

Foreign Direct Investment, Domestic Investment, Growth, and Service Export: Some Cross-Country Evidence

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fulfillment of the award of a Ph.D. degree**

DOCTOR OF PHILOSOPHY

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By

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DECLARATION

I, Swarnamanjari Sahoo, hereby declare that this thesis entitled **“Foreign Direct Investment, Domestic Investment, Growth, and Service Export: Some Cross-Country Evidence”**, submitted by me under the guidance and supervision of Professor Debashis Acharya, is a bonafide research work.

I also declare that it has not been submitted previously in part or in full to this University or any other University or Institution for the award of any degree or diploma.



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**Dedicated to
Maa and Bapa**

CERTIFICATE

This is to certify that the thesis entitled **Foreign Direct Investment, Domestic Investment, Growth, and Service Export: Some Cross-Country Evidence** submitted by Miss. **Swarnamanjari Sahoo** bearing Registration Number 18SEPH04 in partial fulfilment of the requirements for award of Doctor of Philosophy in the School of Economics is a bonafide work carried out by her under my supervision and guidance.

This thesis is free from Plagiarism and has not been submitted previously in part or in full to this or any other University or Institution for award of any degree or diploma.

Further, the student has the following publication and presentation before submission of the thesis:

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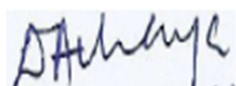
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Abbreviations

ADF:	Augmented Dickey–Fuller Test
AIC:	Akaike Information Criterion
ARCH:	Autoregressive Conditional Heteroscedasticity test
ARDL:	Autoregressive Distributed Lag
CADF:	Cross Sectionally Augmented Dickey-Fuller
CCE:	Common Correlated Effects
CD:	Cross-sectional Dependence
CPEC:	China-Pakistan Economic Corridor
CUSUM:	Cumulative Sum of Squares
CV:	Coefficient of Variation
DBR:	Doing Business Report
DF:	Dickey-Fuller test
DF-GLS:	Dickey-Fuller Generalized Least Squares
DI:	Domestic Investment
DPIIT:	Department for Promotion of Industry and Internal Trade
ECOWAS:	Economic Community of West African States
ECT:	Error Correction Term
EoDB:	Ease of Doing Business
ERSAP:	Economic Reform and Structural Adjustment Program
FD:	Financial Development
FDI:	Foreign Direct Investment
FE:	Fixed Effect
FII:	Foreign Indirect Investment
FMOLS:	Fully Modified Ordinary Least Square
GDP:	Gross Domestic Product
GER:	Gross Enrolment Ratio
GCF:	Gross Capital Formation

GFCF:	Gross Fixed Capital Formation
GMM:	Generalised Method of Moment
GOI:	Government of India
GSDP:	Gross State Domestic Product
GVA:	Gross Value Added
ICT:	Information and Communication Technology
Inf.:	Inflation
IS:	Import Substitution
KPSS:	Kwiatkowski-Phillips-Schmidt-Shin test
LCB:	Lower Critical Bound
LM:	Lagrange Multiplier
M2:	Broad Money Supply
MG:	Mean Group
MNC:	Multinational Corporation
MNE:	Multinational Enterprise
NICs:	Newly Industrialized Countries
OECD:	Organisation for Economic Cooperation and Development
OLS:	Ordinary Least Square
PMG:	Pooled Mean Group
POLS:	Pooled Ordinary Least Squares
PP:	Phillips-Perron
Prob./P-Value:	Probability Value
RBI:	Reserve Bank of India
RGDPG:	Real GDP Growth rate
SBC:	Schwarz Bayesian Criterion
SDP:	State Domestic Product
SVAR:	Structural Vector Autoregression
TO:	Trade Openness
UCB:	Upper Critical Bound
UECM:	Unrestricted Error Correction Model
UNCTAD:	United Nations Conference on Trade and Development

USD/US\$:	U.S. Dollar
WDI:	World Development Indicators
WIR:	World Investment Report
WTO:	World Trade Organisation
ZA:	Zivot-Andrews test

Chapter 1

Introduction, Objectives, and Scope of the Study

1.1 Introduction

Foreign direct investment (FDI) has become one of the most important types of capital inflows to developing countries in the period of globalization and financial integration. Policymakers regularly prefer FDI over other types of capital flows because of the belief that it is more stable in nature and does not add to the stock of external debt in the host country. In addition to serving as a source of funding, FDI frequently fosters economic growth in the host nation by transferring technology and knowledge. FDI Inflows fill the difference between the desired and actual levels of the capital stock, particularly when domestic investment (DI) is insufficient to raise the actual level to the desired level (Hayami, 2001; Noorbakhsh et al., 2001).

Governments are proactively promoting FDI in their countries as international competition to attract FDI grows up. Like most developing nations, India has strongly emphasized drawing sizable amounts of FDI during the post-liberalization period due to the perceived advantages of FDI. The same perception has caused states to compete with one another for the location of foreign investment within the nation. They have been making strong efforts to entice investment in general and foreign investment in particular.

Early in the 1990s, the FDI policy in India was liberalised as part of economic reforms to entice foreign investment and benefit from technology and knowledge spillover. Foreign investments have been flowing into the economy since the New Economic Policy in 1991. As per the Economic Survey of 2017-18, FDI policy reforms declared in the year 2016 have taken many sectors under the automatic approval route. The “Make in India” program was initiated on 25th September 2014 by the GOI to make India a global manufacturing hub. The automatic route has become the most significant channel of FDI flows to India over the year on the basis of the composition of FDI inflows, while FDI via government approval has fallen over time, in line with policy reforms. The reforms of the 1990s have caused more significant FDI flows to India (Nagaraj, 2003; Sethi et al., 2003; Rao & Murthy, 2006).

The gross amount of FDI gained from April 2000 to March 2018 is USD 546452 million. In recent years, liberal policy initiatives have also increased competition among state governments to attract more FDI to their individual states, which leads to locational competition for investment. It is witnessed that the economically advanced upper five states of India drawing 71 per cent of total FDI inflows from April 2000 to March 2018 are Maharashtra, including Dadra and Nagar Haveli & Daman and Diu; Delhi, including Western Uttar Pradesh and Haryana; Tamil Nadu, including Pondicherry; Karnataka; and Gujarat. On the other hand, the states like Bihar, Rajasthan, Orissa, and Uttar Pradesh are receiving very insignificant amounts of total FDI inflows in this period, reflecting distinct signs of FDI concentration at the state level. Hence, it's crucial to maximize the benefits of FDI inflows and make sure that the rising FDI inflows don't result in a rise in regional inequality.

Although there has been a lot of discussion about how FDI affects economic growth, the results of these studies remain inconclusive. Numerous literature claims that FDI is an essential engine for economic growth. However, many studies have not discovered any statistically significant links between FDI and economic growth.

A few other studies have discovered that the linkages between FDI and growth is dependent on the country-specific characteristics or the absorptive capacity of the host countries. In the literature, different forms of absorptive capacities have been analysed through which a country can derive benefits from FDI inflows, for example, trade regime, human capital, infrastructure, financial market development, etc. The local financial market development is one of the absorptive capacities which has been gaining increasing consideration over the period of time (Alfaro et al., 2004; Durham, 2004; Hermes & Lensink, 2003; Omran & Bolbol, 2003).

In the growth literature, there is a fair amount of agreement that financial development encourages economic growth. The key theoretical justification is that financial intermediaries promote mobilization of savings, improve asymmetric information, and increase the opportunities for risk spreading and risk pooling. Overall, this results in higher savings and more effective resource allocation, with favorable effects on the rate of capital accumulation and technological innovation.

Theory suggests different ways through which financial market development allows recipient countries to exploit FDI efficiently. In one way, the availability of more credit facilities allows entrepreneurs to purchase new machines, hire skilled managers and labour, and adopt advanced technology (Alfaro et al., 2004; Omran & Bolbol, 2003). On the other way, the financial market development as well reduces the credit restrictions encountered by foreign firms, giving them chances to expand their innovational works to the host country (Hermes & Lensink, 2003). Moreover, the presence of a better-developed financial market eases FDI to generate backward linkages, which helps local suppliers improve their production efficiency (Alfaro et al., 2004; Ang, 2009).

Hence, a better and developed financial market is an important precondition for the host country to derive benefits from FDI with respect to economic growth (Alfaro et al., 2004; Durham, 2004). However, Azman-Saini et al. (2010), in their study, conclude that, even with the improvement of financial markets, a “threshold level of financial market development” must be there in order to derive a positive benefit from FDI towards economic growth.

FDI inflows are crucial for various reasons, including employment generation, technological know-how, and increased competitiveness (Kobrin, 2005). Considering the anticipated profits of FDI, several studies have been performed to investigate the effect of FDI on economic growth. Though, when assessing the effects of FDI on economic growth, the most important query that arises is whether MNEs are crowding-in or crowding out local investment. The rate of substitution and complementary between FDI and domestic investment determines the extent to which FDI boosts economic growth (De Mello, 1999). Crowding-out happens when inward FDI reduces domestic investment, whereas crowding-in arises when the inflow of FDI stimulates DI in the recipient country.

Some literature claim FDI accelerates economic growth by complementing DI, whereas others find support that FDI has an adverse effect on the host country since it crowds out domestic investment. On the one hand, when MNCs simply replace local firms with their efficiency, FDI crowds out domestic investment in the host country. Crowding-out also takes place when MNCs fund their investment by taking loans from the recipient country, which raises the recipient country's interest rate (Harrison & McMillan, 2003). However, crowding-in arises when FDI

boosts backward or forward production links in the recipient economy (Markusen & Venables, 1999).

Trade and FDI are the prime drivers of economic integration and the process of globalization. The general consensus is trade and FDI are both valuable since trade may boost innovation, productivity, competitiveness, and diversification, while FDI encourages capital stock, creates new jobs, and facilitates technology transfer. Since the era of Adam Smith and David Ricardo, there has been a long-standing tradition in economics that the external performance of a nation is a major factor in economic development. Indeed, the export-led policy produces several growth visions and elevates many people from poverty in East Asia and other regions (World Bank, 1993).

Exports favorably affect economic growth by facilitating improved resource distribution, effective managing techniques, economies of scale, and production efficacy, which has been recognized in the literature (Krueger, 1998; Zahler et al., 2014). Compared with other capital flows, FDI inflows are stable and significant, which helps fill the savings and foreign exchange gaps essential for sustainable development. Multinational corporations (MNCs) play a vital role in international trade as they are responsible for half of the global exports, according to the OECD (2018) estimates. Since MNCs account for a substantial share of global trade, it is reasonable to assume that FDI flows and trade are closely related.

The growing literature on trade and multinational corporations reveals contradictory relationships between FDI and international trade when foreign producers are encouraged to overcome trade barriers by setting similar plants in other markets due to trade frictions (commercial policy, distance, transportation costs, etc.) characterized by market-seeking FDI and tend to substitute trade (Markusen, 1984). This type of investment is known as horizontal FDI. Contrarily, the complementary relation between FDI and trade takes place as cost differences may induce firms to divide the production procedure into stages: labor-intensive phases moving to low-wage nations and capital-intensive phases moving to industrialized countries, exploiting comparative advantages across industries (Helpman, 1984). This kind of FDI, commonly known as vertical FDI, maximizes the benefits from trade for all of its country participants.

Over the last two decades, services have been emerging as one of the “fastest-growing sectors in the global economy”, contributing more than 60% of the worldwide GDP and an even bigger portion of employment in many nations (Hoekman & Mattoo, 2008). In addition to generating high growth and employment, this sector has also enticed significant amounts of FDI (UNCTAD, 2009). Furthermore, this sector contributes significantly to global trade. The ratio of the world’s services trade to GDP increased to 14% in 2019 from around 8% in 1990 (WDI 2020). The global services trade represented one-quarter of all exports, with a value of US\$5.8 trillion in 2018, and one-third of merchandise exports, with a value of US\$5.4 trillion in 2017 (UNCTAD, 2019). Services exports primarily originate from developed economies. Over two-thirds of services traded internationally are provided by these (UNCTAD, 2018).

There have been two lines of investigation into how FDI affects exports. The macro approach examines how FDI impacts exports at the cross-country and typically concludes that foreign inflows generally strengthen the economy of the host nation. The micro approach yields much less definite results by examining how FDI impacts firms' plant-level productivity within a single nation. It is clear that both strategies have drawbacks. The results of the first study are biased, and many questions remain unanswered because it is unable to account for differences between industries. The second does not permit cross-country comparability or generality of the results because it is country-specific.

1.2 Objectives of the Study

The objectives of the thesis are to analyze the broad effect of FDI on economic growth through financial market development across Indian states. Additionally, the thesis tries to relook at whether FDI inflows crowd in or crowd out domestic investment in India. Further, the thesis explores the FDI impact on services export at the sector level across different income group countries; for this, it considers the impact of manufacturing and service FDI and further disaggregates the service FDI into financial and non-financial services on services export.

The definite objectives of the study are as follows:

1. To examine the role of financial market development in the FDI and growth relationship in select Indian states.
2. To examine whether FDI inflows crowd in or crowd out domestic investment in India.
3. To examine the sectoral FDI (manufacturing and service) and sub-sectoral FDI (financial & non-financial services) impact on services export across different income group countries.

1.3 Data and Methodology

1.3.1 Data description

For the first objective, the study employs an annual data set over the period from 2001-02 to 2018-19. The data used in this study for economic growth (Gross State Domestic Product) and financial development (credit by the scheduled commercial bank) are obtained from the RBI Handbook of Statistics on Indian states. The FDI inflows data are extracted from DPIIT (Department for Promotion of Industry and Internal Trade), Ministry of Commerce and Industry, Government of India database.

For the second objective, the study uses quarterly frequency data from the 1st quarter of 1997 to the 4th quarter of 2019. The data on domestic investment (Gross Fixed Capital Formation), financial development (M2 as a percentage of GDP), trade openness (sum of exports and imports share as a percentage of GDP), and real GDP has been extracted from the RBI Handbook of Statistics on the Indian economy, while the FDI inflow data are obtained from DPIIT, Ministry of Commerce and Industry, Government Of India.

To achieve the third objective annual data are collected for a large number of countries covering 81 nations from the period 1990 to 2019. The data on services export, domestic investment (annual percentage growth in gross capital formation), service sector growth (Per capita service value added), inflation (annual percentage change in GDP deflator), financial development (domestic credit to the private sector by banks as a percentage of GDP), and human capital (gross secondary school enrollment ratio) has been extracted from the World Bank's World

Development Indicators database, whereas disaggregated FDI inflows data has been obtained from United Nations Conference on Trade and Development (UNCTAD), Division on Investment and Enterprise Data Extraction Service.

1.3.2 Methodology

Based on the objectives, three different methods are applied. A brief description is given below. The respective chapters describe the method in detail.

In Chapter 2, Firstly, the cross-sectional dependence test is used to check whether shocks are cross-sectionally independent due to similar geographical areas and political and financial shocks across the individual states. The study investigates the role of financial market development in inducing the effects of FDI on economic growth. To estimate long-run coefficients at the Indian States Panel, focus on long-run estimates, like the Pooled Mean Group. In essence, it is an improvement on the Autoregressive Distributed Lag model that addresses the heterogeneity restricting long-run coefficients. It permits the short-run coefficients to differ across states, along with error variances and intercepts. Here, the adjustment mechanism for bringing any short-run deviation into long-run equilibrium is known as the error correction term (ECT). As a result, the potential endogeneity can also be eliminated using the appropriate lags of different variables in the ECT.

Chapter 3 examines the crowding out or crowding in effect of FDI inflows on domestic investment in India using estimation methods with a structural break from Q1 of 1997 to Q4 of 2019. The study first employs the Zivot & Andrews (1992) unit root test to check the stationary properties of variables while detecting a structural break in the series. Then this study uses the Gregory-Hansen cointegration test with one endogenously determined structural break based on the level shift (Gregory & Hansen, 1996) to check the cointegration association among the variables. In order to confirm the result of the Gregory-Hansen cointegration test, the study further applies the ARDL bounds testing approach to cointegration advanced by Pesaran et al. (2001). Moreover, this study uses CUSUM and CUSUMSQ tests to check the parameter stability of the model suggested by Brown et al. (1975).

Chapter 4 investigates the impact of sectoral and sub-sectoral FDI on services export. This study employs a dynamic panel Blundell-Bond system GMM estimator in an unbalanced panel of 81 nations for the period 1990-2019. While adjusting for omitted variables and endogeneity biases, this method facilitates exploring both the time series dynamics and country dimensions of the data. The endogeneity issue is a matter of great concern here, resulting from the joint determination of service export (dependent variable) and two independent variables (FDI inflows and service output growth). The endogenous variables in the study are the service sector growth and FDI inflows, which are taken with GMM-style instruments to control for reverse causality among these variables and the service exports. To test the validity of the moment conditions, the system-GMM estimator verifies the viability of the instruments using the Sargan or Hansen test for over-identifying restrictions and a second-order serial correlation of the differenced error term.

1.4 Organisation of the Thesis

The rest of the thesis has been organized into four chapters,

- i. Chapter two presents both the literature review and empirical analyses of the role of financial market development in the FDI and growth nexus in select Indian states.
- ii. Chapter three reviews both empirical and theoretical literature on the complimentary and substitutionary effect of FDI on domestic investment and examines whether FDI inflows crowd in or crowd out domestic investment in India.
- iii. Chapter four reviews the literature on the relationship between FDI and export at the aggregate and disaggregate levels and empirically examines the sectoral FDI (manufacturing and service) and sub-sectoral FDI (financial & non-financial services) impact on services export across different income group countries.
- iv. Chapter five offers a summary of the thesis, conclusion, limitations, and policy implications. And also briefly presented the scope for further research.

The literature review is not covered in a separate chapter of the thesis. Each chapter focuses on one of the objectives mentioned above. The relevant literature, data, and econometric technique used to accomplish the objectives are discussed in the corresponding chapters.

Chapter 2

FDI, Financial Development, and Economic Growth: Evidence from Select Indian States

2.1 Introduction

Foreign direct investment (FDI) plays an essential role in economic development, modernization, and employment generation. It also contributes to the transfer of technology, human capital formation, entrepreneurship, and efficient management of resources (Saha & Bhowmick, 2020). Therefore, developing countries like India are trying to attract more FDI. Foreign investors find India an attractive destination, mainly because of its huge cheap labour force, comprised of the largest working-age population in the World. The policy reforms of the 1990s have caused more significant FDI flows to India (Nagaraj, 2003; Rao & Murthy, 2006).

According to World Investment Report 2019, global FDI flows has been declined by 13 per cent to USD 1.3 trillion in 2018 from USD 1.5 trillion in the previous year. Despite this reduction, the FDI inflows to developing countries continued stable at \$706 billion in 2018. The international share of developing countries in FDI inflows touched 54% in the year 2018, whereas half of the top 10 host countries are developing ones. Asia was the biggest receiver of FDI in the World, holding a total of \$512 billion inflows in 2018. In South Asia, India attracted \$42 billion overseas investments by holding 10th rank among the top 10 host economies in FDI inflows in 2018.

Early in the 1990s, the FDI policy in India was liberalised as part of economic reforms to entice foreign investment and benefit from technology and knowledge spillover. Foreign investments have been flowing into the economy since the New Economic Policy in 1991. As per the Economic Survey of 2017-18, FDI policy reforms declared in 2016 have taken most of the sectors under the automatic approval route.

The Make in India program was initiated on 25th September 2014 by the government of India to make India a global manufacturing hub. The automatic route has become the most significant channel of FDI inflows to India over the year, on the basis of the composition of FDI inflows to India, while FDI via government approval has fallen over time, in line with policy reforms. The

total FDI gain from April 2000 to March 2018 is USD 546452 million. In recent years, liberal policy initiatives have also increased competition among state governments to attract more FDI to their individual states, encouraging locational competition for investment.

It is witnessed that the richest five states of India drawing 71 per cent of total cumulative FDI inflows from April 2000 to March 2018 are Maharashtra, including Dadra and Nagar Haveli; Delhi, including Western Uttar Pradesh and Haryana; Tamil Nadu, including Pondicherry; Karnataka; and Gujarat. However, the states like Bihar, Rajasthan, Orissa, and Uttar Pradesh are receiving an insignificant amount of total FDI in this period. Various political, social, and economic factors determine the attractiveness of FDI to different Indian states. However, it's crucial to maximize the benefits of FDI inflows and make sure that the rising FDI inflows don't result in a rise in regional inequality.

In terms of benefits, the contribution of FDI to economic growth has been widely discussed in the literature. It suggests that FDI inflows can positively impact economic growth by transferring advanced technology and the spillover effect. Though, such a favourable effect is not automatic; rather, it depends on the absorptive capacity of the host nation. In literature, different forms of absorptive capacities have been analysed through which a country derives benefits from FDI inflows, like trade regime, human capital, infrastructure, financial market development, etc. The local financial market development is one of these absorptive capacities, which has been gaining more attention over the period of time (Alfaro et al., 2004; Hermes & Lensink, 2003; Omran & Bolbol, 2003).

In theory, there are different ways through which financial market development can allow recipient countries to derive benefits from FDI more efficiently. In one way, the availability of additional credit allows firms that have a deficiency of internal funds to buy new machineries, hire skilled managers and labourers, and adopt advanced technology (Alfaro et al., 2004; Omran & Bolbol, 2003). On the other way, domestic financial market development also reduces the credit restrictions met by overseas companies, letting them expand their innovative works to the host country (Hermes & Lensink, 2003). Moreover, an effective financial market eases FDI to generate backward linkages, that helps local suppliers to improve their production efficiency (Alfaro et al., 2004; Ang, 2009). Therefore, an improved and advanced financial market is an

important precondition for the host country to derive benefits from FDI concerning economic growth (Durham, 2004; Alfaro et al., 2004).

