (Greenwood and Jovanovic, 1990; King and Levine 1993). so financial market efficiency can act as a lubricator to the engine of economic process. The financial system is probably the foremost vital institutional and purposeful vehicle for economic transformation. Financial system consists of different types of markets, financial institutions, different- 2 financial instruments, financial services and other mechanisms which influence the creation of savings, investment, capital formation and growth of an economy. The Indian financial system is broadly speaking classified into 2 broad groups: i) organized sector and (ii) Unorganized sector.

The organized financial system is composed of a good network of banks, other financial and investment organizations and variety of financial instruments, that all work together in fairly developed capital and money markets. The various sub-systems of financial system are Banking System, Development banking system, Cooperative system, Money markets and monetary corporations or establishments.

The unorganized financial system is composed of less controlled landlords, moneylenders, indigenous bankers, traders, lending pawn brokers etc. The unorganized financial system part isn't directly amenable to control by the Reserve bank of India (RBI). And unorganized sector is also too big in numbers in India.

1.3 Financial Development

Financial development can be defined as process that marks improvement in quality, quantity, and efficiency of financial intermediary services. It refers to the development and well-being of financial intermediaries and financial markets. Financial Development Report published by World Economic Forum defined financial development as the factors, Policies and institutions that lead to effective financial intermediation and markets, as well as deep and broad access to capital and financial services. Financial development happens when financial instruments, markets and intermediaries ameliorate though doesn't necessarily eliminate –the effects of data, social control and transactions price and thus do a correspondingly higher job at providing the 5 monetary functions. Financial development involves improvement within the production of ex-ante info regarding attainable investments, watching of investment and implementation of corporate governance, trading diversification and management of risk, mobilization & pooling of savings and exchange of goods and services. According to Dorrucci and Drutti (2007), Financial development means the potential of an economy to channel its economy's savings into its investments effectively and efficiently among its own boundaries owing to the quality of its regulatory and institutional framework, the market capitalization of its financial markets, the diversification of its financial instruments and agent's easy access to them and finally the financial market's performance in terms of efficiency, liquidity. Hartmann and Heider (2007) defined financial development as the process of financial innovation also as organizational and institutional enhancements in a financial system, which can minimize asymmetric info, lead to completeness of markets, and add potentialities for agents to have interaction in financial transactions through contracts, scale back dealing prices and increase competition. The scope of

financial development thus includes innovations or improvments in products, establishments and organizations within the banking sector, non-banking financial structures and capital markets.

1.4 Foreign Trade

Foreign trade is the trade between the different countries of the world. It is also called as International trade, External trade or Inter-Regional trade. It consists of imports, exports and "entrepot". Foreign trade basically takes place for mutual satisfaction of wants and utilities of resources. At the level of Central Government it is administered by the Ministry of Commerce and Industry[1]

Foreign Trade can be divided into following three groups:-

1. **Import Trade**: Import trade refers to purchase of goods by one country from another country or inflow of goods and services from foreign country to home country.
2. **Export Trade**: Export trade refers to the sale of goods by one country to another country or outflow of goods from home country to foreign country.
3. **Entrepot Trade**: Entrepot trade is also known as Re-export. It refers to purchase of goods from one country and then selling them to another country after some processing operations.

International or Foreign trade is recognized as the most significant determinants of economic development of a country, all over the world. The foreign trade of a country consists of inward (import) and outward (export) movement of goods and services, which results into outflow and inflow of foreign exchange. Thus it is also called EXIM Trade.

[1] Gaurav Akrani(2011) 'What is Foreign Trade'

For providing, regulating and creating necessary environment for its orderly growth, several Acts have been put in place. The foreign trade of India is governed by the Foreign Trade (Development & Regulation) Act, 1992 and the rules and orders issued there under. Payments for import and export transactions are governed by Foreign Exchange Management Act, 1999. Customs Act, 1962 governs the physical movement of goods and services through various modes of transportation.

To make India a quality producer and exporter of goods and services, apart from projecting such image, an important Act – Exports (Quality control & inspection) Act, 1963 has been in vogue. Developmental pace of foreign trade is dependent on the Export-Import Policy adopted by the country too. Even the EXIM Policy 2002-2007 lays its stress to simplify procedures, sharply, to further reduce transaction costs.

1.5 Manufacturing Trade

As in most advanced economies, the service sector accounts for the largest share of output and employment like U.K, United States. However, key segments in the service sector depend importantly on manufactured goods, especially those related to information processing. At the same time, key innovations developed by firms in the manufacturing sector have been adopted by service-sector firms, enabling them to achieve substantial gains in efficiency and productivity. For example, research has found that big-box retailers such as Wal-Mart and Target have improved the nation's productivity by significantly increasing the efficiency of the supply chain from manufacturer to retailer. This supply chain revolution—termed "just in time" inventories— was started by Toyota, a large global manufacturer.

The total share of the manufactured goods of India in the total exports of India was about 39 per cent in 1950-51 which includes gunny bags, cotton piece goods, and gunny clothes. These all were basically agriculture-based products. However,

complete and detailed data is not available. India's Industrial base too was small. In 1960-61 the total share of manufactured products of India increased to 45.4% and before economic reforms in 1990-91 it boosted to 72.9% and reached its peak in 2000-01 to 78%, thereafter downward trend was set in and it was 67.2 per cent in 2009-10.

The study considers manufactured exports in an inclusive manner are Drugs, Pharma, Engineering and Electronics; Gems & Jewellery, Fine Chemicals, Other Basic Chemicals; Plastic & Linoleum; Textiles - Cotton Yarn/Man–made Yarn/Fabrics/Made-ups, RMG of all Textiles; and Leather, Jute, Carpets and Handicrafts.

As per planning commission report manufacturing Exports will be around 25% of GDP in 2025 from present levels. Among all the manufacturing exports engineering products came out as the most dynamic sector with its 39.8 per cent share in total manufacturing export in 2010. After engineering products other major contributor to India's manufacturing export performance is Gems and Jewellery, with a total share of 22.2%. Textiles are placed at 3rd place with total share of 13.9% in the total manufacturing exports.

1.6 Role of Financial Development in Manufacturing Trade

Trade and finance have been connected in the literature in at two different ways, which can be mainly characterized as supply-side and demand-side. In an important paper, Rajan and Zingales (2003) emphasize the supply-side role of interest groups, and especially the vested interests of incumbent industrialists and financial intermediaries. Incumbents, worried by the threat of entry, have strong incentives to resist financial development. These incentives are weakened if a country becomes more open to foreign competition or to international flows of capital. In this view,

goods market openness can improve the supply of external finance, because it aligns the interests of the economically powerful more closely with financial development. In contrast, Svaleryd and Vlachos (2002) emphasize the role of risk diversification. To the extent that openness is associated with greater risks, such as increased exposure to external demand shocks or foreign competition, it will create new demands for external finance. Firms will need credit in order to overcome short-term cash flow problems and adverse shocks. In this view, the effects of trade on finance are likely to work primarily through the demand side.

There are a number of channels through which financial development can be used into comparative advantage. One of them is based on the liquidity constraints that most firms face. According to this argument, when financial institution is weak and inefficient, firms in export-oriented sectors are burdened by significant liquidity constraints that prevent a subset of productive firms to enter the foreign market (Chaney, 2005). On the other hand, if firms face less restrictive credit constraints as, for example, a result of financial sector reforms, then investment can increase more in response to a lowering of variable export costs and all firms with productivity above a certain level become exporters (Melitz, 2003). Therefore, the main prediction of papers suggests that financial development should promote production first and then trade. The relationships of financial development and trade may vary with the initial level of financial development as a higher level of financial development makes the firm closer to the cut-off level and thus makes entry more probable especially if the conditions on the local financial market are favorable (Berthou, 2007). Beck (2002) also suggests that financial development and trade relationships may also be subject to economies of scale. A sector with scale economies profits more from a higher level of financial development than a sector without economies of scale. Countries with

better developed financial sectors have a comparative advantage in sectors with high scale economies and are therefore net exporters. Finally financial development and trade hypothesis is also highly conditional on a country's pre-existing circumstance such as economic, historic, cultural or geographic specificities (Apoteker and Crozet, 2003).

Financial development plays a key role in determining trade performance. The great trade collapse experienced in 2009 is one of the most striking phenomenon observed in recent years. According to the World Trade Organization (WTO), the volume of world trade fell by 12% in 2009. The decline in the merchandise export volumes was particularly severe in North America (-15%) and Europe (-15%) compared to South America (-8%) and Asia (-11%). According to Francois and Woerz (2009), the decline in trade flows was more dramatic for manufactured products (-15.5%), especially n durable goods such as automotive products (-32%) and industrial machinery (-29%), than for agricultural goods (-3%) or fuel and mining products (-4.5%). More interestingly, the slump in world trade appears much stronger than the contraction in Gross Domestic Product (GDP), which amounted to -4.6% in 2009. The recent drop in export volumes was steeper than those witnessed in 1965 (-7%), 1982 (-2%) and 2001 (-0.2%), known as three main previous episodes of declining trade. It was also more severe than the fall in world trade observed during the Great Depression of the 1930s. While the decline in trade experienced during the Great Depression is largely due to the implementation of trade barriers, the 2009 trade collapse cannot be attributed to increased protectionism.

The main explanation for the magnitude of the trade collapse, according to WTO, relates to the key role of the recent crisis that affected financial systems worldwide. The 2007-2008 financial crises have multiple dimensions. First, a large number of

banks suffered liquidity and solvency problems, inducing failures or massive state bailouts. In addition, a global credit crunch occurred, especially after the bankruptcy of Lehman Brothers (Aisen and Franken, 2010). The crisis also affected financial markets. Suffering from a crisis of confidence, investors fled stock markets for less risky markets, notably sovereign bond markets. According to the World Bank, world stock market capitalization declined by 30000 billion dollars in 2008 (a decline representing nearly 50% of the global GDP).

1.7 Rationale of the Study

The empirical growth literature has identified that in the group of the macroeconomic variables the level of financial development and the degree of openness are highly correlated with growth performance across countries. This study explores a possible link between financial development and trade balance in manufactures of India. Specifically, it analyzes theoretically a channel through which the economy-wide level of financial development of India determines the trade balance in manufactures. Exploring the link between financial development and trade in manufactures in India will be interesting for several reasons. First, if we find that the level of financial development has an effect on the structure of the trade balance, this will underline the importance of financial sector development for economic development beyond its positive impact on economic growth; and therefore, will increases the priority of financial sector reforms on policy maker's agendas. Second, exploring the links between financial development and the structure of international trade will also have implications for the theory of international trade. The **Heckscher–Ohlin** model predicts that trade flows based on an economy's endowments of labor, land and physical capital. In the **Ricardian** model technological differences across countries explain international trade flows. This study explores theoretically and empirically

whether the financial development of India helps predicts manufactures trade balance. A possible link between financial development and international trade has policy implications. On the one hand, reforming the financial sector might have implications for the trade balance if the level of financial development is a determinant of countries' comparative advantage. On the other hand, the effect of trade reforms on the level and structure of the trade balance might depend on the level of financial development.

1.8 Objectives of the Study

1. To measure the performance of Manufacturing Exports and Trade Balance of India.
2. To examine the role of Financial Development in the performance of Manufacturing Export and Trade Balance.

1.9 Hypotheses of the Study

- **Hypothesis 1**

H0: There is no significant relationship between financial development and manufacturing trade.

H1: There is a significant relationship between financial development and manufacturing trade.

- **Hypothesis 2**

H0: There is no significant relationship between financial development and Trade balance.

H1: There is significant relationship between financial development and Trade balance.

