IMPACT OF FINANCIAL DEVELOPMENT AND FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH: AN INVESTIGATION THROUGH MULTI-MODELING APPROACH FOR DEVELOPING COUNTRIES

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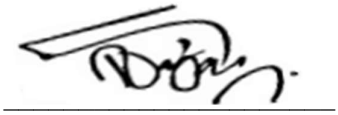

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This is to certify that the research work presented in this thesis, entitled **"Impact of Financial Development and Foreign Direct Investment on Economic Growth: An Investigation through Multi-Modeling Approach for Developing Countries,"** was conducted by Mr. Saqib Mehmood under the supervision of Dr. Ahmad Raza Bilal.

No part of this thesis has been submitted anywhere else for any other degree. This thesis is submitted to the Faculty of Business and Management Sciences, The Superior College, Lahore in partial fulfilment of the requirements for the degree of Doctor of Philosophy in field of Business Administration in Faculty of Business and Management Sciences at The Superior College, Lahore.

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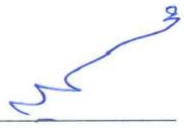
Dr. Muhammad Saeed Meo Signature: 
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DEDICATION

To my parents, **Engr. & Mrs. Hamid Mehmood**, for their unflagging and decorous support throughout my life.

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Saqib Mehmood

LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
BRICS	Brazil, Russia, India, China, and South Africa.
CD	Cross-Sectional Dependence
DC	Developing Country
DCCE	Dynamic Panel Common Correlated Effects
DOLS	Dynamic Ordinary Least Square Method
ECM	Error Correction Model
FD	Financial Development
FDI	Foreign Direct Investment
FMOLS	Fully Modified Ordinary Least Square
GDP	Gross Domestic Production
GFDD	Global Financial Development Database
IFS	International Financial Statistics
NPL	Non-performing Loan
OECD	Organization for Economic Co-operation and Development
Panel ARDL	Panel Autoregressive Distributed Lag Approach
PMG	Pooled Mean Group
UN DESA	United Nations Department of Economic and Social Affairs.
UNCTAD	United Nations Conference on Trade and Development
WDI	World Development Indicators

ABSTRACT

After recurring financial crises that have infatuated developing and developed economies for the last couple of decades, policymakers, analysts, academics, and other stakeholders are concerned about the aptitude of the financial system to trigger economic growth. Since then, the researchers have been poised to re-examine the nature of such relationships in many other aspects concerning the growth and sustainability of the economies in short and long-term periods. The present study aims to empirically examine the impact of financial development and foreign direct investment on the economic growth of developing countries. However, this study utilized panel data on an annual basis of 16 selected developing countries from 1991 to 2017 gathered from World Development Indicators and International Financial Statistics relevant to the variables and proxies considered for the study. The present study is categorically divided into two themes based on the research gap i) financial development and economic growth nexus, and ii) financial development, foreign direct investment, and economic growth nexus.

The dynamic common correlated effects approach was applied as per the sensitivity of the data. The results of the theme I suggest that financial development is an important factor while addressing the economic growth in the selected developing countries. The findings of this study conclude the emergence of financial depth, access, efficiency, and stability in attaining economic growth in the developing countries individually and collectively. However, the robustness of the results has been checked through the fully modified ordinary least square and dynamic ordinary least square methods, which confirmed that financial development causes economic growth in the short and long run. The panel autoregressive distributed lag approach to cointegration was applied for theme II of the study. However, the results showed that FDI and financial development are the key contributors to economic growth in selected developing countries in the short and long run.

The study's quantitative results show the emergence of financial development and foreign direct investment in attaining economic growth in developing countries. This research is a panacea for developing countries and contributes to global literature on achieving economic growth. However, this study will help the practitioners, policymakers, and stakeholders to address economic growth concerning financial

development and foreign direct investment and formulate and enforce suitable policies and strategies regarding sustainable growth in developing countries.

Key Words: Dynamic Panel Common Correlated Effects (DCCE), Developing Countries, Economic Growth, Financial Development, Foreign Direct Investment.

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CHAPTER 1: INTRODUCTION

1.1. Introduction

This chapter deals with the context of the under consideration study. It provides a background and theme of research by considering the area and domain of financial development, foreign direct investment (FDI), and economic growth in developing countries. It provides an insight into the overall aims and objectives of research which depicts the contribution of research in the manner of theoretical and practical significance. It also highlights the context of developing countries that will be the basis for the analysis of this research. This chapter ends with the structure of the thesis along with its pattern.

1.2. Introduction and Background of the Study

In the twenty-first century, where the economies are competing for the competitive edges and for attaining economies of scale; financial development and foreign direct investment are of considerable importance and are attributed as the significant flag bearer of the growth options of the economies (Chaudhry et al., 2013; De-Silva, 2016; Ibrahim and Alagidede, 2018; Levine, 2005; Pradhan, Arvin, and Bahmani, 2018; Pagano, 1993; Rajan, 2006; Sehrawat and Giri, 2016). The different economies rely on their different competitive edges, and these edges may vary from economy to economy, but the financial competitiveness and inflows of investment are of significant importance (Al-Awad and Harb, 2005; Ehigiamusoe and Lean, 2019; Mahoney et al., 2001; Mehmood and Bilal, 2021; Wolde-Rufael, 2009).

Now the world has become a global village where economic well-being is one of the major concerns for the economies. Many of the researches depict the mixed characteristics of the factors that influence the economic growth of an economy. Still, some common elements have a significant impact on economic growth around the globe – better infrastructure, appropriate security conditions, and financial institutions' growth (Chaudhry et al., 2013; Pradhan, 2010; Wu, Hou, and Cheng, 2010).

The managerial expertise in the manner of financial development and in attracting the flows of foreign direct investment is the priority task of the economies to take the competitive edge over the rival economies (Asghar et al., 2019; Baltagi et al.,

2009; Bist, 2018; Chaudhry et al., 2013; Gabor and Brooks, 2017; Law et al., 2013; Lee and Chang, 2009; Shahbaz and Rahman, 2010; Sehrawat and Giri, 2016). The finance growth nexus has been instigated by the study of Bagehot (1873), which systematically acquaints the financial system and its main areas. This study highlighted that the variation in the financial system of one economy concerning the other is due to the economies' efficient and well-designed credit systems. Financial factors were addressed very first time by Schumpeter (1911) in *"Theory of Economic Development,"* which states that the financial aspects have a significant and considerable contribution to the economic growth and well-being of the economy. A well-designed financial structure may result in the appropriate allocation of funds and the stability of the concerned economies. However, this situation creates lucid and reasonable investment opportunities, resulting in better fund management and economic growth. Moreover, economic growth is sustainable in the case of financial innovation and economies of scale.

The operational capacity of the financial system is attaining significant attention from the stakeholders through their distinct direct and indirect impacts on the economy (Tadesse and Abafia, 2019; Sarma and Pais, 2011). The direct impacts are associated with monitoring the funds, the productivity of capital employed, and the volume of savings. Financial intermediation's impact is considered indirect, through which a connection between saver and borrower is generated (Mehmood and Bilal, 2021; Rousseau and Wachtel, 2011). The role of the financial system is highly volatile and leveraged concerning the economy because its different segments are associated with transaction management, fund management, and money, where any failure can disturb the economic stability and vice versa.

The study of Goldsmith (1969) demonstrates the planned version of the finance-growth nexus in the different decades concerning the different economies. This study has a phenomenological interpretation of the said issue. The results show that the countries' economic phases also contribute to the overall well-being and recession in an economy. By keeping in view the reflection of this study, there is a new pathway for the recent research to address the under consideration issue, and that may result in the best way of economic growth (Al-Awad and Harb, 2005; Azman-Saini and Smith,

2011; Ferreira and Matos, 2008; Hassan et al., 2011; Kurtishi-Kastrati, 2013; Rajan, 2006; Zouaoui et al., 2018).

Aligning with the study of Schumpeter (1911), King and Levine (1993) designed a model to evaluate the finance growth relationship. The concluding remarks of this model suggest that financial development is vigorously associated with economic development, which reflects the accumulation of capital and betterment in the economic sovereignty of the economy. According to the theoretical approach of Levine (1997), the finance-growth model has different logical areas, which start with the transactional cost of the financial deals, involvement of financial intermediaries, appropriate risk management, and adoption of new technology. The majority of the previous research's rationale was to address the specific economic and financial development factors in particular countries.

The emergence of banks and the banking sector is of considerable debate because they may interrogate the financial intermediation process and reform their role accordingly. However, the bank concentration specifically affects the financial transactions and their regulatory policies, and their specific procedural roles are the major predictors of financial intermediations. Moreover, the advancement and development in the recent financial system have associations with the banking sector liberalization and financial intermediation (Berger, Demirgüç-Kunt, Levine, and Haubrich, 2004). According to Baltagi (2009), financial openness significantly impacts financial development. Still, in the case of trade openness and through the involvement of capital account, it negatively impacts financial development.

In contrast, Bojanic's (2012) study shows that economic growth can be attained through appropriate trade openness and the appropriate institutional development. However, this study applied different econometric tools and concluded that economic development is achieved through the said option, proved through the cointegration analysis. The error correction model also confirms the authenticity of the results of this study. In today's era, every country is racing to achieve the desired target of FDI inflows due to its associated benefits that have favorable contingent impacts on the host and home country. Most importantly, its relative importance is dignified in developing countries (Flora and Agrawal, 2017; Kurtishi-Kastrati, 2013; Moosa and Cardak, 2006).

The association of FDI with growth options can directly link the dominance of across border transactions, healthy competition, dealing in foreign currency, technological and workforce transformation (Frenkel et al., 2004; Kurtishi-Kastrati, 2013; Loungani and Razin, 2001). FDI is regarded as a wheeler to gear the economy in the desired cruise (Bayraktar, 2013; Blonigen, 2005; Borensztein et al., 1998; De–Mello, 1997; Görg and Greenaway, 2004; Gokmenoglu, Amin and Taspinar, 2015). FDI served as a channel to enter into the new markets, which boom the host countries and reflects the same motive for the home or investing countries. The general agenda behind the FDI is the promiscuous benefits for the host and home countries. The promulgation of FDI can be cited evidently in the early 20th century, where the basic functionality of the concerned matter could be stamped and initiated (Frenkel et al., 2004). The literature behind FDI is flagged with its causes, strategies, agenda points, and motivators. The matter of international capital flows involved in this situation, and the management of these cash/ capital flows are of significant debate (Asteriou et al., 2021; Badeeb and Lean, 2017; Frenkel et al., 2004; Iamsiraroj, 2016; Shahbaz et al., 2011; Shahbaz and Rahman, 2012).

The context of the present study is designed under two themes that were majorly focusing on the 1) financial development and economic growth nexus and 2) foreign direct investments, financial development, and economic growth nexus in the context of developing countries. The developing countries are struggling to get through their growth process, and the emergence of financial development and FDI is considered.

1.2.1. Overview of Economic Growth

Economic growth may have referred to as the steady process through which the economy's productive capacity will increase and cause a significant increase in national output and income (Kalai and Zghidi, 2019; Mahoney et al., 2001; Tiwari and Mutascu, 2011). In order to determine the working orbit of economic growth, it is majorly categorized into two distinct forms; i) either the economy can either grow comprehensively by using more resources or ii) intensively by effectively utilizing the resources – economies of scale. However, this may include capital accumulation, technological innovation, etc. (Romer, 2006; Todaro and Smith, 2009).

Different researchers have their viewpoints, and their viable options for economic growth have different dimensions. Hence, all the varying trends and dimensions are discussed in different studies. The consensus about the considerable points in the existing literature is efficient financial markets, adequate skilled human resources, and equal investment opportunities (Almfraji and Almsafir, 2014; Belloumi, 2014; Blonigen, 2005; Carkovic and Levine, 2005; Iamsiraroj and Ulubasoglu, 2015; Kaur et al., 2013; Khalid and Marasco, 2019; Mahoney et al., 2001; Meyer and Sinani, 2009). However, economic growth is contingent on different factors attributed in the different studies for attaining economic growth in the short and long run. Moreover, different studies have concluding remarks on the economic growth concerning different dynamic areas of the individuals and the economies. However, economic growth is important for the stakeholders (Kumari and Sharma, 2017; Shahbaz et al., 2017b; Song et al., 2021; Zhao and Du, 2007). After recurring financial crises that have infatuated developing and developed economies for the last couple of decades, the researchers have been poised to re-examine the substantive aspects concerning the growth and sustainability of the economies in short and long-term periods. Specifically, the present study articulated financial development and FDI as the main ingredients for attaining economic growth in developing countries.

1.2.2. The Context of Financial Development

Financial development is viewed as the development of the financial sector of an economy. It is ascertained through how functional and operative the financial sector of an economy is and how it contributes toward economic stability, most specifically in the case of individuals' well–being. Financial development is also reliant on the apposite administration of savings, rate of savings, and investment management. The fractional change in the savings rates may result in a shift in overall investment circumstances and the economy's financial well–being. However, financial development may result in economic growth, but there is a need to consider the market, credit management, and other relevant matters (Pagano, 1993).

According to Levine (2005), five major icons of the financial system play their role in getting economies of scale and smooth functioning. These icons are 1) significant information about the investment, 2) monitoring and evaluating the investment after its financing, 3) risk management practices in case of investment, 4)

significant utilization of resources, and 5) appropriate exchange of goods and services. The above-said situation involves the proper functionality of the financial market and financial intuitions. It also requires the prudent role of financial intermediaries for the considerable execution of the packages of the financial system. According to Ferguson (2017), the Cold War needs serious attention over the other wars – World War I and II. However, economic and financial benefits are the emerging areas in the case of the cold war. This study considers different philosophical assumptions and empirical and logical reasoning. It concludes that technology innovation to improve the working conditions, better transaction procedures, and favorable circumstances to improve globalization will result in a better financial system and cause economic growth at the bottom line.

The attributed stance related to financial development showed its positive impact on the economic growth of the economies and, most specifically, in developing economies (Blackburn et al*.,* 2005; Mankiw, Romer, and Weil, 1992; Yang and Yi, 2008). The role of financial development in ramifying the development and growth option is evident from the theory of Schumpeter (1911). According to this theory, financial intervention and innovation are vital concerns in attaining the targeted economy's growth option. Strong theoretical support is available in the literature that really and significantly confirms the character of financial intermediation/ development on the way to economic prosperity (Bencivenga and Smith, 1991; Deidda, 2006; Hamdi, 2015; Hassan et al., 2011; Jianwei, 2015; Miller, 1998; Murinde and Eng, 1994; Patrick, 1966; Shahbaz and Rahman, 2012; Thornton, 1996; Younsi and Nafla, 2017).

Financial development aligns with its different components – depth, access, efficiency, and stability – on a trend basis to cope with the world's financial system modernization. The financial system is up-grading in developing and developed economies. The new trends and financial transactions' anatomy can be cited worldwide. The concerns about financial management, financial stability, and other relevant areas gain much attention in managerial expertise and appropriate policy deployment (Khan and Senhadji, 2003; Ross, 1989; Sandleris, 2014; Söderlund and Tingvall, 2017).

World Bank's Global Financial Development Database (World Bank, 2013) explains that financial development relies on the predestined components causing the expedited demand for financial instruments, financial intermediation, efficiency, and stability. However, due to increased demand and the involvement of financial

institutions and financial development, information asymmetry may originate. This improved demand results in the influential lack of moral hazard (Ross, 1989).

The supply–leading hypothesis showed the theoretical and empirical linkages of financial intermediation/ financial services to promote the growth of the concerned economy. This concept is the reverberation of financial stability-led economic growth. According to Patrick (1966), the financial services and financial intermediation cause economic progress because the stability and growth in the financial system can perform better in the stability of financial services, circulation of the fund, boost saving, domestic credit management, lending capacity building, and overall cash flow management results in the boost of economic activity and led it to the economic progress and prosperity.

The identification of causality between finance and growth was pinpointed by Patrick (1966), and through this identification, different modes of evaluation got their outbreak. The theoretical boundaries explain the logical interaction between the concerned and can be interpreted according to an economy's circumstance. The empirical coordination of financial development may spur economic prosperity. Still, after a particular stage, these phenomena may become passive because, after a certain level of development, the financial development may become dependent on economic growth, negating the supply leading and advocating the demand following hypothesis. The outbreak of economic growth is contingent on financial development at the early stages of development. Cash circulation on solid footing, savings mobilization, and appropriate financial intermediation can be the basic cause of growth in the concerned economies (Patrick, 1966). However, the certainty of conclusion – till now – depicts the diverse influence of finance and growth mutual interrelationship.

Several studies have been conducted to conclude the status of the finance growth relationship, and these researches conclude with the different options and circumstances. The consensus point is lacking in the majority of the investigations related to this core issue. The measurement criteria and proxies for measuring finance growth relationships vary in research. The researchers like Asghar et al. (2015); Cevik and Rahmati (2018)**,** Deidda (2006), Law, Law, and Singh (2014), Levine (1997), Levine (2005), Lucas (1998), Mankiw et al. (1992), Miller (1998), Ndikumana (2000), Nyasha and Odhiambo (2018), Rajan, 2006; Saqib (2015) and Yang and Yi (2008)

concludes the variant results by utilizing different modes of measurement and estimation related to the finance growth relationship.

Finally, this research focuses on the connection between two important fields of finance: financial development and economic growth. Its purpose is to develop a structure for gauging the impact of financial development on economic growth in developing countries. The results of this study may help the developing economies to understand which factors are stimulating financial development and which ultimately lead toward the economic growth of an economy in general and in the case of developing economies for specific. However, as per the World Bank's GFDD, the context of financial development has its framework adopted by the current study. The framework of financial development has four major components, which ultimately depict financial development. These four components are 1) the depth of financial institutions, 2) the access of financial institutions, 3) the efficiency of financial institutions, and 4) the stability of financial institutions (World Bank, 2013).