In view of the above background, this chapter proposes to inspect the role of financial market development in inducing the effects of FDI on economic growth for Indian states. The chapter employs Pooled Mean Group (PMG) estimation technique on a panel of six individual states of India between the years 2001 and 2018. Our panel is confined to six units with 18 years time period; because of the availability of FDI inflows data for only six individual states: Karnataka, Gujarat, Andhra Pradesh, Goa, Rajasthan, and Orissa, and the unavailability of FDI inflows data prior to 2001.

The rest of the chapter is structured as follows; Section 2.2 presents reviews of important literature on this topic. Section 2.3 defines the sources of data and the models used in the chapter. Section 2.4 shows the empirical results, and Section 2.5 finally draws conclusions.

2.2 Review of Literature

Related to other types of capital inflows, FDI inflows are preferable because these are more stable in nature, as these are expensive to reverse and less responsive to local and international crises (Lipsey, 1999).

There are a large number of studies that discuss the potential benefits of FDI to economic growth. FDI can enhance economic growth via spillover effects, including changes in technology, improved efficiency of domestic firms through contract and demonstration effects, accumulation of capital, development of human resources, and increased global trade (Basu & Guariglia, 2007; De Mello, 1997).

However, other part of the literature recommends the FDI effect on economic growth is widely believed to be uncertain (Gorg & Greenaway, 2004). While some studies evidence shows that positive spillover derived from FDI to the host economies is ambiguous (Haddad & Harrison, 1993; Aitken & Harrison, 1999). The finding of the mixed result may be due to the failure of the model in accounting for contingent effects in the FDI and growth relationship. Various studies advocate that the relationship between FDI and growth may depend on country-specific

characteristics or absorptive capacity. Different forms of absorptive capacities have been discoursed in the previous studies, for example, trade regime, human capital, infrastructure, financial market development, etc. The development of the domestic financial market is one of these absorptive capacities, which has been gaining attention over time (Alfaro et al., 2004; Durham, 2004; Hermes & Lensink, 2003).

For instance, according to Hermes & Lensink (2003), the effect of FDI on economic growth depends on the host country's financial markets. They argue that an advanced financial market lowers the risks connected with the domestic firms' investment that look to replicate new technology; as a result, the recipient country's absorptive capacity increases with respect to FDI inflows for deriving benefits from it. Alfaro et al. (2004) find that the impact of FDI on economic growth is ambiguous; however, FDI encourages growth through local financial market development. It suggests that the development of domestic financial markets is an essential precondition for the favorable impact of FDI on growth.

Ang (2009) finds a positive relationship between financial development and output, while FDI has an adverse impact on economic growth in the long run. It also shows that FDI inflows have no direct positive impact on output; it indirectly stimulates economic growth in Thailand through financial market development.

Alfaro et al. (2006) suggest a theoretic model in which the development of local financial markets encourages the growth-augmenting features of FDI in host nations through backward linkages. Financial market development allows the connections between foreign and domestic firms by easing credit constraints through lowering lending and borrowing rates. The advance of the local financial markets makes it easier for credit-restricted firms to start their own businesses by adopting advanced technology. An increase in demand by foreign firms for standard quality materials as input that follow international standards forces the local supplier to upgrade the quality of products by adopting advanced technology, resulting in an increase in the productivity of local suppliers. Consequently, financial markets facilitate FDI spillovers by allowing backward linkages between foreign and domestic firms. The standardization investigation demonstrates a rise in FDI results in larger growth in financially developed nations than in financially underdeveloped ones.

However, Azman-Saini et al. (2010), using 91 countries from 1975–2005 and employing a threshold regression model, find that the FDI effect on growth 'kicks in' only after financial development has surpassed a minimum threshold level. The gain from FDI are not realized until that point.

By investigating the impact of financial development (FD) on FDI in a sample of eight post-communist countries over the period from 1990 to 2016, Irandoust (2021) finds a unidirectional causality from financial development to FDI in six nations out of eight. It suggests that nations who want to promote the globalization of their firms and entice foreign corporations should take actions to increase access to external financing.

No studies have been undertaken regarding the role of financial development in influencing the FDI impact on growth in Indian states. However, most of the studies only focused on the determinants of large-scale disparities in inflows of FDI across the States of India. For instance, Chatterjee et al. (2013), with a panel data analysis of 16 states from 2001 to 2006, find that the physical, social, and educational infrastructure has no substantial impact on FDI inflows. Since FDI into Indian economy is primarily market-capturing in nature, FDI flows appear to be driven only by profitability and risk factor.

Mukherjee (2011) examines the determining factors of FDI flows in India at the regional level and concludes that per-capita manufacturing value added plays a significant favorable influence, whereas wages and tax revenue have a significant adverse effect on FDI inflow. In addition, the first lag of FDI stocks have a greater effect on FDI inflows, which indicate the agglomeration impact. The agglomeration effect shows that wealthier states are receiving an increasing amount of FDI while poorer states are having difficulty in attracting new investments.

Aggarwal (2007) examines the extent to which overseas investment is affected by labour market conditions in different Indian states. The study finds that FDI is discouraged by rigid labour markets. However, the labour market inelasticity and this costs impact are definite for export-driven FDI compared to domestic market-capturing FDI.

Following the above literature, the study aims to examine the role of financial market development in influencing the FDI impact on the growth of Indian states.

2.3 Data

On the basis of the theoretic justifications, the relationship among FDI, financial development (FD), and economic growth is given as follows:

$$Y = f(FDI, FD, FDI \times FD) \quad (1)$$

Where Y represents economic growth which is measured by real per capita GSDP (Gross State Domestic Product), and FDI is the real per capita FDI inflows. FD refers to financial development for which Credit by the scheduled commercial bank is used as a proxy, which is in real per capita terms, and $FDI \times FD$ refers to the interaction between FDI and FD. The interaction term represents the effect of FDI on growth via financial market development. All variables are taken in logarithmic except the interaction term. Expected sign of the FDI coefficient is ambiguous, as stated before. However, the coefficient of FD and the interaction term, i.e., $FDI \times FD$, are expected to be positive.

This study uses a panel of six individual states of India in 18 year time period of 2001-2018. The data for GSDP and Credit are extracted from the RBI Handbook of Statistics on Indian states, and the FDI inflows data are collected from DPIIT (Department for Promotion of Industry and Internal Trade), Ministry of Commerce and Industry, Government of India. Due to the unavailability of FDI inflows data prior to 2001, the study period is fixed from 2001 to 2018, and Individual state-wise FDI inflows data are available only for six states; these are Karnataka, Gujarat, Andhra Pradesh, Goa, Rajasthan, and Orissa, so our panel is confined to six individual units.

The regional offices of the Reserve Bank of India (RBI) provide FDI inflows data for other states group-wise rather than single-state-wise. For instance, the RBI regional office of Mumbai provides data for Maharashtra, including Dadra & Nagar Haveli and Daman & Diu. Similarly, the regional office of Kolkata provides data for West Bengal, Sikkim, and Andaman & Nicobar Islands, etc. Every state has different socio, economic and political backgrounds, so deriving conclusions by using states groups data may not be effective.

2.4 Empirical Model and Methodology

For the analysis of data, the study applies different panel data techniques. Firstly, the cross-sectional dependence test is applied to check whether the shocks are cross-sectionally independent or not. Second, the cross-sectionally augmented Dickey-Fuller (CADF) panel unit root test of Pesaran (2007) was applied to check the stationary properties of the variables while considering the presence of cross-sectional dependence in the series. Thirdly, the long-run equilibrium relationship between the variables is estimated using the Pedroni (1999, 2004) and Kao (1999) cointegration tests. Lastly, the long-run and short-run estimate of the variables on economic growth is estimated using Pooled Mean Group (PMG) estimator.

2.4.1 Cross-sectional dependence tests

In the estimation of panel data, we assume shocks are cross-sectionally independent. However, because of the existence of similar geographical areas, and political and financial shocks, cross-sectional dependence arises across the cross-section unit. In addition, cross-sectional dependence may arise due to additional factors: wrong specification of the model and common shocks (Chudik & Pesaran, 2013). If we are unable to capture this, the estimate may give biased and inconsistent results (Pesaran, 2004; Breusch & Pagan, 1980). Hence, it is crucial to perform a series of cross-sectional dependence tests before applying any estimation. The study uses four cross-sectional dependence tests; Breusch & Pagan (1980) LM test; Pesaran (2004) scaled LM test; Baltagi et al. (2012) biased-corrected scaled LM test; and Pesaran (2004) CD test.

Following the panel data regression model, we will see different types of cross-sectional dependence tests.

$$Y_{it} = \alpha_i + \beta_i X_{it} + \mu_{it} \quad i = 1, 2, \dots, N; t = 1, 2, \dots, T \quad (2)$$

Where i and t are the cross-sectional and time series, respectively. α_i and β_i denote the constant and slope coefficients, which vary across the individual unit whereas X_{it} denotes the independent variables.

The tests are based on the null hypothesis of no cross-sectional dependence. In contrast to the alternative of the existence of cross-sectional dependence.

Breusch & Pagan (1980) introduce the succeeding Lagrange Multiplier test to check the cross-sectional dependence:

$$CD_{BP} = T \sum_{i=1}^{N-1} \sum_{j=i+1}^N \widehat{P}_{ij}^2 \quad (3)$$

Where $\widehat{P}_{ij}^2$ is the estimated correlation coefficient between the errors found from OLS estimation of the individual Eqn. (1) for each country i ($i=1,2,\dots,N$). Conversely, Pesaran (2004) stated that the LM statistic is useable when T is large enough and N is comparatively small.

Pesaran (2004) developed the following scaled version of the LM test to avoid the shortcomings of the Breusch and Pagan (1980) test

$$CD_{LM} = \sqrt{\frac{1}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^N (T \widehat{P}_{ij}^2 - 1) \quad (4)$$

with first $T \rightarrow \infty$, and then $N \rightarrow \infty$. Although it is appropriate for large N and T , it will probable show significant size distortions with large N and small T .

Hence, the limitations of the CD_{BP} and the CD_{LM} tests evidently indicate a necessity for a cross-sectional dependence test which can be appropriate even with large N and small T .

Considering this aspect, Pesaran (2004) suggested another statistic which is commonly known as the CD test, given as follows:

$$CD = \sqrt{\frac{2T}{N(N-1)}} \left(\sum_{i=1}^{N-1} \sum_{j=i+1}^N \widehat{P}_{ij} \right) \quad (5)$$

For fixed T and N , the CD test has an exact mean value of zero.

Baltagi et al. (2012) developed the scaled LM test statistics using a simple asymptotic bias correction:

$$CD_{BC} = \sqrt{\frac{1}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^N \left(T \widehat{P}_{ij}^2 - 1 \right) - \frac{N}{2(T-1)} \quad (6)$$

2.4.2 Panel unit root test

Since, in this study, we expect cross-section dependency among the states of India, the stationary properties of the variables need to be analyzed with second-generation unit root tests. This study uses the CADF (Cross-sectionally Augmented Dickey-Fuller) panel unit root test. Pesaran (2007) advances the CADF unit root test, which considers cross-sectional dependence issues in panel data. This test is based on the common correlated effects (CCE) technique, which removes cross-sectional dependence by augmenting individual country ADF regressions with cross-section averages of lagged levels and the first differences of the individual series. The CADF statistic is given as follows:

$$\Delta Y_{it} = \alpha_i + \beta_i Y_{i,t-1} + \delta_i \bar{Y}_{t-1} + \pi_i \Delta \bar{Y}_t + \varepsilon_{it} \quad (7)$$

Where, $\bar{Y}_{t-1} = \frac{1}{N} \sum_{i=1}^N Y_{i,t-1}$; $\Delta \bar{Y}_t = \frac{1}{N} \sum_{i=1}^N \Delta Y_{i,t}$

Where, $\bar{Y}_{t-1}$ and $\Delta \bar{Y}_t$ are the cross-sectional averages of individual series at lagged levels and first differences, respectively. The test is based on the null hypothesis that all series are non-stationary $H_0: \beta_i = 0$ for all $i = 1, 2, 3, \dots, N$, against the alternative hypothesis that only a fraction of the series is stationary $H_1: \beta_i < 0$ for some i .

2.4.3 Cointegration test

To investigate the probability of long-run relationships among the variables, the study carried out the panel cointegration tests advanced by Pedroni (2004) and Kao (1999). Pedroni (1999, 2004) suggests two types of residual-based panel cointegration tests, such as group tests and panel tests, to check for the presence of cointegration. The panel test is based on four within-dimension approaches, which include: panel PP, panel v, panel ADF and panel rho, while the group test is based on three between-dimension approaches, which entail group PP, group ADF, and group rho. All of the above statistics are asymptotically and normally distributed depending on the estimated residuals derived from the basic long-run model as follows;

$$y_{it} = \alpha_i + \rho_i + \sum_{p=1}^k \beta_{pi} x_{pit} + \varepsilon_{it} \quad (8)$$

Where y and x are assumed to be integrated of order one.

The estimated residual is as follows,

$$\varepsilon_{it} = \delta_i \varepsilon_{it-1} + u_{it} \quad (9)$$

Where, δ_i is the autoregressive term of the estimated residual.

The First category (within-dimension approach) of tests uses the following null and alternative hypotheses:

$$H_0: \delta_i = 1, \text{ for all } i, \quad H_1: \delta_i = \delta < 1, \text{ for all } i$$

The Second category (between dimension approach) of tests uses

$$H_0: \delta_i = 1, \text{ for all } i, \quad H_1: \delta_i < 1, \text{ for all } i$$

It is assumed that the first-order autoregressive terms be the same across all cross-sections in panel statistics; however, the parameter is permitted to vary across cross-sections in group statistics. In the two approaches, rejecting the null hypothesis of no cointegration is interpreted differently. If the null is rejected in panel statistics, the variables are cointegrated across all cross-sections. If the null hypothesis is rejected in group statistics, it means that at least one cointegration relationship exists between the cross-sections.

The Kao test has the similar approach to the Pedroni test but follows the assumption of homogeneity across panels:

$$X_{it} = \alpha_i * Y_{it} \beta + \omega_{it} \quad (10)$$

where $i = 1, \dots, N$; $t = 1, \dots, T$; α_i = individual constant term; β = slope parameter; X_{it} and Y_{it} are integrated of order I(1) for all i . Kao (1999) develops two kinds of panel cointegration tests, namely, DF and ADF type tests. Both tests can be calculated from the following:

$$\bar{\omega}_{it} = \mu \bar{\omega}_{it-1} + V_{it} \quad (11)$$

and

$$\bar{\omega}_{it} = \mu \bar{\omega}_{it-1} + \sum_{p=1}^q \tau_p \Delta \bar{\omega}_{it-p} + V_{it} \quad (12)$$

Where $\bar{\omega}_{it-1}$ is got from equation (10). The null hypothesis is $H_0: \mu = 1$ indicates no cointegration, while the alternative hypothesis is $H_1: \mu < 1$ refers to the existence of cointegration.

2.4.4 Pooled Mean Group (PMG) Estimator

This study practices the panel ARDL method of Pooled Mean Group (PMG) estimator to estimate the long and short-run equilibrium relationship among the series. Pesaran et al. (1999) suggested the PMG estimator, which is connected with polling and an average of the coefficients across the individual units. The PMG estimator constrains the long-run equilibrium to vary across the units while permitting the short-run coefficients to vary over the cross-sectional units. The varying short-run coefficient focuses on state-specific heterogeneity. Contrary, the MG estimator enables heterogeneity in both short-run and long-run relationships. The MG estimator is appropriate for a large number of cross-sectional units, while for a lesser number of units, it is sensitive to outliers (Favara, 2003).

The PMG estimator is employed because of its number of advantages: it permits varying the short-run coefficients and error variances across the groups but constrains the long-run coefficients to be equal. The ARDL model can be applied in the case of both I(0) or I(1) or a combination of both I(0) and I(1) series but not I(2). It is also appropriate for studies with small sample sizes. In this study, we have six cross sections with 18 year time period, which are comparatively small for most of the panel studies, but in the panel ARDL model, it can be taken care of. Finally, it also considers the dynamics of variables in both the short-run and long-run. Therefore the PMG estimation is carried out here.

$$\begin{aligned}
\Delta y_{it} = & A + \alpha_i \sum_{k=1}^{\rho} \Delta y_{i,t-k} + \pi_i \sum_{k=1}^{\rho} \Delta FDI_{i,t-k} + \tau_i \sum_{k=1}^{\rho} \Delta FD_{i,t-k} \\
& + \omega_i \sum_{k=1}^{\rho} \Delta (FDI_{i,t-k} \times FD_{i,t-k}) + \beta_1 y_{i,t-1} + \beta_2 FDI_{i,t-1} + \beta_3 FD_{i,t-1} \\
& + \beta_4 (FDI_{i,t-1} \times FD_{i,t-1}) + \mu_i + \varepsilon_{it}
\end{aligned}
\tag{13}$$

Where A represents the constant term, μ_i is an unobserved state-specific effect and ε_{it} is the white noise error term. β_1 is the coefficient of the previous lagged value of the dependent variable. α_i , π_i , τ_i , and ω_i are short-run coefficients while β_2 , β_3 and β_4 are the long-run coefficients with $\Delta(FDI_{i,t-k} \times FD_{i,t-k})$ and $FDI_{i,t-1} \times FD_{i,t-1}$ being the short-run and the long-run interactive effects of FDI and financial development. The subscripts i and t refer to cross-section and time period, respectively.

2.5 Results and Discussion

Before going to the analysis of results, first, we will discuss the performance of each individual state in terms of growth, FDI, and financial development and will compare these with all India status. For this, we analyze the state-wise annual average growth rates of SDP per capita, FDI per capita, and Credit per capita with an interstate variation or volatility of all these variables across states, which are given in Table 2.1.

The table shows the annual average GDP per capita growth rate of India is 5.26 per cent during 2001-2018, while the volatility of the growth rate is 26 per cent. Here, the coefficient of variation (CV) of year-to-year growth rates is taken as the measure of volatility. In terms of per capita SDP growth rate, Andhra Pradesh (172 per cent), Goa (154 per cent), and Rajasthan (134 per cent) are the most volatile states, while Karnataka (55 per cent), Orissa (64 per cent), and Gujarat (31 per cent) are the least volatile states. The growth rate performance of Andhra Pradesh (10.85 per cent), Gujarat (8.22 per cent), and Goa (8.60 per cent) is more impressive than Karnataka (6.75), Orissa (6.87), and Rajasthan (5.54 per cent); however, all these states achieve higher growth rates than the national average (5.26 per cent) over the period from 2001 to 2018. Figure 2.1 presents the trends of per capita SDP for different states over the period 2001 to 2018.

Table 2.1 Annual averages growth rates and Volatility Measures of Growth (2001-2018)

States	GSDP per capita growth			FDI per capita growth			Credit per capita growth		
	Mean	Std. Dev.	CV	Mean	Std. Dev.	CV	Mean	Std. Dev.	CV
Karnataka	6.74	3.69	54.80	33.39	76.82	230.04	10.67	6.88	64.48
Gujarat	8.22	2.51	30.56	58.13	119.45	205.48	11.63	7.04	60.59
Andhra Pradesh	10.84	18.63	171.75	42.98	81.14	188.80	17.60	22.29	126.64
Rajasthan	5.54	7.42	134.06	514.33	1518.59	295.25	10.68	8.40	78.66
Goa	8.60	13.24	153.95	124.83	290.65	232.83	8.04	9.99	124.29
Orissa	6.86	4.42	64.45	108.45	367.74	339.07	10.76	8.25	76.63
India	5.26	1.38	26.32	16.08	39.81	247.53	9.82	5.76	58.61

Source: Author's calculation

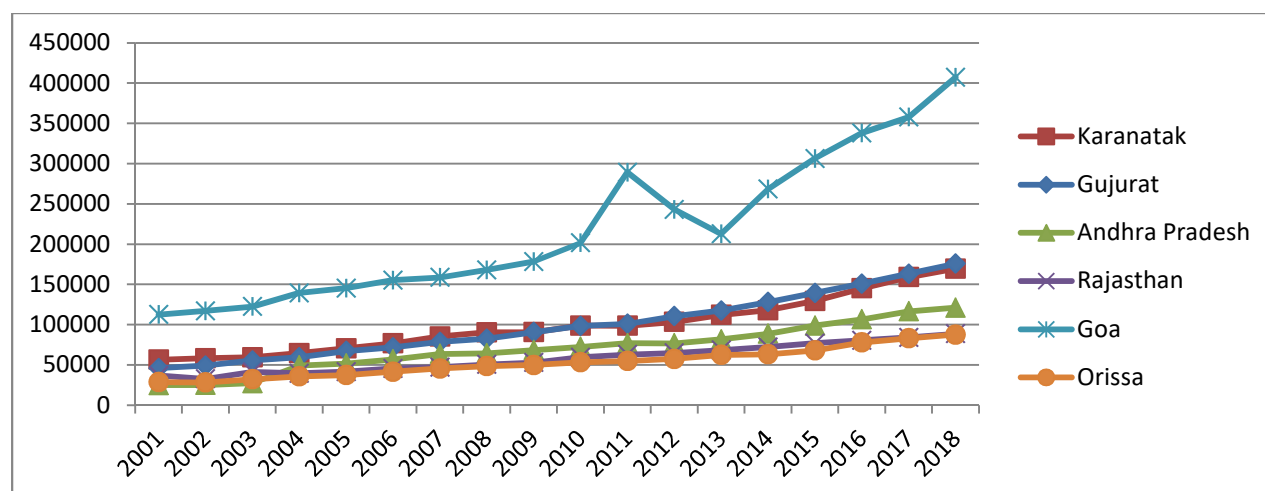
Likewise, all these states have higher per capita FDI growth than the all-India average growth (16.08 per cent). However, some states like Karnataka (33.40 per cent), Gujarat (58.13 per cent), and Andhra Pradesh (42.98 per cent) are far behind Rajasthan (514.34 per cent), Goa (124.83 per cent), and Orissa (108.45 per cent). The inter-state variation of the per capita FDI growth rate is very pronounced, with the coefficient of variation taking the value of 248 per cent. The trends of per capita FDI of Indian states over the period 2001-18 are shown in Figure 2.2.