1.10 Organization of the Study

- Introduction
- Review of Literature
- Research Methodology
- Performance of Manufacturing Exports and Trade Balance of India.
- Role of Financial Development in the performance of Manufacturing Export and Trade Balance
- Major findings and Policy Implications of the study
- References
- Appendixes

Chapter 2

Review of Literature

2.1 Introduction

Literature review is very essential part of any research work. Literature finds gaps in current knowledge. Literature increases knowledge in a particular area of research. It helps you to discover research methods which may be applicable to your research work. This chapter deals with the existing literature related to the topic of the study. Many studies related to the financial development and trade has been reviewed in this chapter. The reviewed literature is divided under the following heads:

Bardhan et al. (1987) focuses on an essential function of financial system that consists to mobilize savings and to allocate funds to investors. They assume that in each country, one sector produces an intermediate good while the other produces a final good. Producing the final good requires the use of the intermediate good as an input and committing this resource one period before the output becomes available. The final good sector thus requires external funds to finance working capital. However, due to information asymmetries between firms and funders, external financing entails moral hazard problems. In this context, undeveloped financial system is unable to alleviate information asymmetries and implies rationing. On the other hand, a highly developed financial system makes it possible to reduce frictions and finance working capital more adequately. As the intermediate goods sector does not require outside funding, financial development is only profitable to the final good sector. Finally, the relatively more financially developed country has a comparative advantage in the final good while the relatively less financially developed country specializes in the intermediate good.

C. Rangarajan (1998) highlights the role of financial sector in achieving sustained economic growth. It argues that a competent financial system is very much essential for improving the saving and investment activity and for promoting the overall productivity in the economy. While discussing the rationale and relevance of financial sector reforms the paper specifically discusses the nature and extent of government intervention, interest rate deregulation, prudential norms and directed credit. The study concludes that various measures in India have laid the foundation for an efficient and well-functioning banking system which will support and strengthen a high level of real growth in future.

Z. Xu (2000) analyzed the effects of permanent financial development on domestic investment and output in forty one countries. The data collection was made for a period of 33 years (1960-1993) and variables were included such as real GDP, real domestic investment and financial development index. The financial development index was constructed by taking variables such as total bank deposits in GDP and the geometric mean of this year's bank deposits and last year's bank deposits divided by GDP. To analyze the data VAR model was used. Impulse response analysis was applied to check the effect of financial development on investment and real GDP. The study found strong evidence that for GDP growth financial development is an important component and to achieve financial development, domestic investment is an important channel.

Beck T. (2002) tried to find out the relationship between financial development and trade in manufactures. His study consists of data for 65 countries over the period 1966 to 1995. To estimate the regression, he uses the credit to the private sector by deposit money banks and other financial institution (%of GDP) as a proxy for financial development. After controlling for unobserved heterogeneity and reverse causality, he

finds that countries with a higher level of financial development experience higher shares of manufactured exports in GDP and in total merchandise exports and have a higher trade balance in manufactured goods. The long-run impact of financial development on manufacturing exports appears to be stronger than its short-term impact.

M.Omran (2003) investigated the role of FDI (foreign direct investment) in promotion of economic growth and financial development in Arab countries. 24 years (1975-1999) of data taken and 17 countries were selected for the study. The variables used in this study were domestic credit from commercial banks to the private sector as a ratio of GDP, commercial banks assets as a ratio of commercial banks, foreign direct investment and central bank assets, and total value of shares traded to GDP, turnover ratio. Cross country regression and pair wise granger causality test were used to analyze data. Data was analyzed by dividing it into three groups mainly reform countries, Gulf countries and other countries to find out the causality between financial direct investment and financial development. The result reflected that Arab countries financial system is related with bank.

M. D. B. Rahman (2004) made an attempt to find out whether higher investment and output growth in the long run results in financial development. Study period is from 1976-2005. The variables used in the study were weighted average annual interest rate on lending by banks, domestic credit to the private sector as a percent of GDP, broad money as a percent of GDP, total deposits as a percent of GDP, gross fixed capital formation as a percent of GDP and GDP per capita. To analyze the data VAR model was used. The result show that there is existence of co-movement between financial development on investment and per capita income in the long run.

Huang Y. (2005) in his study used the cross-country and time-series variation in openness to study the relationship between trade and finance. His study period is 1991-2001. To measure overall financial development, he uses principal components analysis. Using OLS or instrumental variable procedures, he finds strong evidence that trade promotes bank-based financial development in higher-income countries, but not in the lower-income group.

Svaleryd et al. (2005) study the effects of financial factors on the pattern of industrial specialization and comparative advantage using data on financial endowment from OECD countries. Their results indicate that countries with well-functioning financial system tend to specialize in industries highly dependent on external financing. Their results also show that differences in financial systems are more important determinants of the pattern of specialization between OECD countries than differences in human capital.

Khan (2006) made an attempt to examine the impact of trade and financial liberalization on economic growth in Pakistan. Researcher has taken annual data over a period from 1961-2005. To analyze the data researcher used ARDL method. The study showed a positive and significant impact of financial sector development index (FSDI) and ratio of discount rate and trade openness on real GDP. However in the short run FSDI shows statistically insignificant negative association with economic growth.

F. X. Rathinam (2007) re-examined the financial development and economic growth puzzle in India, by taking the determinants of financial sector growth such as legal and institutional developments and financial regulation. Variables used in study were M2 over nominal GDP, private credit to make an overall index of financial development by applying PCA. Multivariate VAR frame work, Granger causality test

and Vector Error Correction Model were used to analyze the data. The empirical test showed that legal and institutional developments and financial regulation promotes financial sector growth. The result also reflects that legal, institutional developments positively affect financial sector growth in the long run and financial regulation has a negative impact on financial sector growth.

King R.G (2008) presented cross-country evidence consistent with Schumpeter's view that the financial system can promote economic growth, using data on 80 countries over the 1960-1989 periods. Various measures of the level of financial development are strongly associated with real per capita GDP growth, the rate of physical capital accumulation, and improvements in the efficiency with which economies employ physical capital. Further, the predetermined component of financial development is robustly correlated with future rates of economic growth, physical capital accumulation, and economic efficiency improvements.

Chakraborty I. (2008) examined the impact of the developments in the financial sector on economic growth in India in the post reform period. Her study extends the models of Pagano (1993) and Murinde (1996) to formalize the relationship between financial development and economic growth in the structure of an endogenous growth model. She uses the quarterly data for the period 1993 to 2005 for India. She finds that investment-output ratio has a positive significant effect on real rate of growth of GDP, irrespective of the indicator of stock market development. An increase in market capitalization dampens economic growth but an increase in the money market rate of interest has a positive significant effect. The findings lend little support to the theoretical prediction that the development of stock market would play an important role in enhancing economic growth in India. Instead, the banking system reform appears to have promoted economic growth significantly. These results support the

view that in India stock market is no substitutes for the banking sector, unlike in some emerging economies like Chile and Mexico.

Samba et al. (2009) investigated the relationship between the level of financial development of a country and its comparative advantage in international trade. The relationship between the two notions seems to perform in a two-side direction: firstly it leads to a comparative advantage in the financially intensive goods, alongside capital and human resources. This study aims to check the existence and the sense of the relation between the two variables within East Asian countries. To check long run relationship between financial development and international trade in manufacturing goods a time-series approach using the VAR Model has been used. The main results of the study suggest that for most of the countries considered, international trade in manufactured goods enhances financial development.

J. Dogbey (2010) tried to examine whether financial development is communicable using spatial econometrics analysis. Three measures were used to measure the financial development as a percentage of financial development namely domestic credit to the private sector, private credit by the banking sector and stock market total value traded for the study. Independent variables used in this study include initial GDP per capita, spatial weight matrixes, lagged level of financial development and regional or continent dummies. Fifteen years (1985-2000) of data taken for to analyze the data. This study used spatial econometric methods to examine the spread of financial development; a Spatial Auto Regressive model (SAR) and Spatial Error Model (SEM) were also used. The study found lagged levels of financial development to account significantly and positively for the level of financial development, but negatively for the changes of financial development. Study also found out that bureaucratic quality is important for financial development.

Susanto et al. (2011) posits that countries that are well financially developed should experience larger volumes of international trade. They empirically examine the effects of financial development on trade of both agriculture and manufactured products. Their study results show a positive impact of financial development on bilateral trade flows for the manufacturing sector, which enjoys a greater impact than the agriculture sector. The impacts vary across regions. In most cases, developing countries experience greater impacts of financial development on exports in both agriculture and manufacturing sectors than do advanced countries.

K. Youssouf (2012) in his paper examined the empirical question about the relationship between countries level of manufacturing trade and its financial sector development. It also investigates the role of institutions in this relationship. This study covered pure cross sectional and panel specification on a sample size of 75 countries over the period 1971 to 2010. According to this paper financial development strongly and robustly exerts a positive effect on manufacturing exports. It is found that this effect is stronger in countries with high quality institutions.

Minija k. (2012) attempted to find out the nature of relationship between financial development and economic growth in India and the direction of relationship between financial development and economic growth. He made a financial development index to measure the financial development in India. He divided the study period in to pre and post liberalization period. For identifying the importance of each variable, principal component analysis is applied and appropriate weights for each variable are identified and constructed the index. In order to examine the long run relationship, ARDL co-integration method is used. To know the direction of causality, Pair wise Granger Causality test and VAR block exogenity tests are applied. The results show a structural break in the study period; accordingly the analysis is done for pre and post

liberalization period and found co-integration in the post liberalization period only. It shows the unidirectional causality between financial development and economic growth. Further, in the pre-liberalization period financial development leads economic growth where as in the post liberalization period economic growth leads to financial development.

M. Kalina (2013) in his paper identified the three mechanism through which credit constraint affect trade, these are the selection of heterogeneous firms into production, the selection of domestic manufactures into exporting, and the level of firm exports. Panel data has been used to check the variation in financial development across countries and the variation in financial vulnerability across sectors. According to the study, 20-25% impact of credit constrains on trade is driven by reduction in total output. The result is that financial developed economies export more in financially vulnerable sectors because of their large scale.

Rahman et al. investigates the relationship between financial development, international trade and economic growth in case of Australia over the period of 1965-2010. The ARDL bounds testing approach to co integration is applied to examine the long run relationship among the series, while stationarity properties of the variables are tested by applying two structural break tests. The results show that financial development, international trade and capital are the drivers of economic growth both in short run as well as in long run. Financial development Granger causes economic growth validating supply-side hypothesis in case of Australia.

Sola (2013) examined manufacturing performance for sustainable economic development in Nigeria with some objectives, those are to look at the growth rate and contribution of manufacturing to GDP, to examine trend in both manufacturing and employment, to determine the structure of capacity utilization, to determine

factors influencing manufacturing performance. Panel data analysis was used on secondary data from 1980-2008 that was extracted from CBN Statistical Bulletin. The results indicate positive relationship between manufacturing and each of capacity utilization and import as 1 percent change in capacity utilization and import lead to 43081 and 3.8 percent change in manufacturing respectively. However, there is a negative relationship between manufacturing and each of investment, exchange rate, and export. A 1% change in investment, exchange rate and export lead to 0.04, 12729, 0.3 percent reduction in manufacturing respectively. This showed that investment, capacity utilization and import were major determinants of manufacturing performance for the period. The study concludes that the key to reversing the poor performance of Nigerian manufacturing is to provide incentives for firms to become more export oriented.

Chapter 3

Research Methodology and Data Source

3.1 Data Description

The study aims to find out the financial development - manufacturing trade relationship in India. Yearly data for a period of 23 years (1992-2014) has been used to conduct the study. A financial index of India has been constructed to measure the depth of financial system of India. Data is collected from RBI, World Bank and Indiastat.

3.2 Variables Used in the Study

3.2.1 Manufacturing Exports: Manufacturing exports (% GDP) is taken to represent the performance of manufacturing exports over the period of 1992 to 2014.

3.2.2 Trade Balance: Trade balance (%GDP) is taken to represent the performance of trade balance of India over the time period of 1992 to 2014.