1.2.2.1. Financial Depth

Financial depth may be referred to as the increased provision of financial services. The financial depth is concerned with the appropriate financial services and intermediation provided to the individuals or the groups (Chukwu and Agu, 2009; Rousseau and Wachtel, 2011; Türsoy and Faisal, 2018). The direct linkages of financial depth with economic growth can be cited in the literature, which ultimately brings positive change to individuals' and societies' economic situations (Arcand, Berkes and Panizza, 2015; Chukwu and Agu, 2009). Hoque and Yakob, 2017; Sehrawat and Giri, 2016; Swamy and Dharani, 2019). However, the macroeconomic effect of financial depth on a country is also stamped from a general perspective in different studies. Moreover, the financial depth typically increases the money supply in connection to GDP in the concerned economies (Arteta and Hale, 2008; Asghar and Hussain, 2014; Law and Singh, 2014; Shahbaz and Rahman, 2010). This results in a better liquidity position and hence can be helpful in investment management and to grab more opportunities (Kyophilavong et al., 2016; Mehmood and Bilal, 2021; Nwachukwu, 2017; Odhiambo, 2008b). The promotion of well-structured financial depth can manage the capacity shocks and macroeconomic situations and help to attain growth

(Nwachukwu, 2017; Nyasha and Odhiambo, 2018). The flow of funds is considerably related to the financial depth, where the circulation of credit is regarded as the deterministic portion of its success. How significantly the financial institutions make credit management is viewed as the measure of financial depth.

1.2.2.2. Financial Access

Access to finance may denote the availability of financial services to the users and provide awareness about it. With the advancement in technology and the high level of competition, every country and organization is racing to compete with its rivals accordingly. However, access to finance is one of the main competing points for the financial institutions individually and the economies collectively. It may have regarded the access of the financial products to individuals and businesses as per their needs and demand, which may consist of required banking transactions, disbursements, savings, and fund management prudently and sustainably (Arora, 2014; Moraes et al., 2021). Better financial services and their appropriate access plays a vital role in uplifting the economies (Ardic, Heimann, and Mylenko, 2011; Arora, 2014; Barra, Ruggiero, and Zotti, 2020; Ratnawati, 2020). Financial institutions are concerned about providing better financial access to their target population, resulting in investment management, the flow of funds, and a better financial system. Mainly, the gauging criteria for financial access are the number of bank accounts per 1,000 adults, the number of bank branches per 100,000 adults, the availability of ATMs[1] , and many other financial services availabilities (Ardic et al., 2011; Arora, 2014; Pearce, 2011; Shen et al., 2021).

Financial access facilitates individuals and businesses to manage their flow of funds through savings or to meet their short-term needs. The advancement in the financial system enabled their customers through distinguished services that raised their standard of living and made their fund management easy. In the global context of financial inclusion, achievement has been made with 1.2 billion adults – worldwide – having access to an account since 2011. 69% of the world's adults had an account. On the other hand, access to an account to its usage is a new horizon where 80% of the population has access to the account, which has been achieved by China, Thailand, Kenya, and India. The challenges still exist worldwide because one-third of the world

[1] Automated teller machine

population is still deprived of bank facilities. Different countries are working on this situation and have launched different financial inclusion models or strategies. The countries that have achieved some goals are Sub-Saharan Africa and India, where sufficient changes have enhanced financial inclusion. For instance, the India Aadhaar Account covered more than 1.2 billion of its population. In developing countries, more than 35% of adults receive government payments on their first account; African countries allow mobile accounts to thrive toward growth (World Bank, 2013).

1.2.2.3. Financial Efficiency

Financial efficiency may refer to providing appropriate financial services at the highest quality with the minimum cost. The literature is keen on how financial efficiency is concerned with economic growth (Ahad, Afza, and Shahbaz, 2017; Islam et al., 2018; Nafla, 2017). However, financial efficiency is slanted towards the efficiency of financial institutions that how efficiently and significantly these institutions are providing their financial services with maximum options (Assefa et al., 2017b; Blejer, 2006; Saqib, 2013). Financial efficiency helps in attaining economic growth through the appropriate fund management and allocation and investment management through the proper financial intermediation (Gabor and Brooks, 2017; Neanidis, 2019; Sánchez-Robles, 1997; Sehrawat and Giri, 2016). The developing and the developed economies are persistently attempting to stimulate economic activity by decreasing their domestic benchmark interest rates, particularly during the last decade. This will result in financial efficacy and the likelihood of fund management (Assefa et al., 2017b; Chinoda and Kwenda, 2019; Saqib, 2013). Financial institutions were offering different financial services, but their success is attributed to how efficiently they managed the cost-benefit connection related to these services. Financial efficiency is concerned with how well the investment in each alternative has been made to ensure the maximum return. Economies rely on a better financial system where the efficient financial system plays a significant role in better results. Despite the status of the economies being developing and developed, the efficiency of the financial system generates the fortunate flow of returns that may implicitly impact the growth of the financial sector in specific and the growth opportunities for the concerned economies in general.

1.2.2.4. Financial Stability

Financial stability is a key concern in the growth of economies. Financial stability refers to the condition where the financial markets/ institutions work in a significant way to support economic growth through the proper intermediation of financial funds, risk management, and smooth function of the financial assets (Blejer, 2006; Ericsson and Irandoust, 2001; Jayakumar et al., 2018; Younsi and Nafla, 2019; Zhang, 2001a). An unstable financial system may result in a financial crisis. However, financial crises are destructive in nature while considering the growth options of an economy (Blejer, 2006; Ghassan, Boulanouar and Hassan, 2021; Makki and Somwaru, 2004; Zang and Kim, 2007). If the financial institutions face low assets quality, this may adversely affect growth (Chinoda and Kwenda, 2019; Manu et al., 2011; Rioja and Valev, 2004). Financial stability is emerging in nature in the current financial and economic literature. Financial stability gained much attention during the international financial crises at the end of the 1990s. However, its emergence gets expedition by the financial and economic crisis that evolved in 2007. Moreover, the financial stability of the financial system is contingent on the different facts that the economies should focus on for the country's financial sector (Alfaro et al., 2010; Jayakumar et al., 2018; Manu et al., 2011; Ratnawati, 2020; Younsi and Nafla, 2019). A stable financial system helps the economies grow in a productive manner through which financial intermediaries, financial markets, and infrastructure help the individuals, investors, and the stakeholders by a smooth flow of funds in a trustful manner.

1.2.3. FDI and Economic Growth

As theme two of the under consideration study, this study focuses on foreign direct investment (FDI) led growth options. From the very beginning of the 21st century, the developing countries are taking much attraction around the globe in the manner of spillovers of FDI, hence can be the competitive edge of these countries. This competitive edge may base upon the opportunity of skilled and able labor, natural resource competitiveness, and the room to excel in the growth option. However, this will serve as a paradigm for the growth of the host and the home country (Blonigen, 2005; Chaudhry et al., 2013; Iamsiraroj, 2016).

The FDI has a significant attraction for developing countries in attaining economic growth, stability, and sustainability (Sabir, Rafique, and Abbas, 2019; Omran and Bolbol, 2003; Nayak and Choudhury, 2014). FDI[2] in the case of developing countries causes different types of edges for the bailout process of the developing countries (Banday and Ismail, 2017; Economou et al., 2017; Jude and Levieuge, 2017; Khan et al., 2019; Kurtishi-Kastrati, 2013; Neanidis, 2019; Shahbaz et al., 2011; Tiwari and Mutascu, 2011; Ulubasoglu, 2015). On an individual level, capacity-building analysis of economies spurs different viewpoints about their lacking and competitive edges.

The different aspects of FDI are considerable and regarded as significant in contribution to the growth options. The difference in the viewpoints is hence creating ambiguity in the mindset of the policymakers either what they have to do in gaining the economies of scale as per this core issue (Acquah and Ibrahim, 2020; Chaudhry et al., 2013; Moosa and Cardak, 2006; Saini and Singhania, 2018). The common theme in the mindset of the economies about FDI is that it may attract foreign investment inflows. These inflows can be utilized domestically and in the host country, resulting in better options for the host country, and ultimately, economic progress can be cited. This particular issue also endorsed the theoretical framework of the neoclassical theory of FDI, new opportunities, and a better standard of living (Levin, 2001).

FDI has emerged as a contemporary issue in the manner of the well-being of the economies. The desired and brighter aspect of FDI is stamped, but the challenge is therefore assisted by the bodies to make sure the attraction of it in their concerned country (Alvarado et al., 2017; Blomstrom et al., 1994; Inekwe, 2013; Jude and Levieuge, 2017; Lensink and Morrissey, 2006; Pegkas, 2015; Sadik and Bolbol, 2001; Zang and Kim, 2007). The theoretical, empirical, and scientific investigations are being made to conclude the issue as per consensus and per the capacity of generalizability (Borensztein et al., 1998; Shahbaz et al., 2011; Xie, 1994; Zghidi et al., 2016). This study aimed to conclude the various issues discussed in Theme I and II of the present study.

[2] On the global scenario the contribution of the stock of FDI has been increased from 22% to 35% (Ashraf, Yong, Afzal and Kun, 2019).

The attribution of the private capital flows showed more than half of the association with FDI[3]. The critical and significant aspect relevant to the developing countries is they can be the source of more attraction as compared to the other countries due to their supportive business environment, working capacity, and relatively more options to grow (Ashraf, Yong, Afzal, and Kun, 2019; Olofin et al., 2019). But the variation in the findings retaliates the researchers to create some considerable growth or the road map to depict the circumstances of this varies issue. However, many of the researches showed the positive impact of FDI in connection to the growth by concerning the developing economies (De–Mello, 1997; Flora and Agrawal, 2017; Gui-Diby, 2014; Herrera-Echeverri, Haar and Estévez-Bretón, 2014; Khalid and Marasco, 2019; Shahbaz, Leitão and Malik, 2011) but still, there is a negation of the said scenario for the host countries or the countries which are the recipient of the inflows of the FDI (Ericsson and Irandoust, 2001) and even the literature is the witness of negative impacts as well for the under consideration issue (Görg and Greenaway, 2004).

It may be regarded as a Gordian knot to evaluate the common points among the economies that can be considered as a suggestion for those economies that are frazzled to find out the bailout process in the perplexing situation (Adams, 2009; Agbloyor et al., 2016; Belloumi, 2014; Carkovic and Levine, 2005; Meyer and Sinani, 2009; Tun et al., 2012; Neanidis, 2019; Yao, 2006). The dynamic environment of competition among economies creates negative and positive vibes to dominate from one economy to another. However, the under consideration study considers FDI as a source of attraction and will evaluate accordingly in developing countries.

1.2.4. Context of Developing Countries

In the current era of competitive advantage, the category of the country is of considerable importance, and hence the options of growth and other relevant aspects can be ascertained through the theoretical conceptualization behind the theme of an economy (Banday and Ismail, 2017; Blomstrom, Lipsey and Zejan, 1994; Botev, Égert and Jawadi, 2019; Prasad, Rogoff, Wei and Kose, 2005; Saqib, 2016). The hike in the nominal level of resources is contingent on the growth options. However, the considerable circumstances for the developing countries are of significant tax revenues

[3] IMF Balance of payments Statistics Year book (1998).

over the last 15 years (UN-DESA, 2019). The source of attraction in developing courtiers is investment opportunities and well-deserved growth options (Al-Awad and Harb, 2005; Calderón and Liu, 2003; Majid and Mahrizal, 2007; Nair-Reichert and Weinhold, 2001). Developing economies have somehow attributes of developed countries but aren't regarded as developed (Cohen, 2006). The rationale behind the developing economies is that they can be developed in the near future. The prevailing circumstance relevant to the view of annual percentage change in growth in different categories is depicted in Table 1.1.

Table 1.1: World output growth, 2009–2018*

Year(s)	Country/ Economy		
	World	**Developed Countries**	**Developing Countries**
2009	-1.3	-3.4	3.1
2010	4.5	2.6	7.9
2011	3.3	1.6	6.2
2012	2.8	1.2	5.4
2013	2.7	1.3	5
2014	3	2	4.7
2015	3	2.4	4.3
2016	2.7	1.7	4.3
2017	3.3	2.5	4.6
2018	3.1	2.3	4.3

* Figures depicts the annual percentage change

Source: UNCTAD (TDR 2019).

It can be observed that the growth options in the developing countries are comparatively high compared to the other group of economies UNCTAD (TDR 2019)[4]. The integration for the more robust view in attaining the growth option is also termed foreign direct investment. The inflows of these investments are equally considerable for every sought of the economy, and it is reported in many of the researches that these inflows have a significant and positive contribution to developing countries (Almfraji and Almsafir, 2014; Banday and Ismail, 2017; Blonigen, 2005; Borensztein et al., 1998; Ferreira and Matos, 2008; Lucas, 1998; Loungani and Razin, 2001; Nkoa, 2018).

[4] United Nations Conference on Trade and Development (Trade and Development Report, 2019)

The incertitude about the growth process is attached to both the types of countries – developing and developed (Combes, Kinda, Ouedraogo, and Plane, 2019; Narayan and Narayan, 2013), but the appropriate and capacity to proceed in case of developing countries is more dominating as compared to the other type of countries (Batuo, Mlambo and Asongu, 2018; Cohen, 2006; Elkomy, Ingham, and Read, 2016; Habibullah and Eng, 2006; Saqib, 2013; Zouaoui et al., 2018). The developing countries are facing indelible challenges that are associated with the emergence of growth, sustainability, health, and population management, but it doesn't mean that these countries are incommensurable relative to the standards of the developed countries (Acquah and Ibrahim, 2020; Kandil, Mahalik and Nguyen, 2017; Mehic, Silajdzic, and Babic-Hodovic, 2013; Shahbaz, Saini and Singhania, 2018; Zhang, 2001b; Zhao and Du, 2007).

Since the rapid growth in globalization, which can be diligently cited from the 1970s, procedural changes such as financial development, capacity building, and investment inflow are significant areas for discussion. However, these types of procedures have become integral elements of the dealings in the operational system of an economy. Moreover, the cross-border transactions through globalization and integrated policies of the economy's strong financial system can be the defining criteria of the fate of an economy (Alfaro et al., 2004; Grassa and Gazdar, 2014; Hassan, Sanchez and Yu, 2011; Hoque and Yakob, 2017; Khan and Senhadji, 2003; Narayan and Narayan, 2013).

The diversity in the financial system and the appropriate circulation of funds can be served as a tool in conforming to a better financial system – financial development (Jones, 2007; Ross, 1989). Though the financial system and its development are the determinants in attaining economic growth but innovation through technological updation and betterment in policymaking were also effective approaches for this integrated system, implicitly for the developing countries (Habibullah and Eng, 2006; Nair-Reichert and Weinhold, 2001; Zouaoui, Maziou, and Ellouz, 2018). The prudent involvement of the financial sector is contingent on many factors that comparatively result in a better outcome. However, the differentiation originated based on managerial and administrative practices of every region, which is concerned with producing their best and focusing on economies of scale.

1.3. Problem Statement

Due to the huge competition, the survival of the economies is based on different attributes. Economic growth is a debated phenomenon in literature where the various attributes affect this issue. Still, the emergence of financial development and investment inflows in the case of foreign direct investment is regarded as the defining criteria for economic growth (Liu et al., 2020; Muhammad, Huynh, and Tram, 2019; Prasad et al., 2005; Shahbaz, 2012; Shahbaz, Rehman, and Muzaffar, 2015; Saqib, 2016; Sbia, Shahbaz and Ozturk, 2017; Tun et al., 2012; Zhang, 2001a; Zhao and Du, 2007). The emergence of financial development and FDI can be cited in different studies, but there is a lack of consensus on the finding of various studies to conclude the economic growth (Alfaro et al., 2010; Chaudhry et al., 2013; Ericsson and Irandoust, 2001; Makki and Somwaru, 2004; Rioja and Valev, 2004; Shahbaz et al., 2011; Swamy and Dharan, 2019; Zang and Kim, 2007; Zhang, 2001a). However, different studies address the various components because the contributing factors have variations in different time frames, regions, and economies (Uddin et al., 2013; Waheed and Younus, 2010; Zang and Kim, 2007; Zhang and Naceur, 2019). World Bank's GFDD (World Bank, 2013) provides a framework concerning financial development, and this framework deals with financial depth, access, efficiency, and stability.

Different studies consider different components of the concerned framework. Specifically, these studies considered only financial development on general grounds (Asghar and Hussian, 2014; Assefa and Mollick, 2017a; Grassa and Gazdar, 2014; Khan and Senhadji, 2003; Shahbaz and Rahman, 2012) or discussed only one or two ingredients of the World Bank's GFDD (World Bank, 2013) framework for financial development (Blejer, 2006; Creel et al., 2015; Chukwu and Agu, 2009; Islam et al., 2018; Türsoy and Faisal, 2018). However, one comprehensive study is missed as per the researcher's point of view, which addresses the impact of financial depth, access, efficiency, and stability individually and collectively to attain economic growth in developing countries.

On a contrary note, the finance-led growth options – supply-leading hypothesis – and the growth-led finance options – demand-following hypothesis – are attaining much attention in the subject matter literature. This particular attention is important in developing countries because the circumstances of these countries are regarded as the

competitive edges for the concerned economies (Adeyeye et al., 2015; Ferguson, 2017; Ibrahima and Alagidede, 2018). Certain logical criteria and theoretical concepts reflect the relationship status of finance and growth nexus. These concepts are 1) supply leading hypothesis (Patrick, 1966; Schumpeter, 1911), which depicts the finance-led growth interrelationship, and 2) demand-following hypothesis (Patrick, 1966; Robinson, 1952), which states the growth led finance 3) bi-directional causality hypothesis (Blackburn and Hung, 1998) 4) is of no causality (Lucas, 1998). However, these concerns are attributed to the logical relationship between financial development[5] and economic growth, the literature witnesses variation in the impacts of the concerned subject matter. These variations are contingent upon the change in target population, subject matter, and measurements criteria (Cohen, 2006; Mehmood and Bilal, 2018; Muhammad, Huynh, and Tram, 2019; Zhang, 2001b). However, the present study also addresses the issue of causality in the finance-growth nexus in developing countries.

The developmental process is aligned with the business opportunities through great operational and technical expertise. However, attracting direct investment and maintaining financial stability are the key concerns for the economies. Moreover, the direct investment in the host country not only brings a fortunate flow of cash but also the transformation of technology, skill, and labor opportunities (Akbas, 2015; Ericsson and Irandoust, 2001; Inekwe, 2013; Jude and Levieuge, 2017; Khalid and Marasco, 2019; Kurtishi-Kastrati, 2013; Kyophilavong et al., 2016). The development in financial matters and their growth can be sublime in the way to the growth of an economy (Ouyang and Li, 2018; Prasad et al., 2005). Though the normative trends about the concerned matter are destined, the variation in ultimate results is also the beauty of operationalization and has different functionalities in different times and places.