In per capita credit growth, except Goa (8.04 per cent), all other states such as Andhra Pradesh (17.60 per cent), Gujarat (11.63 per cent), Karnataka (10.68 per cent), Rajasthan (10.69 per cent), and Orissa (10.77 per cent) have higher growth rate than the all India average growth rate (9.83 per cent). The volatility of Per capita credit growth at the national level (59 per cent) is comparatively lower than the volatility of Per capita FDI growth (248 per cent). Figure 2.3 presents the trends of per capita credit of various states over the period from 2001 to 2018.

From the above discussion, the study concludes that the Indian states are characterised by instability and volatility of growth, mostly in per capita FDI growth during the period 2001 –

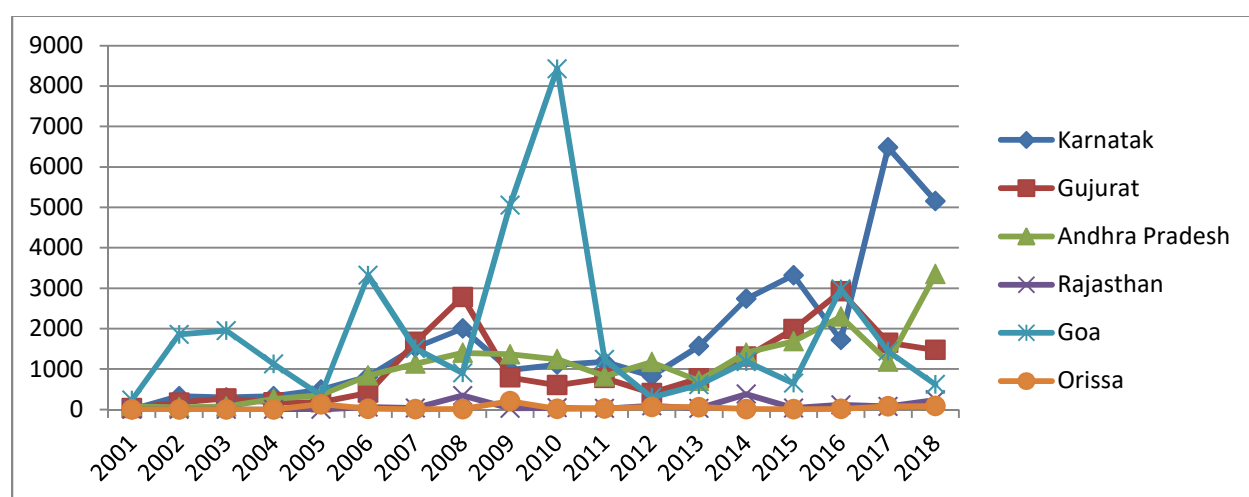
2018. Here states like Karnataka, Gujarat, and Andhra Pradesh are lagging behind Rajasthan, Goa, and Orissa. The descriptive statistics for these variables are provided in Table 2.2 for the whole panel to complement these.

Figure- 2.1: Trend of Real per capita GDP in different states (in Rupees)



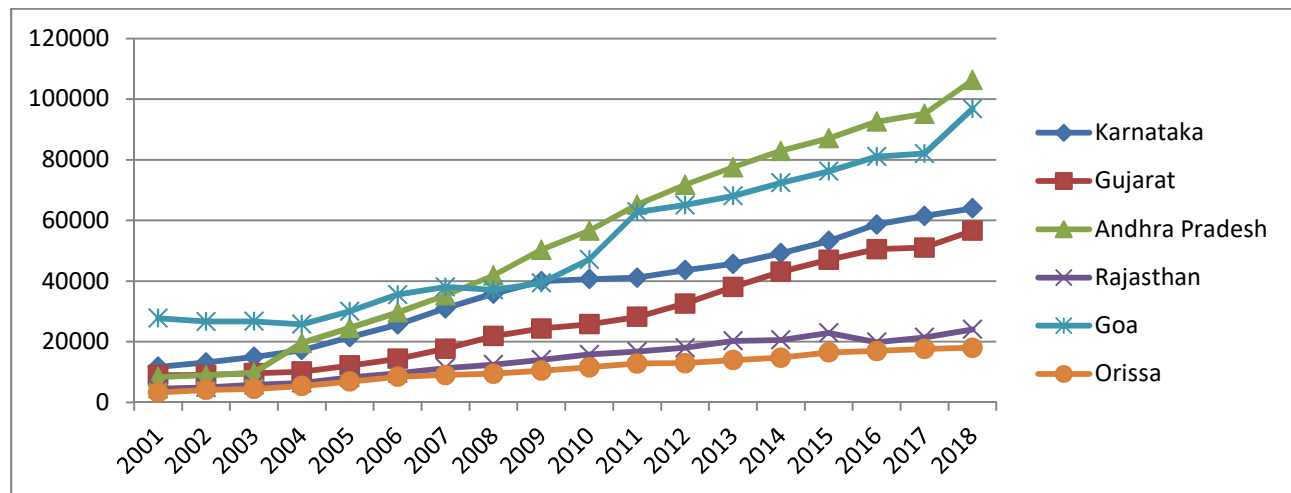
Source: Author's calculation on the basis of data from RBI Handbook of Statistics on Indian states

Figure-2.2: Trend of Real per capita FDI in different states (in Rupees)



Source: Author's calculation on the basis of data from DPIIT, Government of India

Figure 2.3: Trend of Real per capita Credit in different states (in Rupees)



Source: Author's calculation on the basis of data from RBI Handbook of Statistics on Indian states

2.5.1 Descriptive statistics

Before investigating the data series, it is essential to study the descriptive statistics of the variables in the panel to see the distribution and variability of the variables; it is shown in Table 2.2.

Table 2.2 Descriptive statistics

Variables	Obs.	Mean	Std. dev.	Min	Max
LGSDP	108	11.317	0.601	10.120	12.917
LFDI	108	5.424	2.397	-0.925	9.039
LFD	108	10.074	0.842	8.102	11.574
FDI× FD	108	56.297	26.767	-7.864	97.266

Source: Author's calculation

The mean of the natural logarithmic form of GSDP per capita (LGSDP) is 11.32, and its maximum and minimum values are 12.91 and 10.12, respectively. The average of natural

logarithmic form of per capita FDI (LFDI) and Credit (LFD) are 5.42 and 10.07, respectively. The average of the interaction term, i.e., $FDI \times FD$, is 56.30.

2.5.2 Cross-sectional Dependency tests result

As discussed earlier in the panel data set, before the estimation of the model, detecting the cross-sectional dependence is an important step that will help us in selecting the suitable estimator. Table 2.3 displays the results of four cross-sectional dependence tests. The probability values of all the variables under different cross-dependence tests reject the null hypothesis of cross-sectional independence at 1% significance level, which indicates the presence of cross-sectional dependence among variables across all cross-section units. This also shows that a shock initiated in any state under attention is transferred to other states. Therefore we applied a dynamic PMG estimation method, which considers cross-sectional heterogeneity by the short-term parameters.

Table 2.3 Cross-sectional dependency tests result

Variables	Breusch-Pagan LM	Pesaran scaled LM	Bias-corrected scaled LM	Pesaran CD
LGSDP	253.60***(0.000)	42.47***(0.000)	42.29***(0.000)	15.92***(0.000)
LFDI	96.30***(0.000)	13.75***(0.000)	13.57***(0.000)	8.69***(0.000)
LFD	253.69***(0.000)	42.48***(0.000)	42.31***(0.000)	15.92***(0.000)
FDI× FD	118.99***(0.000)	17.89***(0.000)	17.71***(0.000)	10.31***(0.000)

Source: Author's calculation

2.5.3 Unit root test results

Due to the presence of cross-sectional dependence, this study uses a second-generation CADF unit root test suggested by Pesaran (2007) to investigate the stationarity of the variables.

Table 2.4 CADF Panel unit root test results

Variables	Intercept		Intercept & trend	
	Level	1 st differ.	Level	1 st differ.
LGSDP	-2.184	-2.764***	-1.827	-2.925*
LFDI	-3.267***	-----	-3.768***	-----
LFD	-2.210	-3.022***	-3.104**	-----
FDI× FD	-3.091***	-----	-3.640***	-----

Source: Author's calculation

Note: ***, **, and * refer significance at 1%, 5%, and 10% respectively.

Table 2.4 presents the results of the CADF panel unit root test with intercept and with both intercept and trend only. With intercept and trend, all the variables are stationary at level except economic growth (LPGSDP), which became stationary after the first difference. However, in the case of with intercept only, economic growth and financial development are both non-stationary at levels and become stationary at the first difference, while FDI and the interaction term are stationary at levels. CADF unit root test results indicate the existence of both I(0) and I(1) variables, which fit the PMG/ARDL model. The Panel ARDL model can be used whether the series has I(0) or I(1) or a combination of both integrated variables in the same regression but not I(2).

2.5.4 Cointegration tests result

Pedroni (1999, 2004) and Kao (1999) cointegration tests are used to see the existence of long-run relationships between the variables. Table 2.5 reports the results of the panel cointegration test based on Pedroni (1999, 2004). The empirical results indicate that out of the seven statistics, at least four reject the null hypothesis of no cointegration. As the majority of tests reject the null hypothesis, the findings support the presence of cointegration.

Table 2.5 Pedroni Panel Cointegration test results

	Statistic	Prob.		Statistic	Prob.
Panel v-Statistic	1.255	0.104	Group rho-Statistic	1.070	0.857
Panel rho-Statistic	0.914	0.819	Group PP-Statistic	-4.100***	0.000
Panel PP-Statistic	-3.782***	0.000	Group ADF-Statistic	-4.728***	0.000
Panel ADF Statistic	-4.783***	0.000			

Similarly, Table 2.6 shows the Kao cointegration test results. As the ADF test rejects the null hypothesis of no cointegration, it suggests the presence of cointegration at 1% significance level.

Table 2.6 Kao Cointegration test results

	t-statistic	Prob.
ADF test	-3.379***	0.000

Source: Author's calculation

Note: *** denote significance level at 1%.

Hence, the findings of both tests provide support for the presence of a long-run relationship between FDI, financial development, and economic growth.

2.5.5 PMG estimation results

For the robustness check, this study applies PMG estimation to see the cointegration relation among the variables and further to estimate the short and long-run dynamics between the dependent variable and its independent variables. Table 2.7 presents the PMG/ARDL estimation results. The optimal lag length of PMG estimation is chosen by Akaike Information Criterion (AIC). The negative and statistically significant adjustment coefficient (error correction term) supports a cointegrating relationship between economic growth and its explanatory variables. It indicates the speed of adjustment from disequilibrium in the short run to equilibrium in the long run, will be adjusted significantly and corrected by 32 per cent annually. Here, Log per capita GSDP (LPGSDP) is the dependent variable for the estimation.

Table 2.7 PMG estimation results

Variable	Coefficient	Std. Error	t-Stat.	Prob.
Long run				
LFDI	-0.585	0.112	-5.206	0.000
LFD	0.455	0.070	6.500	0.000
FDI × FD	0.062	0.013	4.791	0.000
Short run				
ECT	-0.322	0.140	-2.300	0.024
ΔFDI	0.281	0.181	1.553	0.124
ΔFD	0.219	0.176	1.244	0.217
ΔFDI× FD	-0.027	0.017	-1.590	0.116
Constant	2.156	0.936	2.303	0.024

Source: Author's calculation

Concerning the long-run relationship, the explanatory variables used in the analysis, like financial market development and the interaction of FDI and financial market development, have a favorable and significant impact, while FDI has a negative and significant impact on economic growth.

A one per cent increase in the development of the financial market and the interaction of FDI and financial market development increases economic growth by 45 per cent and 6 per cent, respectively. However, a one per cent increase in FDI inflows decreases economic growth by 58 per cent. The negative influence of FDI inflows on economic growth in India can be explained by the motive of foreign investors to capture the large domestic market or exploit natural resources. And the unequal diffusion of FDI inflows to different states of India is another reason for the limited growth effects of FDI (Chakraborty & Mukherjee, 2012).

The result shows that the direct impact of FDI on economic growth is negative and significant. This outcome of the negative impact of FDI on growth is in line with the outcomes of Hermes & Lensink (2003) and Kohpaiboon (2003). Hermes & Lensink (2003) finds that the direct impact of FDI on economic growth is not significantly positive. This could be interpreted as supporting the idea that FDI does not accelerate a nation's economic growth without additional

requirements. Furthermore, FDI only contributes to economic growth when domestic financial structure development has touched a certain threshold level.

The financial market development increases economic growth, implying that the development of the financial market facilitates more production in the long run by facilitating easy credit availability to domestic firms, who face the issue of credit constraint while expanding their production and innovation. This outcome is consistent as financial market development is considered an essential factor of economic growth. This finding of the significant and favorable impact of financial development on economic growth is generally in support of the outcomes of the study on finance and growth (King & Levine, 1993; Levine et al., 2000).

On the other hand, the positive result of interaction between FDI and financial market development is also consistent and relevant as the countries can derive positive growth benefits from FDI through financial market development. It indicates the advance and efficiency of the financial market help the domestic firms who are facing the issues of credit constraints for adopting advanced technology, which comes with foreign firms or FDI; this eventually leads to economic growth in the long run. The adaptation of advanced technology is possible through the purchasing of the new machine and hiring skilled labour etc.

The positive and significant interactive effects show the presence of a complimentary relationship between FDI and financial development for impact on economic growth. Therefore, the conclusion can be drawn that the impact of FDI on economic growth becomes stronger by the level of financial market development. Hence, even if the direct impact of FDI is negative, its indirect impact on economic growth seems to have positive in the long run. This result is corroborated by the empirical results of Hermes and Lensink (2003) and Alfaro et al. (2004).

2.6 Conclusion

Since the debt crisis of the 1980s, India's attitude toward FDI has changed, with the belief that FDI may help a country's development efforts. In the 1990s, India launched the New Economic Policy as part of economic reforms to attract foreign capital and take advantage of technology and knowledge spillover. Since then, foreign investment has been coming into the economy.

In recent years, liberal policy actions have encouraged competition among state governments to attract more and more FDI into their individual states, resulting in locational competition for investment. The data from DPIIT show that the top five states are attracting 71 per cent of total FDI inflows to India during April 2000-March 2018; these are Maharashtra, including Dadra & Nagar Haveli, and Daman & Diu; Delhi, including Western Uttar Pradesh and Haryana; Tamil Nadu, including Pondicherry; Karnataka; and Gujarat. However, the states like Bihar, Rajasthan, Orissa, and Uttar Pradesh are receiving a very insignificant amount of total FDI inflows in this period.

Over this period, the volatility of per capita FDI growth among the Indian states is very pronounced, with the coefficient of variation taking the value of 248 per cent. It shows that there exists a huge disparity among Indian states in terms of FDI inflows. By considering this disparity, the study wants to analyze whether the states can derive benefits from FDI in terms of economic growth and whether financial market development plays any role in deriving benefits from FDI. For this, the study aims to study the role of financial market development in influencing the FDI's impact on the growth of Indian states.

The analysis of this study starts by using four cross-sectional dependence tests to detect the cross-sectional dependency among the series. After confirmation of the presence of cross-sectional dependence, this study uses a second-generation CADF unit root test proposed by Pesaran (2007) to investigate the stationarity of the variables. The CADF unit root test results indicate the presence of both $I(0)$ and $I(1)$ variables, which fit the PMG/ARDL model. Hence, the study uses the panel ARDL method of the PMG estimator to estimate the relationship between FDI, financial market development, and economic growth.

The PMG estimation results show that though financial development and output growth are positively associated, FDI has a negative impact on output growth in the long run. The findings

also concentrate that the interaction effect of FDI and financial development positively impact output. It shows that although FDI have no direct positive impact on output, it have an indirect influence on encouraging the economic growth of Indian states via financial market development. Therefore, an important implication derives from this finding is that the development of the financial market is a crucial requirement for extracting the favorable benefits from FDI toward the economic growth of select Indian states.

Chapter 3

Foreign Direct Investment and Domestic Investment in the host country: Evidence from India

3.1. Introduction

In the previous three decades, the globalisation of capital, mainly FDI, has been increasing substantially. FDI has become the most stable and significant element of capital inflows in developing nations. FDI inflows are crucial for various reasons, including employment generation, technological know-how, and increased competitiveness (Kobrin, 2005).

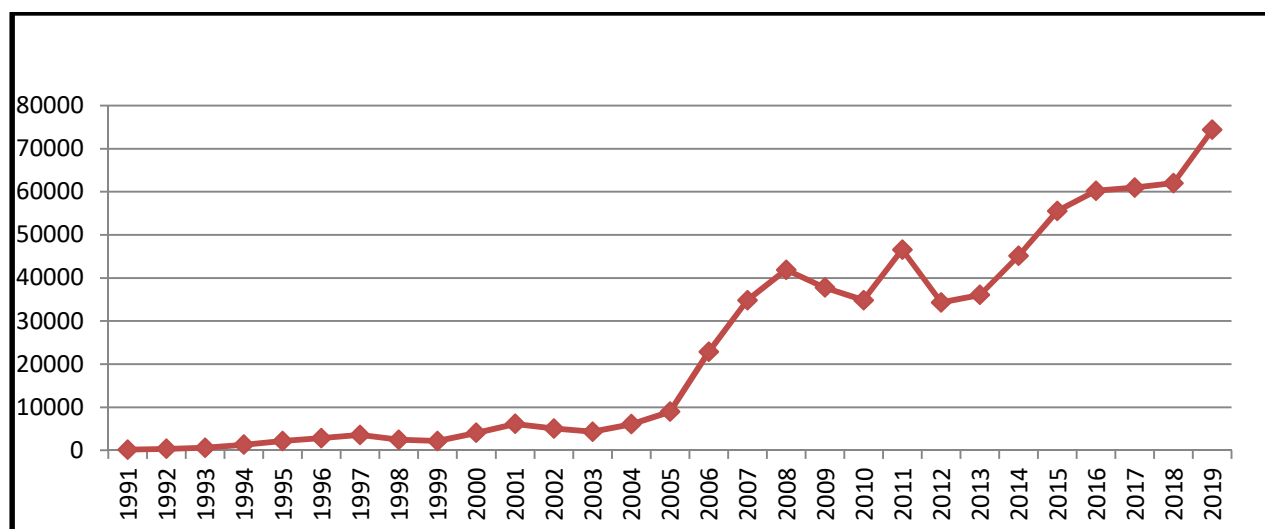
Considering the anticipated benefits of FDI, various research has been performed to investigate the effect of FDI on economic growth. Though, when assessing the effects of FDI on economic growth, the most important question to consider is whether MNEs crowding-in or crowding-out local investment. The rate of substitutability and complementarity between FDI and domestic investment defines the magnitude at which FDI boosts economic growth (De Mello, 1999).

Crowding-out happens when inward FDI reduces domestic investment, whereas crowding-in arises when inflow of FDI stimulates domestic investment in the recipient economy. Contrary, when MNCs simply replace local firms with their efficiency, FDI crowds out domestic investment in the host country. Crowding-out also takes place when MNCs fund their investment by taking loan from the host country, which raise the recipient country's interest rate (Harrison & McMillan, 2003). However, crowding-in happens when FDI boosts backward or forward production linkages in the recipient economy (Markusen & Venables, 1999). Crowding-in also happens as a result of FDI spillover upon domestic firms by increasing their competitiveness. It occurs due to the more advanced technology of foreign firms.

During the 1990s, India started opening its economy by implementing many new policies to boost economic growth; FDI liberalization was one of them. The central focus of opening up policies and economic reforms in India was to attract FDI. Since then, FDI policies have been revised and liberalized on a regular basis. FDI inflows were quite low during the early 'opening-

up' period, at US\$ 129 million in 1991-92, then it started increasing over the period of time, which represents in Figure 3.1.

Figure 3.1: Year-wise total FDI inflows to India (million US\$).



Source: DPIIT 2020, Ministry of Commerce and Industry (GOI)

The FDI inflows are started rising consistently through the first half of the 1990s but stagnant between 1998-99 and 2003-04. It is difficult to identify a clear trend till 2003-04 due to year-on-year fluctuations of FDI inflows. From the year 2004-05, the inflows are continuously increasing till 2008-09. whereas, from 2009-10 till 2013, the FDI inflows are not growing much due to the financial instability caused by the United States subprime crisis in the year 2008 and further the Euro crisis in the year 2012-13.