3.2.3 Financial Development Index: To measure the financial development of India an index has been constructed with the help of proxies such as **Broad money as percent of GDP (M3), Credit by banks and other financial institutions as percentage of GDP (BC), Market Capitalization as percent of GDP (MC) and Financial Innovation (FIN) ratio.**

3.3 Tools Used in the Study

This involves the methods employed in carrying out the research which is mostly based on theoretical background. The methodology commonly applied includes principal component analysis (PCA) for construction of FDI and further unit root test, co- integration test, Granger causality test, vector error correction model (VECM) is used to examine the relationship between variables.

PCA has been applied to calculated weights of variables of Financial Development Index and other models have been applied to identify the type of relationship that exists between financial development and manufacturing trade, the direction of causality between financial development and manufacturing trade and to find out the long run relationship between both these. However, this study used the Johansen multivariate co- integration approach and Vector Error Correction Model (VECM) to establish the relationship long run and short run relationships between financial development and manufacturing trade. Also, the study examines the direction of causality between the financial development and manufacturing trade within the multivariate Granger causality framework rather than conventional bivariate framework. Multivariate Granger causality is an improvement over the bivariate framework and also helps to access relationship among the variables not just in one direction only. Also, distortion of causality inferences is avoided which could be due to omission of relevant variables (Chang and Hsu, 2009).

3.4 Model Specification

Following the theoretical literature and methodology of previous empirical studies, a model can be specified for this study that manufacturing exports and trade balance depends on financial development.

3.5 Techniques for Estimation

The econometric analysis of the relationship between the financial development and manufacturing trade usually involves the following methods.

3.5.1 Unit Root Test

One of the assumptions of standard regression analysis is the condition that variables being tested are stationary. However, many macroeconomic time series are often not

found stationary, they trend up and down over time. Therefore, before regression analysis test for stationary must be done to avoid getting bias and estimates or spurious result. A stationary time series has mean, variance and autocorrelation constant over a period of time. This study has used Augmented Dickey Fuller (ADF) test to examine each variable for the presence of unit root (or Non- stationary).

To test the stationary of variables, we use the Augmented Dickey Fuller (ADF) test which is mostly used to test for unit root. Following equation checks the stationarity of time series data used in the study:

$$\Delta y = \beta_1 + \beta_1 t + \delta y_{t-1} + \sum \alpha \Delta y_{t-1} + \varepsilon_t \qquad \text{…….. (2)}$$

Where εt is white noise error term in the model of unit root test, with a null hypothesis that variable has unit root.

The null and alternative hypothesis for the existence of unit root in variable yt is Ho: $\delta = 0$ versus H1: $\delta < 0$. Rejection of the null hypothesis denotes stationarity in the series.

Once the number of unit roots in the series is decided, the next step before applying Johansen's (1988) co-integration test is to determine an appropriate number of lags to be used in estimation.

3.5.2 Co- integration Test

If the variables are non- stationary, in that case to avoid spurious regression the variables should be differenced before using them in regression model. If co-integration is their between variables or there is a long run relationship between the over time, then they could be used in regression model in the level forms without leading to spurious results. There are many co-integration tests which are used in literature for co integration analysis such as Durbin-Watson, Johansen co- integration

test and Engle- Granger Co- integration test. In this study we will use Johansen test to test for co-integration between the variables because it has an advantage over other co-integration tests as it takes into consideration the possibility of multiple co-integration vectors.

3.5.3 Granger Causality Test

The co-integrating relationship indicates the existence of causal relationship but does not indicates the direction of casual relationship among the variables used in the study. So here, the Granger Causality test will help use to determine the direction of causality between the Manufacturing Exports and Financial development and then between Trade Balance and Financial Development. This study used multivariate Granger- causality as the results of multivariate framework are more informative and reliable than the results of bivariate framework. Formally, a time series x Granger causes another time series y if series y can be predicted with better accuracy by using past values of x rather than by not doing so, other information being identical.

The null hypothesis (H0) that we test in this case is that the X variable does not Granger cause variable Y and variable Y does not Granger cause variable X. In summary, one variable (Xt) is said to granger cause another variable (Yt) if the lagged values of Xt can predict Yt and vice-versa.

In the context of this analysis, the Granger method involves the estimation of the following equations:

If causality (or causation) runs from FD to ME,

$$ln\ ME_t = \Sigma\ \alpha_i\ lnME\ t_{-i} + \beta_j\ lnFD\ _{t-j\ +}\ \lambda_1 t + u_{1t} \quad \text{..... (3)}$$

If causality (or causation) runs from ME to FD, it takes the form:

$$ln\ FD_t = \Sigma\ \gamma_i\ lnFD\ t_{-i} + \delta_j\ lnME\ _{t-j\ +}\ \lambda_2 t + u_{2t} \quad \text{.....(3.1)}$$

Where ME is manufacturing exports and FD is Financial Development.

3.5.4 Vector Error Correction Model (VECM)

If the variables in the model are co-integrated then it will be useful to use Vector Error Correction Model (VECM) to understand the relationship between variables both in short run and also in long run, which will be very useful to have comprehensive information concerning the dynamic relationship between the variables and how the adjustment toward the equilibrium position occur after initial divergence.

Chapter 4

Performance of Manufacturing Exports and Trade Balance of India

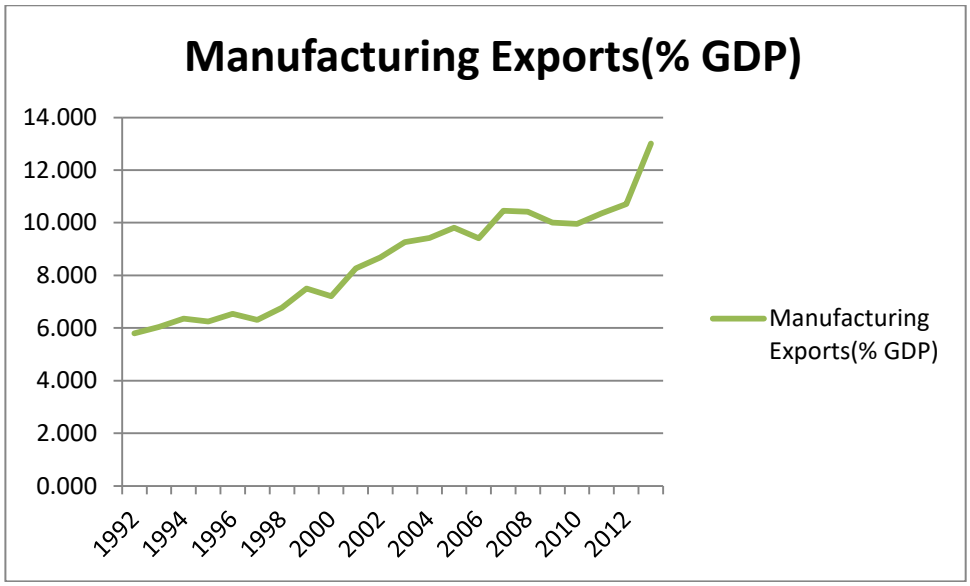
4.1 Introduction

In this chapter the first objective will be covered which is measuring the performance of manufacturing exports and trade balance of India over the period of 1992 to 2014. The performance of both the variables can be easily understood with the trend of these variables on a graph. After getting trend of these variables it becomes very important to find out the reasons which could explain the trend. At first manufacturing exports trend will be captured and later on the trend of trade balance will be captured.

Table No .4.1: Manufacturing Exports (% GDP)

Year	Manufacturing Exports(% GDP)	Year	Manufacturing Exports(% GDP)
1992	4.823	2003	8.683
1993	5.803	2004	9.263
1994	6.038	2005	9.422
1995	6.358	2006	9.813
1996	6.243	2007	9.409
1997	6.535	2008	10.455
1998	6.306	2009	10.417
1999	6.773	2010	10.004
2000	7.499	2011	9.963
2001	7.211	2012	10.355
2002	8.271	2013	10.714
		2014	13.014

Figure No .4.1: Manufacturing Exports (% GDP)



Source- Author's computation with MS-Excel 2007.

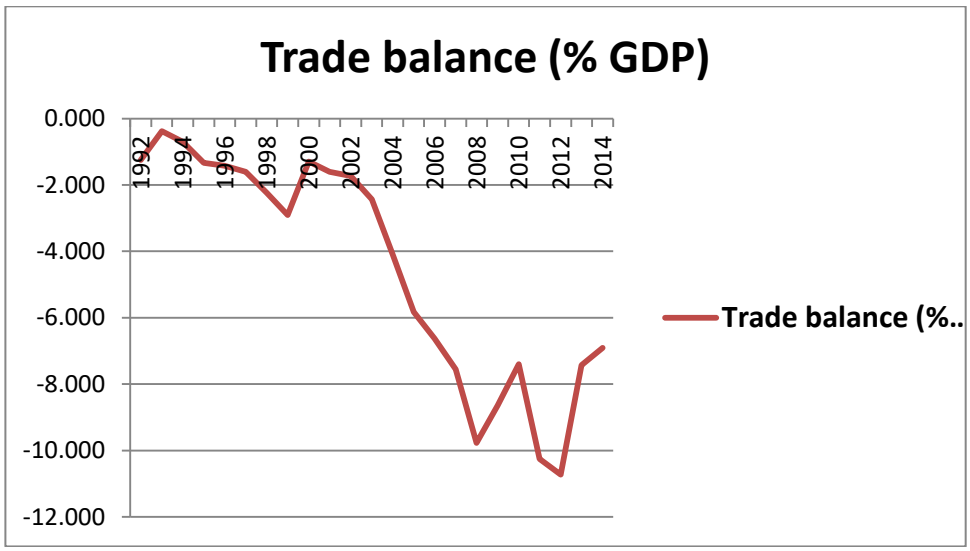
The present table and figure shows the contribution of manufacturing exports in GDP as percentage of GDP since 1992 to 2014. Where years are taken on the horizontal axis and manufacturing exports (%GDP) on vertical axis. Manufacturing exports are showing increasing trend over the years from 1992 to 2014 with little bit fluctuations in between. In 1992 manufacturing exports were 4.9% and it reached to 10.8% in 2013 which is showing the improved health of manufacturing exports over the years. At the end of study period (2014) it reached to its peak 13%. But in between their is bit fluctuations the reasons for this fluctuations are because the relative appreciation of rupee against dollar, slower economic growth of world trade and narrow base of manufacturing exports.

Table No. 4.2: Trade Balance (% of GDP)

Year	Trade balance (% of GDP)	Year	Trade balance (% of GDP)
1992	-1.251	2003	-2.433

1993	-0.376	2004	-4.096
1994	-0.698	2005	-5.828
1995	-1.331	2006	-6.629
1996	-1.416	2007	-7.551
1997	-1.605	2008	-9.769
1998	-2.245	2009	-8.641
1999	-2.904	2010	-7.401
2000	-1.299	2011	-10.255
2001	-1.602	2012	-10.724
2002	-1.727	2013	-7.430
		2014	-6.912
Source- Reserve bank of India			

Figure No .4.2: Trade balance (% of GDP)



Source-Author's computation with MS- Excel 2007.

Above chart shows the trade balance percent of GDP since 1992 to 2014. On horizontal axis years are taken and on vertical axis trade balance (%GDP) is taken. India trade balance is in negative which means that India is importing more than its

exports. India trade balance's deficit has increased since 1992 with some improvement in between 2006 and 2008 and again after 2010. In 1992 trade balance of India was – 1.25% of GDP and this deficit increased to -9.8% again for two years it improved to -7.4% but in 2012 it came to its lowest – 10.72% but after this lowest point it again recovered and reached to -6.91.