Literature is full of different conclusions related to foreign direct investment's impact on attaining economic growth. However, some of these studies confirm its adverse effect in case of economic growth (Elkomy et al., 2016; Gui-Diby, 2014), some of these studies conclude the inconclusive results for economic growth (Alfaro et al.,

[5] "The policies, factors, and the institutions that lead to effective financial intermediation and effective financial markets, as well as deep and broad access to capital and financial services". World Economic Forum (2008).

2010; Ericsson and Irandoust, 2001; Zhang, 2001a) and some of these studies concludes its positive remarks in attaining economic growth (Chaudhry et al., 2013; Hagan and Amoah, 2019; Omran and Bolbol, 2003). However, the present study revisits the impact of FDI and financial development on attaining economic growth pertaining to the developing countries. This study wants to provide a comprehensive roadmap for the developing countries on economic growth by considering the ingredients enlightened by the present research.

Based on the earlier discussion, the study came up with the two themes addressed in this study. The theme I of under consideration study is mainly based on investigating the impact of financial development on economic growth in developing countries. The present study investigates the issues related to the theme-I are: 1) examination of the nexus between financial development and economic growth, 2) to test the impact of financial depth, financial access, financial efficiency, and financial stability on economic growth – individually and collectively – in the developing countries 3) to evaluate the long and short-run relationship between financial development and economic growth specifically in case of developing countries and 4) to test the existence of supply-leading and demand-following hypothesis in the developing countries.

The second theme of this study is based on the issue of foreign direct investment and economic growth nexus by keeping in view the context of developing countries. Foreign direct investment inflows are regarded as a major source of inflows of cash for the economies against the services or work rendered (Almfraji and Almsafir, 2014; Blonigen, 2005; Carkovic and Levine, 2005; Chaudhry et al., 2013; Ferreira and Matos, 2008; Grassa and Gazdar, 2014; Loungani and Razin, 2001; Wang, 2009). Economies are struggling to attain the concluding remarks about their economic growth. However, the under consideration study focuses on 1) to investigate the relationship between FDI, financial development, and economic growth in developing countries and 2) to test the long and short-run relationship between FDI, financial development, and economic growth in developing countries. Moreover, the economic growth in terms of FDI is a considerable point under theme II of the present study.

The actual problem focuses on the economic growth of the developing countries by considering financial development and foreign direct investment as the mainstream

areas in the present study. However, this intends to provide a comprehensive insight into the developing countries' rehabilitation process for their growth.

1.4. Research Questions

The main and sub research questions of the thesis are as follows:

1. What is the impact of financial development on economic growth in developing countries?
    a. What is the impact of financial depth on economic growth in developing countries?
    b. What is the impact of financial access on economic growth in developing countries?
    c. What is the impact of financial efficiency on economic growth in developing countries?
    d. What is the impact of financial stability on economic growth in developing countries?
2. What is the impact of foreign direct investment on economic growth in developing countries?

1.5. Research Objectives

Based on the earlier mentioned discussion in instruction and background of the study, it is evident that foreign direct investment and financial development are the two major areas on which developing countries may focus on economic development. However, the concern of this thesis is based on two different themes that are categorically summarized in the form of different research objectives.

The main and sub-objectives of the thesis are stated as follows:

1. To investigate the impact of financial development on economic growth in developing countries.
    a. To test the impact of financial depth on economic growth in developing countries.

b. To test the impact of financial access on economic growth in developing countries.

c. To test the impact of financial efficiency on economic growth in developing countries.

d. To test the impact of financial stability on economic growth in developing countries.

2. To investigate the impact of foreign direct investment on economic growth in developing countries.

1.6. Research Gap and Significance of the Study

The present study addresses the issues of financial development and foreign direct investment in attracting economic growth in developing countries. The under consideration study has characterized by the research gap, theoretical and practical significance, which is depicted as follows:

1.6.1. Research Gap

The present study reviewed the existing literature related to financial development, foreign direct investment, and economic growth. However, the lack of consensus in the concluding remarks of different studies is available in the literature. Most importantly, one comprehensive study is missed that addresses the World Bank's GFDD (World Bank, 2013) framework for financial development, which includes the four distinct components: financial depth, access, efficiency, and stability in addressing the issue of economic growth in the developing countries. The literature reflects a vast body of knowledge about the finance-growth nexus. However, different studies address the different components because the contributing factors have variations in different time frames, regions, and economies.

Specifically, these studies considered only financial development on general grounds (Assefa and Mollick, 2017a; Grassa and Gazdar, 2014; Khan and Senhadji, 2003; Shahbaz and Rahman, 2012) or discussed only one or two ingredients of the World Bank's GFDD (World Bank, 2013) framework for financial development (Blejer, 2006; Creel et al., 2015; Chukwu and Agu, 2009; Islam et al., 2018; Türsoy

and Faisal, 2018). However, one comprehensive study is missed as per the researcher's point of view, which addresses the impact of financial depth, access, efficiency, and stability individually and collectively to attain economic growth in developing countries. Literature is full of different conclusions related to foreign direct investment's impact on achieving economic growth. However, some of these studies confirm its adverse effect in case of economic growth (Elkomy et al., 2016; Gui-Diby, 2014), some of these studies conclude the inconclusive results for economic growth (Ericsson and Irandoust, 2001; Zhang, 2001a; Alfaro et al., 2010) and some of these studies conclude its positive remarks in attaining economic growth (Chaudhry et al., 2013; Hagan and Amoah, 2019; Omran and Bolbol, 2003). However, the present study revisits the impact of FDI and financial development on the economic growth of developing countries. The present study also found the methodological gaps in the under consideration themes of the study and considers dynamic modeling and robustness of the prevailing analysis to provide comprehensive concluding remarks.

However, the present study wants to provide a comprehensive road-map to the developing countries on the way to economic growth by considering the two main themes of the present study: 1) financial development and economic growth nexus, ii) FDI, financial development, and economic growth nexus in the developing countries.

1.6.2. Theoretical Significance

Economic growth is viewed from different angles in the existing literature. However, the present study adds value to the existing literature through different distinctive points identified in the research gap.

Previous empirical studies considered economic growth categorically through the theoretical lens of financial development's general version (Mehmood and Bilal, 2018; Muyambiri and Odhiambo, 2018; Narayan and Narayan, 2013, Waheed and Younus, 2010). However, the present study has several distinguishing points which theoretically contribute to the existing literature. First, the previous studies didn't consider all components addressed in World Bank's GFDD (World Bank, 2013) framework for financial development, including financial depth, access, efficiency, and stability. The present study theoretically contributes by addressing all these components individually and collectively under one study to conclude the economic growth in

developing countries, which is missed according to the researcher's knowledge. However, it will be regarded as the real contribution of the present study.

Second, different studies evaluated the variables' individual effects concerning the finance-growth nexus (Grassa and Gazdar, 2014; Majid and Mahrizal, 2007; Söderlund and Tingvall, 2017; Vaona and Patuelli, 2008). However, the present research articulated different indexes by pooling different variables through the principal component analysis that best expresses the joint impacts on the predicted variables. This will provide in-depth insight to the readers to conclude the under consideration issue. Third, the study examines the supply-leading and demand-following hypothesis that depicts the finance-led growth and growth-led finance interrelationships, respectively. However, this issue addresses the direction of the causality of the finance-growth relationship, which will provide a shred of fresh evidence on the earlier stated issue.

Fourth, the present study revisits the FDI and financial development through multi-modeling to provide a comprehensive roadmap for the developing countries on economic growth. Fifth, the under consideration study adds value to the existing literature by addressing the financial development and foreign direct investment under one study to conclude the economic growth of the developing countries. This will contribute theoretically to how developing economies strengthen their financial system and attract foreign inflows to attain economic growth. Sixth, dynamic modeling is applied to conclude the themes of the present study. However, the robustness of the analysis will create its competitive methodological edge. Seventh, this study provides an extensive comparative analysis of the existing literature and theories on the subject under consideration. In the twenty-first century, where the countries compete for economic competitiveness, the present study postulates how the audience and authorities of developing countries focus on financial development and investment inflows. However, earlier described scenarios best differentiate the present study from the existing studies on the subject matter and create a theoretical context.

1.6.3. Practical Significance

Developing countries are struggling to reach a better standing in the overall world. The capacity to grow is considerable in the developing countries compared to

the rest of the countries because they can get economies of scale through resource management (Bittencourt, 2012; Hassan et al., 2011; Uddin, Shahbaz, Arouri and Teulon, 2014). However, this research will explore the finance-growth nexus with the financial development framework (World Bank, 2013) by considering the developing countries, adding value to the existing literature. However, this research will provide a more comprehensive understanding to the readers, policymakers, and practitioners because this study will address all the four components of the financial development framework (World Bank, 2013) in one study that was missed in the previous research as per researcher's point of view. This will provide insight to the readers on how the financial depth, access, efficiency, and stability impact the economic growth of developing countries individually and collectively. The present study revisits the FDI and financial development through multi-modeling to provide a comprehensive roadmap for the developing country's growth. However, the findings of this study will contribute to the knowledge and provide policy prescriptions that will serve as a tool for the developing countries to attain and sustain their economic growth implicitly. This research will help the policymakers, especially the Ministry of Finance, Ministry of Commerce and Trade, Ministry of Planning and Development, and respective State Banks of these developing countries, properly plan to transform themselves from developing to developed counties. This research will also help the practitioners to implement the implications/suggestions of this research to get better results than before on the way to economic growth.

1.7. Structure of the Thesis

The thesis is structured based on the following chapters, prepared by keeping in view the scope and nature of the research. However, the brief description and vision of the thesis are described below.

Chapter 1 is based on the overall introduction and rationale of the thesis. This chapter focuses on the pace of work exhibited in the later chapters. However, the background of the study, research questions, objectives of the research, the scope of research, and the research contribution are the integral elements of this chapter. However, these elements are presented by keeping in view the context of the study, which is under consideration.

Chapter 2 describes the relevant literature on finance growth nexus, and related areas have been studied relevant to Theme I. Different dimensions of financial development and their interrelationship with economic growth are discussed. Chapter 2 will also explain the financial depth, access, efficiency, and stability in representing financial development to attain economic growth. It will also highlight the existing studies on foreign direct investment and economic growth nexus. Different aspects of the said relationship are discussed in this chapter by keeping in view theme II of the under consideration study. The primary focus of this chapter is to determine the gap in research which can justify the present study. However, the existing literature and the body of knowledge have been reviewed in this study on the under consideration area of research by considering the theoretical and empirical linkages with the present study. Moreover, the methodological models in the existing literature are also studied in this chapter to justify the gap in the methodological manner of research. The research framework is also explained in this chapter to get a better insight into the working boundary of the current study.

Chapter 3 includes the method of doing research related to the present study. However, the research approach, research methodology, research paradigms, research philosophies, data, the time frame of data, sources of data collection, hypothesis development, model development, reasons for the model development, data analysis techniques, and reasons are mentioned and explained logically.

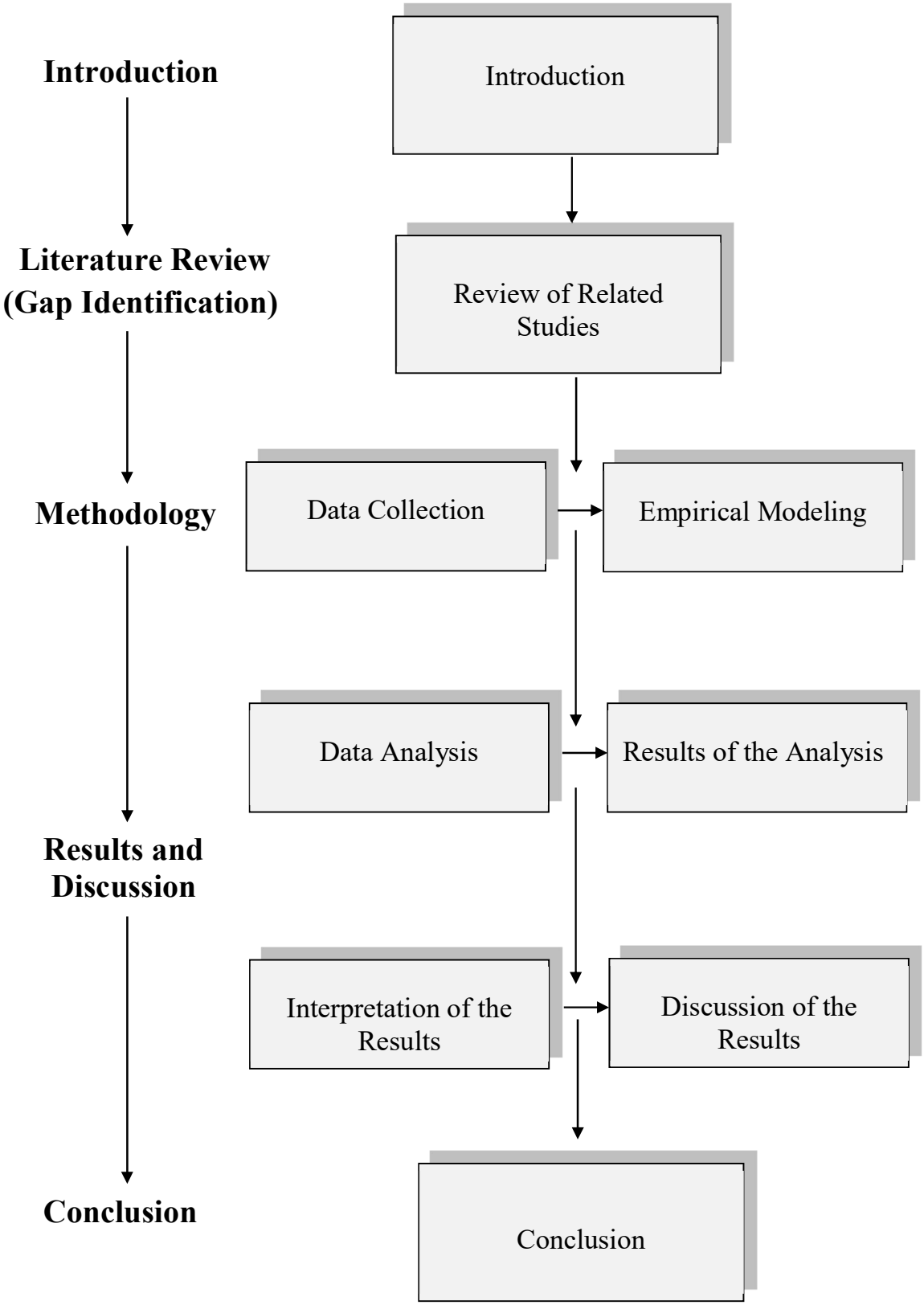
Chapter 4 aims to investigate the hypotheses that were presented in chapter 2. However, different statistical and econometric models and tools are used to justify and answer the research questions and to gain the study's objectives. This chapter also helps to attain the concluding remarks about the research because the findings and results will help to conclude the under consideration hypothesis and the objectives of the present study.

Chapter 5 has drawn a conclusion based on the results and discussion. However, this chapter concludes with a summary of major findings, the body of knowledge contributed through this study, and study implications. Research limitations and areas of further research are also presented in this chapter.

1.7.1. Summary

This chapter provides the overall face of the thesis. It will give an overview of financial development, economic growth, and related areas simply and lucidly. However, the research question, objectives, scope of research, and methodology used to conclude research have been studied. In the end, this chapter provides the theoretical and graphical structure of the thesis. The next chapter is related to reviewing relevant literature and theories related to the present research.

Figure 1.1: Structure of the Thesis
Source: Compiled by Author



CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter is designed to review the studies relevant to the under consideration themes of the study. This chapter highlights different studies' viewpoints that the authors conduct at different time frames and with varying data sets. However, most of the researchers came up with different lines of bottom and empirical findings that have variations from the results of other related studies—the concluding remarks of this chapter vow to provide the gap for the under consideration study.

2.2. Overview of Financial Development and Economic Growth Nexus

Financial development and economic growth phenomena are of considerable debate, and researchers, academicians, and other consultants have been in this debate since the 19th century to conclude this varied issue (Asghar, Qureshi and Nadeem, 2015; Babatunde, 2011; Batuo et al., 2018; Bittencourt, 2012; Bist, 2018; Blackburn, Bose and Capasso, 2005; Chow, Vieito and Wong, 2019; Prasad et al., 2005). Many researchers have solid arguments for the finance-led growth connection, and their studies play the role of advocates of the under-consideration issue (Beck, Levine, and Loayza, 2000; Blackburn and Hung, 1998; Campbell and Hopenhayn, 2005; Habibullah and Eng, 2006; Kyophilavong et al., 2016; Levine, 2005; Muyambiri and Odhiambo, 2018; Pradhan, Arvin and Bahmani, 2018; Rioja and Valev, 2004; Zouaoui, Mazioud, and Ellouz, 2018). Apart from the advocates of the under consideration stance, different studies reflect the crosier and vanishing connection of finance with growth (Deidda, 2006; Law and Singh, 2014). Some studies have a stance of no-causality from the under-consideration perspective (Zang and Kim, 2007).

However, the literature is a cubicle about the subject matter and needs to be studied logically to differentiate and conclude systematically. Different theories of financial development have been evolved over the period to target the subject matter to give an authentication stamp for spreading the growth option in the desired economy, i.e., Schumpeter's (1911) theory of financial development, theory of financial intermediation, and growth of Gurley and Shaw (1955), theories of demand following and supply leading of Patrick (1966) and McKinnon (1973) and Shaw (1973) theories

of economic growth, etc. The process of economic growth has been observed in the study of Patrick (1966) by keeping in view the conditions of the market and the involvement of financial institutions. According to the findings of this study, the financial institutions/ intermediaries should be established according to the financial assets and as per gross national production (GNP).

These theories are the flag bearer of their agenda points that have their dais of working capacity. These capacities have documented and procedural daintiness, which is accepted, challenged and rejected by many researchers (Bist, 2018; Blomstrom, Lipsey and Zejan, 1994; Fernández and Tamayo, 2017; Gabor and Brooks, 2017; Hung, 2003; Kaur, Yadav and Gautam, 2013; Sehrawat and Giri, 2016; Swamy and Dharani, 2019; Younsi and Nafla, 2017).