The proactive policy measures and improvement in the ease of doing business in the country resulted in considerable improvement in FDI inflows. Since the financial year 2013, the FDI inflows have been increasing. India ranked 63rd among 190 countries in the Ease of Doing Business (EoDB) Index in 2019, following the Doing Business Report (DBR), 2020. According to UNCTAD's World Investment Report 2020, India holds the 9th position in receiving FDI in the year 2019, with 51 billion dollars as inflows compared to 42 billion dollars in 2018, holding 12th rank among the top 20 host economies in the world.

One question that emerges here is whether this huge volume of FDI inflows into India has the desired influence on the country's economy. Based on the above background, this study aims to examine whether this increase in FDI inflows in India helps in enhancing domestic investment. In other words, whether FDI inflows crowd in or crowd out domestic investment in India.

The rest of the paper is organized as follows. Section 3.2 represents the literature review. Section 3.3 describes the details of data sources and models. Section 3.4 provides the methodology, Section 3.5 explains empirical results, and Section 3.6 finally draws the conclusion.

3.2. Literature review

There are numerous studies that analyze the effect of FDI on economic growth. However, the conclusion on this is ambiguous. Some authors claim that FDI accelerates economic growth by complementing DI, while others find evidence that FDI has a negative impact on the recipient's economy because it crowds out domestic investment. For instance, Noorzoy (1979) examines the effects of FDI on domestic investment in Canada over the period 1957 to 1971 and finds that FDI boosts economic growth by alleviating capital shortages, thereby complementing domestic investment, particularly when investment is allocated in high-risk areas or sectors where domestic investment is limited.

Ang (2009) finds that in the long run, both FDI and public investment stimulate private domestic investment; however, FDI has a greater impact on private domestic investment than public investment in Malaysia for the period 1960 to 2003. Lean & Tan (2011) examine the connections between FDI and domestic investment on economic growth in Malaysia from 1970 to 2000. Using the Johansen co-integration and Granger causality tests, the study concludes that there is a presence of a long-run relationship between FDI, domestic investment, and economic growth; and in the long run, FDI has an encouraging and domestic investment has an adverse impact on economic growth, while, FDI have a crowding-in effect on domestic investment.

The study by Ndikumana & Verick (2008) finds that FDI have a complementary effect on domestic investment in Sub-Saharan African countries, and private domestic investment helps in attracting FDI. Lumbila (2005) uses panel data analysis to study the effects of FDI on economic

growth in 47 African countries over the two decades of 1980–2000 and finds that FDI have a crowd in effects on domestic investment. He also finds that domestic investment appears as the key way via which FDI stimulates economic growth only if policy and the macroeconomic environment are sound. Jain, Gopalaswamy, and Acharya (2014) find a positive and bi-directional linkage between FDI and domestic investment in Asian EMEs for 1995–2007; it suggests that FDI complements domestic investment.

The other extreme of the literature argues that FDI crowds out domestic investment and hence has a detrimental impact on the growth process.

For example, Van Loo (1977) finds that in Canada, FDI has a neutral or crowding-out effect on domestic investment. Agosin & Machado (2005) examine the association between FDI and domestic investment in developing countries from 1971–2000, and the study finds that the FDI does not always have a favorable impact on domestic investment. They especially discovered FDI have a crowding-out impact on domestic investment in Latin America.

Eregba (2012) examines the effect of FDI on domestic investment in ECOWAS (Economic Community of West African States) countries from 1970 to 2008. With the help of a panel cointegration test, the study reveals that FDI inflow crowds out domestic investment. Braunstein & Epstein (2002) apply the panel regression model on Chinese provincial data from the period 1986 to 1999 to investigate the FDI impact on domestic investment. Their results show that FDI crowds out domestic investment in China.

Wang (2010), using data for 50 countries from 1970 to 2004, finds that FDI inflows have a contemporaneous adverse effect on domestic investment, whereas the aggregate impact of FDI over time is favorable. Besides, the study also finds separately for developed nations that the contemporary impact of FDI on domestic investment is discouraging, and the aggregate effect of FDI is neutral. In case of less developed Countries the contemporaneous effect of FDI on domestic investment is neutral, while the aggregate impact of FDI is encouraging.

Kumar & Pradhan (2005) examine the dynamic linkage between FDI, domestic investment, and growth using panel data for 98 developing countries over the time 1980–99. The study finds a negative competition effect from the foreign entrants over domestic enterprises in the industry and a favorable externality on domestic investment due to backward linkages in the subsequent

round. The relative importance of these effects is determined by the character of FDI projects or the quality of FDI; these effects vary substantially for different types of investments. Additionally, in net terms, the impact of FDI on domestic investments seems to crowd-out domestic investment, in general.

In the Indian context, various literature has discussed the broad impact of FDI on economic growth, and the findings of these studies have produced mixed results. For example, Singh (2007) finds that FDI in India primarily flows to the most capital-intensive industries, resulting in a lack of desirable employment opportunities, mainly for manual and semi-skilled labor. Hence, there are less opportunities for growth.

Sethi & Patnaik (2007), using time series estimates with monthly data over the period 1995 to 2004, examine the effect of international capital inflows on economic growth in India and conclude that Foreign Indirect Investment has a negative effect on India's economic growth, whereas FDI and Foreign Portfolio Investment affects economic growth positively. Total capital flows have a favorable impact on the country's economic growth.

Rath & Bal (2014) study the relationship between FDI, public investment, and private domestic investment in India over the period 1978-79 to 2009-10. By using the structural VAR model, they find that FDI has a crowding-in effect on private domestic investment, whereas public investment has a neutral effect.

Prasanna (2010) examines the effect of FDI inflows on domestic investment in India and finds that the direct impact of FDI on domestic investment is significantly positive, i.e., it resulted in an increase in domestic investment initially, while the indirect effect of the FDI on domestic investment in the long-term is neutral. Hence, there is no indication of either crowding-in or crowding-out of domestic investment in the long run in India. So, even though FDI complements domestic investment directly, it fails to crowd in local investment in the long run.

Chakraborty & Mukherjee (2012) examine the long-run relationship between domestic investment, FDI, and economic growth in India from 1996: Q1 to 2009: Q2. Using the Gregory and Hansen cointegration test with the presence of a structural break and the ARDL model without any consideration of a structural break, the study finds that there is the presence of a cointegrating long-run relationship between the three variables. Further, applying the Toda and

Yamamoto technique for causality analysis, the result shows that there is no statistically significant impact of FDI on economic growth, while India's GDP has a more significant effect on enticing FDI flows, and FDI has a complementary role in domestic investment.

After reviewing the relevant literature related to the relationship between FDI, domestic investment, and economic growth, the current study adds to the existing stock of knowledge in two ways. At first, few studies have been undertaken on the effects of FDI on domestic investment in the context of India, and there is no clear-cut conclusion regarding the relationship between FDI and domestic investment. Moreover, the majority of them have used estimation techniques without considering a structural break.

So, this study tries to fill this gap by taking steps towards reexamining the FDI and domestic investment relationship while accounting for the structural break in the series. For this, it uses the Zivot-Andrews unit root test with a structural break, and for long-run analysis, the Gregory-Hansen cointegration test and the autoregressive distributed lag (ARDL) approach to cointegration test are used by accounting the existence of the structural break. To the best of my information, this is the first empirical study that investigates the short-run and the long-run estimates of FDI on domestic investment in India in a multivariate model wherein economic growth, financial development, and trade openness are included as additional variables to overcome the potential omitted-variable bias problem.

3.3 Model and data

From the previous literature, empirical specification of the long-run DI equation has been drawn, which given in the below equation

$$\ln DI_t = \alpha_0 + \alpha_1 \ln FDI_t + \beta X_t + \varepsilon_t \quad (1)$$

Where DI_t represents the domestic investment as a percentage of GDP measured as Gross Fixed Capital Formation (GFCF) as a percentage of GDP minus FDI inflow as a percentage of GDP; foreign investments are deducted from gross fixed investment to overcome double counting (Kumar & Pradhan, 2005), and FDI_t refers to FDI as a percentage of GDP, X_t includes a set of control variables.

The choice of control variables are on the basis of the prevailing empirical literature, such as; the level of economic activity taken by real GDP growth rate (RGDPG), trade openness (TO) obtained from the sum of exports and imports (volume of trade) share as a percentage of GDP and broad money supply (M2) as a percentage of GDP used as a proxy for financial development (FD). α_1 and β are the unknown parameters to be estimated. α_0 is a constant and ε_t is the random error term. All variables are taken in their natural logarithm forms to reduce the heteroscedasticity of residual.

Eq. (1) can be rewritten as;

$$\ln DI_t = \alpha_0 + \alpha_1 \ln FDI_t + \beta_2 \ln RGDPG_t + \beta_3 \ln TO_t + \beta_4 \ln FD_t + \varepsilon_t \quad (2)$$

A priori anticipation is that a consistent increase in economic growth is related to higher domestic investment, $\beta_2 > 0$. Some empirical studies find that economic growth is the crucial factor in enhancing domestic investment (Adams, 2009; Al-Sadiq, 2013; Wai & Wong, 1982). Moreover, the effect of trade openness on domestic investment is ambiguous. The trade openness coefficient sign can go anyway. Trade openness can have a positive impact on domestic investment via technology and knowledge spillovers. Conversely, it may also have a negative influence on domestic investment if consumers' preference goes toward import goods (Ndikumana, 2000); hence, the sign of β_3 can be positive or negative. The impact of financial development is expected to be positive, $\beta_4 > 0$. Lastly, the impact of FDI on domestic investment is ambiguous; therefore, we can expect $\alpha_1 > 0$ or $\alpha_1 < 0$.

The data on GFCF, broad money supply (M2) as a percentage of GDP, trade openness, and real GDP has been extracted from the RBI Handbook of Statistics on the Indian economy, while the FDI inflow data are extracted from DPIIT, Ministry of Commerce and Industry, Government of India. The study uses quarterly frequency data from the 1st quarter of 1997 to the 4th quarter of 2019.

3.4 Methodology

For this analysis, the study applies several appropriate econometric techniques. At first, Zivot & Andrews unit root test was used to verify the stationary properties of the variables while detecting a structural break in the series. Secondly, to estimate the long-run relationship among the variables, the Gregory-Hansen cointegration test and ARDL bound testing approach to cointegration were applied by considering the occurrence of a structural break in the series.

3.4.1 Unit root tests

The uses of common unit root tests, such as ADF, PP, DF-GLS, and KPSS tests may give inefficient and biased results when a structural break is present in the time series. This study uses the ADF unit root test with intercept to validate the stationarity of the variables while thinking that such test is inappropriate when the structural break prevails in the variables. Hence, the study applies the Zivot & Andrews (1992) unit root test to detect the structural break in the series. The lag lengths are chosen based on the Akaike Information Criteria (AIC). In the presence of a structural break point in the series, Zivot & Andrews (1992) formulated three models to check the stationarity properties of the variables: (1) model 1 deals with one-time change in the intercept of the variables; (2) model 2 deals with change in the slope of the trend function, and (3) model 3 combines one-time changes in the intercept and the slope of the trend function. This study uses model 1, which permits for a change in intercept. The model 1 takes the following form:

$$\Delta Z_t = \alpha + \mu Z_{t-1} + \beta t + \rho DU_t + \sum_{j=1}^k d_j \Delta Z_{t-j} + \epsilon_t \quad (3)$$

Where, DU_t is used as a dummy variable. ϵ_t is white noise disturbance term.

The test is based on the null hypothesis that $\rho = 0$, which shows that the series is non-stationary with an intercept not having any evidence about the structural break, while hypothesis $\rho < 0$ infers that the variable is stationary with one unknown structural break.

3.4.2 Cointegration tests

Initially, this study uses the Gregory-Hansen cointegration test with one endogenously determined structural break based on the level shift (Gregory & Hansen, 1996) to verify the existence of a cointegrating relationship between domestic investment, FDI, economic growth, trade openness, and financial development. This is shown in Eq. 4:

$$Y_t = \alpha_0 + \alpha_1 D_t + \beta \sum_{i=1}^4 \alpha_{1i} X_{it} + \varepsilon_t \quad (4)$$

Where Y_t is the dependent variable, X_t represent the explanatory variables, and D_t is the dummy variable used to represent a structural break in the intercept. α_0 represents the intercept before the shift and α_1 represents the intercept after the shift.

$$D_t = \begin{cases} 1 & \text{if } t > TB \\ 0 & \text{if } t < TB \end{cases}$$

The Gregory-Hansen cointegration test inspects the null hypothesis of no cointegration against the alternative hypothesis of cointegration in the presence of a structural break. Since the Gregory-Hansen approach checks three alternative unit root tests; ADF, Zt, and Za, this study follows the Zt statistics as Gregory & Hansen (1996) recommend that Zt is the best in terms of size and power.

In order to confirm the result of the Gregory-Hansen cointegration test, the study further applies the ARDL bounds testing approach to cointegration developed by Pesaran et al. (2001). It has a number of benefits. For example, it can be applied regardless of the order of integration, i.e., whether the variables are I(0) or I(1), or a combination of both orders, while other cointegration methods require all variables to be in equal integration order, i.e., integrated of order one, like Johansen (1991) and the Johansen & Juselius (1990) tests. Moreover a dynamic unrestricted error correction model (UECM) can be obtained from the ARDL bounds testing. Furthermore, the UECM joint short-run dynamics with long-run equilibrium by not missing long-run evidence.

The following ARDL model is used for estimation purposes:

$$\begin{aligned}\Delta \ln DI_t = & \alpha_1 + \alpha_0 D_{Dum} + \alpha_2 \ln DI_{t-1} + \alpha_3 \ln FDI_{t-1} + \alpha_4 \ln RGDPG_{t-1} + \alpha_5 \ln TO_{t-1} + \\ & \alpha_6 \ln FD_{t-1} + \sum_{i=1}^p \beta_i \Delta \ln DI_{t-i} + \sum_{i=1}^q \beta_i \Delta \ln FDI_{t-i} + \\ & \sum_{i=1}^m \beta_i \Delta \ln RGDPG_{t-i} + \sum_{i=1}^s \beta_i \Delta \ln TO_{t-i} + \sum_{i=1}^r \beta_i \Delta \ln FD_{t-i} + \mu_t\end{aligned}\quad (5)$$

Where, D_{Dum} is the dummy variable representing the structural breakpoint determined by the Gregory Hansen cointegration test, and μ_t denotes normally distributed error term. The optimal lag length of the ARDL model is determined by the AIC.

For testing the presence of cointegration, the study followed the F-test recommended by Pesaran et al. (2001). So as to test cointegration, it is necessary to compare the calculated F-statistic with the critical bounds, i.e., the upper critical bound (UCB) and lower critical bound (LCB) created by Pesaran et al. (2001). The null hypothesis $H_0: \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = 0$ of no cointegration is tested in Eq. (5) against the alternative hypothesis $H_A: \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq 0$ of cointegration. If the calculated F-statistic surpasses the UCB, the series are cointegrated; if the calculated F-statistic falls below the LCB, the series are not cointegrated. The inference would be ambiguous if the estimated F-statistic falls between the UCB and the LCB.

For checking the parameter stability of the model, this study uses CUSUM and CUSUMSQ tests suggested by Brown et al. (1975).

3.5 Empirical Results and Discussion

Before going to any empirical analysis, this study tries to explore the relationship between output, FDI, and domestic investment (DI) through graphical representations. For establishing the relationship among them, it plots the graphs of output against FDI, domestic investment against FDI, and output against domestic investment, in figures 3.2 (a), (b), and (c), respectively, where output is measured by Gross Domestic Product (GDP).

Fig 3.2 (a) GDP against FDI (Rs. Crore)

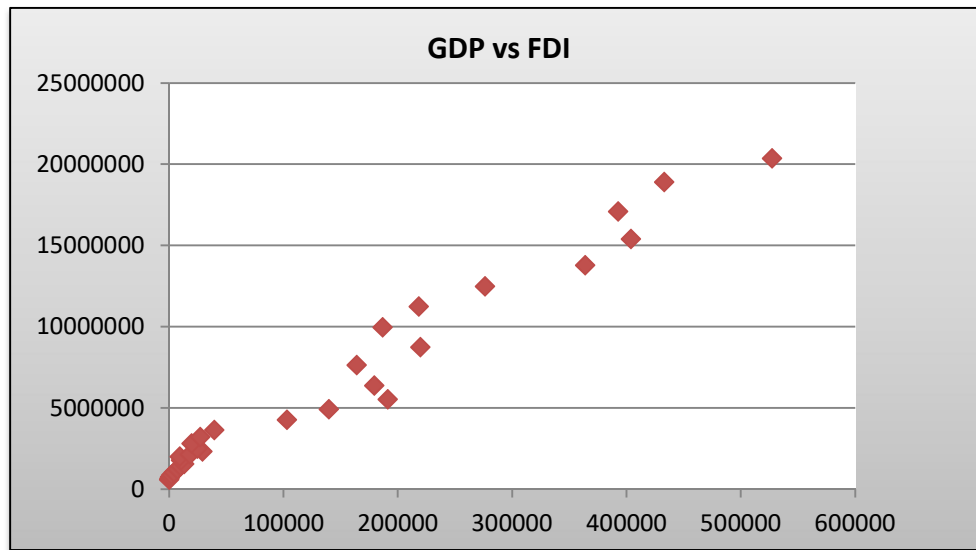


Fig 3.2 (b) DI against FDI (Rs. Crore)

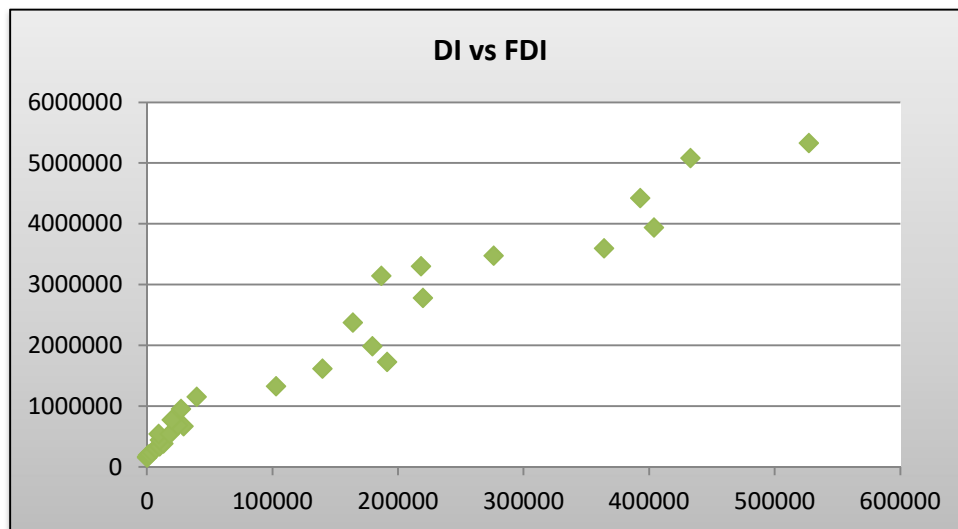
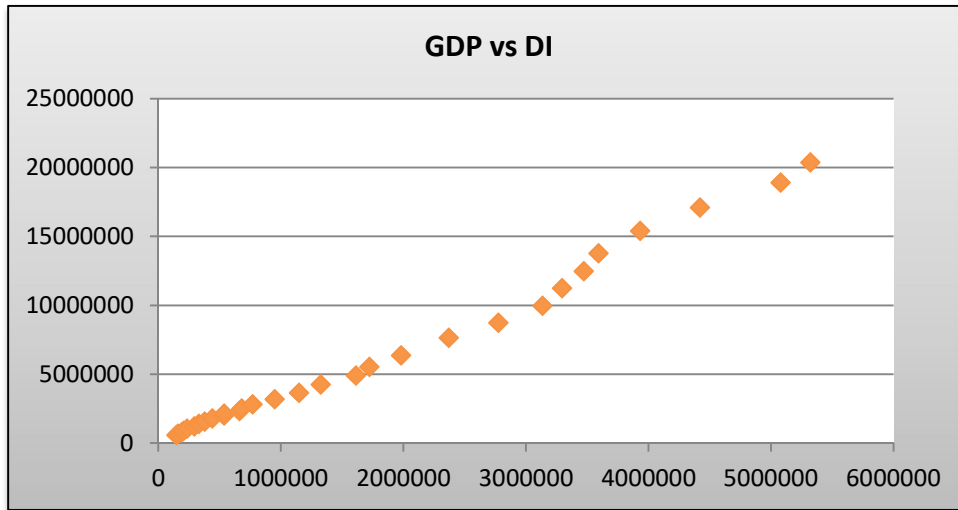


Fig 3.2 (c) GDP against DI (Rs. Crore)



These figures clearly represent strong and positive relationships between output and domestic investment, while the relationship between FDI & domestic investment and between FDI & output are inconclusive. From these scatter plots, it is difficult to derive any conclusion about the relationship between domestic investment and FDI and between GDP against FDI. Hence, this study carries out a formal econometric analysis, which is discussed below.

3.5.1 Descriptive Statistics

The descriptive statistics of the variables are shown in Table 3.1. It depicts that there are significant disparities between the minimum and maximum values of each variable, and there is also adequate variability in every single time-series data with reference to the mean and standard deviations of these variables.

Table 3.1 Descriptive Statistics

	DI	FDI	TO	RGDPG	FD
Mean	3.326	0.461	3.663	1.831	4.313
Maximum	3.550	1.449	4.152	2.585	4.504
Minimum	3.098	-1.081	3.062	-1.444	4.079
Std. Dev.	0.120	0.605	0.286	0.543	0.096
Skewness	0.108	-0.531	-0.529	-3.021	-0.050
Observations	92	92	92	92	92

3.5.2 Unit root tests results

Primarily, to evaluate the stationarity of the series, this study uses the ADF unit root test with intercept. The results are shown in Table 3.2, which indicates that except economic growth (RGDPG), all other variables are non-stationary at levels but become stationary after first differences. It shows that variables have both orders of integration, i.e., $I(0)$ and $I(1)$.