4.2 Conclusion

In this chapter the trend of manufacturing exports and trade balance can be captured with the help of graph where both are taken in the form of % of GDP over the period of 1992 to 2014. In case of manufacturing exports, India has made progress with little bit fluctuations in between. In 1992 manufacturing exports were 4.9% and it reached to 10.8% in 2013 which is showing the improved health of manufacturing exports over the years. At the end of study period (2014) it reached to its peak 13%. But in between there is bit fluctuations and the reasons for this fluctuations are because was some relative appreciation of rupee against dollar, slower economic growth of world trade and narrow base of manufacturing exports case of India. And India's trade balance is in negative which means that India is importing more than its exports. India trade balance's deficit has increased since 1992 with some improvement in between 2006 and 2008 and again after 2010. In 1992 trade balance of India was – 1.25% of GDP and this deficit increased to -9.8% again for two years it improved to -7.4% but in 2012 it came to its lowest – 10.72% but after this lowest point it again recovered and reached to -6.91.

CHAPTER 5

Role of Financial Development in the Performance of Manufacturing Exports and Trade Balance of India

5.1 Introduction

In this chapter the focus will be on attaining the results of second objective which is to assess the role of financial development in the performance of manufacturing exports and trade balance. Before assessing the role of financial development with manufacturing exports and trade balance it is important to construct financial development index by taking appropriate proxies which can measure the depth of financial development in India. These proxy of financial development are discussed later on in this chapter. After construction of financial development index FDI (Financial development index) relationship of it will be checked with manufacturing exports and trade balance with the help of some important tools and techniques with are mentioned below. Various researchers have utilized the Augmented Dickey Fuller (ADF) test for examination of stationarity in their studies. This study has also applied Augmented Dickey Fuller (ADF) test to check unit root. Johansen Co-integration Test has been used to find out the long-run relationship between the variables. To check the causality and its direction the Granger Causality Test, and at last Vector error correction Model (VECM) have been applied in this study to check the short run association between variables

5.2 Financial Development Index

An index is a statistical aggregate that measures change in the magnitude of a group of related variable to measures the stock market performance or economic performance. Each index has its own calculation methodology and is usually expressed in terms of a change from base value. To understand and measure the degree of financial

development one must consider different factors that together contribute to the degree of depth and efficiency of the provision of financial services.

There is no single argument as to which proxies are most appropriate for measuring financial development of a nation. This justifies the need to construct an index as a single measure that represents the overall development in the financial sector by taking the relevant financial proxies in to account. The study used Broad money as percent of GDP (M3), Bank Credit as percentage of GDP (BC), Market Capitalization as percent of GDP(MC) and Financial Innovation(FIN) ratio as the proxies for financial depth. Using these variables the researcher developed a summary measure for financial depth by applying Principal Component Analysis (PCA). That sufficiently deals with the problems of multi-colinearity and over parameterization as an overall indicator of the level of financial development.

To construct FDI for India below given four indicators have been used as an indicator of financial development which have been widely used in literature (Rousseau and Wachtel, (1998) Xu (2000), Fase and Abma (2003), Rioja and Valve (2004), Rahman (2004), Tahir (2008).

5.2.1 Broad Money (M3) (as % of GDP)

Broad money is the total sum of currency outside banks, demand deposits other than those of the central Government, the time savings and foreign currency deposits of resident sectors other than the central Government, bank and traveler's cheques and other securities such as certificates of deposit and commercial paper.

5.2.2 Market Capitalization (as % of GDP)

Market capitalization is the total value of the tradable shares of a publicly traded company, it is equal to the share price times the number of shares outstanding.

5.2.3 Private Credit by banks and other financial institutions (as % of GDP)

Total bank credit provided by the scheduled commercial bank is taken to represent the credit money circulated in economy during each period.

5.2.4 Financial Innovation Ratio

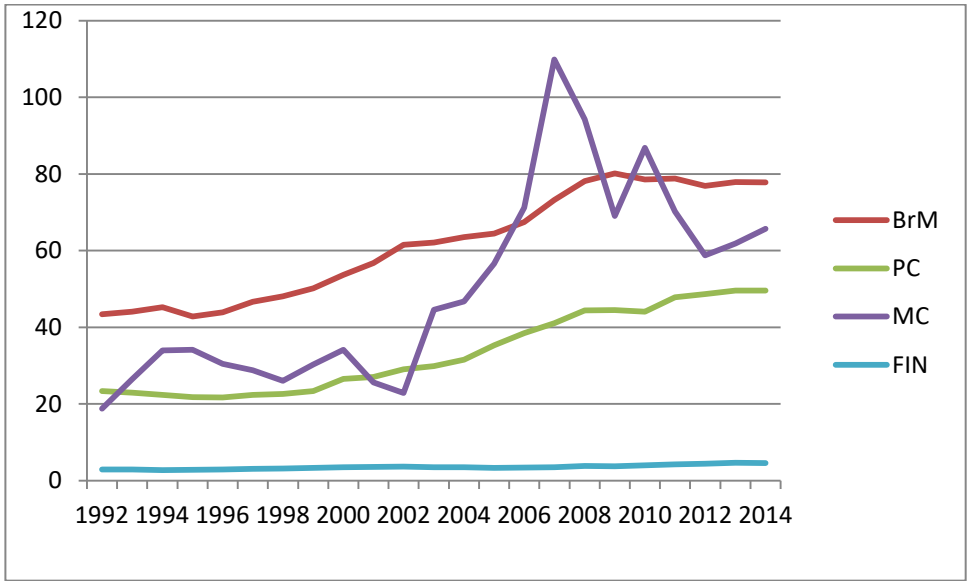
Financial innovation means that the new instruments in the financial services industry like ATM, Debit card, Credit card, Smart cards and Wire transaction. These innovations play significant role in the improvement of an economic efficiency and productivity. Generally broad money (M3) to narrow money (M1) ratio is taken to represent financial innovation ratio. The motivation for using this measure is that as financial innovations grow, individuals tend to move away from more liquid assets, which are reflected in M1, to less liquid assets, which are reflected in M3. The ATMs concentration, bank concentration and private sector credit as a percent of GDP can also be used as alternative proxies for measuring financial innovation.

Table No. 5.1: Indicators of Financial Development of Index

Year	Broad Money(%GDP)	Private credit by money banks and other financial institutions (% GDP)	Market capitalization(% GDP)	Financial innovation ratio
1992	43.38361	23.36136	18.78431	2.93405
1993	44.10991	22.95706	26.4775	2.85906
1994	45.2283	22.38643	33.95459	2.74422
1995	42.79482	21.808	34.12785	2.78908
1996	43.91923	21.65723	30.41661	2.89264
1997	46.64202	22.38486	28.74497	3.06646
1998	48.05851	22.63066	25.99536	3.17393
1999	50.18484	23.36055	30.25666	3.28902
2000	53.70334	26.56207	34.15482	3.46096

2001	56.74395	26.99236	25.61342	3.54364
2002	61.5403	29.01546	22.89353	3.62772
2003	62.09038	29.88384	44.55021	3.46583
2004	63.52173	31.50079	46.78001	3.45609
2005	64.46119	35.26139	56.57688	3.29081
2006	67.42788	38.44168	71.24072	3.41973
2007	73.22305	41.02541	109.8937	3.47622
2008	78.15405	44.37484	94.24033	3.80637
2009	80.14973	44.52106	69.02351	3.76205
2010	78.5734	44.05978	86.85786	3.96993
2011	78.83992	47.79597	70.23557	4.25052
2012	76.85653	48.70382	58.73553	4.42145
2013	77.91	49.61748	61.89569	4.62062
2014	77.77307	49.61802	65.70387	4.60223
Source- World Bank				

Figure No. 5.1: Trend of variables used for FDI.



Source- Author's Computation with MS- Excel 2007.

The above Table and figure shows the trend of all four variables (Broad money M3, Private credit by banks and other financial institutions, Market capitalization and financial innovation) which we have selected for the purpose of financial development index. When we look at the chart it is clearly visible that all the variables have increasing trend with some fluctuations in between.

Firstly, **Broad money** is denoted as BrM and here it is taken as the percentage share of Broad money in GDP. The percentage of broad money has increased since 1992 to 2014. It was around 43.4% in 1992 and in 2014 it touched 77.8%. Some of the major reasons for this increase has been identified are Increased government expenditure over a period of time, Conversion of foreign currency inflows through FDI and ECBs, Increased deposits with banking system as these constitute around 85% of M3, Improved performance of many sectors .

Secondly, **private credit by banks and other financial institutions** is denoted by PC. Private credit too has taken in the form of percent of GDP. It too has increased from 23.36% in 1992 to 49.61% in a smooth way. Reforms of 1992 have played a

very key role in addition of private credit by banks and other financial institutions as these reforms has helped in increased money supply due to many factors which have been mentioned above. Financial inclusion policy with simplified banking procedure has increased the banking and other investment deposits which has ultimately resulted in diversification of these deposits towards the private credit to industries and other entities. Basically private credit by banks and other financial institutions shows the lending ability of financial institutions of a nation. Higher lending ability of financial institutions and banks represents the better condition of financial institutions and banks and vice- versa.

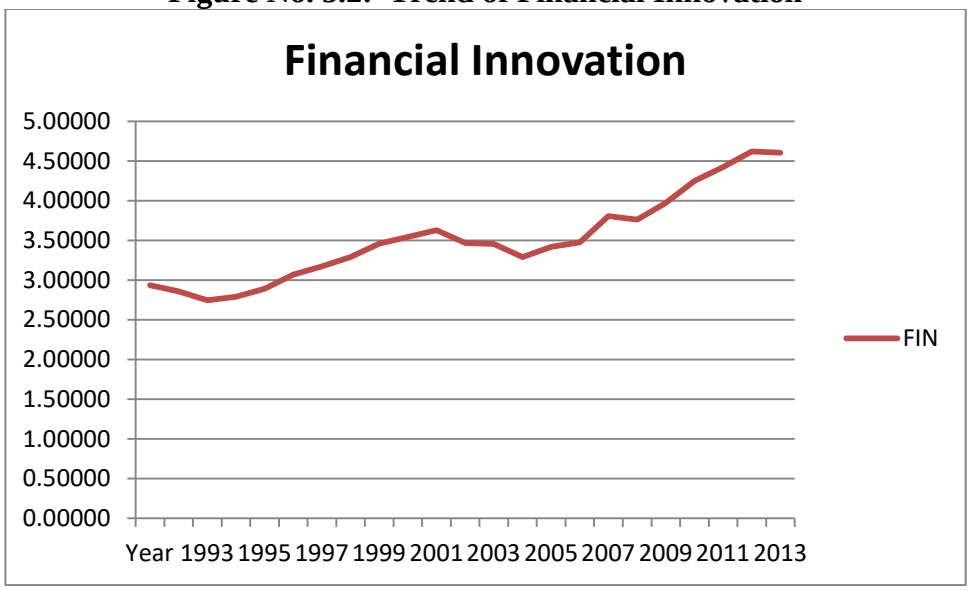
Thirdly, **market capitalization** is denoted by MC in chart and it is too taken in the form of percent of GDP. It has increased from 18.78% to around 65% basically these sector has tremendous growth and has gained most out of 1992 reforms but if we look chart closely then it is also visible that growth of market capitalization was not a smooth one during this period in 1998 it came down to 25% from 30% in 1996 and again in 2002 it touched low of 22.89%. After this low it soared to 109.9 in 2007 but after this it again came down which was 65.70% in 2014. Some of the major positive reasons for this market capitalization increase are increased resource mobilization by firms which was supported by FIIs and mutual funds from supply side, Surge in crude oil prices, Mergers and acquisition, Increased financial literacy among investors, simplification of trading and settlement procedure in stock market which has helped market capitalization to grow but there are many other reasons which have impacted the growth of market negatively. Some of them are U.S sub-prime mortgage, Inflation, high oil prices, slowdown of world economy and depression of U.S dollar.

Fourthly, **financial innovation** is denoted as FIN in chart and it is calculated as M3/M1. Financial innovation too has increased in a smooth way and reforms have

played a very key role in development of financial innovation. Few of the reasons for this increased innovation from 2.93 in 1992 to 4.6 in 2014 are globalization of economy, more sophisticated technology, due to changes in procedure of taxes and policy, market imperfections, search of transaction reduction method.