2.2.1. Selected Review of Literature

Greenwood and Jovanovic (1990) studied the interrelationship between financial intermediation and economic growth. The finding of this study includes the confirmation of the positive relationship between financial intermediation and economic growth due to the increase in the rate of return. However, the financial intermediation may vary from circumstance to circumstance and economy, and its effects showed variations in results accordingly.

Financial intermediation has been studied by Bencivenga and Smith (1991). This study focuses on how financial intermediation plays a vital role in financial development, leading to economic progress. However, the motives of financial development are the appropriate interference of the financial institutions to instigate the financial betterment in the economy, and the result of this economic development can be concluded at the bottom line.

The two-fold aspect of financial development was studied by Arestis and Demetriades (1997), which aimed to analyze empirically: I) the contribution of financial system/financial development on the growth of an economy and II) the impact of financial liberalization in attracting investment and economic well-being on an overall basis. After doing in-depth statistical and econometric analysis on the concomitant issue, the findings suggest that financial management, appropriate look after for financial intermediation, and stable financial policies may result in the

financial development of an economy. Resultantly, the opportunities for financial liberalization are cited to facilitate the economic progress and growth of the economies.

Beck et al. (2000) investigated the relationship between financial intermediation and economic stability, per capita income, savings, accumulation of capital, etc. the findings of this study suggest a positive impact of financial intermediation on the earlier reflected issues. However, in long-run relationship estimation, the explanatory variable is of significant importance for predicted variables.

Multiple aspects of financial intermediation have been studied by Levine et al. (2000) by keeping in view the two major icons I) the financial intermediation II) the accounting policies and practices across the countries. The findings of this study came up with the findings that financial intermediation plays a vital role in bringing financial prosperity to the economy because appropriate and legal financial transactions result in the better involvement of financial intermediation, which may cause financial prosperity at the bottom line. However, significant accounting reforms and policies of upgraded accounting systems may result in appropriate financial development and, consequently, better economic growth.

By keeping in view, domestic investment Ndikumana (2000) conducted a study to highlight its impact on financial development. This study argued that domestic investment would help to mobilize resources that will engage the economy in different desirable perspectives that may lead to the economic well-being of the economy. Specifically, in the case of sub-Saharan Africa, this study concludes that there is a spillover effect of domestic investment, which firstly strengthens the financial development and then, as a result, causes economic well-being in the economy.

The absorptive capacity of FDI in stipulating financial and economic growth was highlighted in the study of Omran and Bolbol (2003). This study considered FDI as an indicator to attract investment in Arabian countries, resulting in cash inflows in the under consideration countries. However, this particular study also accounts for the financial well-being and economic progress. The findings suggest that the financial development and economic progress nexus is considerable up to a specific threshold. After that, it may result in a non-influence at the bottom line.

Money and financial intermediation are the key elements of the financial system (Hung, 2003). According to the study by Hung (2003), these instruments should be addressed while discussing financial development and their ultimate effects on economic growth. However, the stronger the financial system, the stronger will be the economic progress at the bottom line. However, the lower inflation rates cause financial stability and thus result in economic progress in any concerned economy. Khan and Senhadji (2003) study endorsed the finance-led growth relationship through its theoretical and empirical estimation. The confirmation of finance as a contributor to growth can be cited for further implications for financial stimulation and appropriate policymaking. Christopoulos and Tsionas (2004) consider the finance-growth nexus by utilizing the panel data of developing countries. By applying different econometric techniques and, most specifically, threshold analysis, the findings conclude a unidirectional causality between financial development and economic growth in the concerned economies.

Campbell and Hopenhayn (2005) consider the market size for evaluating distribution channels and considerable agenda points in terms of the market. However, the study concludes that the market size is of considerable importance in large economies where the minute change in the market brings more significant results than the small ones—the market size matters in the decision of the size of an economy. The concluding remarks of the research suggest that the larger markets are the attorney in terms of changes in the economy and economic well-being. However, at the same time, this study also demonstrates the Schumpeter (1911) theorem of the supply-leading hypothesis. Financial development is sensitive in all ways of growth. It can be monitored so that the constructive areas could be considered and destructive areas in the finance-growth interrelationship should be avoided.

The operationalization and sustainability of the credit market have been studied by Deidda (2006). This study focuses on the fact that the more the financial development, the more competitiveness in the financial markets, which will result in the sustainable economic growth of the economies. However, the involvement of technology and financial innovation will lead to stability in the flow of funds and better utilization of resources. However, the emergence of this issue illuminates the new horizon through this study that the finance-led growth option is appropriate for

economies with strong footings of growth; hence, the less developed countries show relatively opposite results compared to the developed – weak and negative.

ASEAN-4[6] countries are important while considering the financial development and its interring relationship with economic growth (Majid and Mahrizal, 2007). This study was concerned with concluding the scenario of financial development by taking the substance of economic growth and its related areas. This study is concerned with applying upgraded econometric techniques to get the concluding remarks of the research. The findings in the case of Indonesia are aligned with the results of Lucas (1988), which confirms the no causality between the finance-growth nexus. However, the findings demonstrate a relationship between financial development and economic growth in other countries.

By keeping in view, the issue of financial deepening, Apergis (2007) conducted a study to conclude this varied issue. However, this study created three different constructs to reflect the different research horizons. However, this study applied different econometric techniques and, most specifically, handled the dynamic heterogeneous panel. This study confirms the emergence of financial development for economic growth.

The mix influence on the finance growth interrelationship is cited in the study of Abu-Bader and Abu-Qarn (2008). The stance is that the common phenomena of finance-led growth have some limited version of empirical background in this study because a little effect can be cited over the strong impact of growth in attracting financial development. The variation in results depicts the beauty of the implications of the results due to the change in the region, area, or target economies. However, the illumination of the consensus point is still awaited.

Jun, Wan, and Jin (2007) studied the mobilization of investment, management of returns, and well-being of financial resources. The evaluated period for the under consideration study was 1987-2001 in the Chinese context. By considering China as a region under consideration, this study focuses on the strategy of regional alliance in terms of finance growth nexus. The structure of this study was a blend of different

[6] Indonesia, Malaysia, Thailand and the Philippines

provinces that are operational in China. The study confirms a significant relationship between financial intermediation, financial stability, and economic growth on a consensus basis. The results are not equally applicable because there is a mismatch of these results in the case of coastal and those provinces that are in-land.

Financial development and economic growth can be a recondite issue because the well-being of the economies is based on this concerning issue. However, Zang and Kim (2007) conducted a study to analyze the finance-growth nexus empirically. This study reviewed the theme of two studies related to the finance-growth nexus – Robinson (1952) and Lucas (1998). The analysis segment of this research showed unique results in contrast to the general phenomena prevailing about the highlighted stance. The findings revert the existing sensation that financial development causes economic growth in a one-way relationship. Conversely, economic growth may develop financial circumstances on the bottom line. However, after the rejection of financial development's effect on the growth of an economy, there is a need to adopt a prudent way to harmonize the growth options. There is a dare need to re-evaluate the overwhelming financial development catalyst and their related areas of interest. By keeping in view the factor of regional finance growth nexus, Vaona and Patuelli (2008) addressed the same issue in the region of Italy. The findings suggest that the funds at the regional level are contingent on financial development, and at the regional level, financial development is the key determinant of economic growth. Financial development has been operationalized bank capital level by Jokipii and Milne (2008) by taking 25 European Union (EU) countries as a sample. These 25 countries were a blend of 10 and 15 countries that were new and existing EU countries. The findings of this study showed the diverse influence in terms of negative pro-recurring relationship with economic growth.

Hsueh et al. (2013) study was conducted on the footprints settled down by the Kónya (2006). The study focused on the deliberate factors laid down by Kónya in 2006 by prioritizing export and growth. However, by applying different econometric techniques and doing sensitivity analysis, the study concludes that the growth shows its sensitivity towards financial development and confirms the supply leading hypothesis in the case of selected ten Asian countries. The concluding remarks of this research

highlight the importance of financial development and its management to ensure economic progress in Asian countries.

By doing the review base analysis of the finance and growth relationship, Saqib (2015) concludes that the different researchers argued different viewpoints on the varied issue. However, the traditional measurement practices and some recent practices have evolved to figure out this issue. The concluding remarks of this research shed light on the fact that this issue is still inconclusive and shows varying results in the manner of direction and conformation of the relationship. Somehow in the continuation of the study of Saqib (2015), the study of Akbas (2015) concluded an association between the finance-growth nexus. Still, this association is regarded as a week, which raised different questions marks on the authenticity of the subject matter.

Using a simultaneous equation model on the 12 MENA countries from 1990 to 2011, Omri, Daly, Rault, and Chaibi (2015) conducted a study to find out the relationship between financial development and related areas of economic progress by keeping in view the environmental issues and trade concerns. This study's findings suggest a bi-directional causality between financial development and the under-consideration problems of the study. However, the practical implications of this study conclude that financial development is concerned in the case of the economic progress of an economy, specifically in the case of selected MENA countries. Financial stability caused the sound ground to instigate the trade opportunities in these countries, and thus, trade opportunities, as a result, drive economic prosperity in MENA countries.

African region countries are emerging their way to be well-developed countries. However, the struggle is formulated to engage the stock market and banks to achieve desired results. The study of Assefa and Mollick (2017a) captures this varied issue and considers the two mainstream items – the stock market and banks – to achieve the aim of this study. By taking 15 years of data from 15 African countries and applying different econometric and statistical tools, this study concludes that African countries are the good recipient of FDI and portfolio flows – representing financial development, contributing to economic growth.

By taking China and India as the target countries and taking the large data set of 43 years, Shahbaz, Kandil, Mahalik, and Nguyen (2017b) examine the determinants of financial development. After checking the stationarity of the concerned variables for

both countries, different econometric tests were applied. However, the findings of this research advocate that economic growth is a cause of globalization that leads toward financial development, and ultimately, this will authenticate economic growth. Asongu and Nwachukwu (2017) conducted comprehensive research on multiple African countries' development circumstances to attain financial and non-financial aid. The data in this particular research consist of infrastructure, financing capacity, and industrial performance. By applying various statistical tools, this study concludes that the development in different stances will add value to the existing development in a country and, most specifically, in the case of African nations.

Finance-growth phenomena are recognized in the majority of the countries but with the stake of different attributes which have a contingent and robust impact on a situation in a very logical way. However, Badeeb and Lean (2017) concluded in their research that financial development is considered essential for economic growth. However, if oil prices are included, the relationship will be changed as it will slow down the growth and vice-versa.

By taking the large data set of 79 countries, Bremus and Buch (2017) determine the bank-growth nexus. However, this study portrayed that shocks produced due to the change in bank activity level have a direct and significant impact on the GDP of an economy. Hence, the administrative issue for the economies is that openness in the cadre of finance has an adverse effect on GDP. For the implications, this study suggests that the banks with high credit ratios face leverage at the bottom line. The germane is purely the issue of financial management by co-integrating it with the issue of development. The policy is advised to adopt financial development if an economy wants to excel in economic growth (Mehmood and Bilal, 2018). The cumbersomeness in the area of financial affairs to determine the true understanding for the sake of getting economies of scale through better utilization of resources and the liberalization of financial policies (Babatunde, 2011; Gabor and Brooks, 2017; Grassa and Gazdar, 2014; Kyophilavong et al., 2016; Mehmood and Bilal, 2018; Sandleris, 2014; Younsi and Nafla, 2017).

Nyasha and Odhiambo (2018) reviewed the finance-growth nexus by keeping in view the findings of different researches. The findings of this study suggest that the relationship mentioned above is critical and shows different results and bottom lines in

different study settings and different disciplines. However, the economies should take reasonable measures to cope with this issue. By taking the data from 1970 to 2016, Cevik and Rahmati (2018) investigate the Libyan economy as a resource-dependent economy. The considerable points related to the findings of this research showed that the institutional quality in the manner of Govt. spending and channelization of resource allocation helps the economies better comprehend the relationship between financial development and economic growth and, most specifically, in the case of Libya.

Ouyang and Li (2018) conducted a study to conclude the relationship between financial development and economic well-being in panel data from different provinces of China. The findings of this study gave a broad conclusion about the earlier discussed relationship as the financial development represents the negative impact in the case of economic development in the provinces of China. The same issue is also tinted in Chen et al. (2020) study, which portrays the varying results in both situations – positive in the short-run and negative in the long run. Mehmood and Bilal (2021) investigated the finance-growth nexus and concluded the emergence of different financial attributes in attaining economic growth in developing countries.

2.3. Financial Depth and Economic Growth Nexus

Domestic credit to the private sector is lucidly impacting the financial setup in an economy. Arteta and Hale (2008) argued that domestic credit has a considerable impact on the emerging markets inclined to their sovereignty. The intention for the said situation's managerial construction is critical and may vary from economy to economy. The debate for financial depth and growth of the economies has been considered an ongoing debate since the 19th century—however, the direction of causality matters in defining the flow of success of the system. The direction of causality can be cited in different studies from financial depth to growth, and in some studies, it is mentioned as growth to financial depth. The conclusion about this phenomenon can be cited in Odhiambo's (2008b) study, which narrates an un-directional causality from economic growth to financial depth. However, the flow chart leads to the clues of economic growth that lead to savings, and the financial depth can be attained.

The finance-growth nexus was identified and empirically examined by Wolde-Rufael (2009). This study evaluated the factors contributing to attaining the

perspectives of the theme of the study. This study highlighted different aspects – domestic credit to the private sector, liquid liabilities, investment opportunities for the inventors and better infrastructure, etc. – that contribute to attaining the growth options in an economy.

Shahbaz and Rahman (2010) conducted a study to comprehend the financial growth and foreign capital inflows nexus. By applying different econometric techniques and verifying the basic assumptions of the data, this study concludes that domestic credit to the private sector stimulates the economy and its progress significantly. A mixed influence has been observed in the direction of finance-growth options in the study of Kar et al. (2011). The study concludes that the findings are categorically specific to the country and showed different trends in their relationship with the change in the country. However, the circumstances and financial conditions of the different countries are different, and one consensus point cannot be portrayed at the bottom line.

Uddin et al. (2013) conducted a comprehensive study to determine the iconic factors vital in stimulating economies and productivity. By taking Kenya as a sample and applying different advanced econometric techniques to date, this study concludes that the domestic credit to the private sector has emerged as a vital indicator of financial development and hence increases the economic development of an economy – Kenya. Sandleris (2014) states an association between defaults in sovereignty and domestic credit. However, this association addressed an inverse relationship which vows that higher sovereign risk will lower the domestic credit to the private sector at the bottom line. A finance-growth phenomenon has been evaluated by Uddin, Shahbaz, Arouri, and Teulon (2014) by keeping developing countries in view. The bottom line of this study has proved that financial development incorporates economic growth and the economic well-being of developing economies. By keeping in view the situation of the finance-growth nexus, Law and Singh (2014) conducted a study to determine the behavior of finance for the economy's growth. This study highlighted the areas that reflect the bright and adverse circumstances of the involvement of finance. However, this study concludes that the optimal level of finance may bring the economic well-being of an economy.

Moreover, in continuation of the study of Law and Singh (2014), Arcand et al. (2015) examine the criterion considered optimal or considerable in the case of financial depth. By applying different statistical analyses, this study concludes that the financial depth starts functioning negatively and exceeds the specific level[7]. Before and after study on European Union's financial crises was conducted by Asteriou and Spanos (2019) by taking the panel data of 26 countries. This study concludes that financial resonance affects economic growth by applying statistical and econometric techniques and dummy variables. Still, in case after the crises, financial development became the cause of resistance to economic growth from 1990 to 2016. The standard measures of financial depth are utilized for the proxy of financial development. However, as a result of these findings, the systematic involvement of adequateness of capital through domestic credits and credit management may serve as a shield in the period of the economic crunch. By taking the panel data from 1978 to 2012, Asghar and Hussain (2014) also confirmed the emergence of the financial development index concerning financial depth. However, developing countries are the implicit beneficiaries of financial depth while considering the economic benefits.

By taking the panel data of a region[8], Abubakar, Kassim, and Yusoff (2015) conducted an empirical examination to find out the significant relationship between financial development and economic growth, better known as the finance-growth nexus. This relationship is of considerable debate and has gotten attention around the globe. The findings of this study confirm that banks' private credit and domestic private credit contribute significantly to economic growth. However, appropriate financial policies may stamp the development.

By taking the data UAE for 36 years on economic variables, Sbia, Shahbaz, and Ozturk (2017) conducted comprehensive research on growth, urbanization, and financial development. Outcomes of this study suggest that the indicators of financial depth significantly affect economic growth. However, bi-directional causality was concluded among the variables. The debate regarding the connections of financial development with the growth of the considered economies is ongoing, and differences in opinion can be cited in the earlier researches (Akbas, 2015; Asghar and Hussain,

[7] The criterion is, if the percentage of credit to private sector reaches to 100 in relation to GDP.
[8] "Economic Community of West African States (ECOWAS) Region"

2014; Asongu and Nwachukwu, 2017; Babatunde, 2011; Greenwood and Jovanovic, 1990; Levine et al., 2000; Omran and Bolbol 2003; Sandleris, 2014; Shahbaz et al., 2015; Sehrawat and Giri, 2016). The study of Sehrawat and Giri (2016) was conducted to endorse existing phenomena of incorporation of financial integration to attain economic well-being. This study is the triumphant view of the finance-led growth connection. However, this study's destined economies – SAARC – are prescribed to focus on financial management and development to get the stamp of growth.

Shahbaz, Van-Hoang, Mahalik, and Roubaud (2017) conduct comprehensive research to evaluate the Indian economy's financial development. This study uses quarterly data over 40 years and applies many econometric techniques to conclude the aim of this study. This research concludes that there is a direct association between capital formation and icons of financial depth on the representation of financial development and economic growth because capital formation leads to a solid financial system, which affects economic stability at its best.

Islam et al. (2018) conducted a study to find out the co-integration between financial depth, FDI, and economic growth in the case of China. By applying different econometric techniques and doing further quantitative analyses, the finding of this study suggests that financial development has a significant and positive linkage with the FDI. However, FDI and financial depth join together, and as a result, economic growth may take place and most categorically in the case of China. It is worth mentioning that the volatility in the manner of finance growth interrelationship has been examined by the study of Zouaoui et al. (2018) by taking the panel data. The empirical examination was destined to determine the issue of financial depth on the advanced analytical footings. This study successfully stamped the volatility among the said issue and linked it with the investment opportunities available in the under-consideration economy.