Table 3.2 Results from the ADF unit root test.

Variables	Level	1 st Difference
DI	-1.480	-3.036**
RGDPG	-5.147***	
FD	-1.828	-4.235***
TO	-2.363	-4.190***
FDI	-1.440	-9.836***

Note:** and *** indicate significance at 5% and 1% levels, respectively.

The fundamental issue with the ADF unit root test is that it does not account for any evidence about the structural break that prevails in the series. The ADF unit root test results are not appropriate and suitable in the existence of a structural break in the series.

Hence, the study uses Zivot & Andrews (1992) unit root test to avoid this shortcoming and to verify the strongness of the outcomes gained by the ADF test. This test tells about one structural break that originates in the series. Table 3.3 shows the results of the Zivot-Andrews unit root test. Here except economic growth, all other series are found non-stationary at level with intercept, but these variables became stationary at first differences.

Table 3.3 Results from the Zivot-Andrews unit root test.

Variables	Level		1 st Difference	
	ZA-test statistics	Break Date	ZA-test statistics	Break Date
DI	-3.398	2003Q2	-4.982**	2007Q4
RGDPG	-5.580***	2003Q1	----	----
FD	-4.118	2010Q4	-5.051**	2009Q3
TO	-2.752	2003Q4	-5.050**	2012Q3
FDI	-3.664	2006Q1	-10.271***	2008Q2

Note:** and *** indicate significance at 5% and 1% levels, respectively.

Both the ADF and Zivot & Andrews tests results confirm that variables are varied order of integration, i.e., both $I(0)$ and $I(1)$ but not $I(2)$. From the above results, it is evident that the variables are mutually integrated, which favors the usage of ARDL bounds testing for cointegration. Hence, this study applies the ARDL approach for cointegration analysis.

3.5.3 Cointegration tests results with Unknown Structural Break

Following unit root tests, afterward, we will study the long-run relationship among the series in the existence of a structural break. Accordingly, this study applies the Gregory-Hansen cointegration test developed by Gregory & Hansen (1996), which considers for one endogenously determined structural break. This test verifies the null hypothesis of no cointegration against the alternative hypothesis of the existence of cointegration in the presence of an endogenously determined structural break.

The Gregory-Hansen cointegration test results are shown in Table 3.4, which indicates that there is sufficient support to reject the null hypothesis of no cointegration and accept the alternative

hypothesis of the presence of cointegration at 1% level of significance. It is since the absolute value of the computed test statistic is greater than the critical value. The fourth quarter of 2012 is the endogenously determined structural break period, likely referring to the Euro crisis. The European debt crisis was responsible for the growth slowdown in the Indian economy by reducing exports and disturbing capital inflows into India. This event is important for India's economic activity.

Table 3.4 Results from the Gregory-Hansen Cointegration test

	Test Statistic	Break Date	Asymptotic Critical Values		
			1%	5%	10%
Zt	-10.07***	2012Q4	-6.05	-5.56	-5.31

Note:*** shows the level of significance at 1%.

Even though the result from the Gregory-Hansen cointegration test, as shown in Table 3.4, is reliable, in order to confirm this result, the study also applies the ARDL bounds testing approach to cointegration suggested by Pesaran et al. (2001). The ARDL model is constructed by considering the endogenously determined structural break identified through the Gregory-Hansen cointegration test. There is a pre-condition to select the optimal lag length of the variables before applying the ARDL bounds testing.

The F-test computation from the ARDL model is much more sensitive to lag length selection (Ouattara, 2006). Compared to SBC, the AIC criterion has superior properties, and it provides reliable and effective results which help capture the dynamic relationship among the variables (Lutkepohl, 2006). Thus this research uses the AIC criterion to get the appropriate lag length of the model. The outcomes of the ARDL bounds testing approach to cointegration in the existence of structural break are shown in Table 3.5.

Table 3.5 The ARDL bounds testing approach to cointegration results

F- statistics	Break Date	99% lower bound	99% upper bound
6.475	2012Q4	3.74	5.06

Table 3.5 indicates that the estimated F-statistic is greater than the UCB, which suggests the acceptance of the alternative hypothesis, i.e., the presence of cointegration at 1% significance level. This result confirms the cointegration relationship among FDI, economic growth, financial development, trade openness, and domestic investment in the case of India from 1997Q1 to 2019Q4.

After finding a cointegrating relationship among the series, the study explores the long-run and short-run estimates of FDI, economic growth, trade openness, and financial development on domestic investment in the case of India. Table 3.6 shows the long-run and short-run estimates of the variables.

Table 3.6 The long-run and short-run estimates results

Dependent variable (LnDI)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Long run coefficient				
LnFDI	-0.075***	0.028	-2.72	0.008
LnTO	0.358***	0.056	6.35	0.000
LnRGDPG	0.061***	0.021	2.98	0.004
LnFD	0.509***	0.173	2.95	0.004
Constant	-0.239	0.682	-0.35	0.728
Short run coefficient				
ΔLnDI	-0.365***	0.128	-2.86	0.005
ΔLnDI_{t-1}	-0.360***	0.108	-3.33	0.001
ΔLnDI_{t-2}	-0.495***	0.079	-6.28	0.000
ΔLnFDI	-0.072***	0.016	-4.46	0.000
ΔLnTO	0.132*	0.071	1.86	0.067
ΔLnTO_{t-1}	-0.112	0.071	-1.58	0.117
ΔLnTO_{t-2}	0.209***	0.064	3.25	0.002
ΔLnRGDPG	0.033***	0.008	3.83	0.000
ΔLnFD	0.273***	0.075	3.64	0.001
ΔLevelDummy	-0.036*	0.019	-1.85	0.068
Constant	-0.128	0.345	-0.37	0.712
ECT(-1)	-0.536***	0.154	-3.47	0.001
Adj. R-square	0.787			

Notes: * and *** show statistical significance at 10% and 1% levels, respectively. The model ARDL (4, 1, 3, 0, 0) is selected based on the AIC.

In relation to the long run, it is reported in Table 3.6 that FDI inflow is negatively related to domestic investment and is statistically significant at 1% level. This implies that FDI inflow crowds out domestic investment in India during the sample period. The results indicate that a 1% increase in FDI decreases domestic investment by about 0.075% in the long run. The cause behind the crowding-out effects of FDI on domestic investment might be huge competition from foreign firms, making it difficult for local businesses to survive in the market, and it crumbles the market share of domestic investors. These findings are consistent with the findings of Agosin & Machado (2005), Braunstein & Epstein (2002), Kumar & Pradhan (2005), and Udomkerdmongkol & Morrissey (2008).

The impact of financial development on domestic investment is positive and statistically significant at 1% level. A 1% rise in financial development increases domestic investment by 0.509%, *ceteris paribus*. The expansion of the broad money supply (M2), which is used as a proxy for financial development, helps in enhancing credit allocation to local firms, through which domestic investment stimulates. The results show that financial development is a major contributor to enhancing domestic investment. This result corroborates the findings of previous studies.

The results also indicate that trade openness has a positive impact on domestic investment and is statistically significant at 1% level. A 1% increase in international trade (export plus import) to GDP ratio is expected to cause domestic investment to go up by 0.358%, keeping all else constant. This finding is in line with the findings of Ndikumana & Verick (2008), Eregha (2012), and Ndikumana (2000) that trade openness positively affects domestic investment via knowledge and technology spillovers, but contradictory to Al-Sadiq (2013), who found an adverse impact of trade openness on domestic investment because of the consumers' preference towards imported products.

Economic growth is positively associated with domestic investment, and its coefficient is highly significant. It is observable that a 1% increase in real GDP growth rate raises domestic investment by 0.061%. This finding supports the view of Wai & Wong (1982), Adams (2009), Al-Sadiq (2013), and Ndikumana (2000), who noted that the country having faster economic growth experience more investment.

Table 3.6 also shows the short-run results. The impact of economic growth, financial development, and trade openness on domestic investment is positive and significant at 1% and 10% levels, respectively. However, FDI has a negative and significant impact on domestic investment. Therefore, this result confirms that in the short run, also FDI crowds out domestic investment.

The negative and statistically significant ECT (-1), i.e., -0.536, support the long-run relationship between the series in the case of India. The short-run divergence from the long-run equilibrium is adjusted by 53.6% each quarter.

Sensitivity analysis shows that the short-run model's error term satisfies all diagnostic tests, such as the LM test for serial correlation, Jarque-Bera test for normality, ARCH test, Breusch-Pagan-Godfrey test for heteroskedasticity and the Ramsey reset test. The Ramsey test shows that the functional form for the short-run model is correctly identified. The diagnostic test results are shown in Table 3.7.

Table 3.7: Diagnostic tests results

Test	F-Stat.	Prob.
χ^2 (Normal)	0.307	0.857
χ^2 (Serial)	1.092	0.367
χ^2 (ARCH)	0.102	0.750
χ^2 (HS)	1.818	0.055
χ^2 RAMSEY	1.74	0.166

Notes: χ^2 (Normal) is the Jarque-Bera normality test;

χ^2 (Serial) shows the Breusch-Godfrey LM test for autocorrelation;

χ^2 (ARCH) is the LM test for checking the ARCH effect;

χ^2 (HS) is the Breusch-Pagan-Godfrey test for heteroscedasticity;

χ^2 RAMSEY is the Ramsey test for omitted variables or functional form.

For checking the long-run and short-run stability of the parameters, the study applies CUSUM and CUSUMSQ tests. Figs 3.3 and 3.4 demonstrate the plots of both CUSUM and CUSUMSQ statistics. These figures show that the plots of both tests are within the 5% critical boundaries, indicating that both long-run and short-run estimates are stable.

Fig. 3.3 CUSUM test results

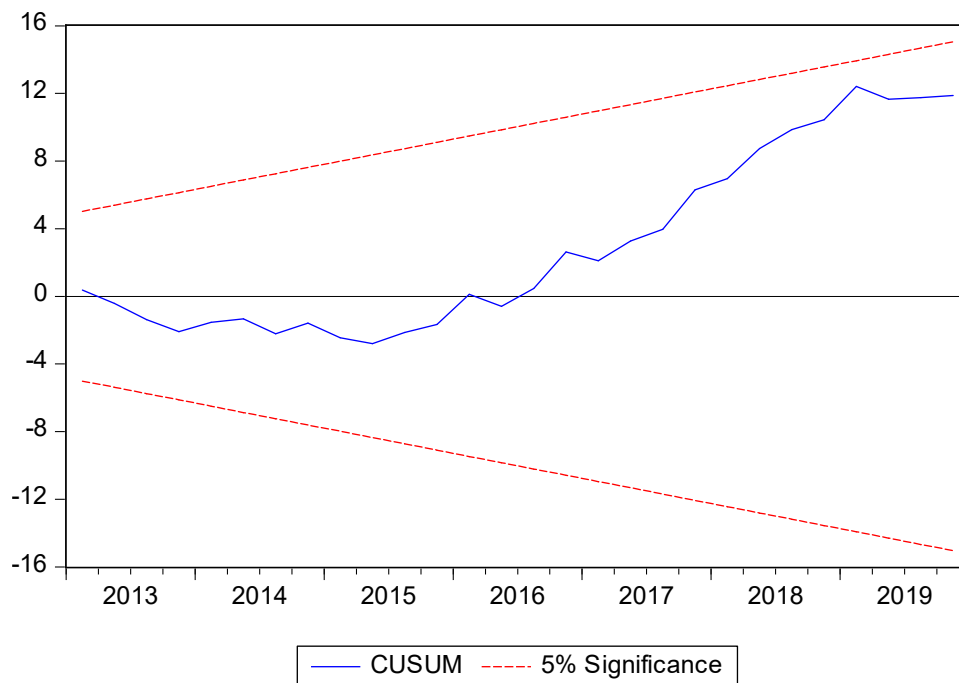
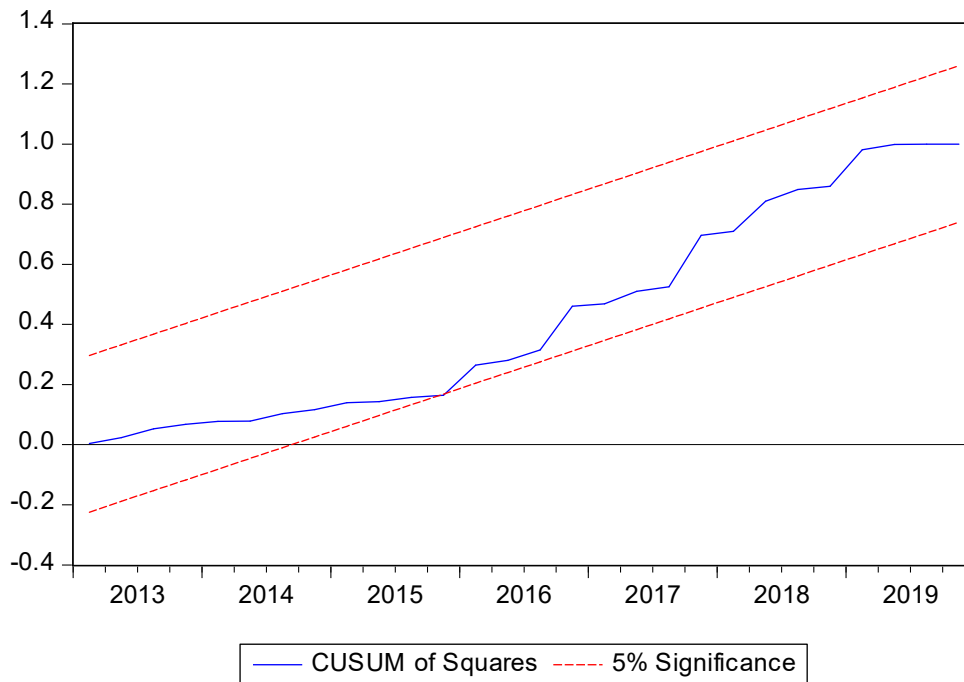


Fig. 3.4 CUSUMSQ test results



3.6 Conclusions

In literature, there are few studies that discuss the linkages between FDI and domestic investment in the case of India. Furthermore, the majority of the previous studies have used estimation techniques without considering structural break in the series. Moreover, the dramatic changes in FDI inflows into India over the period have drawn our attention to study whether this huge amount of FDI inflow has the desired effect on domestic investment. Specifically, to study whether FDI has a crowding in or crowding out effect on domestic investment of the country. These above concerns are the main incentives of this empirical study. Hence, this study aims to investigate the short-run and the long-run estimates of FDI on domestic investment in India using a multivariate model wherein economic growth, financial development, and trade openness are included as additional variables.

By considering the importance of structural break in the series, this study applies several suitable econometric techniques. The ADF unit root test and considering a structural break in series, the Zivot-Andrews unit root test suggest that except economic growth, all other variables are non-stationary at levels but became stationary after the first differences. Subsequently, for establishing the long-run relationships among the series, the Gregory- Hansen cointegration test and the ARDL bounds testing approach to cointegration are employed by considering the existence of structural break.

Once the above cointegration tests confirm the existence of a long-run relationship among domestic investment, economic growth, FDI, trade openness, and financial development, then using the ARDL model, the study estimates the long-run and short-run elasticity of domestic investment with respect to FDI, economic growth, trade openness, and financial development. This study points out that FDI has a significant crowding-out impact on domestic investment, while economic growth, financial development, and trade openness stimulate domestic investment in both the long run and short run.

Chapter 4

Sectoral and Sub-sectoral FDI Impact on Services Export: A Cross-Country analysis

4.1 Introduction

FDI and trade are the prime drivers of globalization and the integration process. The general consensus is that FDI and trade are both advantageous since trade may boost innovation, productivity, competitiveness, and diversification, while FDI encourages capital stock, creates new jobs, and facilitates technology transfer. As a result, developing countries have come under intense pressure from international organizations to promote FDI and trade to realize higher economic development and growth (Williamson, 2004).

From the era of Smith and Ricardo, there has been a long-standing tradition in economics that the external performance of a nation is a major factor in economic development. Indeed, the export-enhancing strategy produces several growth phenomena and elevates many people from poverty in East Asia and other regions (World Bank, 1993).

Exports favorably affect economic growth by facilitating improved resource allocation, effective management techniques, economies of scale, and production efficiency, which has been better known in the literature (Krueger, 1998; Zahler et al., 2014). However, other studies (Hallward-Driemeier et al., 2002; Wagner, 2007) empirically demonstrate that most productive enterprises engage in export due to scale economies, effective management, and production techniques.

Compared with other capital flows, FDI inflows are stable and significant, which helps fill the savings and foreign exchange gaps essential for sustainable development. Multinational corporations (MNCs) play a vital role in international trade as they are responsible for half of the global exports, according to the OECD (2018) estimates. Since MNCs hold a substantial share of global trade, it is reasonable to assume that FDI flows and trade are closely associated.

On the other hand, the growing literature on trade and multinational corporations reveals contradictory relationships between FDI and international trade. Foreign producers are encouraged to overcome trade barriers by setting similar plants in other markets due to trade

frictions (commercial policy, distance, transportation costs, etc.) characterized by market-seeking FDI and tend to substitute trade (Markusen, 1984). This type of investment is known as horizontal FDI. Contrarily, the complementary relation between FDI and trade takes place as cost differences may induce firms to divide the production process into stages: labor-intensive stages moving to low-wage countries and capital-intensive stages moving to industrialized countries, exploiting comparative advantages across industries (Helpman, 1984). This kind of FDI, commonly known as vertical FDI, maximizes the benefits from trade for all of its country participants.

Theoretically, the extra capital, managerial expertise, and technology that MNCs have, together with access to global, regional, and particularly home country markets, lead to simulative impacts of FDI on the recipient country exports (UNCTAD, 2002). According to the OECD (2018) estimates, MNCs account for nearly one-third of global GDP, i.e., 28%, and approximately a fourth of global employment.

Governments in developing and emerging countries focusing on growth have been trying to attract foreign investment with several attractive plans. Nowadays, FDI acts as the most significant foreign funding in these countries.

The emergence of service FDI is a recent development in global capital flows, gradually replacing traditional manufacturing FDI. The primary concern is whether the host countries will benefit from this shift. In the last two decades, services have been emerging as one of the fastest-growing sectors in the global economy, contributing more than 60% of the worldwide GDP and an even bigger portion of employment in many nations (Hoekman & Mattoo, 2008). Moreover, generating higher growth and employment, this sector has also attracted significant amounts of FDI (UNCTAD, 2009).

Furthermore, this sector contributes significantly to international trade. The ratio of the world's services trade to GDP increased to 14% in 2019 from around 8% in 1990 (WDI 2020). The global services trade represented one-quarter of all exports, with a value of US\$5.8 trillion in 2018, and one-third of merchandise exports, with a value of US\$5.4 trillion in 2017 (UNCTAD, 2019). Services exports primarily originate from developed economies. Over two-thirds of services traded internationally are provided by these (UNCTAD, 2018).

Most of the research in the existing studies concentrates on the aggregate FDI-trade link, based on the panel data or cross-sectional analysis and taking period averages. The study claims that the time dimension of data is crucial to capture the change in export growth resulting from a shift in FDI trends. However, as all the existing literature are static, this dimension is completely lost.

This study adds three new ideas to the existing literature. First, it is an in-depth industry analysis of FDI- service export linkages at the sector and sub-sector level by differentiating between manufacturing and services and within services among financial and non-financial, which goes much beyond the studies on exports and FDI at an aggregate level. In detail, the study aims to examine the sectoral FDI (manufacturing and service) impact on services exports and further the subsector FDI (financial & non-financial services) impact on services export by disaggregating the service sector into financial and non-financial services.

Secondly, this is the first systematic cross-country analysis at the disaggregated level of the FDI-export linkages using the widest and longest data span of 81 countries from 1990 to 2019. And also study the same linkages across different income group countries to control heterogeneity caused by the level of development. For this, the study breaks down the sample into the following categories: (1) low-income countries, (2) lower-middle-income countries, (3) upper-middle-income countries, and (4) high-income countries. This grouping has been drawn from the World Bank classification. As the number of countries in the low-income category is small, for this study, we include categories 1 and 2 together under low and lower-middle-income countries and categories 3 and 4 under upper-middle and high-income countries.

Thirdly, the study uses the Blundell-Bond GMM estimator (Arellano & Bover, 1995; Blundell & Bond, 1998) to study the FDI-export relationship in an unbalanced panel of 81 nations for the period 1990-2019. While adjusting for omitted variables and endogeneity biases, this estimation method enables us to study both the time dimension and country dimensions of the data. Many earlier studies suffer from endogeneity and simultaneity issues because the explanatory variables employed in the investigations are possible to interact with one another, or the dependent variable may influence the independent variables.

The endogeneity issue is a matter of great concern here, resulting from the joint determination of service export (dependent variable) and two independent variables (FDI inflows and service output growth). To control for endogeneity and reverse causality, we use the instrument matrices based on lagged levels and lagged differences of the crucial explanatory variables.

The rest of the chapter is structured as follows. Section 4.2 briefly reviews the literature, while Section 4.3 shows the methodology. Sections 4.4 and 4.5 show the data sources and stylized facts. Sections 4.6 and 4.7 summarize the result and concluding remarks, respectively.