Below given graph is the graph explaining financial innovation individually which is same included in above graph where its performance was not visible clearly as the size of financial innovation was too low as compared to other variables included in above graph. Values of financial innovation lies between 3 to 4.5 which means that it does not have any high changes over the study period and the reasons for the same have been already discussed.

Figure No. 5.2: Trend of Financial Innovation



Source: Author's Computation with MS-Excel 2007.

5.3 Methodology Adopted to construct Financial Development Index (FDI)

- For the purpose of FDI yearly data is taken for a period of 23 years from 1992-2014.
- bank credit as percentage of GDP, market capitalization of listed companies as percentage of GDP Broad money as percentage of GDP, bank credit as

percentage of GDP, Financial Innovation ratio (Broad money to narrow money) are considered for constructing the Financial Development Index for India(FDII).

- To calculate the weights of each variable for construction of FDI Principal Component analysis (PCA) is used.
- Variable is multiplied with corresponding weights which are calculated through principal Component analysis Sum up the results of the multiplied variable and divided by the total weight of principal components.
- The obtained figure is the financial development index (FDI) to represent financial Development.

Component Score Coefficient Matrix

	Component
	1
VAR00002	.283
VAR00003	.285
VAR00004	.242
VAR00005	.267

Extraction Method: Principal Component Analysis.

Component Scores.

Source: Authors computation with SPSS software

Above table shows the weights of different – different variables used for construction of financial development index. In the above table weight first variable has 28.3 weight, second has 28.5% which is also highest among all other variables, third variable has 24.2% and the third one has 26.7%. Aggregate of these weights is approx. 107 and this will be converted to 100 and on the scale of 100 the above

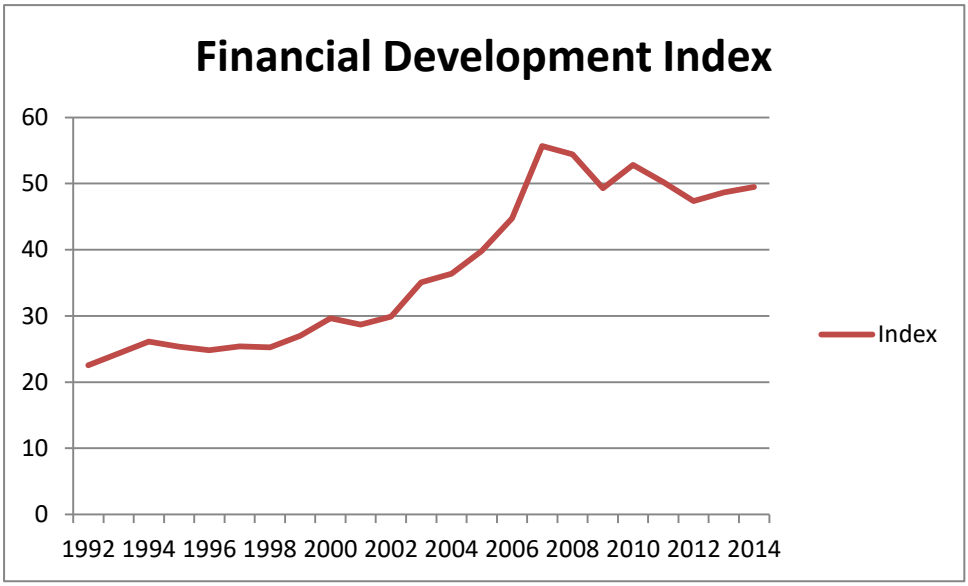
weights will be converted on the scale of 100 which will be final weights considered for the construction of index.

Table -5.2: Financial Development Index

Year	Index
1992	22.52836
1993	24.32301
1994	26.11821
1995	25.37595
1996	24.82282
1997	25.39794
1998	25.24362
1999	26.9818
2000	29.67217
2001	28.68518
2002	29.8899
2003	35.09247
2004	36.39518
2005	39.79839
2006	44.74764
2007	55.65688
2008	54.40148
2009	49.2847
2010	52.80924
2011	50.20072
2012	47.37707

2013	48.65535
2014	49.47103

Figure No. 5.3: Financial Development Index



Source: Authors computation with MS-Excel 2007.

Above given figure 4.5 is Financial Development Index figure which is calculated with the help of four variables used for financial development. Financial development has an increasing trend from 1992 to 2014 whose values lies between 22.52 to 49.47.Values going towards 100 shows that financial development is improving over time. In case of India financial development was increasing smoothly but due to fall in market capitalization decline 2007 onwards financial development too has shown fluctuating trend of decreasing first then increasing again followed by falling again.

5.4 Relationship between Financial Development and Manufacturing Exports

As financial development index has been constructed with the help of proxies of financial development next step is to check the relationship of financial development index with manufacturing exports and trade balance with the help of below mentioned procedure.

5.4.1 Unit root

It deals with the stationarity of time series variables taken in a study. To make the study free from spurious relationship, it is essential to testify whether taken variables are stationary or not. Stationarity condition is prime assumption for the analysis of time series, which is necessary to fulfill a time series analysis. If the data taken in the study has a unit root at level zero it is necessary to be stationary at level one. It means that data should be stationary after first difference or second difference. In this study I have applied Augmented Dickey Fuller (ADF) Test which has three models suhch as Intercept, Trend and Intercept and no trend and no intercept. Null hypothesis is there is unit root or non-stationary and alternative hypothesis is there is no unit root or stationary. The rejection of null hypothesis is based on the criteria of test statistics and probability value. If test statistics is more than critical value at 5 percent level of significant the null hypothesis will be rejected. On the other hand probability value (p-value) plays a crucial role to check significance of the model. The p-value is less than 0.05 leads to rejection of the null hypothesis at level of significance. The following table reveals the results of unit root test at level zero.

Table No. 5.4: ADF Test at Level

Variables	ADF Model	t-statistics	Critical value at 5%	p-value
LNFD	Intercept	-1	-3.03	0.73
	Trend & Intercept	-1.46	-3.66	0.8
	None	1.42	-1.96	0.95

LNME	Intercept	-1.36	-3.02	0.58
	Trend & Intercept	1.34	-3.66	0.99
	None	-0.46	-1.96	0.5
LNTB	Intercept	-2.97	-3.02	0.05
	Trend & Intercept	-2.88	-3.66	0.18
	None	-1.45	-1.96	0.13
Source: Calculated by Researcher in e-views 9.5				

The above table depicts the results for unit root test. Here financial development, manufacturing exports and trade balance of India are the three variables which are being checked unit root. The above table states that in the model of intercept for financial development the t-statistics is -1 and critical value at 5 percent level of significance is -3.03. It states that t-statistics is lesser than the critical value at 5 percent. Meanwhile the p- value is 0.73 which is not significant. In this model null hypothesis cannot be rejected. It means financial development has unit root or not stationary for intercept at level zero.

In the model of trend and intercept for financial development the t-statistics is -1.46 which is less than 5 percent critical value -3.66. On the other hand p-value is 0.8, which indicates that the model is not significant. These results shows that the null hypothesis cannot be rejected which means in this model financial development has unit root.

Further the model which has no trend and no intercept, the t-statistics -0.42 which is less than 5 percent critical value -1.96. On the other hand p-value is 0.95 which is

greater than 0.05. It shows that the null hypothesis cannot be rejected. It means financial development has unit root in this model also.

Apart from financial development the other variable is manufacturing trade which is also required to be examined the presence of unit root. For this indicator three models have been adopted which are intercept, trend and intercept and no trend and no intercept. For intercept the t-test of manufacturing is -1.36 and critical value at 5 percent level of significance is -3.02. Here the t-statistic is greater than critical value at 5 percent level of significance. In the model of trend and intercept the t-statistics is -1.34 and the critical value is -3.66 which is greater than the t-statistics. The p- value is 0.99. In this situation null hypothesis cannot be rejected. The other model is no trend and no intercept the t-statistics is -0.46 and critical value is -1.96. Here the value of t-statistics is less than critical value at 5 percent level of significance. More over the p- value is 0.5 which is more than 5 percent. The result indicates that the null hypothesis cannot be rejected. It means manufacturing trade has unit root or not stationary at level zero.

In the model of third variable which is trade balance for intercept t-statistics is -2.97 and critical value is -3.02 which is greater than t-statistics, p-value is 0.05. For trend and intercept t-statistics is -2.88, critical value is -3.66 and p-value is 0.18 which indicates that the model is not significant. In the model of no trend and no intercept the t-statistics is -1.45, critical value is -1.96 and p-value is 0.13. It means this model also has a unit root.

In nut shell it is found that the indicators, taken in this study have unit root at level zero which is not full filling the assumption of time series analysis.

Since the variable are unit root at level zero which is not meeting the assumption of time series analysis this study needs to go for the examination of unit root at level one i.e. after first difference or second difference.

Table No. 5.5: ADF Test at 2nd Difference

Variables	ADF Model	t-statistics	Critical value at 5%	p-value
LNFD	Intercept	-6.21	-3.04	0
	Trend & Intercept	-6.2	-3.69	0
	None	-6.43	-1.96	0
LNME	Intercept	-5.94	-3.02	0
	Trend & Intercept	-3.37	-3.73	0.09
	None	-5.85	-1.96	0
LNTB	Intercept	-4.84	-3.04	0
	Trend & Intercept	-4.66	-3.69	0
	None	-5.01	-1.96	0

Source : Calculated by Researcher in e-views 9.5

The present table indicates the results of unit root for the indicators financial development, manufacturing exports and trade balance at level two. In this test there are three models taken which are intercept, trend and intercept and no trend and no intercept. This table states that in the model of intercept for financial development the t-statistics is -6.21 and critical value at 5% level of significance is -3.04. It states that

the critical value at 5 percent is lesser than the t-statistics. The p- value is 0.00 which is significant. In this model null hypothesis will be rejected, because the critical value is less than t-statistics and p- value is less than 0.05%. It means financial development is stationary for intercept at level one. So, null hypothesis can be rejected. In the model of trend and intercept for FD the t-statistics is -6.2 which is greater than 5 percent critical value -3.69. The p- value is 0.00, which indicates that the model is significant. Thus the null hypothesis can be rejected.

In the ADF model of no trend and no intercept, the t-statistics is -6.43 which is greater than 5 percent critical value -1.96. On the other hand p- value is 0.00. The result shows that the null hypothesis can be rejected. It means the model is significant.

Apart from FD, for intercept the t-statistics of manufacturing exports is -5.94 and critical value at 5 percent level of significance -3.02. Here the t-statistics is greater than critical value at 5 percent level of significance. So the null hypothesis can be rejected. In the ADF model which have trend and intercept the t-statistics of manufacturing exports is -3.37 and critical value at 5 percent level of significance is -3.73. The p- value is 0.09, which means that null hypothesis cannot be rejected. Further, the model which has no trend and no intercepts t-statistics is -5.85 which is greater than 5 percent critical value -1.96. The p- value is 0.00. So the null hypothesis can be rejected.

Apart from FD and ME, in the model of trade balance for intercept the t-statistics is -4.84 and critical value at 5% is -3.04. The p-value is 0.00. For the model trend and intercept t-statistics is -4.66 and critical value is -3.69. The p-value is 0.00. It means we can reject the null hypothesis. In the model of no trend and no intercept the t-statistics is -5.01 and critical value at 5 percent is -1.96. The p-value is 0.00.With the above results we can say that the model is stationary and we can proceed. Because

only after the stationarity of the model, we can check any relationship between variables. To see the long-run relationship between FD and ME, between FD and TB Johansen co-integration test has been used.

5.4.2 Co-integration Test

Through Co-integration Test we will check long-run relationship between variables. This test has adopted trace statistics and max statistics for the examination of relationship between variables. Results of the co-integration test have been depicted in the table.