Ibrahim and Alagidede (2018) conducted a study to determine the relationship between financial development and economic growth in sub-Saharan African countries. The study under consideration did the data purification and settlement as per the research requirement. By doing so, the data splitting and different statistical methods were opted to streamline the data. The findings suggest a positive and significant relationship between financial development – proxied through the indicators of

financial depth – and economic growth. However, certain contributing factors confirm the earlier mentioned relationship between these two. Moreover, the enormous financial capacity/ depth has a long-term impact on economic growth and vice versa.

The debate on financial interference in the growth functionality has been evaluated by Swamy and Dharani (2019). By considering the variables of financial depth and their related areas, the study is attempted to conclude the finance-growth nexus. The demanding criteria were applied to the under consideration issue to conclude the authenticated panacea. The logical reasoning behind the subject matter is the threshold effect deemed for the developmental process backed by financial engineering. However, the vital element of this study unveiled the fact that robust and contingent strategies should be devised for financial depth in the manner of credit management which shell leads the economic growth. The results of this study reflect the dominating factors that are equally admissible for the developed and emerging economies.

The performance of the different economies also has significant relevance in investment decision-making because the performance of sectors of any economy may vary from time to time and from circumstance to circumstance. These sectors purely depict the trend of doing work in an economy. These trends may be conditional or cyclic but are of significant importance in decision-making for the economies where they have to go. The performance of the various sectors in an economy advocates and is inclined to the financial performance and financial depth. This common factor depicts that one sector's performance in an economy may serve as a bailout process for the many other relevant areas of interest. However, credit management, money circulation is the deterministic agendas when discussing economic growth (Asongu and Nwachukwu, 2017; Deidda, 2006; Greenwood and Jovanovic, 1990; Herrera-Echeverri et al., 2014; Islam, 2018; Jones, 2007; Jude and Levieuge, 2017; Lardy, 1995; Pegkas, 2015; Tun, 2012; Yao, 2006).

Researchers are in continuous debate of digging the utmost evaluation of finance-led growth circumstances around the globe. The authenticity of this option may be cited in the capacity of Arestis and Demetriades (1997), Christopoulos and Tsionas (2004), Bittencourt (2012), Hoque and Yakob (2017), Nyasha and Odhiambo (2018), Sehrawat and Giri (2016), Swamy and Dharani (2019), and Zang and Kim (2007). Still,

there is a lack of consensus on what ingredients of financial depth – financial development – cause the exact growth for the economies.

2.4. Financial Access and Economic Growth Nexus

The recent viewpoint related to the growth options of an economy has several areas that are of considerable importance, and financial access and the availability of financial services are of emerging in nature because the access and the utilization of financial services may bring betterment in the standard of living (Ardic, Heimann and Mylenko, 2011). The world is competing for appropriate allocation and utilization of resources, and financial services availability and financial inclusion are emerging in nature in the current era (Ardic et al., 2011; Arora, 2014). In continuation of the supporters of financial development led growth connection (Arteta and Hale, 2008; Hung, 2003; Jun et al., 2007; Wolde-Rufael, 2009), the study of Shahbaz (2011) did a comparative analysis for economic development either more inclined due to FDI or financial intervention. The concluding remarks suggest that financial intervention/ financial access qualifies for economic growth more significantly than FDI.

By considering financial institutions' access through institutional quality as a prime indicator of financial development, Law et al. (2013) conducted a study to conclude the earlier mentioned issue. However, this study's findings make clear that there is a threshold effect of institutional quality and empowerment on the financial institutions on the economic growth of an economy. According to this study, up to a certain level, the financial intuitions and their financial management may affect the growth of an economy. After a certain level, the dominating issue will become meaningless, or in some cases, it may be harmful to the economies. The emphasis on institutional quality and their progress was also highlighted by Levine (1997), which ensures the ideology of finance-growth nexus.

Financial inclusion is attaining gradual importance in the present day as access to financial instruments, and financial services could be the robust sources for the success of the services provided by the financial institutions. The attribution of this phenomenon is based on how the customers and the potential customers are aware that these services are available to them to utilize (Arora, 2014; Shen et al., 2021). However,

the study's findings by Arora (2014) state the direct linkage of financial access with economic growth.

By taking the data of 77 countries for 1980-2007, Beck et al. (2014) conducted a study to conclude financial intermediation/ financial access and its effects on the specialized areas – size, growth rate, and volatility. By applying different econometric techniques and the implications of a different model, this study's findings suggest a strong impact of financial intermediation on the under-consideration issues. However, there is the only variation in results due to the size of the economy. Financial intermediation affects the low, middle, and high-level economies according to their size. The financial intermediation reflects financial stability strongly in low and middle-income countries, but higher volatility is estimated in higher-income countries.

The implications and effects of financial inclusions are different for developed and developing countries. In a study by Arcand et al. (2015), financial inclusions are negatively related to economic growth in high-income countries. Whereas the study of De Gregorio and Guidotti (1995) separated the period into two sets, one for 1960-85 and the other from 1970-85, the correlation for the period of 1960 to 1985 was positive, and the negative correlation existed for 1970-1985. These studies indicate that developed countries may have got the point where increment in financial inclusion is no longer related to a positive relationship between economic growth and financial inclusion. The efficiency of investment decreases with increments. However, still, literature is not certain about the relationship between economic growth and financial inclusion.

In contrast, in developing countries, this relationship shows positive results. For instance, Pearce (2011) showed that financial inclusion increased the MENA (the Middle East and North America) region's competitive environment, increased incomes, reduced poverty, and generated new employment opportunities. Still, MENA has limited financial services under the control of NGOs. If we look at some other countries, as Sharma (2016) checked the relationship between the economic growth and financial inclusion in the Indian economy, the results indicated the positive behavior of economic growth and financial inclusion.

Desbordes and Wei (2017) studied the financial system's performance to conclude this significant issue. However, the study considers different significant

elements that are persistently managing the hold of financial development. The valuable remarks of this study show that the economies should focus on the management and up-gradation of their financial system so that this valued financial system can cause the growth of the concerned economy. The digitalization of the financial system can drive financial innovation (Gabor and Brooks, 2017). The earlier considered issue is sensitive because this particular process can boost the financial system in its functionality, but the ultimate management of this stance is desirable. However, the endorsement of a planned financial system can cause growth options.

Institution quality and their relevance with financial development are of considerable debate. However, the study of Fernández and Tamayo (2017) provides insight through a theoretical and empirical survey. The primary focus of this study was institutional quality measured through transaction handling procedure, transactions cost, and contingency plans against any of the related circumstances. The findings of this research highlighted the thematic relevance of intuitional quality with economic growth, which, however, leads to the economic well-being of the concerned economy. The implications suggest that, along with many others, asymmetric information and poor market discipline are the key hurdles in institutional quality and financial development. Moreover, this will react pathetically to the economic growth.

By considering financial inclusion as a pacemaker of economic growth, Sethi and Acharya (2018) took data from 31 countries around the globe to conclude the emergence of financial access in attaining economic growth. However, the findings conclude that financial access is of considerable importance while considering the economic growth of the economies. Financial inclusion/ financial access has been studied by Ratnawati (2020), and the findings of this study narrated that financial inclusion has a significant impact on the economic well-being of an economy. However, the stance of this study is that prudent financial inclusion will result in the desired results. In other cases, irregularities may occur in the financial system and mislead Asia's growth options.

Recent literature between financial inclusion and economic growth supports the positive link. For instance, Shen et al. (2021) investigated the spatial data and techniques on 86 neighboring countries and concluded that digital financial inclusion boosts economic growth and has spillover effects. Adedokun and Aga (2021) found a

positive link between economic growth and financial inclusion in Sub-Saharan African countries. Menyelim et al. (2021) also investigated the relationship between financial access and economic inequality in 48 Sub-Saharan African countries. They found a negative link between financial access to the relationship between income inequality and economic growth.

Financial inclusion has been considered in the study of Adedokun and Ağa (2021). By viewing the period from 2004 to 2017, the study concluded that financial inclusion significantly and positively impacts the countries' economic growth under consideration. This study's findings also conclude the direction of causality among the finance-growth nexus that economic growth leads to financial inclusion in the short run.

2.5. Financial Efficiency and Economic Growth Nexus

Financial efficiency has meaningful effects on financial stability and economic growth. Blejer's (2006) study concludes the authenticity of financial efficiency about financial stability and economic growth. The study provides a systematic flow of attaining economic success from financial efficiency. To estimate financial efficiency and financial development, Hasan, Koetter, and Wedow (2009) conducted a comprehensive study by taking a sample of 100 countries between 1996 and 2005. The findings of this study suggest that financial efficiency and cost-effectiveness are of significant importance while considering the economic growth of developed economies. At the same time, financial efficiency is also a key attribute in defining economic growth in developing countries.

By doing a comparative analysis of the developing and the developed countries, Waheed and Younus (2010) consider financial depth and efficiency as the defining figures in attaining economic growth. The findings revealed the dynamic impacts of financial depth and financial efficiency on economic growth because the positive and significant effect of financial depth can be cited in growth. Still, the positive and insignificant impact of financial efficiency can be viewed at the bottom line of the under consideration research. Financial efficiency is not the only way to attain economic growth in the concerned countries. The institutional quality, financial institutions' supervision, and other related areas are also of considerable importance (Gabor and Brooks, 2017; Waheed and Younus, 2010).

Financial efficiency was considered to bring economic growth in the developing countries by Saqib (2013). The lifestyle of the residents depends upon the purchasing power parity (PPP) and financial well-being of the residents of a country. The stable and strong PPP depends upon several circumstances, whereas institutional quality, well defined financial system, and an increase in per capita income are the major stakeholders of the concern. By keeping in view the earlier-mentioned scenario, Ahad et al. (2017) estimate the contingent effect of a stable financial system with the import capacity. Using a multivariate model, the findings of this study suggest that financial development significantly attracts imports, and imports are negatively and significantly correlated with import prices and vice versa.

Inflation is a major hurdle in the way of financial development. This may reduce the purchasing power parity and overall financial stability of an economy. By taking the annual panel data set of 22 years for 40 developed- and developing countries, Younsi and Nafla (2017) concludes that the financial-development is a key to the economic well-being of the developing countries. On a macro level, the campaign of financial development starts from a well-defined monetary policy and through appropriate financial reforms. However, financial crises have a negative and significant relationship with economic growth, and these results indicate the robustness of the banking system on the whole.

By considering the financial efficiency and interest rate, Assefa et al. (2017b) conducted a study on how these factors contribute to economic growth. The findings suggest a negative and significant impact of interest rate on the stock prices and growth. This could happen due to the inverse connection between interest rates and growth and vice-versa. By taking sub-Shahan countries, the study of Jalloh and Guevera (2017) conducted a study to conclude the issue of financial depth and efficiency. The findings of this study conclude that financial depth played a significant role in bringing economic growth in the under consideration countries. At the same time, the interest rate spread is adversely affecting economic growth. Specifically, there is an endorsement for the low-interest rate spreads to promote the financial efficiency of these countries. Moreover, the authorities and the governing bodies should take care of this issue to ensure financial efficiency and thus attain economic growth.

The transitional phase in confirmation of the finance growth relationship is on its way to evaluation and understanding. The complete theoretical and empirical assessment will give a concrete bottom line about this varied issue. By keeping in view, the knowledge of this core issue Bist (2018) conducted an empirical examination to conclude that either the relationship between finance and growth is available or this study was also in a hunt to the determination of the type of relationship – long or short – and the direction of the relationship as well. For attaining the aim of this study, 16 economies regarded as low in their respective income were selected. Data over two decades was collected for empirical analysis and understanding. The results of this study were aligned with the results of Beck et al. (2000), Law and Singh (2014), Abubakar et al. (2015), Shahbaz et al. (2015); Sbia et al. (2017), Islam et al. (2018) which states that there is a: I) positive, II) significant, III) strong and IV) long-run relationship exists in the contemporary issue.

By taking the cross-country data for forty years, Neanidis (2019) conducted an empirical examination to find out the role of financial institutions and, most specifically, the role of the banking sector on the FDI – growth relationship. The concluding remarks of this study suggest that the banking supervision/ efficiency and institutional quality are the tycoons in between the FDI – growth relationship. The banking regulatory bodies should monitor the financial system to get the desired results and appropriate deployment of the financial system.

The compliment for taking the credit for growth has been cited in earlier research (Baltagi et al., 2009; Gabor and Brooks, 2017; Law et al., 2013; Sehrawat and Giri, 2016; Shahbaz and Rahman, 2010). The same endorsement can be cited in Combes, Kinda, Ouedraogo, and Plane (2019). The composition of the findings of this research showed variations in its outcome. These variations are subject to the change in the subject matter of destined variables that are progressively hitting the target. The nutshell of the findings comprises the contingency of the events that happened to support and negate the subject matter. The efficiency and financial flows matter a lot in deciding the ultimate influence on growth and other relevant areas of interest. However, the direct linkage between the financial flows and growth can be cited because the flows' volatility made volatile growth and vice versa.

However, the confirmation of financial development through financial intermediaries' involvement in sanctioning credit and interest rates management can play a vital role in financial development. However, through appropriate awareness through credit information index, interest rates and credit management can better adopt financial instruments. However, financial development is the key contributor to attaining growth in the selected developing countries (Manu et al., 2011; Saqib, 2013; Vaona and Patuelli, 2008).

The literature suggests that financial development dimensions can help reduce income inequality and economic growth. However, the efficiency of the financial sector is the deterministic criterion for achieving economic growth on the global average (Blejer, 2006; Hasan et al., 2009; Waheed and Younus, 2010). In addition, the literature also suggests that banking sector development has a stronger positive effect on income distribution than stock market development. The overall concern is the efficiency of the concerned economy's financial sector that may uplift the economies, reduce income inequality, and strengthen economic growth (Alfaro et al., 2010; Assefa et al., 2017b; Jalloh and Guevera, 2017; Rioja and Valev, 2004).

2.6. Financial Stability and Economic Growth Nexus

Different theories have their viewpoint about financial instability, and thus, this may vary according to the period, economies, and global factors. However, numerous issues can be cited in the literature that may affect the financial system. The financial literature considers some of these issues as hasty liberalization of the financial sector, mismanagement in financial matters, inappropriate policy-making, unjustified resource allocation, and irregularities in the financial system (Ghassan et al., 2021; Shahbaz et al., 2011; Swamy and Dharan, 2019).

The major concern for financial stability deals with the proportion of non-performing loans in the credit allocation process and loan repayment system. This may arise due to the inappropriate loan granting systems and fund management. The financial institutions should focus on the repayment of loans and their proper functioning to rehabilitate the financial stability and thus attain economic growth in the concerned economy (Blejer, 2006; Manu et al., 2011). Bittencourt (2012) examined financial stability and economic growth nexus by taking Latin American countries as a

base. The study was undertaken to re-investigate the theorem of Schumpeter (1911), which has mainstreamed the agenda of economic growth. This study took time-series and panel data to investigate whether entrepreneurial activities channel financial resources through the financial sector can boost economic growth at the bottom line. However, the concluding remarks of this research suggest that the Schumpeter (1911) theorem was based on reality, and the findings of this research were confirmed by the study of Bittencourt (2012). Moreover, economies should focus on macro-economic stability if economic growth is destined.

The role of Govt. is a high-profile stance in the case of economic and infrastructure stability. Ting (2017) brings 2008 as a base year and empirically examines the different areas of interest. This particular year has a fame for financial crises by keeping in mind this core issue. The stability of the macro-economic stance of any country is based on the financial and economic policy of any country. The financial institutions' performance and activity do matter in bringing the financial system's stability and thus result in economic growth. However, the role of banks and stock markets is considered significant in this regard. The findings of this research provide groundbreaking results in its field. It denominates that the negative impact of financial liberalization has a significant effect on the financial crises of the earlier mentioned period. Moreover, banks cannot align with financial-stability measurement but serve as a player to make it stronger. The findings are also following the footings of Bittencourt (2012), Beck et al. (2014) and, Omri et al. (2015), Sehrawat and Giri (2016).

Hoque and Yakob's (2017) study examined the extended version of this issue by taking the latest version of finance growth nexus evaluation through some moderating elements involvement. The modality of this research lies in the induction of moderation of the assessment of the subject matter. The estimated elements of this study conclude that the Malaysian economy can gain a boost if it focuses on the subject matter – financial development. However, the edge of this study was to get an authentication stamp in the manner of inducting moderating elements, which represents a more comprehensive and advanced view of the subject matter.

The Finance-growth nexus is a debatable concern, and the beauty of this issue lies in the fact that it showed a difference in the results among different countries. To

bridge the gap and create a consensus among the researcher's viewpoints, Söderlund and Tingvall (2017) conducted comprehensive research on the case of China. The competitive edge of this research is also that the provincial level data were gathered and analyzed. This study's concluding remarks showed that financial development significantly boosts overall economic growth by taking “marketization of financial system and economic growth” as the main attributes.

By taking the data of 31 countries on board, Hou and Cheng (2017) conducted a comprehensive study to highlight the dominating factors that affect economic growth. After applying different econometric tools and other analytical techniques, this study concludes the unique findings at the bottom line. However, while connecting the stock market and functionality of the banking sector, one should consider the era of evaluation first because the performance of these macro-economically integrated indicators elapses their performance with the change in the time frame, market conditions, individual investing behavior may tend to change time-to-time. The bottom line of this research indicates that the more a country engages in financial activities, the more fruitful results will be.

Since the global financial crisis of 2007, the finance growth nexus has become important in the literature on financial development and economic growth relationship (Carré and L’œillet, 2018). This research is primarily focused on the pre and post-financial crises analysis. However, this study reviewed different investigations focusing on finance growth nexus based on pre and post-financial crises. It concluded that there is no consensus on the elements on an overall basis. Still, on a specific cause, certain factors contribute towards financial development, resulting in the economies' economic well-being. Moreover, financial instability, inflation, and inappropriate financial intermediation may result in the mismanagement of the financial development of different economies. Financial stability has been viewed by Ghassan et al. (2021). The view of this study is based on the financial policies and regulations authorized by the banking sector for the administration of financial stability. However, in the long run, financial stability authenticates economic growth.