4.2 Literature Review

One of the significant consequences of FDI is its effect on international trade. Theoretically, FDI may have substitutable or complementary relations with trade. Mundell (1957), with the help of a theoretical model, shows that FDI and trade substitute each other. Meanwhile, according to the new trade theory, FDI may substitute or complement trade following the nature of the investment (Dunning, 1980; Markusen, 1997; Helpman, E., Melitz & Yeaple, 2003).

Generally, FDI and exports are the two main ways through which firms can go into the global market. More precisely, firms will have to bear transportation and trade costs if they choose to export over FDI. In contrast, firms can avoid the above-mentioned costs related to export if they choose FDI over export. It indicates that to serve foreign markets, firms launch plants in overseas countries to overcome trade costs (Markusen, 1984). This is called horizontal FDI. Markusen (1984) and Markusen & Venables (1995) demonstrate that horizontal FDI is market-capturing or that these businesses enlarge overseas to overcome trade costs, resulting in a substitutionary relationship with the trade.

However, Helpman (1984) and Helpman & Krugman (1985) demonstrate a possible complementary relationship between FDI and trade when vertical FDI is the concern resulting from the geographical fragmentation of the production process based on the factor price differences across various nations. In turn, this leads to the intra-firm trade in intermediate goods, among the vertically integrated firm, through the exports of intermediate goods from the parent firm to the affiliate engaged in producing and selling final goods.

In theoretical literature, the existence of FDI and trade mainly depends on the category of FDI, that is, whether the FDI is horizontal or vertical. The proximity-concentration trade-off model, developed by Brainard (1993), demonstrates that a firm plans to enter the international market by exports when there are concentration advantages: low trade barriers, low transportation costs, and high investment barriers, while the opposite is the case in proximity advantages, which are related with horizontal FDI, resulted in the displacement of trade.

There are contradictory theories on the relationship between FDI and trade. In general, there are two channels by which FDI may impact the host country's exports.

One is direct impacts that depend on whether foreign-financed firms use resources in the host country and look for exports to other countries or just for the host country's market. The former is denoted as vertical FDI, based on relative factor endowments, driven by factor cost differentials, and deterred by trade costs. The latter is referred to as horizontal FDI, a market-seeking investment with the objective of domestic market penetration, and is attracted mainly by trade costs and market size (Demekas et al., 2007).

Addition to the direct effects of FDI outlined above, it is argued that FDI also has indirect effects on host country exports through spillover effects. It indicates exports of domestic enterprises can also be affected by foreign-owned enterprises (Helleiner, 1989; H. K. Zhang & Song, 2000). The local firms' competitiveness may also improve through the transmission of technologies, managerial know-how, entrepreneurial skills, and labor training from the MNCs (Sun, 2001; H. K. Zhang & Song, 2000).

However, FDI may also have a detrimental impact on the export of local firms due to the better human capital and technology that MNEs possess crowds out and negatively affects the export of domestic firms (Karpaty & Kneller, 2011; Ruane & Sutherland, 2005). In another way, the MNEs existence can result in a rise in the costs of factors of production. In this situation, domestic firms may be unable to contest with multination enterprises, and their exports might be adversely influenced by FDI (Melitz, 2003).

To study the influence of FDI to exports, Nwanna (1986) carried out a cross-country analysis by taking into account 23 less-developed nations. The empirical findings reveal that FDI have a direct favorable effect on exports. Though, the extent of the impact of FDI on exports varies

from one country to another. Harding & Javorcik (2012) find a favorable association between FDI inflow and the quality of export in developing nations.

Studies find a positive effect of FDI on export performance in Portugal (Cabral, 1995), China (K. H. Zhang, 2005), African countries (Hailu, 2010), Ireland (O'Sullivan, 1993). Although relatively scarce, some studies have shown that FDI inflows have a negligible or negative effect on domestic exports. Various cross-country analyses support a negative association between FDI and exports (Horst, 1972; Jeon, 1992). Additionally, some empirical studies find no significant relationship between the two variables (Gebremariam & Ying, 2022; Lall & Mohammad, 1983; Sharma, 2000).

To a certain extent, data aggregation influences the link between exports and FDI. Aggregate data may overstate the complementarity effect and conceal the existence of substitution effects. To address this issue, Blonigen (2001) examines product-level data for the Japanese automobile parts industry in the U.S. market. By concentrating on one product, he finds that the data do not hide the substitution effects; rather, there is evidence of both complementary and substitution effects.

Numerous studies on aggregate FDI show that it boosts exports, but such results cannot be generalized to a sector level. The service, manufacturing, and agricultural sectors each have unique features, so combining FDI inflow in different sectors possibly mislead the impacts. To put it another way, aggregation may result in aggregation bias (Shah et al., 2019).

Thus few studies have shifted their focus on studying the relationship between FDI and export at the sector or disaggregated level.

Onyekwena, C., Ademuyiwa & Uneze (2017) investigate the FDI and trade relationship between West African countries and the European Union by segregating the total export data into primary, intermediate, and final goods. The study finds that FDI has a positive impact on the export of primary goods, and a negative impact on the export of intermediate goods, while no significant impact on the final goods exports.

Ruane & Sutherland (2005), using enterprise-level data for the manufacturing sector of Ireland, find a negative association between host-country firms' export intensity and foreign-owned firms'

export sales ratios. It Indicating towards an adverse export spillover from FDI. Popovici (2018), while studying the effect of FDI on the export of the European Union's manufacturing and service sectors, finds that irrespective of the economic sector, FDI helps in enhancing exports, although the degree of the effect of FDI on exports is higher in the case of new European Union member states compare to old ones.

Cheong Tang & Wong (2011) find in the case of Cambodia that FDI inflows not only encourage service and merchandise exports but also produce favorable externalities through backward and forward linkages. Similarly, in the Newly Industrialized countries (NICs), Shah & Raza (2022) find FDI inflow is a important determinant of export in the services sector. Wong et al. (2009) find a bi-directional causality between FDI inflows and services trade in the case of Singapore, while there is no evidence of any causality in Malaysia. In comparison to inward FDI, it is acknowledged in the empirical literature that outward FDI may enhance exports of services. Grunfeld & Moxnes (2003), using 22 OECD countries data from 1999 to 2000, find a complementary relation between outward FDI and services trade. It shows that outward FDI has an impact on the trade in services through foreign affiliate sales.

Jithin & Babu (2021) find complementary linkages between financial services FDI and services trade, while a substitutionary association between non-financial services FDI and services trade in emerging nations. The results also demonstrate positive linkages between FDI in non-financial services and manufacturing trade.

From the above context, it is clear that the effects of FDI on export differ by sector and may not be consistent across all export groups. The diverse findings of empirical evidence show how controversial the topic is. Although the existence of FDI export spillover has been studied in the literature, very few studies have examined this effect at the sectoral and sub-sectoral levels. And no research to date has examined this for different income group countries.

4.3 Methodology

The study aims at estimating the effect of FDI on export performance by controlling the variables of growth rate, human capital, financial development, domestic investment, and inflation. The study tries to estimate the model based on previous studies on FDI and export linkages. The empirical model is as follows;

$$\begin{aligned} \ln EXP_{it} = & \beta_0 + \beta_1 \ln EXP_{i,t-1} + \beta_2 \ln GVA_{it} + \beta_3 FDI_{it}^k + \beta_4 GER_{it} + \beta_5 FD_{it} + \\ & \beta_6 GCF_{it} + \beta_7 Inf_{it} + \beta_8 \sigma^t + \mu_i + \varepsilon_{it} \end{aligned} \quad (1)$$

With $\mu_i \sim i.i.d. (0, \sigma_\varepsilon)$, $E[\mu_i \varepsilon_{it}] = 0$

Where $\ln EXP$ denotes the log of services exports as a share of GDP, and $\ln GVA$ shows the service sector growth in terms of log of per capita service value-added in constant 2015 U.S. dollar. FDI^k represents the net FDI inflow as a share of GDP into the k th industry; here, the k th industry represents manufacturing, aggregate services, and financial and non-financial services. GER is the gross secondary school enrollment ratio, used as a proxy for human capital, and FD shows the financial development measured by the domestic credit to the private sector by banks as a percentage of GDP. GCF shows the annual percentage growth in gross capital formation used as a proxy for domestic investments, and Inf represents the inflation measure through the annual percentage change in GDP deflator. μ_i is individual country-specific effects, and σ^t is represented by year dummies.

The study uses the dynamic Blundell-Bond system GMM estimator as it helps to eradicate the data endogeneity and reverse causality issue. In addition, it also allows us to exploit both the pooled country characteristics and time series dynamics of the data. The System GMM is a better approach to the fixed effects (FE) and pooled ordinary least squares (POLS) method, as the latter two methods fail to account for the dynamic of the processes and to correct the endogeneity problem.

Due to the association between the unobserved residual and lagged dependent variable, panel data are favored over cross-sectional data when assessing the changes in the dependent variable. Here, the association between $\ln EXP_{i,t-1}$ and μ_i leads the cross-sectional estimates to be a bias that is eliminated in samples with large time dimensions but persists with time averaging. Hence,

the presence of such an association indicating a dynamic structure and the techniques of time averaging cross-sectional methods produce a bias, which cannot be removed by accounting for fixed effects. Hence, the study uses GMM methodology to overcome these issues.

Arellano-Bond difference GMM and Blundell-Bond system GMM are two dynamic panel GMM estimators that are specifically developed to control the joint endogeneity of some regressors by constructing an internal instruments matrix.

In the Arellano-Bond difference GMM model, lagged-level observations are used as instruments for differenced variables, while the Blundell-Bond system GMM employs both lagged-level and lagged difference observations as instruments for differenced variables and level variables, respectively.

A necessary condition for applying difference and system GMM is that the error term should not suffer from the second-order serial correlation; else, the instrument standard errors will continue to expand without bounds. Because of this, Arellano & Bond (1991) proposed a second-order autocorrelation test.

These conditions are as follows:

(i) No second-order serial correlation in the error term:

$$E[\ln EXP_{i,t-p}(\varepsilon_{it} - \varepsilon_{i,t-1})] = 0$$

$$E[\ln GVA_{i,t-p}(\varepsilon_{it} - \varepsilon_{i,t-1})] = 0$$

$$E[FDI^k_{i,t-p}(\varepsilon_{it} - \varepsilon_{i,t-1})] = 0$$

$$E[x_{i,t-p}(\varepsilon_{it} - \varepsilon_{i,t-1})] = 0$$

For $p \geq 2$ and $t = 3, \dots, T$, where x_{it} consists of a set of control variables. GVA_{it} and FDI_{it}^k , are the service sector growth rate and sectoral FDI inflows, respectively, which are taken instrument with GMM-style.

The efficiency of the Blundell-Bond System-GMM estimator depends on another necessary condition; that is, while the unobserved country-specific effect is correlated with the regressors at levels, it is not connected with their differences.

(ii) No correlation of the unobserved country-specific effect with their differences

$$E[(\ln EXP_{i,t-1} - \ln EXP_{i,t-2})(\mu_i + \varepsilon_{it})] = 0$$

$$E[(GVA_{i,t-1} - GVA_{i,t-2})(\mu_i + \varepsilon_{it})] = 0$$

$$E[(FDI^k_{i,t-1} - FDI^k_{i,t-2})(\mu_i + \varepsilon_{it})] = 0$$

$$E[(x_{i,t-1} - x_{i,t-2})(\mu_i + \varepsilon_{it})] = 0$$

This allows lagged first differences to be used as instruments for levels. The endogenous variables in this study are the service sector growth and FDI inflows, which are taken with GMM-style instruments to control for reverse causality among these variables and the service exports variable.

To test the validity of the moment conditions, the system-GMM estimator verifies the validity of the instruments using the Sargan or Hansen test for over-identifying restrictions and a second-order serial correlation of the differenced error term.

4.4 Data and sources

Annual data are collected for a large number of countries covering 81 nations from the period 1990 to 2019. In the Appendix, a list of sample nations is given in accordance with their income levels under the following categories: (1) low-income countries, (2) lower-middle-income countries, (3) upper-middle-income countries, and (4) high-income countries. This grouping has been drawn from the World Bank classification. As the countries number in the low-income group is lesser, for this research, we include categories 1 and 2 together under low and lower-middle-income nations and categories 3 and 4 under upper-middle and high-income nations.

Except for the data on net FDI inflows, all other variables included in this study are taken from World Development Indicators (WDI), the World Bank. These include the services export, which is the dependent variable, and other explanatory variables are; domestic investment, service sector growth, inflation, financial development, and gross secondary school enrollment ratio.

The most important independent variable is FDI inflows as a share of GDP; both are in the current USD, and all FDI figures are net flows. The FDI inflow data on manufacturing, aggregate services, financial services, and non-financial services are taken from United Nations Conference on Trade and Development (UNCTAD), Division on Investment and Enterprise Data Extraction Service.

The control variables for this study are selected based on the foregoing empirical work. It is anticipated that the past value of services export will have a favorable impact on its current value since it may indicate a good export climate, i.e., a positive feedback effect. The right-hand side of the model includes a lagged value of services export due to the strong correlations between past and future export performance.

The level of economic activity is taken by the per capita service value-added; we expect the growth of the economy and its export to be positively related. A higher production level is the primary driver of export growth, as there is the possibility of consumption of surplus output in the global market.

Generally, domestic investment is incorporated in the model to differentiate the FDI effect on export from the investment effect on export. Domestic capital significantly affects the ability and competitiveness of an industry and, thus, its export performance. Hence, increased capital can improve the productivity and export potentiality of the industry. Domestic investment is a significant cause of export expansion found in the literature on the determinants of export performance (Erickson & Hayward, 1992; H. K. Zhang & Song, 2000).

A lack of improved human capital impedes the transfer of technology and learning, as well as the expansion and variation of export in low-income countries (Hausmann et al., 2007). More skilled and healthier workforce will possibly contribute to competitiveness, efficiency, and greater

services export. Hence, human capital is a crucial factor in determining service export performance (Seo et al., 2012).

Another crucial factor influencing export is the financial sector development. For instance, due to the development of the financial market, firms find it simpler and more affordable to finance their capital requirements, trade financing, as well as investments in technology up-gradation and innovation. As a result, they can export more (Sahoo et al., 2014). Finance has a favorable effect on the export of services, similar to the case of goods export, because it lowers the costs of exporting services, allows for rapid and efficient transactions, and makes certain that firms have access to working capital, which makes services exports more competitive (Beck, 2003). Therefore, financial development is expected to be positively correlated with services export.

Theoretically, there is an inverse relationship between export and inflation. Inflation in the domestic market makes goods and services costlier in the international market, which reduces the demand for domestic export in the foreign markets. High inflation is likely to be correlated with low exports (Gylfason, 1997).

4.5 Stylized facts

In this section, the study analyses some of the basic statistics on export growth and FDI inflows. The global aggregate services export has been shown in Fig. 4.1 for 1990- 2019, which increased by approximately 8- times, from US\$ 636 billion in 1990 to US\$ 5072 billion in 2019. The figure shows that services export decreased during the global financial crisis in 2008-09. They grew up again by 2010 and once again fell in 2015.

Fig. 4.2 shows sectoral FDI inflows by services, manufacturing, finance, and non-financial services in nominal terms. The service sector saw significant growth in FDI from 1990 to 2019, with a 7-times increase, from US\$ 91 billion to US\$ 632 billion. One of the sub-sectors receiving the highest FDI inflows is the non-financial services sector. FDI inflows into this sector increased eight-fold, from US\$ 64 billion to US\$ 545 billion. The financial services sector, which comes after the manufacturing sector, saw FDI inflows rise of 3 times, from US\$ 27 billion to US\$ 87 billion, while a 6-fold rise in FDI inflows, from US\$ 52 billion to US\$ 327 billion, was observed in the manufacturing sector.

Three panels have been created for our study: one includes all 81 nations, and the other two are divided by income categories. To further investigate FDI inflows to various sectors by the three panels, in Fig. 4.3, we show the averages of four series on an aggregate and disaggregate FDI as a share of GDP for each panel.

The descriptive statistics for these variables are provided in Table 4.1 for each panel to complement these. It appears that all categories of FDI are, on average higher in the upper middle and high-income countries, while the gap between the three panels is smaller in the case of manufacturing FDI, followed by non-financial services FDI.

Fig 4.1 Global Aggregate Services Exports

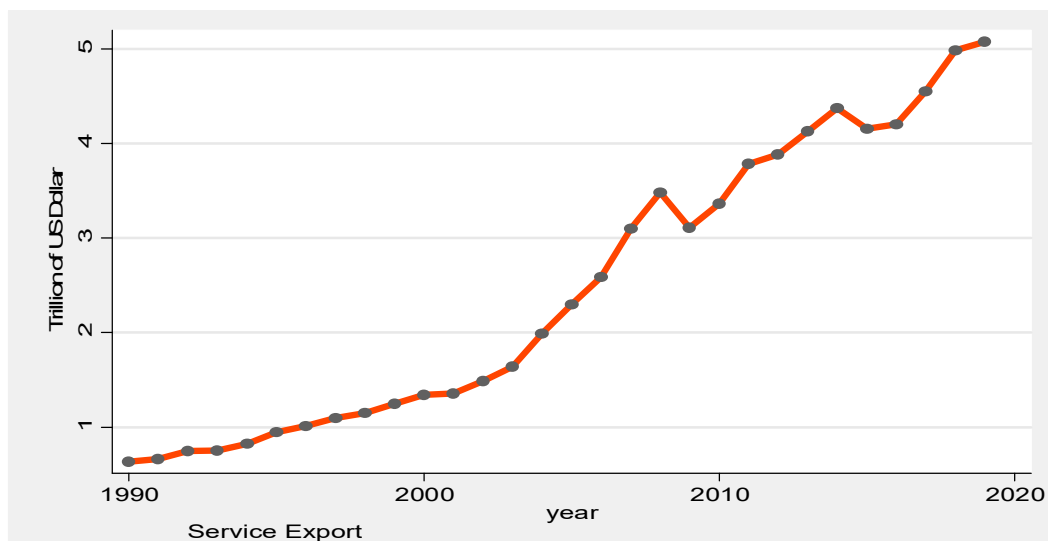


Fig 4.2 Global Sectoral FDI inflows

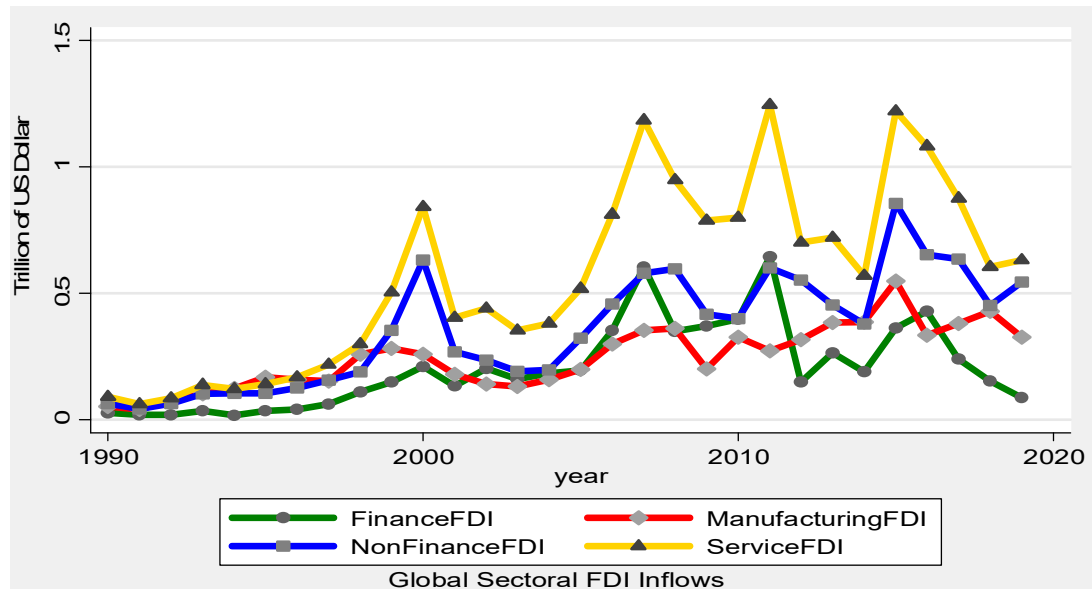


Fig 4.3 Averages of sectoral & sub-sectoral FDI as a share of GDP by panels

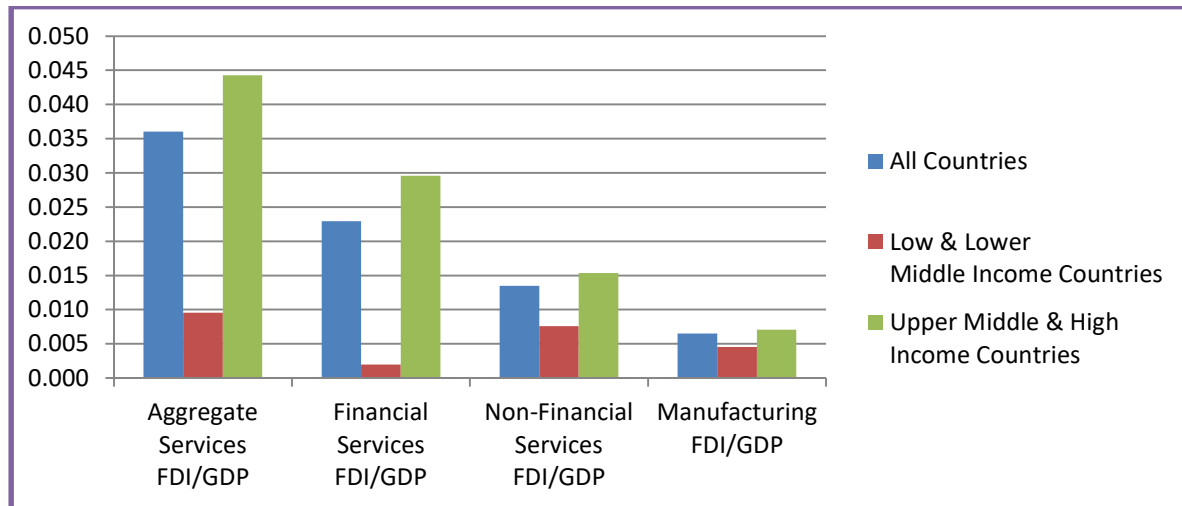


Table 4.1 Descriptive Statistics

Variables	Observation	Mean	Std. Dev.
All Countries			
Service Export Share of GDP	2233	0.107	0.137
Aggregate service FDI share of GDP	2393	0.036	0.259
Finance FDI share of GDP	2363	0.023	0.250
Non-Finance FDI share of GDP	2363	0.013	0.038
Manufacturing FDI share of GDP	2363	0.006	0.026
Per capita service value added	2168	34537	35923
GER	2123	87.824	25.740
Credit to private sector by banks to GDP	2108	56.245	44.397
Inflation	2362	31.164	256.473
GCF Growth	2235	5.534	28.877
Low & Lower-Middle Income Countries			
Service Export Share of GDP	514	0.063	0.044
Aggregate Service FDI Share of GDP	569	0.010	0.018
Finance FDI share of GDP	569	0.002	0.005
Non-Finance FDI share of GDP	569	0.008	0.016
Manufacturing FDI share of GDP	539	0.005	0.008
Per capita service value added	505	6017	3293
GER	442	60.483	24.754
Credit to private sector by banks to GDP	546	27.590	17.035
Inflation	568	46.170	334.178
GCF Growth	525	6.410	27.032

Upper-Middle & High-Income Countries			
Variables	Observation	Mean	Std. Dev.
Service Export Share of GDP	1719	0.121	0.151
Aggregate service FDI share of GDP	1824	0.044	0.296
Finance FDI share of GDP	1794	0.030	0.287
Non-Finance FDI share of GDP	1794	0.015	0.043
Manufacturing FDI share of GDP	1824	0.007	0.029
Per capita service value added	1663	43197	36838
GER	1681	95.013	20.679
Credit to private sector by banks to GDP	1562	66.261	46.601
Inflation	1794	26.413	226.290
GCF Growth	1710	5.265	29.422

Note: Per capita service value added is expressed in US\$ Million.