Table No.5.6: Co-integration Test of FD & ME

Trace Statistics					Max Statistics			
No. of CE	Eigen Value	trace stat	5% critical value	P-value	Eigen Value	Max-Eigen stat	5% critical value	P-value
None	0.52	17.34	15.49	0.03	0.52	15.27	14.26	0.03
At most 1	0.94	2.06	3.84	0.15	0.94	2.06	3.84	0.15

Source : Calculated by Researcher in e-views 9.5

The above table reveals co-integration between financial development (FD) and growth of manufacturing exports (ME) of India. Here trace statistics and max Eigen value have been utilized for determination of relationship. In this test, trace statistics (17.34) for none is greater than 5 percent critical value (15.49) and max Eigen statistics (15.27) is more than 5 percent critical value (14.26). In both statistics probability value (0.03) is significant at 5 percent level of significance. These values

lead to reject the null hypothesis which is that there is no co-integration between the variables. It means that the variables are co-integrated in the long run.

Table No 5.7: Co-integration Test of FD & TB

Trace Statistics					Max Statistics			
No. of CE	Eigen Value	trace state	5% critical value	P-value	Eigen Value	Max-Eigen state	5% critical value	P-value
None	0.42	12.03	15.49	0.15	0.42	11.58	14.26	0.13
At most 1	0.02	0.45	3.84	0.5	0.02	0.45	3.84	0.5

Source: Calculated by Researcher in e-views 9.5

The above table reveals co-integration between financial development (FD) and trade balance (TB) of India. Here also trace statistics and max Eigen value have been utilized for determination of relationship. In this test, trace statistics (12.03) for none is less than 5 percent critical value (15.49) and max Eigen statistics (11.58) is less than 5 percent critical value (14.26). In both statistics probability values (0.15, 0.13) are not significant at 5 percent level of significance. These values lead to accept the null hypothesis which is that there is no co-integration between variables. It means that the variables are not co-integrated in the long run.

5.4.3 Granger Causality Test

It is statistical hypothesis test to determine the causality between the variables. It shows the causality between the indicators. It does not only examine the causality

between the variables but also show the direction of causality between the variables. This test is based on f-statistics. To test the hypothesis the probability value (p-value) plays a significant role. If the p-value is less than 0.05 the null hypothesis will be rejected. Results of the Granger causality test have been depicted in the above table.

Table No. 5.7: Granger Causality Test

Null Hypothesis	F-Statistics	P-Value
LNFD does not Granger cause LNME	7.01	0
LNME does not Granger cause LNFD	0.19	0.82

Source: Calculated by Researcher in E-Views 9.5

The above table presents the results of Granger Causality Test on financial development and manufacturing trade of India. The table reveals that the p-value is 0.00 for null hypothesis LNFD does not granger cause LNME which is less than 0.05, so the null hypothesis can be rejected at this level of significance. On the other for the null hypothesis LNME does not granger cause LNFD, the p-value is 0.82 which is greater than 0.05. This value prompts to accept the null hypothesis. The results are showing that the growth of financial development causing the growth of manufacturing exports of India. The above results indicate that there is unidirectional relationship between financial development and manufacturing exports in India.

5.4.4 Vector Error Correction Model (VECM)

If the variables included in the empirical model are co-integrated, it will be useful to use a Vector Error Correction Model (VECM) to understand the relationship between the variables in the short run, which will be useful to have comprehensive information concerning the dynamic relationship between the variables and how the adjustment

towards the equilibrium position occurs after the initial divergence. The table below shows the results of VECM which shows the relationship between the variables in short run.

Table No. 5.8: VECM Dependent Variable D(ME)			
Test Statistic	Value	df	Probability
F-statistic	0.247667	(3, 17)	0.8619
Chi-square	0.743002	3	0.863
Source: Calculated by Researcher in E-views 9.5			

Normalized Restriction (=0)	**Value**	**Std. Err.**
c(5)	0.583198	0.813279
c(6)	-0.015119	0.704931
c(7)	0.030324	1.256299
Source: Calculated by Researcher in E-views 9.5		

Null Hypothesis: C (5)l=C(6)=C(7)=0

Note: *when probability value is more than 0.5% we accept null hypothesis.*

The results of the f-statistics, chi-square and probability value summarized in table indicate the acceptance of null hypothesis that says there is no short run causality between the variables. The table shows that there is no causality running from

financial development to manufacturing exports, which is indicated from the probability value which is more than 5% significance level.

5.5 Conclusion

While summarizing this chapter it can be clearly observed that financial development index follows the same trend of variables which are used to construct the financial development index. Market capitalization is the only variable which is a high fluctuating in nature and reasons for the same has been already discussed other than market capitalization all variables have smooth increasing trend from 1992 to 2014. There is no doubt that financial development in India has increased post reforms period but it is also fact that India need to go at much higher stage of financial development which is only possible when Indian government focuses on increasing awareness for stock market among investors and promoting financial innovation all over India not only to few regions of nation. After construction of financial development index the results of relationship between financial development index and manufacturing exports have been obtained by applying ADF test to test the stationarity of the time series. After checking stationarity co- integration test was applied on two times. Firstly on financial development and manufacturing exports and secondly on financial development and trade balance where co-integration was found between financial development and manufacturing trade whereas there was no co-integration between financial development and trade balance. After conducting co-integration test Granger causality test was applied on financial development and manufacturing exports and outcome of this test was that financial development have causality on manufacturing exports but manufacturing exports does not have any causality on financial development which is a unidirectional relationship. At last vector error correction model (VECM) was applied on financial development and

manufacturing exports to check their short- run relation where the outcome of the test it that there is no short run causality between financial development and manufacturing exports.

Chapter 6

Major Findings and Policy Implications of the Study

6.1 Conclusion

The main purpose of this empirical study was to examine performance of manufacturing trade of India and to find out the casual linkages between manufacturing trade and financial development of India over the period from 1992-2014. This study attempted to prove that in developing county like India, Financial development affects the manufacturing exports where the share of manufacturing exports is not much in total exports of India and financial development is not yet as much in other developing nations such as China and Japan.

While working on the first objective of the study which is measuring the performance of manufacturing exports and trade balance of India the results are showing very improved results for India since LPG (Liberalization, Privatization and Globalization) Model adoption by India. In case of Manufacturing exports which is presented in Table and figure 3 in the form of contribution of manufacturing exports in GDP as percentage of GDP since 1992 to 2014. Manufacturing exports are showing increasing trend over the years from 1992 to 2014 with few up and down fluctuations in between. In 1992 manufacturing exports were 4.9% and it reached to 10.8% in 2013 which is showing the improved health of manufacturing exports over the years. But again in 2014 it came down to 3.01% from 10.8% because of adverse effect of fall in crude prices, the relative appreciation of rupee against dollar, slower economic growth of world trade and narrow base of manufacturing exports of India.

And in case of Trade balance of India which is taken in the form of percent of GDP since 1992 to 2014. India trade balance is in negative which means that India is

importing more than its exports. India trade balance's deficit has increased since 1992 with some improvement in between 2006 and 2008 and again after 2010. In 1992 trade balance of India was – 1.25% of GDP and this deficit increased to -9.8% again for two years it improved to -7.4% but in 2012 it came to its lowest – 10.72% but after this lowest point it again recovered and reached to -6.91.

Second objective is the main objective of the study where the purpose is to examine the casual linkages between manufacturing trade and financial development of India over the period from 1992- 2014. But before moving to objective an important task was to measure the financial development into best possible manner. So after doing lot of literature review we selected four variables to measure financial development which are Broad money as percent of GDP (M3), Bank Credit as percentage of GDP (BC), Market Capitalization percent of GDP(MC) and Financial Innovation(FIN) Rousseau and Wachtel, (1998) Xu (2000), Fase and Abma (2003), Rioja and Valve (2004), Rahman (2004), Tahir (2008). After selecting these four variables a FDI (Financial Development Index) has been constructed (Lazer.D). Financial development is showing an increasing trend from 1992 to 2014 whose values lies between 22.52 to 49.47.Values going towards 100 shows that financial development is improving over time. In case of India financial development was increasing smoothly but due to fall in market capitalization decline 2007 onwards financial development too has shown fluctuating trend of decreasing first then increasing again followed by falling again.

The study revealed positive long run correlation between the financial development and manufacturing exports on the other hand there is no correlation between financial development and Trade balance of India. After identifying the long run relationship between financial development and manufacturing exports vector error correction

model applied to find out the short run relationship between financial development and manufacturing exports and the results of vector error correction model showing that there is short run relationship between financial development and manufacturing exports. And in case of financial development and trade balance vector auto regressive (VAR) model applied as there was no co-integration between them for the period of 1992- 2014.

The multivariate Granger causality test was also employed to identify the direction of causality between the financial development and manufacturing exports for the period of 1992 to 2014. The Granger causality test showed a unidirectional relationship between financial development and manufacturing exports where financial development affects the manufacturing exports between the periods of 1992 to 2014.

6.2 Major Findings of the Study

Findings of this study reveal that there is co-integration between financial development and manufacturing exports of India where financial development has unidirectional relationship with financial development (FD effecting ME). And there is no short run causality between financial development and manufacturing exports which is similar to the findings of **Beck T. (2002)** where he also tried to find out the relationship between financial development and trade in manufactures. His study consists of data for 65 countries over the period 1966 to 1995. He finds that countries with a higher level of financial development experience higher shares of manufactured exports in GDP and in total merchandise exports and have a higher trade balance in manufactured goods. The long-run impact of financial development on manufacturing exports appears to be stronger than its short-term impact. On the other hand financial development does not effect and trade balance of India.

6.3 Policy Implications

After going through review of literature and looking at the nature of relationship between the variables below given suggestions can be provided to the government for the policy implication purpose-

- Financial innovation can be increased by introducing mandatory provisions for cashless transactions in government and private organizations which will lead to promotion of digital payments among their employees.
- Financial market access should be increased by increasing awareness in India with the help of introducing compulsory financial literacy courses in school or at college level while considering future so that it should not be limited among few cities of India and to specific gender only
- Export awareness should be promoted among entrepreneurs by organizing exports awareness fairs for entrepreneurs at small tows too because lot of entrepreneurs does not know how to exports.
- Government should ensure the stability of export policies and these should not be affected by change in government and ministers.
- Credit should be given at lower rates for the export purpose to the entrepreneurs.
- Export infrastructure should be promoted in India in terms of joining all export potential markets with airport or ports so that transportation cost could be decreased and information awareness related infrastructure too needs to be increased so that information can be made available to entrepreneurs.
- A fund should be developed by the government for the distribution purpose for those outlets which are situated in difficult markets.

6.4 Limitations of the Study

Some of the limitations of the study are mentioned below-

- Time period of the study 1992- 2014 which is just 23 years and after post-reform period only it could have been extended to more than 23 years and also could have been divided into pre- reform period and post- reform period.
- To measure the depth of financial development of India only 4 indicators have been selected but in real financial development is beyond these 4 parameters. So other variables also could have been included to measure the depth of financial development index.
- In this study financial development's effect is checked only on manufacturing exports and trade balance of India. Financial development's effect could have been checked on manufacturing imports also.