The augmented beauty in the empirical findings of earlier cited research lies in the variety of observations, data sets, time frame, methodological differentiation, and most importantly and basically above all, the variations in their viewpoints/ conclusions

of the research. The approaches of differentiation can distinguish the issue of variation in the findings in the circumstances – security empowerment, food and health, technological empowerment, political stability, human capital administration, enchanted infrastructure, managed and supreme law and order situation and entrepreneurial mindset, etc. – of the concerned economies/ target population and these circumstances may be the predictors on individual or the blend basis (Arteta and Hale, 2008; Bist, 2018; Economou et al., 2017; Greenwood and Jovanovic, 1990; Hamdi, 2015; Hoque and Yakob, 2017; Loungani and Razin, 2001; Moosa and Cardak, 2006; Scott-Kennel, 2004; Thanawala, 1994; Vaona and Patuelli, 2008).

The ongoing debate is still didn't attain solitary and has different opinions and options as per change in time, place, and circumstances. The case-to-case variations soothe the need to determine the facts and figures that can be called determining factors in the under consideration scenario. Certain studies are confirming the emergence of finance-led growth options (Abubakar and Gani, 2013; Aluko et al., 2020; Asghar and Hussain, 2014; Cevik and Rahmati, 2018; Christopoulos and Tsionas, 2004; Combes et al., 2019; Hamdi, 2015; Hsueh et al., 2013; Hoque and Jun et al., 2007; Nyasha and Odhiambo, 2018; Yakob, 2017; Zouaoui et al., 2018). The bottom of different researches reflects the inconclusive results about this varied issue, and some of them reflect mixed results so far (Deidda, 2006; Law and Singh, 2014; Zang and Kim, 2007). However, this extensive literature has studied the different measurement criteria of finance development and economic growth. The measurement criteria are also different from one study to another study. These measurement criteria also showed huge sought of variation in individual and overall group levels. There is also a need to develop comprehensive measurement criteria to ensure this core issue's simple and lucid functioning. The difference in views vows the emergence of a study that can provide a panacea in its understanding, vision, and functionality.

2.7. Comparative View of Different Studies on Finance-Growth Nexus

Table 2.1: Summary of Selected Previous Studies on Finance-Growth Nexus

Empirical Study	Time Frame	Country/ Countries	Methodology	Major Findings
Major Studies on Finance-Growth Nexus				
King and Levine (1993)	1960-1989	80 Countries	Co-integration and Sensitivity Analysis	FDEV ⟶ EGRT
Levine (1997)	1976-1993	Low, middle and high-income countries	Structural Analysis, Correlation Analysis	FDEV ⟶ EGRT
Beck et al. (2000)	1960-1995	63, 77, 61, and 72 Countries Panel for Different Analysis	Dynamic Panel Technique	Accounting reforms strengthen FDEV, and resultantly, EGRT stamped
Rioja and Valev (2004)	1960-1995	74 Countries	GMM Dynamic Panel Techniques	FDEV ⟶ EGRT
Al-Awad and Harb (2005)	1969-2000	10 Middle Eastern Countries		FDEV impacts EGRT up to a considerable level. No clear direction is concluded.
Deidda (2006)	-	Developed and less developed economies	Econometric and Statistical Analysis	For developed countries FDEV (+) ⟶ EGRT For less developed countries FDEV (–) ⟶ EGRT
Apergis et al. (2007)	1975-2000	15 OECD and 50 Non-OECD	Pedroni Panel Cointegration	FIDEE ⟷ EGRT
Hassan et al. (2011)	1980-2007	Low, middle and high-income countries	Panel Co-Integration and Causality Analysis	FDEV ⟶ EGRT

Table 2.1 Continued

Bittencourt (2012)	1980-2007	4 Latin American Countries	Panel pooled, fix, and random effect model	Confirms Schumpeter's Theory
Law and Singh (2014)	1980-2010	87 Developed and Developing Countries	Dynamic Panel Model	Threshold effect between FDEV and EGRT. It is significant up to a certain level.
Asghar and Hussain (2014)	1978-2012	15 Developing Countries	Pedroni Panel Cointegration	FDEV ⟶ EGRT FDEV ⟷ FORDI
Beck et al. (2014)	1980–2007	77 Countries	Pairwise Correlations	FDEV ⟶ EGRT
Omri et al. (2015)	1990-2011	12 MENA Countries	Unit Root Testing, GMM	TOPP ⟷ EGRT FDEV ⟶ EGRT
Sehrawat and Giri (2016)	1994-2013	SAARC Countries	FMOLS and PDOLS	FDEV ⟶ EGRT
Ibrahim and Alagidede (2018).	1980-2014	29 Sub-Saharan Africa	Threshold Estimation Technique	FDEV ⟶ EGRT
Zouaoui et al. (2018)	1960-2016	50 Developing Countries	Fixed Effects Estimator	Volatility in FDEV and EGRT is stamped
Swamy and Dharan (2019).	1983-2013	24 Economies		FDEV (-)⟶ EGRT
Aluko et al. (2020)	1990-2015	33 Sub-Saharan African	PMG Estimator and GMM Estimator	FDEV ⟶ EGRT
Mehmood and Bilal (2021)	1991-2017	10 Developing Countries	DCCE Model	FDEV ⟶ EGRT
Bidirectional Causality between Financial Development and Economic Growth				
Blackburn and Hung (1998)	-	-	Multi-country version of the model	FDEV ⟷ EGRT
Abu-Bader and Abu-Qarn (2008)	1960-2004	5 MENA Countries	VAR and VECM	FDEV ⟷ EGRT

Table 2.1 Continued

Swamy and Dharan (2019).	1983–2013	24 Economies		FDEV ⟷ EGRT
Non-causality between Financial Development and Economic Growth				
Zang and Kim (2007)	1961-1995	74 countries	Sims–Geweke test	No causal link between FDEV and EGRT but a substantial link between EGRT to FDEV.

FDEV may read as financial development and EGRT is the abbreviation of economic growth. FIDEE = financial deepening, VAR = vector autoregressive, PMG = Pooled mean group, GMM = generalized method of moments, FORDI = foreign direct investment, TOPP= trade openness, ARDL = autoregressive distributive lag, ECM = error correction model, SUR = seemingly unrelated regression, TSLS = three-stage least squares, MFR = Mixed Fixed and Random, RQ = regulatory quality

Source: Compiled by Author

2.8. Summary

The spoonerism in evaluating financial development is challenging and debated in different studies. The theme of changing the status of many economies relies on these various issues (Abubakar et al., 2015; Chang, 2002; Combes et al., 2019; Desbordes and Wei, 2017; Ferreira and Matos, 2008; Hsueh et al., 2013; King and Levine, 1993; Sandleris, 2014; Swamy and Dharani, 2019). The earlier chronological literature on the subject matter reveals different aspects. This aspect ranges from measurement to evaluation criteria and variations in findings from economy to economy and time to time. Financial development is a systematic process depicted through this extensive literature and has significant clues and criteria that instigate further study. The managerial aspect is spotted in the literature, which urges to establishing a phonological design that saves the importance of the subject matter under consideration. The mixed influence of the results cited earlier also reflects the answer of many phenomena – what, when, why, where, and whom –narrating the backdrop of the majority of the studies.

This vast literature helps this study design its unique work method in light of previous research conducted by different researchers. The variation in viewpoints/ results is evaluated, and shell be incorporated in attaining the objectives of this study. The primary agenda of this literature was to find out the gap and the grey areas that should be addressed through this research so that the objectives of this study can be attained. The bottom line of this literature highlights the emergence of a study to

conclude the logical and empirical version of the financial development and economic growth connection.

The key points of this literature also provide different clues about the impotence of finance-led growth relationships in different kinds of economies – developing, emerging, and developed economies. At the same time, the current study is going to target the developing economies because these countries are regarded as those economies which are striving for their growth in any terms and options to change the status of their economy through economies of scale (Elkomy et al., 2016; Economou et al., 2017; Habibullah and Eng, 2006; Herzer and Klasen, 2008). However, this study will empirically evaluate the finance-growth by targeting developing economies.

2.9. Supply-Leading and Demand-Following Hypothesis

2.9.1. Overview

Certain aspects and dimensions are directly and indirectly related to the finance-growth nexus. These aspects are essential and need a prudent attraction for their explanation. However, among many other aspects, the supply-leading and demand-following hypotheses are important while considering the finance-growth nexus (Chow et al., 2019; Fan et al., 2018; Isu, Okpara and Ch, 2013; Karimo and Ogbonna, 2017; Tadesse and Abafia, 2019).

2.9.2. Context of Supply–Leading and Demand–Following Hypothesis

The context of issues as mentioned earlier gained considerable importance in the era of the competitive edge where the economies are in search of clues to find the exact pathways of development and economies of scale (Adeyeye et al., 2015; Chaudhry et al., 2013; Mehmood and Bilal, 2018; Muyambiri and Odhiambo, 2018). However, the supply-leading hypothesis depicts the context that there is a need for a well-developed financial system to attain the growth of an economy (Blackburn et al., 2005; Habibullah and Eng, 2006; Murinde and Eng, 1994). On the second side – the demand-following hypothesis – the applicable concept is that the growth results in the financial system's development (Isu et al., 2013). These two concepts are opposite of each other, and in the manner of their concern, the debate on both these hypotheses is ongoing. Different studies have been conducted on these issues, and various studies

show the difference in their viewpoint. However, the present study includes selected literature on these issues to get better insight and the ultimate conclusion.

2.9.3. Review of Selected Literature

There are many empirical investigations available on the issue of financial development and economic growth phenomena. These investigations are based on the serious concerns related to finance, financial development, financial deepening, research and development, infrastructure, technological advancement, and skill orientation to the human capital that may, directly and indirectly, mark the economic growth (Adeyeye, 2015; Akinci, 2013; Chow et al., 2019; Karimo and Ogbonna, 2017; Murinde and Eng, 1994; Rioja and Valev, 2004; Zhao and Du, 2007). Financial well-being and economic sovereignty are the top priority concerns of every country (Muyambiri and Odhiambo, 2018; Neanidis, 2019; Rajan, 2006; Uddin et al., 2013). The economists are in a recondite situation to get an insight into the financial issues and the economic conditions in the concerned economies. In the era of global competition, policy-making, theory building, and coming up with a concrete conclusion is a fanfare task (Thanawala, 1994). Economic growth is relevant to the macro-economic indicators and can be dignified somehow at the micro-level. The commentators shed light on the emergence of market selection, investment categorization, new and advanced technology, and identifying key customers in terms of growth options (Carlsson and Eliasson, 2003).

Different economies follow different schools of thought to express their views about financial concerns and economic sovereignty. The differences in their point of view are based on theory, practice, and the basis of literature available on the concerned issue (Aluko et al., 2020; Belloumi, 2014; Loungani and Razin, 2001; Wolde-Rufael, 2009; Zhang, 2001b). However, the considerable debate turned into the conclusion of logical reasoning of two different theories/schools of thought. I) is demand following theory and II) supply leading theory. These two theories are presented at different times and by various researchers to prove their viewpoints and give a logical verdict. The first

theory – the demand following theory – was developed by Robinson (1952), and the second theory was devised by Schumpeter[9] (1911).

The rationale of doing work by keeping in view the basic and logical concepts of demand-following and supply-leading hypothesis/ theorem is to understand the differential point that may create dissension between the earlier mentioned hypothesis. The literature has an authenticity about theorems that are predominantly devised by Patrick (1966). The study of Patrick (1966) introduced two different aspects in the existing literature of financial development – demand following and supply leading behavior. These two behaviors have a backdrop of two different opinions and methods of doing work (Akinci et al., 2013; Abubakar and Gani, 2013; Chang, 2002; Jalloh, 2015; Chow et al., 2019; Murinde and Eng, 1994). These two aspects can be differentiated on their unique identification of basic evaluation criteria. The growth-led finance options and finance-led growth are directly associated with the demand-following and supply-leading theorems (Patrick, 1966).

The contributing factors in these theorems are the evaluation criteria and basic functionality – evaluating the cause and effect relationship. This particular differentiation served as dominating evaluation criteria for the economies following either hypothesis at a specified period. However, these two concepts/ theorems are of relative importance and have significant contributions as per specified time and place (Karimo and Ogbonna, 2017; Thanawala, 1994; Wolde-Rufael, 2009).

Financial development and economic growth phenomena and their inter-relationship are of considerable impotence and debatable. To conclude this varied issue, Murinde and Eng (1994) conducted a study to verify the under-consideration pheromone and the stance to prove either the existence/ implementation of demand following or supply leading theories in the developing countries, i.e., Singapore. However, different econometric techniques and methods were applied, and a concrete conclusion was driven. The decision depicts that an economy like Singapore follows the supply-leading theory and focuses on rehabilitating. However, a need to reconstruct

[9] There is a contradiction about the publication date of Schumpeter's theory of economic development. Its publication may be cited in different research as 1911 and 1934 respectively. Both the dates are considerable because the German version of this theory was published in 1911 and its English version was published in 1934 (Thanawala, 1994).

and rehabilitate the financial system if an economy wants to create a pinnacle in economic development.

Thornton (1996) evaluated the finance-led growth relationship by taking 22 developing countries into empirical consideration. The thematic view of this issue is positive and preselected in the prescribed literature and can be cited according to the difference in the opinion of the researchers. The current empirical work provided ground-breaking results, and the empirical ground suggests the mixed influence in the finance-led growth relationship. The diversity of opinion shows that most of the countries are not inclined toward growth by apparent and concrete changes in the financial matters of the developing countries, and some of the countries can be cited in the empirical findings that have an inclination toward growth options when the financial system brings changes in their terminologies.

To test the demand following or supply leading hypothesis, Chang (2002) conducted a study to come up with the selection of at least one theorem to get a concluding insight about this issue. The findings of this study were recondite and didn't follow any of the early mentioned theories. However, the mainstream agenda is the finance-growth nexus; their behavior is in their way and autonomy in their mutual effects. Moreover, there is no confirmation –yet – according to this particular study that any hypothesis of finance-growth inter-relationship exists. The results are specific, not general, because of China's target population or the data used to analyze this agenda point. However, the issue of generalizability may be suspected in this case.

By taking the panel data of 109 industrial countries over approximately three decades, Calderón and Liu (2003) examine the influence of financial affairs in bringing prosperity to concerned economies. The suitability of evaluation criteria and appropriate model functioning can get the destined results, or at least the research can determine what it is destined to be. However, by keeping the emergence of the earlier mentioned issue and applying suitable econometric techniques, considerable points can be cited in the findings of this particular empirical examination. These considerable points are: firstly, there is a positive and long-run relationship between financial development and economic growth. However, one can conclude the significant influence of financial intermediation on the growth of the concerned countries. Secondly, the influence of financial matters is of considerable importance, most

specifically in developing countries rather than countries with great industry input and specific consideration for industrialization. Thirdly, the up-gradation of the financial system and appropriate policy-making about the core area of finance can bring overall certainty in bringing growth and stability. These indications confirm the thematic interpretation of supply leading scheduling, reflecting that finance and its related area are the conformation criteria for better growth opportunities and stability options.

By considering a large panel of 74 countries, Rioja and Valev (2004) conducted a study to determine the relationship and direction between financial development and economic growth. After a detailed analysis by utilizing the different econometric techniques, the conclusion of this research showed that the financial development has varying trends to the variation in region. However, regions are further categorized into different income levels and hence showed their performance according to the financial intermediation of the financial institutions prevailing in the market. The concept and theorem of the supply leading hypothesis were also confirmed in the study of Habibullah and Eng (2006), which provides the authentication stamp in the way of financial resonance to lead the growth options.

The direction of causality in the case of finance-growth nexus is concluded in the study of Odhiambo (2007). According to this study, the supply leading and demand following phenomena is a Gordian knot which showed their recondite results that may vary from economy to economy and from time to time. The consensus on the direction of causality in the finance growth nexus is not concluded as certain factors should be addressed to account for this varied issue. There is also a sensitivity in the measurement criteria of financial development and economic growth, which may also create a distinction in the concluding remarks of the under consideration issue. The bottom line of this research reflects that the flag of bi-directional causality is flagging in developing and developed economies. Still, less developed countries are concerned, contemplating the unidirectional causality in the concluding remarks.

The relationship and the direction of the relationship between financial development and economic growth were studied by Odhiambo (2008a). This study focused on the influence of this varies issue in developing countries. The subsequent results of this study reveal that the financial development and its management is a real tycoon behind the upgrading of economic growth. This issue is not only confirming the

positive and significant relationship between financial development and economic growth, but also, at the same time, it is confirming the theory of supply leading hypothesis. However, bi-directional causality in the under-consideration terms may be regarded as the conformation of the reciprocal hypothesis (Wolde-Rufael, 2009).

A comprehensive study was conducted by Akinci et al. (2013) by taking the data of less developed-developing- and developed countries throughout 1980-2011. This research aimed to conclude the relationship between finance and growth options nexus. The study was conducted to highlight the agenda in such a way so that the pertinent concept can be concluded in terms of the suggested three types of countries.

Financial development has different grey areas in its boundary that should be determined, evaluated, and mitigated. By keeping in view the earlier stance, Abubakar and Gani (2013) took the large data set for three decades by focusing on the Nigerian economy and did a comprehensive empirical analysis. The findings of this study were the first of its kind because it highlights different significant areas in the way of financial development that should be addressed on an urgent basis. The highlighted areas are mainly the issues of interest, variety of financial services, and financial deepening. Whereas, the demand following hypothesis is confirmed by Isu, Okpara, and Ch (2013) by keeping in view the context of the Nigerian economy.

The creation, movement, and management of financial resources are the major goals of financial institutions (Adeyeye, Fapetu, Aluko, and Migiro, 2015). According to this study, financial institutions should address financial issues lucidly to settle the economic issues. The problem in the financial system arises when the financial institutions are not performing as desired. However, by keeping in view the theme of Adeyeye et al. (2015), the basic functionality in the financial system is the appropriate management of supply leading and demand following germane. Moreover, this research's concluding remark reflects a bi-directional causality between financial circumstances and growth opportunities while considering the developing economies.