4.6 Empirical Results and Discussion

As considerable of the FDI effect is visible at the sub-sectoral level, variances within the service sector and disparities over the sectors make the study of total FDI-exports impacts ambiguous and deceptive. This may be the cause why earlier research on spillover effects from aggregate FDI finds mixed results and no general relations (Lipsey, 2004).

To tackle these issues, we examine the sectoral FDI (manufacturing and services) impact on services exports, and further to study at sub-sector levels, we disaggregate the services sector into financial and non-financial services in an unbalanced panel of 81 nations from 1990 to 2019. In other words, the study tries to investigate the impact of FDI on services exports at the sectoral level by studying the manufacturing and service FDI impact on services export and, further, at the sub-sectoral level, by analysing financial and non-financial services FDI effect on services export.

Our findings below demonstrate significant inter-sectoral disparities not visible in the aggregate FDI data analysis. To address the heterogeneity issue because of the development level, we divide the data by following income distribution processes: (1) low-income countries, (2) lower-middle-income countries, (3) upper-middle-income countries, and (4) high-income countries. This group has been drawn from the World Bank classification. As the countries number in the low-income group is few, for this research, we include categories 1 and 2 together in low and lower-middle-income nations and categories 3 and 4 under upper-middle and high-income nations, and then report the collective outcomes. Classifying the data into different income classes shows significant disparities between the groups.

The study gives some interesting results regarding the association between FDI and export by income groups and sectoral and sub-sectoral FDI, as shown in Table 4.2.

Table 4.2 summarises the empirical findings. It includes estimates of the major explanatory variables in the rows, and models with various categories of FDI are shown in columns (1-4); aggregate services FDI, manufacturing FDI, financial services FDI, and non-financial services FDI.

Table 4.2 Sectoral FDI Impact on Services Export across countries groups

All countries				
	Service FDI/GDP	Manufacturing FDI/GDP	Finance FDI/GDP	Non-Finance FDI/GDP
Log of Service Export (lag -1)	0.995*** (0.027)	0.974*** (0.032)	0.979*** (0.030)	0.992*** (0.024)
Log of Per capita Service Value Added	-0.042* (0.024)	-0.013 (0.024)	-0.031 (0.026)	-0.035 (0.027)
FDI/GDP	0.032* (0.017)	0.040 (0.074)	0.040* (0.023)	-0.076 (0.136)
GER(Secondary)	0.002** (0.001)	0.0010 (0.0007)	0.001* (0.001)	0.001** (0.0007)
Credit-GDP	0.0005* (0.0002)	0.0004 (0.0003)	0.0004* (0.0003)	0.0004* (0.0003)
Inflation	-0.00004** (0.00002)	-0.00003* (0.00002)	-0.00004* (0.00002)	-0.00004* (0.00002)
GCF annual growth	-0.0002 (0.0004)	-0.0003 (0.0004)	-0.0002 (0.0004)	-0.0002 (0.0004)
Number of observations	1572	1547	1554	1554
Number of groups	77	76	76	76
Number of instruments	168	168	168	168
AR(2) test	0.727	0.702	0.726	0.762
Hansen J test (P- Value)	1.000	1.000	1.000	1.000

Low & Lower Middle-Income Countries				
	Service FDI/GDP	Manufacturing FDI/GDP	Finance FDI/GDP	Non-Finance FDI/GDP
Log of Service Export (lag -1)	0.965*** (0.023)	0.945*** (0.026)	0.940*** (0.032)	0.950*** (0.023)
Log of Per capita Service Value Added	0.005 (0.039)	0.028 (0.032)	-0.032 (0.033)	0.015 (0.032)
FDI/GDP	1.011 (0.683)	1.423 (1.048)	1.623 (1.064)	1.202* (0.618)
GER(Secondary)	0.0004 (0.0006)	0.0008 (0.0008)	0.001 (0.0007)	0.0007 (0.0006)
Credit-GDP	0.0003 (0.0009)	0.0007 (0.0010)	0.001** (0.0008)	0.0004 (0.0010)
Inflation	-0.00005*** (0.00002)	-0.00007*** (0.00002)	-0.00004 (0.00004)	-0.00005** (0.00002)
GCF annual growth	0.002* (0.0009)	0.0018* (0.0010)	0.001* (0.0008)	0.0015* (0.0009)
Number of observations	353	328	353	353
Number of groups	18	17	18	18
Number of instruments	168	167	168	168
AR(2) test	0.615	0.533	0.573	0.635
Hansen J test (P-Value)	1.000	1.000	1.000	1.000

Upper Middle Income & High Income Countries				
	Service FDI/GDP	Manufacturing FDI/GDP	Finance FDI/GDP	Non-Finance FDI/GDP
Log of Service Export (lag -1)	0.985*** (0.030)	0.975*** (0.036)	0.980*** (0.035)	0.987*** (0.024)
Log of Per capita Service Value Added	-0.029 (0.025)	-0.036 (0.028)	-0.029 (0.025)	-0.029 (0.027)
FDI/GDP	0.031* (0.018)	0.049 (0.070)	0.036 (0.023)	0.013 (0.088)
GER(Secondary)	0.0013* (0.0007)	0.0015** (0.0007)	0.001* (0.0007)	0.0013* (0.0007)
Credit-GDP	0.0004* (0.0002)	0.0005* (0.0003)	0.0004* (0.0002)	0.0004* (0.0002)
Inflation	0.0004 (0.0005)	0.0003 (0.0005)	0.0004 (0.0005)	0.0006 (0.0005)
GCF annual growth	-0.0006 (0.0006)	-0.0005 (0.0006)	-0.0006 (0.0006)	-0.0007 (0.0006)
Number of observations	1219	1219	1201	1201
Number of groups	59	59	58	58
Number of instruments	168	168	168	168
AR(2) test	0.328	0.307	0.349	0.410
Hansen J test (P- Value)	1.000	1.000	1.000	1.000

Note: ***, ** and * denote significance at 1%, 5%, and 10%, respectively. Figures in parentheses are the robust standard errors.

At first, we observe strong support for the past value of services export, robustly strengthening the current services export across all the models and panels, indicating the sign of a good export climate. These results are consistent with the literature.

Looking at specific findings, Table 4.2 shows that in the full sample or all countries samples, services sector growth has a detrimental effect on services export and is significant in the model that controls for aggregate services FDI. It suggests that the production pattern is entirely market-oriented rather than export-oriented, which is consistent with the findings of Jithin & Babu (2021). The study also suggests that human capital & financial development have a significant positive impact on services export in all the models except that control for manufacturing FDI. It indicates that a well-developed financial system and better quality of human capital promote the export of services, which is in line with the findings of Sahoo & Dash (2017). However, inflation discourages export, which is consistent with the findings of Gylfason (1997).

Now, let's focus on the sectoral FDI inflows, the key explanatory variables of our interest. Our findings reveal different types of FDI flows impact service exports differently. Total services FDI in column 1 has a favorable and statistically significant impact on services export that can be recognized mainly by the contribution of financial services FDI, which is in column 3. A one-unit rise in inflows relative to GDP for FDI in financial services is connected with a 0.040 percent rise in services export. This favorable outcome is in line with the widely accepted notion that FD promotes export (Beck, 2003; Wamboye & Mookerjee, 2014). The financial development channel is believed to help businesses by easing funding restrictions. Our finding suggests that FDI in financial services is possible to help this diffusion channel.

In the case of “upper-middle and high-income panels”, better human capital & higher financial development are the two crucial factors in explaining the growth of services export for all the models. However, when sectoral FDI is taken into consideration, it is only significant in the model that controls for aggregate services. It indicates that FDI in aggregate services has a significant positive impact on services export. However, there is weak evidence of this effect derived from the finance industry.

For “low and lower-middle-income countries”, domestic investment significantly encourages services export. These associations are strong across models by different sectoral FDI flows and corroborate with earlier findings concerning the factors that influence the export of services. It also provides evidence of a significant negative impact of inflation on services export across all the models except the model that controls for financial FDI and a significant positive impact of financial development on services export in the model that controls for financial FDI.

When we come to Sectoral FDI flows, it is significant in the model that controls for non-financial services FDI, which might be resulted from the fact that the impact of most of the non-financial services FDI on the economy spreads out through the manufacturing sector instead of the service sector (Doytch & Uctum, 2011). However, the manufacturing sector is less reliant on innovation technology; rather, it depends more on imitation technology that employs a less skilled workforce (Aghion et al., 2009). Hence, deriving positive spillover requires employing a low-skilled or cheap labor pool than a highly educated labor pool (Doytch & Uctum, 2019) which is the case in low and lower-middle-income countries.

It indicates non-financial services FDI tends to boost the export of services, or FDI in non-financial services plays a complementary relation with services export in this group. This result can be substantiated by studying the above relations at the individual country level and considering their policy initiative towards attracting FDI in non-financial services, which induces services export. The study here presents four individual country cases of the low and lower-middle-income countries. These are India, Pakistan, Bangladesh, and Egypt, which are discussed below in detail.

India

Fig 4.4 (a)

Trend of Non-finance Service FDI

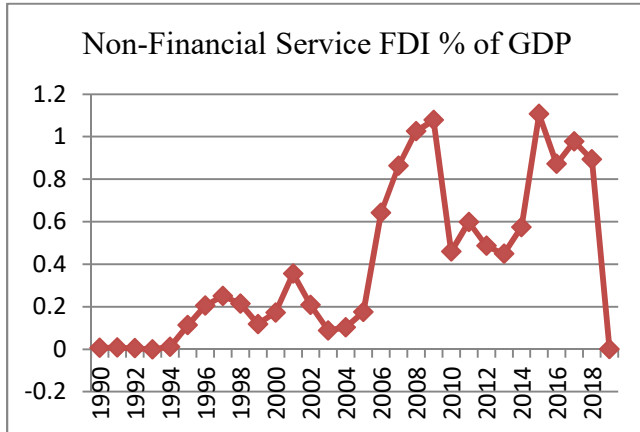
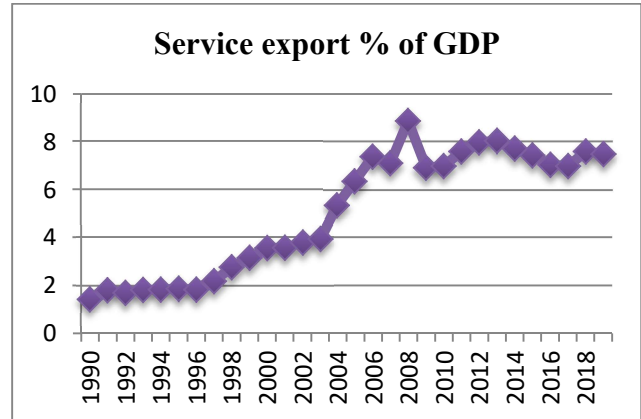


Fig 4.4 (b)

Trend of Service Export



The above figure 4.4 (a) & (b) shows that FDI in non-financial services and services export follow the same trend, indicating a positive relationship between the two.

Following the liberalisation policy of 1991, FDI in non-financial services rose steadily in India from 1994 to 1997. After that, India experienced a downfall in overall FDI inflow in the next two years, which might be credited to several factors, such as; the overall slowdown in the growth of the Indian economy, the decline in global cross-border financial flows, particularly to East Asian developing countries, primarily brought on by the Asian financial crisis of the late 1990s; and political unrest and inadequate domestic investments. During this period, the non-financial services FDI also followed the declining trend, as the sub-sectors like telecommunication, transportation, computer software, and energy hold a large share of total FDI.

Again after 2001, FDI inflows did not experience any expansion and generally fell due to the Gujarat earthquake in January 2001, the terrorist attack on the Indian Parliament in December 2001, and the World Trade Organisation (WTO) terrorist attack in September 2001.

Following 2005–2006, there was an upsurge in FDI inflows as a result of various FDI-attracting policy initiatives taken by GOI. Importantly, the government announced a revised FDI policy in March 2005, including the decision to permit FDI up to 100% of an Indian company's equity

through the automatic route in townships, housing, built-up infrastructure, and construction development projects. Also, this year, the SEZ Act was passed, bringing new opportunities for foreign companies to participate in the Indian economy by developing the zones or establishing operations in zones that offer a specific incentive.

However, after 2009 FDI inflows slowed down from growing significantly due to the financial instability caused by the United States subprime crisis in 2008 and the subsequent Euro crisis in 2012–2013. Adverse effects are caused globally by a drop in investors' confidence and declining global growth prospects.

The revival signs for FDI inflows only began to emerge in 2014 as a result of the make-in-India policy initiative taken by the GoI. The policy relaxes FDI norms as well as allows 100 per cent FDI under the automatic approval route to the sub-sectors like construction, tourism & hospitality, wellness, information technology & business process management, railways, roads, and highways, etc.; it also opens up the defense sector by allowing FDI up to 49 per cent, consequential increase in FDI in non-financial services sector.

Pakistan

Fig 4.5 (a)

Trend of Non-finance Service FDI

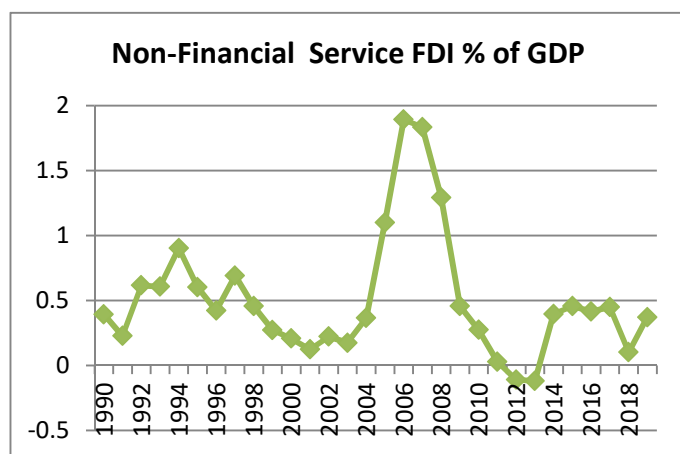
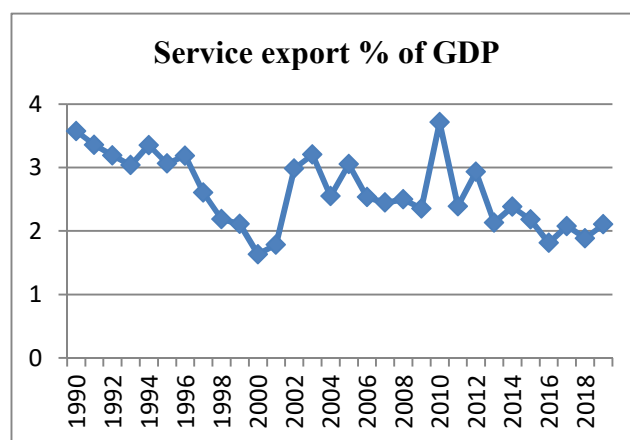


Fig 4.5 (b)

Trend of Service Export



As illustrated in Figure 4.5 (a) & (b), both non-financial services FDI and services export follow more or less the same trend. In other words, there is a direct relationship between non-financial services FDI and services export, which indicates that FDI in non-financial services positively affects the export of services.

Following policy measures of the 1990s, Pakistan performed well and attracted a relatively higher amount of FDI in non-financial services as the trade and commerce industries received a significant amount of FDI on an average share of 36.2 percent of total FDI between 1990-1994, and the energy sector which attracted a substantial amount of FDI following the 1994 Power Policy.

Pakistan tested its nuclear missiles in 1998 in an effort to gain access to atomic power globally. Consequently, it faces various international economic sanctions, resulting in a decline in FDI, particularly in the energy and power sectors. Political instability and the security situation are the two other significant potential causes for the decline in FDI.

To entice foreign stakeholders to the services sector, particularly in telecommunications, the government adopted liberal investment policies in the form of the Telecom Deregulation Policy in 2003 and the Cellular Mobile Policy of 2004. The telecom industry began to expand following the liberalisation policy announced by PTA (Pakistan Telecommunication Authority). The amount of FDI in the telecom sector increased significantly and accounted for 21.13% of total FDI in 2003–04. After this, it rose steadily and reached 54.11% of total investment in 2005–2006. Then in the subsequent years, this growth started declining due to political disturbances in the country. The global financial crisis of 2008 is also responsible for this decline.

To attract foreign investment, Pakistan developed an Investment Policy in 2013 that further liberalised investment policies in most sectors. Again in April 2015, Pakistan signed an agreement with China, namely China-Pakistan Economic Corridor (CPEC), for economic cooperation. Infrastructure development and energy production are the key focus areas of CPEC.

Except for the aviation, banking, agriculture, and media sectors, the 2013 Investment Policy removed minimum initial capital investment rules across sectors and allowed for no minimum investment requirement or maximum share of foreign equity. In the services sector, foreign investors may retain 100 percent equity, provided they have permission, a no objection

certificate, or license from the respective authority, along with meeting the criteria of the relevant sectoral policy. One hundred percent foreign ownership is permitted in the infrastructure, health, and education sectors.

The majority of analysts believe that the increased FDI in FY2018 was largely due to better macroeconomic stability, large energy projects under CPEC, and improved security conditions.

Bangladesh

Fig 4.6 (a)

Trend of Non-finance Service FDI

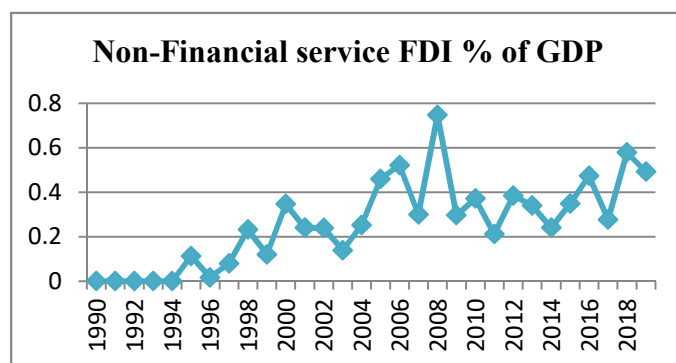
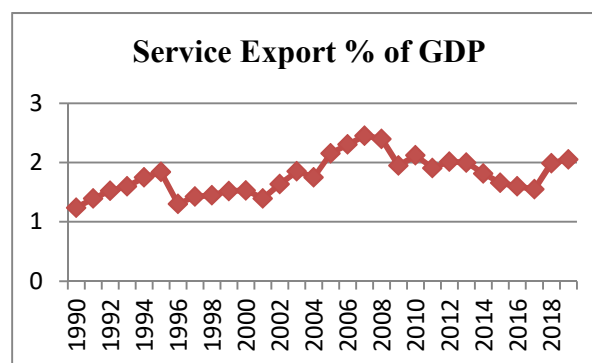


Fig 4.6 (b)

Trend of Service Export



As illustrated in Figure 4.6 (a) & (b), there is a direct relationship between non-financial services FDI and services export. It is seen that when the inflow of FDI in non-financial services is positive and has an upward trend, there is positive growth in the services export. Contrary to this, when non-financial services FDI has a downward trend, the services export growth is also negative and follows a downward trend.