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Appendixes

Appendix-1: Unit Root Test of LNFD for Intercept at Level

Null Hypothesis: LNFD has a unit root
Exogenous: Constant
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.008007	0.7296
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFD)
Method: Least Squares
Date: 06/22/17 Time: 00:11
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFD(-1)	-0.062694	0.062196	-1.008007	0.3285
D(LNFD(-1))	0.204049	0.235944	0.864819	0.3999
D(LNFD(-2))	-0.030944	0.026777	-1.155610	0.2648
C	0.255824	0.224516	1.139447	0.2713

R-squared	0.125709	Mean dependent var	0.031900
Adjusted R-squared	-0.038220	S.D. dependent var	0.078100
S.E. of regression	0.079578	Akaike info criterion	-2.047296
Sum squared resid	0.101323	Schwarz criterion	-1.848150
Log likelihood	24.47296	Hannan-Quinn criter.	-2.008421
F-statistic	0.766851	Durbin-Watson stat	2.056812
Prob(F-statistic)	0.529156		

Appendix-2: Unit Root Test of LNFD for Trend and Intercept at Level

Null Hypothesis: LNFD has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.464429	0.8076
Test critical values:	1% level	-4.498307	
	5% level	-3.658446	
	10% level	-3.268973	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFD)
Method: Least Squares
Date: 06/22/17 Time: 00:15
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFD(-1)	-0.278936	0.190474	-1.464429	0.1637
D(LNFD(-1))	0.322024	0.252713	1.274268	0.2220
D(LNFD(-2))	-0.015431	0.029415	-0.524585	0.6075
C	0.871468	0.559121	1.558639	0.1399
@TREND("1992")	0.012276	0.010236	1.199213	0.2490

R-squared	0.202198	Mean dependent var	0.031900
Adjusted R-squared	-0.010549	S.D. dependent var	0.078100
S.E. of regression	0.078511	Akaike info criterion	-2.038848
Sum squared resid	0.092459	Schwarz criterion	-1.789915
Log likelihood	25.38848	Hannan-Quinn criter.	-1.990254
F-statistic	0.950415	Durbin-Watson stat	2.007927
Prob(F-statistic)	0.462389		

Appendix-3: Unit Root Test of LNFD for None at Level

Null Hypothesis: LNFD has a unit root
Exogenous: None
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.417149	0.9555
Test critical values:	1% level	-2.685718	
	5% level	-1.959071	
	10% level	-1.607456	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFD)
Method: Least Squares
Date: 06/22/17 Time: 00:18
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFD(-1)	0.007895	0.005571	1.417149	0.1745
D(LNFD(-1))	0.183143	0.237284	0.771831	0.4508
D(LNFD(-2))	-0.022814	0.026034	-0.876291	0.3931

R-squared	0.054764	Mean dependent var	0.031900
Adjusted R-squared	-0.056440	S.D. dependent var	0.078100
S.E. of regression	0.080273	Akaike info criterion	-2.069274
Sum squared resid	0.109545	Schwarz criterion	-1.919914
Log likelihood	23.69274	Hannan-Quinn criter.	-2.040118
Durbin-Watson stat	1.986571		

Appendix-4: Unit Root Test of LNFD for Intercept at 2nd Difference.

Null Hypothesis: D(LNFD,2) has a unit root
Exogenous: Constant
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.211759	0.0001
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFD,3)
Method: Least Squares
Date: 06/22/17 Time: 00:20
Sample (adjusted): 1997 2014
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFD(-1),2)	-2.134822	0.343674	-6.211759	0.0000
D(LNFD(-1),3)	0.604545	0.210442	2.872732	0.0123
D(LNFD(-2),3)	-0.003373	0.028793	-0.117129	0.9084
C	-2.22E-05	0.021057	-0.001055	0.9992

R-squared	0.789862	Mean dependent var	-0.001000
Adjusted R-squared	0.744832	S.D. dependent var	0.171509
S.E. of regression	0.086636	Akaike info criterion	-1.861068
Sum squared resid	0.105082	Schwarz criterion	-1.663207
Log likelihood	20.74961	Hannan-Quinn criter.	-1.833786
F-statistic	17.54095	Durbin-Watson stat	2.070974
Prob(F-statistic)	0.000051		

Appendix-5: Unit Root Test of LNFD for Trend and Intercept at 2nd Difference.

Null Hypothesis: D(LNFD,2) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.202791	0.0005
Test critical values:	1% level	-4.571559	
	5% level	-3.690814	
	10% level	-3.286909	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFD,3)
Method: Least Squares
Date: 06/22/17 Time: 00:24
Sample (adjusted): 1997 2014
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFD(-1),2)	-2.169450	0.349754	-6.202791	0.0000
D(LNFD(-1),3)	0.622560	0.213752	2.912532	0.0121
D(LNFD(-2),3)	-0.014115	0.031778	-0.444168	0.6642
C	0.051363	0.064693	0.793951	0.4415
@TREND("1992")	-0.003675	0.004369	-0.841104	0.4155

R-squared	0.800707	Mean dependent var	-0.001000
Adjusted R-squared	0.739387	S.D. dependent var	0.171509
S.E. of regression	0.087556	Akaike info criterion	-1.802947
Sum squared resid	0.099658	Schwarz criterion	-1.555622
Log likelihood	21.22653	Hannan-Quinn criter.	-1.768844
F-statistic	13.05768	Durbin-Watson stat	2.171642
Prob(F-statistic)	0.000174		

Appendix-6: Unit Root Test of LNFD for None at 2nd Difference.

Null Hypothesis: D(LNFD,2) has a unit root
Exogenous: None
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.433040	0.0000
Test critical values:	1% level	-2.699769	
	5% level	-1.961409	
	10% level	-1.606610	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNFD,3)
Method: Least Squares
Date: 06/22/17 Time: 00:25
Sample (adjusted): 1997 2014
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNFD(-1),2)	-2.134811	0.331851	-6.433040	0.0000
D(LNFD(-1),3)	0.604532	0.202984	2.978225	0.0094
D(LNFD(-2),3)	-0.003380	0.027043	-0.124971	0.9022

R-squared	0.789862	Mean dependent var	-0.001000
Adjusted R-squared	0.761843	S.D. dependent var	0.171509
S.E. of regression	0.083699	Akaike info criterion	-1.972179
Sum squared resid	0.105082	Schwarz criterion	-1.823784
Log likelihood	20.74961	Hannan-Quinn criter.	-1.951717
Durbin-Watson stat	2.070972		

Appendix-7: Unit Root Test of LNME for Intercept at Level

Null Hypothesis: LNME has a unit root
Exogenous: Constant
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.356510	0.5821
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNME)
Method: Least Squares
Date: 06/22/17 Time: 00:28
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNME(-1)	-0.488946	0.360444	-1.356510	0.1938
D(LNME(-1))	-0.429279	1.345321	-0.319090	0.7538
D(LNME(-2))	-0.046157	0.191991	-0.240415	0.8131
C	1.019679	0.775918	1.314159	0.2073

R-squared	0.112606	Mean dependent var	-0.034750
Adjusted R-squared	-0.053780	S.D. dependent var	0.295061
S.E. of regression	0.302891	Akaike info criterion	0.625968
Sum squared resid	1.467886	Schwarz criterion	0.825114
Log likelihood	-2.259680	Hannan-Quinn criter.	0.664844
F-statistic	0.676775	Durbin-Watson stat	1.175092
Prob(F-statistic)	0.578846		

Appendix-8: Unit Root Test of LNME for Trend and Intercept at Level

Null Hypothesis: LNME has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.345377	0.9999
Test critical values:	1% level	-4.498307	
	5% level	-3.658446	
	10% level	-3.268973	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNME)
Method: Least Squares
Date: 06/22/17 Time: 00:30
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNME(-1)	1.701599	1.264775	1.345377	0.1985
D(LNME(-1))	-1.738927	1.455859	-1.194434	0.2509
D(LNME(-2))	-0.099595	0.182307	-0.546304	0.5929
C	-2.557085	2.118782	-1.206866	0.2462
@TREND("1992")	-0.081405	0.045295	-1.797203	0.0925

R-squared	0.269832	Mean dependent var	-0.034750
Adjusted R-squared	0.075121	S.D. dependent var	0.295061
S.E. of regression	0.283762	Akaike info criterion	0.530953
Sum squared resid	1.207809	Schwarz criterion	0.779886
Log likelihood	-0.309531	Hannan-Quinn criter.	0.579547
F-statistic	1.385808	Durbin-Watson stat	1.572705
Prob(F-statistic)	0.285900		

Appendix-9: Unit Root Test of LNME for None at Level

Null Hypothesis: LNME has a unit root
Exogenous: None
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.460462	0.5027
Test critical values:	1% level	-2.685718	
	5% level	-1.959071	
	10% level	-1.607456	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNME)
Method: Least Squares
Date: 06/22/17 Time: 00:31
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNME(-1)	-0.017921	0.038919	-0.460462	0.6510
D(LNME(-1))	-0.350823	1.372434	-0.255621	0.8013
D(LNME(-2))	0.053208	0.180209	0.295260	0.7714

R-squared	0.016822	Mean dependent var	-0.034750
Adjusted R-squared	-0.098846	S.D. dependent var	0.295061
S.E. of regression	0.309300	Akaike info criterion	0.628469
Sum squared resid	1.626327	Schwarz criterion	0.777829
Log likelihood	-3.284690	Hannan-Quinn criter.	0.657626
Durbin-Watson stat	1.101384		

Appendix-10: Unit Root Test of LNME for Intercept at 2nd Difference.

Null Hypothesis: D(LNME,2) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.937651	0.0001
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNME,3)
Method: Least Squares
Date: 06/22/17 Time: 00:36
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNME(-1),2)	-1.074964	0.181042	-5.937651	0.0000
C	-0.071908	0.071126	-1.011001	0.3254

R-squared	0.662008	Mean dependent var	0.020700
Adjusted R-squared	0.643231	S.D. dependent var	0.519573
S.E. of regression	0.310342	Akaike info criterion	0.592355
Sum squared resid	1.733618	Schwarz criterion	0.691928
Log likelihood	-3.923552	Hannan-Quinn criter.	0.611793
F-statistic	35.25570	Durbin-Watson stat	1.211350
Prob(F-statistic)	0.000013		

Appendix-11: Unit Root Test of LNME for Trend and Intercept at 2nd Difference.

Null Hypothesis: D(LNME,2) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 4 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.373781	0.0904
Test critical values:	1% level	-4.667883	
	5% level	-3.733200	
	10% level	-3.310349	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 16

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNME,3)
Method: Least Squares
Date: 06/22/17 Time: 00:38
Sample (adjusted): 1999 2014
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNME(-1),2)	-17.94930	5.320231	-3.373781	0.0082
D(LNME(-1),3)	13.30899	4.474264	2.974566	0.0156
D(LNME(-2),3)	7.491896	2.941777	2.546725	0.0314
D(LNME(-3),3)	1.988668	1.239148	1.604867	0.1430
D(LNME(-4),3)	-0.295440	0.183927	-1.606287	0.1427
C	0.674160	0.254291	2.651131	0.0264
@TREND("1992")	-0.050424	0.016395	-3.075660	0.0132

R-squared	0.692747	Mean dependent var	-0.076375
Adjusted R-squared	0.487912	S.D. dependent var	0.365560
S.E. of regression	0.261596	Akaike info criterion	0.455605
Sum squared resid	0.615892	Schwarz criterion	0.793613
Log likelihood	3.355157	Hannan-Quinn criter.	0.472914
F-statistic	3.381973	Durbin-Watson stat	1.625894
Prob(F-statistic)	0.049678		

Appendix-12: Unit Root Test of LNME for None at 2nd Difference

Null Hypothesis: D(LNME,2) has a unit root
Exogenous: None
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.855138	0.0000
Test critical values:	1% level	-2.685718	
	5% level	-1.959071	
	10% level	-1.607456	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNME,3)
Method: Least Squares
Date: 06/22/17 Time: 00:39
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNME(-1),2)	-1.034828	0.176738	-5.855138	0.0000

R-squared	0.642815	Mean dependent var	0.020700
Adjusted R-squared	0.642815	S.D. dependent var	0.519573
S.E. of regression	0.310523	Akaike info criterion	0.547586
Sum squared resid	1.832061	Schwarz criterion	0.597373
Log likelihood	-4.475862	Hannan-Quinn criter.	0.557305
Durbin-Watson stat	1.156730		