The monetization of sub-Saharan African countries was made to evaluate their connection with growth relative to the financial intermediation by Jalloh (2015). This study considered multiple countries of sub-Saharan Africa and did the empirical treatment to conclude the factual findings at the bottom line. The thumbnail information about the finance-growth connection showed variation in their results

because the different countries included in the concerned region showed different results in their empirical examination. The diversity in the findings and results was cited due to the diversity of the circumstances of different regions. By utilizing the time-series data of the specific countries, the suggested empirical results showed that certain countries/areas in the concerned regions have an association with finance-led growth. However, the results are contingent on many other regions negating the under consideration concept. However, the differentiation originated based on managerial and administrative practices of every region, which is concerned with producing their best and focusing on economies of scale.

Karimo and Ogbonna (2017) examined financial depth and economic growth nexus. The structure of this study follows different econometric techniques to dig out the exact path of the relationship between the earlier mentioned circumstances. The findings suggest that the financial deepening is the reason for economic growth. The direction of the relationship is of considerable importance because the growth depends on the financial deepening. By keeping in view the results of this research, the theory of supply leading can be proved at the bottom line.

The prudence of the developing countries relies on the continuous struggle in the manner of economic resonance, financial restructuring, technological up-gradation, and subtle settlement of financial policy (Al-Awad and Harbm, 2005; Blackburn et al., 2005; Carlsson and Eliasson, 2003; Lardy, 1995; Mahoney et al., 2001; Wolde-Rufael, 2009) but a variety of options still exist in the surge of multiple dominating factors that an individual economy have. However, in the wake of swerving findings and non-consensus of the conclusions of different researches, Fan et al. (2018) examines the Chinese economy to provide concluding remarks on the finance-led growth relationship. By adopting novelty in the evaluation and analysis process, the proved part of this research confirms the supply leading theory because the proof of growth options due to the financial reconstruction, management, and innovation can be cited. The focusing point of this research is to fix the issues of financial constraints. Appropriate policymaking should be devised to cope with the financial matters of the concerned country. By doing so, the growth process can be incubated, expedited, and can be stabilized. The consensus area can have a deliberate immunization to create the economies' strength therapy for the financial sovereignty. Hence, autonomy is not

gained by any of the studies that can claim sustainable results and generalizability in the finance-growth nexus (Muyambiri and Odhiambo, 2018).

The literature reflects a lack of consensus in the acceptance and rejection of supply leading and demand following theories in the different economies. The study of Chow et al. (2019) conducted an empirical examination to find out the existence of earlier mentioned theories in the selected economies. The findings suggest that the finance and growth phenomena address the same direction in the selected developing countries. However, the terms and conditions are confirmed by applying the most recent econometric techniques and by utilizing the updated proxies of financial development and economic growth in a contextual way.

In continuation to the existing literature on the supply-leading hypothesis, Tadesse and Abafia (2019) conducted an empirical examination to verify the current theorem. For this purpose, comprehensive data in terms of Ethiopia was collected for four decades. This thorough empirical examination was based on logical reasoning and a consolidated version of the supply-leading hypothesis and its related areas. The concluding remarks of this study confirm the theorem of the supply-leading hypothesis in the case of the Ethiopian economy. The specific prescriptions for the other economies like Ethiopia contain a significant contribution in the Govt. expenditures in the manner of security, infrastructure, reduction in the trade barriers, financial innovation, stability in political and economic policies, and skill up-gradation in human capital. However, the consensus points for the finance-growth phenomena are to develop a substantive measure to make financial reforms for the betterment of the economy and its stability. However, the measurement criteria of financial development and growth option may vary from country to country and time to time. This distinction reflects the authenticity of the uniqueness of the circumstances in different economies.

The earlier stated version of literature on the under-consideration issue showed a different viewpoint in different studies. The variation in opinions is obvious because every country/ region and group of countries is not having the same circumstances in their dealings. However, the variations in working capacity, circumstances, and work method result in accepting and rejecting demand following and supply leading behaviors. Some studies advocate for the supply-leading hypothesis (Aluko et al., 2020; Fan et al., 2018; Karimo and Ogbonna, 2017; Muyambiri and Odhiambo, 2018), and

some of the researches are believers in demand following hypothesis (Odhiambo, 2007). However, the lack of consensus can be cited in the existing literature concerning the under consideration issue.

The comparative view of the above-discussed literature review is given in Table 2.2 to better understand the issues under consideration. It can be seen in the literature that there is a difference in the viewpoint of different studies that are considered in the literature. Some of them support the supply-leading, and some consider the demand-following hypothesis. However, studies are also reflected in the literature showing the bi-directional causality between issues under consideration. However, Table 2.2 is designed to get a comparative view of the studies.

2.9.4. Summary

The basic theme of the literature is to identify the most dominating hypothesis from the under consideration hypothesis – demand following, supply leading. As per the conclusion of this literature, there is a mixed influence of both these hypotheses on the real world. The mix influence is not based on a hit and trial basis. Still, it has some logical-based theories that can be the key contributor to accepting or rejecting the subject hypothesis. The policies and the method of doing work are not stagnant across the globe. However, the pre-estimation about the hypothesis that an economy should follow to get a competitive edge over the other rival economies is a millennium development goal and needs evaluation. The modulation in the economic and sovereignty circumstances is not monotonous and mollifies the predictive behavior of system evaluation.

The studies which are the muse in this study reflect the variation and non-consensus about the subject matter. Some literature studies support the supply-leading hypothesis, and some belief in the demand following hypothesis. However, the analyses of Akbas (2015) and Kar et al. (2011) didn't have logical attribution with any of the subject hypotheses because these studies attributed different contingent effects that were regarded as the defining criteria for the acceptance or the rejection of the subject matter. Moreover, the study of Chang (2002) depicts inconclusive results about the subject matter. The current study will also conclude with the mutation of the subject hypothesis under discussion.

2.9.5. Comparative View of the Literature of Supply-Leading and Demand-Following Hypothesis

Table 2.2: Comparative Analysis of Literature of Supply-Leading and Demand-Following Hypothesis

Empirical Study	Time Frame	Country/ Countries	Methodology	Major Findings
Supply Leading and Demand Following Hypothesis				
Murinde and Eng (1994)	-	Singapore	Bivariate Vector Autoregressive (BVAR) Model	Supply-Leading Hypothesis
Chang (2002)	1987Q1-1999Q4	China	Granger Causality Tests	Inclusive Results
Calderón and Liu (2003)	1960-1994	109 Developing and Industrial Countries	Granger Causality Tests	Supply-Leading Hypothesis
Odhiambo (2007).	1980-2005	3 Sub-Saharan African Countries	Granger Causality Tests	Findings vary from country to country
Isu et al. (2013).	1990-2009	Nigeria	Granger Pairwise Causality Test	Demand Following Hypothesis.
Nayan et al. (2014).	2005-2012	Panel of 10 Countries	GMM Estimate	Supply-Leading Hypothesis
Jalloh (2015).	1965-2012	20 Sub-Sahara African Countries	Granger Causality Tests	Bilateral Causation
Adeyeye et al. (2015)	1981-2013	Nigeria	Granger Pairwise Causality Test	Bi-directional causality
Karimo and Ogbonna (2017)	1970-2013	Nigeria	Granger Causality Tests	Supply-Leading Hypothesis
Tadesse and Abafia (2019)	1975-2016	Ethiopia	Granger Causality Tests	Supply-Leading Hypothesis

Source: Compiled by Author

2.10. Foreign Direct Investment and Economic Growth Nexus

2.10.1. Overview

FDI has been of great concern for the last couple of decades, and it is relatively important for both developing and developed economies (Chen et al., 2020; Creel et al., 2015; Khalid and Marasco, 2019; Saini and Singhania, 2018; Tiwari and Mutascu, 2011). The relative importance is based on two different agenda points related to two different types of countries – developing and developed. The major concern for developing courtiers in the case of FDI is the growth options that are associated with the flows of FDI, which helps these economies to gain a completive advantage, economies of scale, and the opportunities at large scale to grow and to lead themselves from developing to emerging and emerging to developed economies. The inclination of developed countries towards FDI is due to the sustainability and up-gradation of their financial, economic, and technological concern in the short and long run (Dunning, 1988; Fischer, 1998; Mehic et al., 2013; Saini and Singhania, 2018). The emergence of FDI has gone through different stages and categories, which may become the identity of its reflection in the case of different kinds of economies (Tiwari and Mutascu, 2011; Tun et al., 2012; Zghidi et al., 2016).

2.10.2. FDI-Growth Nexus

The under consideration issue is a foreign direct investment and economic growth nexus. However, a different viewpoint is available in the literature about the inter-relationship of these concerns. Various studies endorse the impact of FDI on growth, different studies endorse negative impact, and different studies provide inconclusive results. However, the various researchers' different viewpoints and concluding remarks are depicted in the following literature.

2.10.3. Review of Selected Literature

Foreign direct investment is the key concern for attaining economic growth in the under consideration economies (Zhang, 2001a). Different countries have different special attraction points, which bound the economies to trade with the other economies regarding FDI flows – inflows and outflows. In the 21st century, the world is now a global village where the countries exchange their produce/ services in a very significant

way, and it has become the need of the hour to do that (Chaudhry et al., 2013). The mobility of resources and the exchange of goods and services is becoming a major source of earnings for the economies. Countries having greater opportunities to attract investment in their country are considered more successful and geared economies as compared to those countries which are lacking in attracting the investment in terms of FDI inflows (Almfraji and Almsafir, 2014; Blomstrom et al., 1994; Blonigen, 2005; Borensztein et al., 1998; Carkovic and Levine, 2005; Ferreira and Matos, 2008; Lucas, 1998; Loungani and Razin, 2001; Torissi, 1985; Wang, 2009).

> *"Foreign direct investment is delivering an eye-opening circumstance related to its dealing; as per the fact sheet of UNCTAD (2018), there is an overall declining trend in the FDI flows. There is an overall 23% downfall in FDI flows to $1.43 trillion on concrete facts and figures basis. On the contrary note, the developing economies somehow show their stable figure of FDI – $671 billion – which is commendable in their peer economies. The figure of inflows of FDI in the developed economies is felled down – 37% – to $712 billion. The downward trend in the flows of FDI in the case of transition economies is also cited. The declining ratio is 27% which is $47 billion, which is alarming and is the second-lowest after the same content figure of 2005. The FDI is regarded as a key tycoon in the external sources of financing of the developing countries because this source let these economies to raise their finance successfully through this way. However, the share of this source of external financing is 39% of the total which is one of the finest ratios among other sources. As per facts and figures, developing Asia is one of the major recipients of FDI in its concerned region, and it is reflecting amazing results of the rise of FDI flows from 25% to 33% – from 2016 to 2017. From different types of economies, the share of FDI flows of the developed economies is declined by 50% on an overall basis from the total".* UNCTAD (2018).

The facts and figures related to FDI inflows per described economies are reflected in Figure 2.1. The dominance in the statistics is associated with the developing

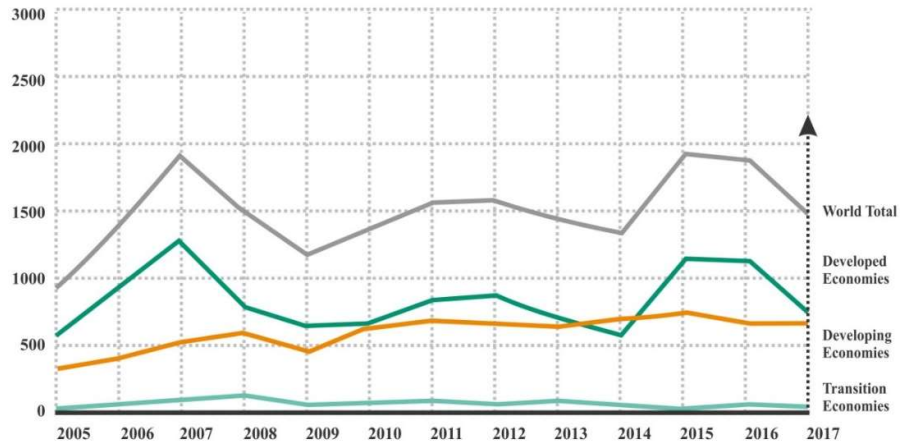
countries at most as these countries reflect stability in their outcomes compared to the other comparative group of countries. As per the graphical description of developed countries, their inflows have more fluctuations relative to the other countries. The less variation in FDI inflows authenticates more growth options in the developing countries than the other (Flora and Agrawal, 2017). The growth is always contingent on the efficient utilization of resources (Alam and Sumon, 2020; Ali et al., 2021; Barra et al., 2020; Shahbaz et al., 2017).

The efficient utilization of resources can create a competitive advantage for the economies which are making it sure. There are different views and understandings about the FDI stance, and somehow, it was regarded as a portfolio investment before the 1950s (Nayak and Choudhury, 2014). The relative importance of FDI for all kinds of economies is indispensable (Flora and Agrawal, 2017).

Figure 2.1 reflects the flow chart of FDI inflows of the world total, developed, developing, and transition economies.

Figure 2.1: FDI Inflows, Overall and Group Wise Detail

Source: UNCTAD (2018), (Data: 2005-2017, Amount in Billions of US$)



In the surge of deployment of FDI, there is an involvement of different purports that are different due to varying circumstances of the host and home country. However, the major complexity is identifying marginal cost and evaluating break-even points where the countries could do their cost-benefit analysis (Frenkel et al., 2004). The

marginal costing and standardization by collaborating with the customs around the globe can be a significant understanding in gaining economies of scale and fulfilling procedures according to the international standards (Herzer and Klasen, 2008; Tiwari and Mutascu, 2011; Torissi, 1985).

The illumination of FDI is best depicted in the theorem of Dunning (1988) which states that three icons have major concerns on the way of FDI. These significant concerns are regarded as OLI – *"ownership, location and internationalization"* – contributing dominantly to FDI circumstances. This paradigm explains that ownership does matter because the host country's proprietary stance will do the possible to succeed in the targeted investment. Whereas location is concerned, even after the Dunning (1988) paradigm, many other types of research also confirm location's importance in the degree of FDI (Habibullah and Eng, 2006; Pagano, 1993; Shahbaz et al., 2017; Tun et al., 2012).

The competitive location edges result in the utilization of specific land, environment, up-graded technology, local skilled and technical labour, infrastructure, and other distinguished resources, which can significantly contribute to the way of the success of FDI. The concern of internationalization having attachment with FDI can be cited as an icon for gaining marginal insight into cost-effectivity, international exposure, the impact of significance of globalization, termed response of international standards according to host and home country. The internationalization issue and its relative importance can be cited in the theoretical and empirical literature relevant to FDI (Frenkel et al., 2004; Lardy, 1995; Zhao and Du, 2007).

The literature also shows the commercialization of FDI in bringing economic prosperity and economies of scale. The widespread phenomenon about FDI is that it has logical and scientific effects in bringing growth options and economic sovereignty to the host and home country (Asongu and Nwachukwu, 2017; Mankiw et al., 1992; Mehic et al., 2013; Moosa and Cardak, 2006).

By taking the panel data of 20 years of developing countries, Borensztein et al. (1998) conducted a study to emulate the impact of FDI on economic growth. The findings conclude that the FDI inflows are the best source of technology transformation, human resources, and the other aspects related to the investment. However, FDI plays

a vital role in bringing prosperity to the host and investing countries. However, the globalization theory has now eliminated the distinguishing element of location advantage as the rapid mean of transportation and innovation in technology have made it possible to attain the competitive advantage from the place where it is considered distinguished (Porter, 1998).

By using the panel data of 11 different economies, Zhang (2001a) conducted a comprehensive study to evaluate the impact of FDI on attaining economic growth. This study introduces new iconic variables that are the first in investigating the relationship between the under consideration issue. This study shows that the FDI attraction is not a number game but depends upon certain factors that should be accounted for in attracting the FDI inflows in a particular country. However, the factors that help the economies to attract FDI vary from country to country because every country has its competitive edge that the countries should acknowledge and prescribe. On a general note, these factors are commonly liberal trade policies, appropriate human capital, and a controlled environment for investment opportunities.

In the era of financial crises, the developing economies adopted FDI to gain inward investment to stabilize the concerned economies and boost economic well-being at the bottom line (Loungani and Razin, 2001). The endorsement of the findings of this study can be cited in the study of Ericsson and Irandoust (2001), which confirms the bidirectional causality in the under consideration issue – FDI and growth. However, the implications are available in the study that demonstrates the stimulating factors for each other and stamps the emergence of both these issues for the well-being of the considered economies. Literature depicts the mixed impact of the FDI-growth relationship. The diverse influence is due to the process's heterogeneity and effects. To examine the varied effect, Nair-Reichert and Weinhold (2001) conducted a study and concluded that the results of the FDI-growth option are heterogeneous[10].

By analyzing over a decade of panel data Zhang (2001b) conducted a study to determine the impact of FDI on the economy. This study differentiates the data set into different regions, and these regions were analyzed on separate grounds. The findings of

[10] Heterogeneous or heterogeneity means the circumstances that are having diversity in their aspects and includes different stages that are the necessary elements to be accounted for (Higgins and Thompson, 2002).

this study suggest a positive and significant impact of FDI on the economy in the regions, particularly the coastal regions. As the inland regions are concerned, those do not depict the desired results compared to the coastal regions.

By keeping in view, the concentration of developing countries in the advancement of growth opportunities, Sadik and Bolbol (2001) conducted a study to find out the influence of FDI on growth, particularly in Arab countries. The concluding remarks of this study reflect the positive sway of FDI on economic growth. Still, the FDI is considerable in technology transformation, exchange of human resources, and better investment opportunities. However, the suggestions of this research comprised the information to enhance technological aspects of Arab countries along with capacity building in terms of factors of productivity and investment opportunities.

Developing countries are regarded as those countries which are struggling with growth options. Having said information about these countries, Makki and Somwaru (2004) evaluated whether FDI is causing economic growth in these countries or not? However, for attaining the aim of this study, the impact of FDI in attracting economic growth is determined along with several other factors – mobility of savings, human capital mobilization and appropriate trade facilitation, etc. by keeping all these circumstances into consideration, this study concludes that there is a positive and significant relationship between FDI and growth options. Still, this growth option can be attained if the mobilization of concerned factors can be confirmed.

The host country of FDI can get better opportunities to enhance their infrastructure, investment opportunities, trade options, and technology transfer (Scott-Kennel, 2004). According to Scott-Kennel (2004), the host country can attain competitive advantages in FDI inflows. These FDI inflows can bring better results for developing and developed economies. However, the local firms can be gained the most impact of FDI in the under consideration countries, and hence, economic prosperity can be achieved.