In the late 1980s and the 1990s, Bangladesh announced a number of measures and liberalized its FDI policy framework by offering attractive investment opportunities to foreign investors. The energy and power sector, a sub-sector of non-financial services, is one of those sectors in Bangladesh where FDI has been promoted through various policy supports because of the significant investment required to meet the nation's energy demands. Along with liberalising the

energy sector, the government also relaxed capital controls by reducing bureaucracy, enabling private companies to take foreign loans without seeking government approval.

The figure shows that FDI inflow into non-financial services increased between 1997-98 and 2000-01, which may be due to the dominance of the power, and gas and petroleum, i.e., the energy sectors. These received 21% and 24% of net FDI inflows from 1996-97 to 2000-01, but after that, they began to fall as gas field blowouts took place that prompted legal action by the government against foreign businesses.

The graph clearly exhibits an upward trend of non-financial services FDI during 2005-2008 due to the dominance of FDI inflow in the telecommunication sector.

However, between 2008 and 2009, Bangladesh's total FDI inflow decreased by almost 34%. This decline can be explained by a 60% decline in the telecom sector over that time period, according to UNCTAD's World Investment Report 2010. This downturn was influenced by the uncertainty that emerged due to the renewal of mobile operator licenses, which were set to expire in 2011.

In terms of net FDI inflows, the previous leaders, namely gas and petroleum, and power, remained significant but were now ranked fourth and fifth, respectively.

After a few years, there is further change in the sectoral composition of FDI inflows. This time, the power industry is under focus. In recent years, it has become the leading destination for FDI inflows across all sectors. It may be due to the implementation of the Power Sector Master Plan (PSMP) 2010 for 2010–2030 to avoid further power crises the country already experienced in 2009. The generation plan targets 8% growth and universal access to electricity by 2021. Telecom FDI remains significant during this time is not surprising due to the continuous increase in mobile phone use.

From the above figure, the year 2008 received the highest FDI inflows into non-financial services, followed by 2006. The figure also shows that the FDI inflow into Bangladesh is not consistent. This might occur due to the nation's political instability, poor infrastructure, bureaucracy, insufficient fiscal and financial incentives toward foreign and non-resident Bangladeshi investors, etc. Political turmoil and poor infrastructure are thought to be the two main contributing factors.

Egypt

Fig 4.7(a)

Trend of Non-finance Service FDI

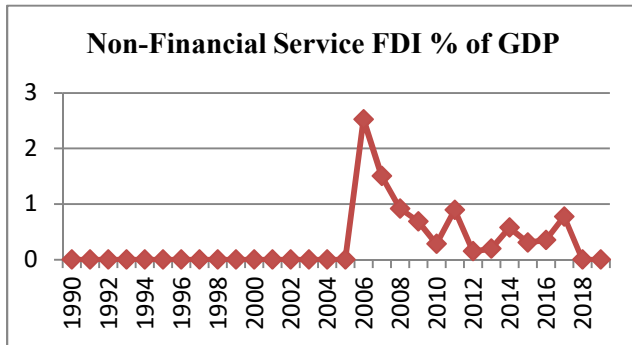


Fig 4.7(b)

Trend of Service Export

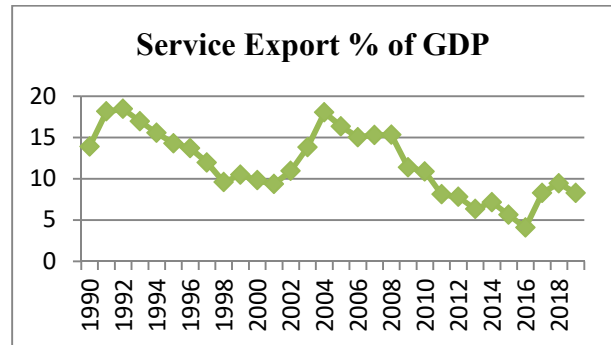


Figure 4.7 (a) & (b) demonstrates a positive association between FDI in non-financial services and services export. When inflows of FDI in non-financial services are negligible or have a downward trend, the export of services declines steadily or shows a downward trend. On the other hand, when FDI in non-financial services has an upward trend, the service export growth is positive and follows an upward trend.

In the 1990s, capital inflows into developing economies increased, particularly in the form of FDI. However, Egypt attracted low levels of FDI or a negligible amount of FDI in non-financial services, both in absolute and relative terms. Two causes were primarily responsible for the lower level of FDI inflows in the 1990s. At first, during the first half of the 1990s, contractionary domestic policies related with the Economic Reform and Structural Adjustment Program (ERSAP), which was launched in 1991 to control inflation, lower the government's deficit, and remove various price distortions, unintentionally decreased Egypt's attractiveness to FDI. Secondly, the positive effects of the successful implementation of the ERSAP could not be realized due to adverse shocks caused by the 1997 Luxor massacre and the 1997-1998 East Asian economic crisis.

In the mid-2000s, a dramatic increase in FDI inflows to the ICT sector resulted in a significant and positive change in FDI to the non-financial services sector. From 2006 to 2009, the ICT sector received real FDI inflows of 3 billion Egyptian Pounds, which is more than double the total amount received in all previous years.

This drastic change in FDI flows can be attributed to a number of factors, including the 2005 deregulation of the telecommunications industry, the emergence of public-private partnerships in the information and communications technology (ICT) sector, and the creation of regional call centers for the offshoring IT and IT system services (AmCham Egypt, 2008). The development of Giza's so-called "Smart Village" for the IT sector made these possible (UNCTAD, 2011). However, the global financial and economic crisis of 2008–2009 severely affected the IT and communications sectors. As a result, FDI inflows into these industries decline both in absolute and relative terms. FDI flows again experienced a downfall in 2011 due to political instability, severe security concerns, and massive labour protest following the January 25 Revolution.

The dollar exchange rate to the Egyptian pound is expected to drop as demand pressure from withdrawing foreign investors decreases. The Egyptian government declared on November 3, 2016, that it would float the Egyptian pound in an attempt to restore the nation's economy, which has been in a downturn since 2011. To regain macroeconomic stability and growth, in 2016, Egypt floated its currency and started a domestic economic reform programme funded by an IMF loan of \$12 billion.

In sum, all the above four countries validate the result that FDI in non-financial services positively affects the services export.

Additionally, the study results also show that the manufacturing FDI has no significant impact on services export across the panels, which implies the study does not find any evidence corroborating the hypothesis of cross-sectoral effects. The alterations result that we see across sectors and panels may be motivated by the diverse economic conditions prevalent in each group of countries.

As noted earlier, the Hansen J test for over-identification and the tests for serial correlation of the differenced error term are performed by the system-GMM estimator to verify the soundness of the moment conditions. The p-value of the test, which is presented at the bottom of each panel result, shows that the null hypothesis of the validity of the instruments cannot be rejected. Additionally, the differenced error terms do not show any second-order serial correlation, according to the second-order serial correlation test.

4.7 Conclusion

This research tries to provide evidence for the effect of sectoral and sub-sectoral FDI on the growth of services export. First, the study divides FDI inflows into the manufacturing and services sector, and then within services, it divides them into financial and non-financial services. The analysis covers 81 countries over a long period, from 1990 to 2019.

To reduce heterogeneity bias caused by the level of development, we divide the sample based on income distribution measures, following the world bank classification. And study the same effects across different income groups, namely low-income, lower-middle-income, upper-middle-income, and high-income countries. Due to the few countries number in the low-income group, for this study, we combine the “low-income with lower-middle-income countries and upper-middle income with high-income countries”. Based on our information, this is the first study to inspect the impacts of sectoral and sub-sectoral FDI on services export while controlling for the key determinants of services exports: service sector growth, human capital, domestic investment, financial development, and inflation.

The study employs a dynamic panel Blundell-Bond system GMM estimator to control for the potential endogeneity and reverse causality issues.

The study provides several new findings next to a regression analysis employing the dynamic panel Blundell-Bond GMM estimator. We observe that the results vary significantly in accordance with the category of capital inflow and the income group. When the data is grouped on the basis of income, the study finds that in the full or all-country sample, foreign investment promotes the export of services in the models that control for FDI in aggregate services and

financial services. Hence, the result supports a complementary relationship between financial services FDI and services exports as well as between aggregate services FDI and services exports. It indicates that FDI in financial services supports the favorable impact of aggregate services FDI on services export.

The study also discovers that in low and lower-middle-income countries, non-financial services FDI significantly contributes to the growth in services export, which mostly occurs through the manufacturing sector (Doytch & Uctum, 2011). However, the manufacturing sector depends more on imitation technology, which requires a low-skilled or cheap labor pool, and is less reliant on innovation technology which requires a rich supply of highly educated workforce for deriving positive spillover to the economy (Aghion et al., 2009). It indicates that FDI in non-financial services complements the export of services in this group.

In contrast, for the upper-middle & high-income countries, the study finds that aggregate services FDI significantly contributes to the increase in services export. However, there is weak confirmation of the positive impacts of aggregate services FDI on services export derived from the finance industry or financial services FDI.

Additionally, the study could not find any connection between services export and manufacturing FDI across the panels, indicating no evidence of cross-sectoral spillover effects.

Chapter 5

Summary, Conclusion, and Scope for Future Research

5.1 Summary of the Study

There have been increasing efforts to attract FDI due to the belief that FDI has several positive effects, including efficiency gains, hosting new procedures to the local market, technology transmissions, global production networks, managerial skills and know-how, and access to markets. In addition to this, policymakers more often favour FDI over other types of capital flows because of the belief that it is more stable and does not become a part of the stock of external debt in the recipient nation.

There has been a lot of discussion in the literature about the relationship between FDI and economic growth, but the results of these studies are still inconclusive. In the literature, many studies suggest that FDI inflow plays a crucial role in increasing the economic growth of a nation. However, many other studies do not find any statistically significant links between FDI and economic growth. Few studies find that the FDI and growth relationship depends on the absorptive capacity of the host countries. Different types of absorptive capacities are discussed in the literature, for example, trade regime, human capital, infrastructure, financial market development, economic development, etc. The local financial market development is one of the absorptive capacities, which has been gaining increasing consideration over the period of time (Alfaro et al., 2004; Hermes & Lensink, 2003; Omran & Bolbol, 2003).

All these debates inspired this thesis to work on these issues and make an effort to inspect and see the role of financial market development in inducing the impacts of FDI on economic growth in Indian states over the period of 2001-2018. And further, the focus has been given to see whether FDI inflows have a crowding-in or crowding-out impact on domestic investment in India. The rate of substitutability and complementarity between FDI and domestic investment determines the level to which FDI boosts economic growth (De Mello, 1999). Lastly, the study makes an attempt to analyse the export impact of the FDI at the sectoral and sub-sectoral level or the impact of sectoral (manufacturing & service) FDI and sub-sectoral FDI (financial service &

non-financial service) on the export of services across 81 countries. In particular, the study wants to see the broad impacts of FDI on the economy based on the gaps found in the literature. Hence, the thesis concentrated on three areas: economic growth, domestic investment, and export.

Consequently, the thesis set three different objectives as follows,

1. To examine the role of financial market development in the FDI and growth relationship in select Indian states.
2. To examine whether FDI inflows crowd in or crowd out domestic investment in India.
3. To examine the sectoral FDI (manufacturing and service) and sub-sectoral FDI (financial & non-financial services) impact on services export across different income group countries.

This chapter summarises the findings, along with some concluding remarks and policy suggestions.

5.2: Findings

5.2.1 FDI and Growth Nexus, the role of financial development: Evidence from Select Indian States

The study examines the role of financial market development in influencing the impacts of FDI on economic growth using six Indian states over the period 2001-2018. The overall findings suggest that financial development and output growth are positively related, while FDI have an adverse impact on output in the long run. The negative impact of FDI inflows on economic growth in India can be explained by the motive of overseas stakeholders to capture the large local market or exploit natural resources. And the unequal diffusion of FDI inflows to different states of India is another reason for the limited growth effects of FDI (Chakraborty & Mukherjee, 2012). The result shows that the direct impact of FDI on economic growth is negative and significant. The financial market development increases economic growth, implying that the development of the financial market facilitates more production in the long run by facilitating easy credit availability to domestic firms, who face the issue of credit constraint while expanding

their production and innovation. This finding is consistent as financial market development is measured as an essential element of economic growth.

Furthermore, the interaction of FDI and FD has a favorable and significant impact on economic growth. The positive result of the interaction effect is also consistent and relevant as the countries can derive positive growth benefits from FDI through financial market development. It indicates the improvement and efficiency of the financial market help the domestic firms who are facing the issues of credit constraints for adopting advanced technology, which comes with foreign firms or FDI; this eventually leads to economic growth in the long run. The adaptation of advanced technology is possible through the purchasing of the new machine and hiring skilled labour etc. The positive and significant interactive effects show complementary linkages between FDI and FD for impact on economic growth. Therefore, the conclusion can be drawn that the effect of FDI on economic growth is encouraged by the level of financial market development. Hence, though FDI has no direct positive effect on output in the long run, it indirectly stimulates economic growth in Indian states through financial market development.

5.2.2: FDI and Domestic Investment: Evidence from India

The study wants to analyse whether the dramatic changes in FDI inflows into India over the past years have the desired impact on domestic investment or whether it has a crowding in or crowding out effect on the domestic investment of the country. Therefore, this study aims to analyze the short-run and the long-run estimates of FDI on domestic investment in India using a multivariate model wherein economic growth, trade openness, and financial development are included as additional variables over the period from 1997Q1 to 2019Q4. By considering the importance of the existence of a structural break in the time series, this study applies the Zivot-Andrews unit root test to see the stationary properties of the series in the existence of a structural break. For establishing the long-run association between variables, the Gregory- Hansen cointegration test and the ARDL bounds testing for cointegration are employed, focusing on the existence of structural break.

The analysis reveals that FDI inflow is negatively and significantly related to domestic investment in the long and short run. This implies that FDI inflow crowds out domestic investment in India during the sample period. The cause behind the crowding-out impacts of FDI on domestic investment might be huge competition from foreign firms, making it difficult for local businesses to survive in the market, and it crumbles the market share of domestic investors. While in both the long run and short run, the impact of economic growth, financial development, and trade openness on domestic investment is positive and significant. This can be explained in this way by the expansion of the broad money supply (M2) used as a proxy for financial development that helps enhance credit allocation to local firms, through which domestic investment stimulates. Further, trade openness can favorably impact domestic investment via technology and knowledge spillovers. Moreover, economic growth is positively connected with domestic investment and is consistent with the notion that the country having faster economic growth experiences more investment.

5.2.3: Sectoral and Sub-sectoral FDI Impact on Services Export: Cross-Country Evidence

The study tries to substantiate the effect of sectoral and sub-sectoral FDI on the growth of services export. First, the study divides sectoral FDI inflows into the manufacturing and services sector, and then within the service sector, it divides sub-sectoral FDI into financial and non-financial services. The analysis covers 81 countries over a long period, from 1990 to 2019. To reduce heterogeneity bias caused by the level of development, we divide the sample countries by income distribution processes, following the world bank classification. And study the same effects across different income groups, namely “low-income, lower-middle-income, upper-middle-income, and high-income countries”. Due to few countries number in the low-income group, for this study, we combine “the low-income with lower-middle-income countries and upper-middle income with high-income countries”. The study employs “a dynamic panel Blundell-Bond system GMM estimator to control for the potential endogeneity and reverse causality issues”.

The findings recommend that in the full or all-country sample, foreign investment promotes the export of services in the models that control for FDI in aggregate services and financial services. Hence, the result supports a complementary relationship between financial services FDI and services exports as well as between aggregate services FDI and services exports. It indicates that there is evidence of the positive effects of aggregate services FDI on services export derived from the finance industry or financial services FDI.

Furthermore, in low and lower-middle-income countries, non-financial services FDI significantly contributes to the growth in services export. This might be a result of the fact that the impact of most of the non-financial services FDI on the economy spreads out through the manufacturing sector instead of the services sector (Doytch & Uctum, 2011). However, the manufacturing sector is less reliant on innovation technology; rather, it depends more on imitation technology that employs low skilled workforce (Aghion et al., 2009). Hence, deriving positive spillover requires employing a low-skilled or cheap labor pool compared to a high-skilled labor pool (Doytch & Uctum, 2019) which is the case in low and lower-middle-income countries. It indicates non-financial services FDI is complementary to services export in this group.

Additionally, for the upper-middle and high-income countries, aggregate services FDI significantly contributes to the increase in services export. However, there is weak support for the positive effects of aggregate services FDI on services export derived from the finance industry or financial services FDI. Moreover, the study could not find any connection between services export and manufacturing FDI across the panels, indicating no evidence of cross-sectoral spillover effects.

5.3 Policy Recommendations

This thesis offers some essential policy insights for the host countries to derive positive benefits from FDI inflows. The results indicate that FDI has no direct positive impact on the output growth of Indian states; it has only an indirect impact on stimulating economic growth through financial market development. Hence, the states should focus on increasing the extent and efficiency of the financial market development for extracting the positive benefits from FDI inflows toward economic growth. In another way, we can say that the states should not only focus on attracting more and more FDI inflows by providing favorable environments like lower taxes, environmental protections, wages, and working conditions, which may generate adverse FDI externalities. It should also focus on increasing the absorptive capacities of the economy by strengthening the financial market, which helps in attracting more FDI and the benefits derived from it.

Moreover, findings also show that FDI inflows have a significant crowding-out impact on domestic investment in India in both the long and short run. It suggests that policymakers should not simply believe that inflows of FDI always help in increasing the ability to produce in the economy. Mostly, the motive of foreign stakeholders is to capture the local market or exploit natural resources. Appropriate FDI policies and regulations are necessary to gain from FDI. For instance, on the one hand, host countries need to encourage FDI inflows, and at the same time, they should also regulate MNEs to take on export responsibilities. Especially quality FDI must be promoted in India to invest in underdeveloped regions.

In addition, the study finds that in the full sample or all country sample FDI in aggregate services and financial services promotes the export of services, while in the upper-middle and high-income countries, aggregate services FDI only significantly contributes to the increase in services export. In contrast, in low and lower-middle-income countries, non-financial services FDI significantly contributes to the growth in services export. It indicates the effect of service FDI on the export of services seems to differ across country groups. Hence, the policy decisions regarding the FDI inflows into the service sector should be on the basis of the development level of the country. Especially, policies for sub-sectoral FDI within the service sector must be the top priority, i.e., whether MNEs are going to invest in financial services or non-financial services.

5.4 Limitations and Scope for Future Research

5.4.1 Limitation

The present study is not free from limitations, which are discussed below

1. One of the most important limitations of the study is the data availability constraints. The selection of the states in the study sample is based on the availability of FDI inflows data for individual states, which is only available for six states; other states data are available group-wise.
2. The study applied aggregate-level data to see the crowding-in or crowding-out effect of FDI inflows on domestic investment. Using aggregate data at all India levels may omit some essential hidden information, which may give biased results. Hence, using disaggregated data at the industry level can provide richer information with better results.
3. Due to less number of nations in the low-income categories for the analysis, we combined low income with lower middle income and upper middle income with high income; combining two heterogeneous groups of countries within one group may not provide richer information.

5.4.2 Scope for Future Research

There are some gaps in this study that can be taken forward in future

- Since 2019, DPIIT has been providing FDI Inflows data for each and every individual state. So, future research can be done by covering all the states of India, which may help in making a better comparison between different regions of India and helpful in providing better policy implications.
- Future research can focus on the complementary or substitutionary impact of FDI on domestic investment in different industries of the manufacturing sector, where domestic investment in the form of fixed assets plays an important role in stimulating growth.

- It would be more interesting if, apart from looking at the financial and non-financial services FDI impact on the services export, future research focused on the impact FDI inflows to different industries of the service sector on services export. For example, the impact of capital flows to industries within the service sector like ICT, Trade, Transportation & Storage, Construction, and Business activities on the services export.
- Additionally, future research could focus on analysing the threshold level of financial market development means at what level of financial development a state can benefit from FDI. Because even with the improvement of financial markets, a threshold level of financial market development must be there to derive positive benefits from FDI inflows toward economic growth.

Appendix

Low-Income Countries

Mali, Mozambique, Syrian Arab Republic, Tajikistan.

Lower-Middle Income Countries

Algeria, Bangladesh, Bolivia, Egypt, Arab Rep., El Salvador, India, Kyrgyz Republic, Lesotho, Morocco, Nicaragua, Nigeria, Pakistan, Philippines, Tunisia, Ukraine.

Upper-Middle Income Countries

Albania, Argentina, Armenia, Belize, Brazil, Bulgaria, China, Colombia, Costa Rica, Dominican Republic, Guatemala, Indonesia, Kazakhstan, Malaysia, Mexico, North Macedonia, Paraguay, Peru, Russian Federation, Turkey, Venezuela, RB.

High-Income Countries

Austria, Belgium, Brunei Darussalam, Canada, Chile, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR: China, Hungary, Iceland, Ireland, Israel, Italy, Korea, Rep., Latvia, Lithuania, Luxembourg, Mauritius, Netherlands, New Zealand, Norway, Oman, Panama, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States, Uruguay.

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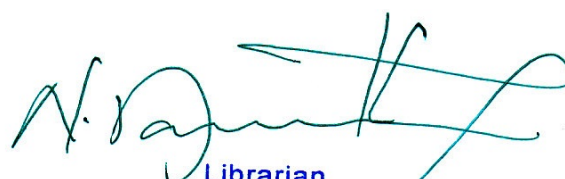
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