Appendix-13: Unit Root Test of LNTB for Intercept at Level

Null Hypothesis: LNTB has a unit root
Exogenous: Constant
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.974078	0.0547
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTB)
Method: Least Squares
Date: 06/22/17 Time: 00:42
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTB(-1)	-1.274819	0.428644	-2.974078	0.0090
D(LNTB(-1))	0.173651	0.335819	0.517099	0.6122
D(LNTB(-2))	0.086538	0.234641	0.368810	0.7171
C	2.407178	0.962394	2.501240	0.0236

R-squared	0.562712	Mean dependent var	0.114650
Adjusted R-squared	0.480721	S.D. dependent var	3.916748
S.E. of regression	2.822449	Akaike info criterion	5.089944
Sum squared resid	127.4595	Schwarz criterion	5.289090
Log likelihood	-46.89944	Hannan-Quinn criter.	5.128819
F-statistic	6.863057	Durbin-Watson stat	2.073893
Prob(F-statistic)	0.003488		

Appendix-14: Unit Root Test of LNTB for Trend and Intercept at Level

Null Hypothesis: LNTB has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.881195	0.1883
Test critical values:	1% level	-4.498307	
	5% level	-3.658446	
	10% level	-3.268973	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTB)
Method: Least Squares
Date: 06/22/17 Time: 00:43
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTB(-1)	-1.344643	0.466696	-2.881195	0.0114
D(LNTB(-1))	0.225790	0.363751	0.620726	0.5441
D(LNTB(-2))	0.114102	0.248509	0.459146	0.6527
C	1.855757	1.580059	1.174485	0.2585
@TREND("1992")	0.053433	0.119532	0.447022	0.6612

R-squared	0.568461	Mean dependent var	0.114650
Adjusted R-squared	0.453384	S.D. dependent var	3.916748
S.E. of regression	2.895788	Akaike info criterion	5.176710
Sum squared resid	125.7838	Schwarz criterion	5.425643
Log likelihood	-46.76710	Hannan-Quinn criter.	5.225304
F-statistic	4.939830	Durbin-Watson stat	2.068875
Prob(F-statistic)	0.009637		

Appendix-15: Unit Root Test of LNTB for None at Level

Null Hypothesis: LNTB has a unit root
Exogenous: None
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.448125	0.1336
Test critical values:	1% level	-2.685718	
	5% level	-1.959071	
	10% level	-1.607456	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTB)
Method: Least Squares
Date: 06/22/17 Time: 00:44
Sample (adjusted): 1995 2014
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTB(-1)	-0.466889	0.322409	-1.448125	0.1658
D(LNTB(-1))	-0.329132	0.307803	-1.069293	0.2999
D(LNTB(-2))	-0.156452	0.244384	-0.640189	0.5306

R-squared	0.391727	Mean dependent var	0.114650
Adjusted R-squared	0.320166	S.D. dependent var	3.916748
S.E. of regression	3.229440	Akaike info criterion	5.319976
Sum squared resid	177.2978	Schwarz criterion	5.469336
Log likelihood	-50.19976	Hannan-Quinn criter.	5.349132
Durbin-Watson stat	2.037070		

Appendix-16: Unit Root Test of LNTB for Intercept at 2nd Difference.

Null Hypothesis: D(LNTB,2) has a unit root
Exogenous: Constant
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.845730	0.0013
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTB,3)
Method: Least Squares
Date: 06/22/17 Time: 00:46
Sample (adjusted): 1997 2014
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNTB(-1),2)	-3.480779	0.718319	-4.845730	0.0003
D(LNTB(-1),3)	1.294290	0.529405	2.444803	0.0283
D(LNTB(-2),3)	0.404897	0.243675	1.661629	0.1188
C	-0.073280	1.107469	-0.066169	0.9482

R-squared	0.893116	Mean dependent var	0.048778
Adjusted R-squared	0.870212	S.D. dependent var	13.04054
S.E. of regression	4.698000	Akaike info criterion	6.125281
Sum squared resid	308.9969	Schwarz criterion	6.323141
Log likelihood	-51.12753	Hannan-Quinn criter.	6.152563
F-statistic	38.99427	Durbin-Watson stat	2.277968
Prob(F-statistic)	0.000000		

Appendix-17: Unit Root Test of LNTB for Trend and Intercept at 2nd Difference.

Null Hypothesis: D(LNTB,2) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.669565	0.0083
Test critical values:	1% level	-4.571559	
	5% level	-3.690814	
	10% level	-3.286909	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTB,3)
Method: Least Squares
Date: 06/22/17 Time: 00:47
Sample (adjusted): 1997 2014
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNTB(-1),2)	-3.480896	0.745443	-4.669565	0.0004
D(LNTB(-1),3)	1.294395	0.549403	2.356003	0.0348
D(LNTB(-2),3)	0.404965	0.252890	1.601349	0.1333
C	-0.010869	3.203778	-0.003393	0.9973
@TREND("1992")	-0.004623	0.221512	-0.020869	0.9837

R-squared	0.893119	Mean dependent var	0.048778
Adjusted R-squared	0.860233	S.D. dependent var	13.04054
S.E. of regression	4.875263	Akaike info criterion	6.236358
Sum squared resid	308.9865	Schwarz criterion	6.483684
Log likelihood	-51.12723	Hannan-Quinn criter.	6.270461
F-statistic	27.15774	Durbin-Watson stat	2.278059
Prob(F-statistic)	0.000003		

Appendix-18: Unit Root Test of LNTB for None at 2nd Difference.

Null Hypothesis: D(LNTB,2) has a unit root
Exogenous: None
Lag Length: 2 (Fixed)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.014706	0.0000
Test critical values:	1% level	-2.699769	
	5% level	-1.961409	
	10% level	-1.606610	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNTB,3)
Method: Least Squares
Date: 06/22/17 Time: 00:49
Sample (adjusted): 1997 2014
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNTB(-1),2)	-3.480499	0.694058	-5.014706	0.0002
D(LNTB(-1),3)	1.294196	0.511532	2.530042	0.0231
D(LNTB(-2),3)	0.404944	0.235448	1.719890	0.1060

R-squared	0.893082	Mean dependent var	0.048778
Adjusted R-squared	0.878827	S.D. dependent var	13.04054
S.E. of regression	4.539409	Akaike info criterion	6.014482
Sum squared resid	309.0935	Schwarz criterion	6.162878
Log likelihood	-51.13034	Hannan-Quinn criter.	6.034944
Durbin-Watson stat	2.277661		

Appendix-19 Co-integration results between FDI and Manufacturing Exports

Date: 06/21/17 Time: 08:27
Sample (adjusted): 1994 2014
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: FDEV MTRD
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.516805	17.33991	15.49471	0.0261
At most 1	0.093690	2.065861	3.841466	0.1506

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.516805	15.27405	14.26460	0.0345
At most 1	0.093690	2.065861	3.841466	0.1506

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

FDEV	MTRD
-12.18646	17.75681
2.363260	1.708337

Unrestricted Adjustment Coefficients (alpha):

D(FDEV)	0.050915	-0.006683
D(MTRD)	-0.047856	-0.083024

1 Cointegrating Equation(s): Log likelihood 29.50832

Normalized cointegrating coefficients (standard error in parentheses)

FDEV	MTRD
1.000000	-1.457093
	(0.09733)

Adjustment coefficients (standard error in parentheses)

D(FDEV)	-0.620470
	(0.15918)
D(MTRD)	0.583198
	(0.81328)

Appendix-20; Co-integration between FDI and Trade Balance

Date: 06/21/17 Time: 08:31
Sample (adjusted): 1994 2014
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: TB FDEV
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.423991	12.03417	15.49471	0.1553
At most 1	0.021196	0.449909	3.841466	0.5024

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.423991	11.58426	14.26460	0.1273
At most 1	0.021196	0.449909	3.841466	0.5024

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

TB	FDEV
-0.564259	0.188823
0.077644	-3.514116

Unrestricted Adjustment Coefficients (alpha):

D(TB)	2.108190	0.034197
D(FDEV)	0.000338	0.010407

1 Cointegrating Equation(s): Log likelihood -23.05861

Normalized cointegrating coefficients (standard error in parentheses)

TB	FDEV
1.000000	-0.334638
	(1.73123)

Adjustment coefficients (standard error in parentheses)

D(TB)	-1.189565
	(0.33781)
D(FDEV)	-0.000191
	(0.00978)

Appendix-21 Granger Causality Test of FDI and Manufacturing Exports

Pairwise Granger Causality Tests
Date: 06/25/17 Time: 22:42
Sample: 1992 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
MEXP does not Granger Cause FTRD	21	7.01498	0.0065
FTRD does not Granger Cause MEXP		0.19391	0.8256

Appendix- 22 Vector Error Correction Model (VECM) Results

Vector Error Correction Estimates
Date: 07/02/17 Time: 13:46
Sample (adjusted): 1994 2014
Included observations: 21 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LNFD(-1)	1.000000
LNME(-1)	-1.457093
	(0.09733)
	[-14.9709]
C	-0.508520

Error Correction:	D(LNFD)	D(LNME)
CointEq1	-0.620470	0.583198
	(0.15918)	(0.81328)
	[-3.89794]	[0.71709]
D(LNFD(-1))	0.287985	-0.015119
	(0.13797)	(0.70493)
	[2.08727]	[-0.02145]
D(LNME(-1))	-0.457163	0.030324
	(0.24589)	(1.25630)
	[-1.85923]	[0.02414]
C	0.032170	-0.031819
	(0.01382)	(0.07059)
	[2.32840]	[-0.45075]
R-squared	0.481284	0.041876
Adj. R-squared	0.389746	-0.127205
Sum sq. resids	0.060909	1.589983
S.E. equation	0.059857	0.305824
F-statistic	5.257745	0.247667
Log likelihood	31.55265	-2.699321
Akaike AIC	-2.624062	0.638031
Schwarz SC	-2.425106	0.836987
Mean dependent	0.033810	-0.031190
S.D. dependent	0.076624	0.288052

Determinant resid covariance (dof adj.)	0.000315
Determinant resid covariance	0.000206
Log likelihood	29.50832
Akaike information criterion	-1.857935
Schwarz criterion	-1.360544

D(LNFD) = C(1)*(LNFD(-1) - 1.45709345184*LNME(-1) - 0.508520124738) + C(2)*D(LNFD(-1)) + C(3)*D(LNME(-1)) + C(4)

D(LNME) = C(5)*(LNFD(-1) - 1.45709345184*LNME(-1) - 0.508520124738) + C(6)*D(LNFD(-1)) + C(7)*D(LNME(-1)) + C(8)

Dependent Variable: D(LNME)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 07/02/17 Time: 15:13
Sample (adjusted): 1994 2014
Included observations: 21 after adjustments
D(LNME) = C(5)*(LNFD(-1) - 1.45709345184*LNME(-1) - 0.508520124738) + C(6)*D(LNFD(-1)) + C(7)*D(LNME(-1)) + C(8)

	Coefficient	Std. Error	t-Statistic	Prob.
C(5)	0.583198	0.813279	0.717094	0.4831
C(6)	-0.015119	0.704931	-0.021448	0.9831
C(7)	0.030324	1.256299	0.024137	0.9810
C(8)	-0.031819	0.070591	-0.450747	0.6579

R-squared	0.041876	Mean dependent var	-0.031190
Adjusted R-squared	-0.127205	S.D. dependent var	0.288052
S.E. of regression	0.305824	Akaike info criterion	0.638031
Sum squared resid	1.589983	Schwarz criterion	0.836987
Log likelihood	-2.699321	Hannan-Quinn criter.	0.681209
F-statistic	0.247667	Durbin-Watson stat	1.095620
Prob(F-statistic)	0.861854		

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	0.247667	(3, 17)	0.8619
Chi-square	0.743002	3	0.8630

Null Hypothesis: C(5)=C(6)=C(7)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5)	0.583198	0.813279
C(6)	-0.015119	0.704931
C(7)	0.030324	1.256299

Restrictions are linear in coefficients.