The ultimate scenario about the FDI growth relationship is gaining much attention from the researchers, and the community is invoking the conclusion about this varied situation. With the changing environment around the globe and the changing circumstances in the socio-cultural environment, there are various shifts in the

economies to behave according to these changing situations. The bifurcation in the economies depends on the economies' circumstances: political, economic, or cultural. According to these circumstances, the economies' identification can occur (Azman-Saini et al., 2010a; Adams, 2009; Belloumi, 2014; Blackburn et al., 2005; Herrera-Echeverri et al., 2014; Lardy, 1995; Li and Liu, 2005; Wang, 2009).

In continuation of the earlier scenario, Li and Liu (2005) analyzed this situation by taking a comprehensive and large data set of 84 countries for approximately three decades to conclude FDI and growth phenomena. According to this study, certain factors are associated with the impact of FDI on growth options. However, human capital, infrastructure, and technological advancement are the contingent factors that significantly consider the relationship between FDI and economic growth. However, the findings of this study conclude that there is a positive and significant relationship between FDI and economic growth. Still, if the country lacks technological advancement and related areas, these countries have an empirically negative relationship in all the mulls cited earlier.

The relationship between FDI and economic growth was studied by Lensink and Morrissey (2006). The basic assumption behind this study was that the deviation in the FDI brings negative impacts on the growth options of the economy. By doing the panel data analysis, the findings of this study are confined to the basic assumption, which shows that the volatility in the FDI is contingent on the negative impacts on the growth of an economy and vice versa. FDI has different determining factors that may become the cause of its attraction. The smooth functioning of FDI depends on many factors determined by Moosa and Cardak (2006). This study concludes the issue by taking the cross-section data of 140 countries. The concluding remarks of this study conclude that the appropriate research and development, human capital, and better utilization of infrastructure are the standard and key determinants in attracting FDI. However, other factors undoubtedly influence FDI and growth, but the varied impacts are ascertained.

By taking the time series data of different countries for approximately three decades, Chowdhury and Mavrotas (2006) conducted a study to approve or disapprove of the existing phenomena of the positive relationship between FDI and economic growth. By applying innovative econometric techniques, this study concluded that

some counties are included in the sample database that approves this existing phenomenon. Still, some counties are not fully absorbing this particular concept. However, this study approves the functionality of FDI–growth interrelationship at the bottom line on an overall basis.

By taking the provincial level panel data of Chinese provinces, Yao (2006) conducted a study to evaluate the impact of exports and FDI on China's growth. The findings of this study comprised the distinguished results that the tuned facts have a significant and positive impact on the economy boost up. However, exports of China will attract other countries to invest, and direct investment in China will flourish the local Chinese industry. Moreover, China's considerable points are to focus on the concluded points of this study to attain the economies of scale and persistent growth in their economy.

FDI and economic growth inter-relationship were studied by Zhao and Du (2007) by taking the time series data of China. By applying empirical econometric techniques, the findings suggest a significant contribution of FDI in attaining the growth in the case of China. However, in support of the market hypothesis, this study argued that the market size is an essential factor in attracting FDI. As a result, economic progress can be attained in the case of China. The study of Herzer and Klasen (2008) disapproves of the general concept of a positive and significant relationship between FDI and growth because the results of this study reflect that in many developing countries, this concept didn't suit best and does not approve of the concept of positive gesture FDI-growth inter-relationship. This study also authorizes that some countries are intended to confirm the existing phenomena, but this confirmation is available in short and long-run relationships.

An investigation of SSA[11] countries was conducted by Adams (2009) by taking the panel data related to these countries. This study reflected the gradual effects of FDI on economic growth because the study results reveal the initial effects related to FDI on growth options. Still, after the gradual initialization and incremental optimization, its effects showed a spill-over towards the positive vibes related to the under consideration issue. However, there are some contingent effects associated with this

[11] Sub-Saharan Africa

study's theme. These themes are Govt. positive intervention, the contribution from the local body, and strong and positive political scenarios.

Approximately the panel data of one decade was analyzed by Wang (2009) to evaluate the impact of sector-wise FDI and growth options in Asian countries. The agenda points of this study were the involvement of the manufacturing sector in introducing FDI in Asian countries. Findings reflect a positive effect of FDI inflows on the host countries. However, as the contribution of non-manufacturing organizations/sectors is concerned, it is not reflecting the positive and significant contribution in bringing the growth in the selected Asian countries. However, Asian countries should focus on manufacturing FDI to attract growth at the bottom line.

On an individual level, capacity-building analysis of economies spurs different viewpoints about their lacking and competitive edges. Meyer and Sinani (2009) did a Meta-analysis on the issue of FDI and growth inter-relationship. This study came up with the evaluated factors that the FDI attraction and local working capacity are based on the performance of local firms. It is a matter of worth how the local firms are working and are intended to work in the environment provided by the country's stakeholders. However, the conclusion of this research is based on the fact-finding, and these facts are; the countries that are putting their attention on local industry development, infrastructure development, human capital management, and reverence for the technology adoption and transformation were regarded as the ideal economies to take advantage of FDI in making their economy strong.

The effect of economic freedom was tested by Azman-Saini et al. (2010a) by considering the relationship between FDI and economic growth in a panel of 85 countries. The empirical findings of this study suggest that there is no direct linkage between FDI and economic growth. Still, if there is an involvement of economic freedom and institutional quality, then there is a positive and significant relationship between the under consideration phenomena. The mixed influence of FDI in minting and enhancing the FDI can be cited in the study of Alfaro et al. (2010), which states that the implications of FDI showed variation as per change in the type of economy and its operations. This distinction among economies was based on their income level and financial capacity.

The widespread phenomena of FDI and economic growth relationship were concluded by Azman-Saini et al. (2010b) by taking the involvement of financial institutions. The findings of this study suggest that the FDI didn't perform significantly until or unless the financial institutions didn't perform their role in boosting the economy. However, there is a threshold impact of FDI on growth, but this effect can stabilize impacts if the financial intuition's performance can be monitored and regulated. Similar to this case, the study of Azman-Saini and Smith (2011) considered financial institutions – the insurance sector – as a key motivator in the mobilization of savings and thus stamped the growth options. A large data set of developing and developed countries was taken. By doing a strong econometric analysis, the findings of this study conclude that the financial sector/ insurance companies are playing a vital role in the confirmation of the finance-growth relationship.

Tiwari and Mutascu (2011) conducted a study to determine the relationship between foreign direct investment and economic growth. By applying different econometric techniques, the findings suggest a positive and significant impact of FDI on economic growth in ASIAN countries. The flow of international capital has increased with the help of FDI around the globe. The economies are taking advantage of converting their status from developing to emerging and emerging to developed economies. To consider this motive, Shahbaz et al. (2011) investigated by seeing the emergence to conclude the agenda of FDI-led growth and finance-led growth connection. This study performed different advanced analyses by taking the time series data for approximately three decades. It concluded that the issues of financial integration and stability are above board and have significant impeding while discussing the growth of an economy. However, the consideration of FDI is also not negligible, but in comparison to financial intervention, the role of FDI is meager. Hence the vote of confidence for the conclusion of growth is cast in favor of financial development.

By taking the panel data of 164 countries, Buchanan et al. (2012) conducted a study to determine the relationship between institutional quality and FDI. Applying different econometric techniques to attain this study's results suggests a positive and significant relationship between institutional quality and FDI. The economies with better focus and administrative criteria related to the institutions are more likely to be

stable than those that didn't give supreme importance to the financial intuitions while considering FDI and economic growth. However, the results showed more robustness in the countries regarded as low-income countries. Moreover, the suggestions of this study include that the economies that want to attract more FDI and need growth at the bottom line,

Institutional quality was linked with FDI attraction by Tun et al. (2012). This study examines the role of institutions or MNCs in attracting FDI by taking the large panel data set of 77 countries. The highlights of this study show that there are certain factors that a country should have to attract the FDI, and as a result, economic progress can be attained. The panel data analysis of this study shows that the factors contributing to attaining the FDI are institutional quality, human capital performance, productivity management, export orientation, mobilization of savings, etc. However, there is an opposition to the general concept, which reflects that the market size is not a significant factor in contributing the FDI attainment.

In line with the empirical findings of the earlier research of Blonigen (2005), Wang (2009), Azman-Saini et al. (2010a, b), and Azman-Saini and Smith (2011), the study of Shahbaz and Rahman (2012) concluded their findings of the subject matter. It stated a significant and positive relationship between FDI and growth. However, this study provided the prescription of certain other factors that can contribute well to developing economies' up-lift. Hence, keen implantation is suggested at the bottom line. Before the global financial crisis, the ease of doing work was estimated in the developing countries to attract FDI. However, countries with appropriate working conditions, capacity building, and investment attraction are the main receivers of FDI inflows (Bayraktar, 2013).

By taking the panel data for approximately two decades, Inekwe (2013) conducted a study to determine the empirical binding between FDI and economic growth. This study utilized modern econometrics techniques to do advanced analysis related to the under consideration issue. The findings suggest a positive association between FDI and growth, most specifically in the case of Nigeria. However, the key agenda point of this study includes the involvement of the manufacturing sector in the attraction of FDI and, as a result, economic growth can be attained. In contrast to Inekwe's (2013) study, Kurtishi-Kastrati (2013) narrated that the impact of FDI on the

host country is contingent on the host country's absorptive capacity. This study is not an abnegator of the exciting benefits associated with the FDI, but these benefits cannot be attained automatically. The backdrop of these benefits is attributed to a considerable extent of an infrastructure – any kind – that can achieve the desired results in the existing circumstances. FDI and economic growth relationship in China were studied by Chaudhry et al. (2013). The findings of this study conclude that there is a highly positive and significant relationship between FDI and economic growth. However, the counties should focus on the appropriate measures to attract FDI to attain economic growth in their countries.

By considering different southeast European countries, Mehic et al. (2013) conducted an empirical examination by implementing advanced statistical techniques to gain insight into FDI and growth issues. The concluding remarks of this research suggest that the FDI is statistically significant in connection with growth. However, certain factors contribute to the advancement of growth, and these factors may vary from one southeast European country to another.

The financial system of BRIC[12] countries was evaluated by Kaur et al. (2013) to analyze its impact on FDI inflows. However, domestic credit to the private sector, banking transition upgrading, and advancement in the banking system can be the key motivators in attracting the FDI, most specifically in BRIC countries. Panel data for the 50 African countries were evaluated by Gui-Diby (2014) to conclude the relationship between FDI and economic growth in terms of different threads of time frame. After applying different econometric techniques, the findings of this study reflect a positive and highly significant relationship between the destined issues – FDI nexus growth. However, this study also concluded that there is a threshold effect available in this particular situation because, before a certain period, this phenomenon – FDI nexus – growth is adverse. After all, before 1995, the results of FDI impacting growth options are adverse and are negative in their signs and symbols.

Different countries took as a sample based on their income level, and a panel data analysis was made on 87 countries by Herrera-Echeverri et al. (2014). This study focused on the vision of how FDI, entrepreneurship, and appropriate management of

[12] Brazil, Russia, India and China these countries are regarded as the struggling economies that are struggling to be transitioned from developing to the developed stage.

the institutions/ quality can be analyzed to evaluate the economic betterment of the under consideration countries. However, this analysis revealed a significant and positive relationship between FDI, entrepreneurship, and growth options. Moreover, countries with more incubation capacity of the intuitions are more inclined towards growth and economic sovereignty. Thus the countries should focus on institutional quality to attract the FDI. As a result, the entrepreneurial opportunities will be enhanced, and growth can be stamped at the bottom line.

Belloumi (2014) confirms the authenticity of the relationship between FDI and economic growth by taking the time series data for approximately three decades. The findings conclude a significant and positive bounding between FDI to growth in both the long and short run. However, the economies like Tunisia should focus on the points related to FDI and play the number game to attract FDI inflows to their country. This will stabilize their economy and work in technology transformation, employment opportunities, and local industry development. However, better infrastructure is also endorsed for economic well-being.

To conclude the diverse influence of FDI and growth options phenomena, Iamsiraroj and Ulubasoglu (2015) conducted a comprehensive study by taking the panel data of 140 countries over approximately four decades. The findings suggest a positive and significant relationship between FDI and economic growth. However, there is a global impact of FDI on economic growth cited in developing countries. Moreover, trade openness and reduction in trade barriers may bring more investment opportunities to developing countries and vice versa. The decision-makers of the countries should focus on the expedition of flows of cash in terms of international cash flows so that the growth options can be stamped. The relationship between FDI and economic growth was evaluated by Pegkas (2015). This study applied panel data analysis techniques to determine the relationship between the under-consideration issues. However, the findings confirm a strong and significant impact of FDI in attaining growth. Moreover, this study also confirms the presence of long-run relationships in the targeted countries. Trade openness is also shown positive and significant impacts in achieving economic growth.

A country's economic growth is contingent on foreign direct investment (Iamsiraroj, 2016). According to this study, economic development relies not only on

the flourishment of FDI but on certain other circumstances that directly affect economic growth and FDI. These factors are a friendly environment for investment, a controlled trade environment, etc. However, this study concluded a bi-directional causality between the FDI-Growth nexus.

By considering SSA countries as a base, Agbloyor et al. (2016) conducted a study to determine the potential relationship between FDI and economic growth. By applying different econometric techniques, the findings of this study suggest that there is no significant relationship between FDI and growth options. However, this relationship is contingent on the quality and prescribing criteria of intuitions/ financial institutions. The institutions are of primary importance in bringing growth in SSA countries. Moreover, the economies that is well equipped with natural resources and managed natural resources are directly inclined to economic growth and vice versa.

By taking the panel data of the countries,[13] Zghidi et al. (2016) evaluated the relationship between FDI and economic growth. This study implied different advanced econometric techniques to determine the influence of FDI in attaining economic growth. However, the focusing point in this study was the economic freedom that was considered the key tycoon in achieving the growth at the bottom line. Moreover, the findings suggest that the positive and significant relationship between economic freedom and FDI can benefit multinational corporations.

Human capital and political stability are the two leading indicators to evaluate the strength of an economy. These two contributing factors are the sub-elements of FDI attraction and cash inflows. The country's sovereignty and stability are contingent on these options and other related areas (Desbordes and Wei, 2017; Elkomy et al., 2016; Hagan and Amoah, 2019; Inekwe, 2013; Kar et al., 2011; Yao, 2006).

By considering the panel data of 61 economies, Elkomy et al. (2016) adduce the economic progression by keeping the inflow of foreign direct investment. Human, political and technological factors bring under consideration to attain authentic insight into the FDI-growth relationship. This study is of considerable importance due to the unconventional results about the FDI's impact on the growth of the economies. The un-

[13] Tunisia, Morocco, Algeria and Egypt were the countries of North Africa that were included in this study.

conventional effects include the disapproval of FDI's positive effect on the growth of ten transition economies. However, the mixed results of this study have a consensus point that the appropriate management and up-gradation of human capital is a key to FDI attraction in all the economies that were considered in this particular research. The threshold effect can be cited in the empirical findings of this study.

Institutional quality and the comprehensive threshold analysis were conducted by Jude and Levieuge (2017) to analyze their impact on terms of FDI attraction in the host countries. The significance of this research lies in evaluating stages where the institutional quality attracts the FDI, and as a result of these, economic growth can be attained. The findings confirm the circumstances of marginal FDI can bring prosperity in terms of growth options. Different types of economies were studied by Alvarado et al. (2017), which took low, middle, and high-income economies to understand and conclude the impact of FDI in terms of growth options. This study took overall economic situations as well as the regional level data. The parametric implications of FDI on economic growth differ while considering the regional or general economic circumstances. The FDI impact on economic growth is not regarded as significant in regional analysis but significant in overall economic conditions.

The performance of different sectors registered in the financial institutions of different economies is also having significant relevance in the investment decision making of the foreign countries because the performance of sectors of any economy may vary from time to time and from circumstance to circumstance, and these sectors purely depict the trend of doing work of an economy. These trends may be conditional or cyclic but are of significant importance in decision-making for the economies where they have to go. The performance of the various sectors in an economy advocates the concept of diversification because the basic ideology of diversification is based on the common know factor *"don't put all eggs in one basket."* This common factor depicts that one sector's performance in an economy may serve as a bailout process for the many other relevant areas of interest. However, the performance of sectors operational in an economy can motivate foreign investment in the host country (Alam et al., 2016; Asongu and Nwachukwu, 2017; Deidda, 2006; Herrera-Echeverri et al., 2014; Islam, 2018; Jianguo et al., 2022; Jones, 2007; Jude and Levieuge, 2017; Lardy, 1995; Meyer and Sinani, 2009; Mehic et al., 2013; Muye and Muye, 2017).

By taking the data of OECD and non-OECD countries for approximately two decades, Economou et al. (2017) highlighted the central theme of FDI attraction. According to this study, an economy's main attraction points are infrastructure, economic stability, security conditions, and skilled labor. However, in attaining the advantage of FDI inflows, the economies should focus on the earlier mentioned points to get a competitive edge over the other economies and gain economies of scale. The endorsement of this particular issue can be cited in the study of Flora and Agrawal (2017), which confirms the emergence of FDI attraction in attaining growth.

Saini and Singhania (2018) conducted a study to determine FDI determinants in developing and developed countries. By applying different econometric and statistical techniques, the findings of this study suggest that certain factors based on economic conditions directly attract foreign direct investment in developing and developed countries. The implications of this study suggest that the Govt. should focus on skill development, facilitation in the production system, and appropriate policymaking to enable an economy to attract FDI in a more significant manner.

Nkoa (2018) conducted a study by taking 52 African countries by considering financial development as a tycoon for FDI facilitation. By applying different econometric techniques, the findings of this study suggest that there are certain factors – domestic credit to the private sector, financial liberalization, etc. – that contribute toward financial development, and better financial policies and criteria are served as a key attraction of FDI in case of African countries. However, the concluding remarks of this study suggest that low-income countries should focus on their economic well-being. For their endorsement, there is an appropriate need for policymaking and its implementation so that the positive spillovers of FDI may attract. However, trade openness and human capital may be the defining figures for attaining FDI and economic growth.

Financial markets/institutions' impact on attracting FDI was studied by Hagan and Amoah (2019), which considered the earlier mentioned phenomena in attaining growth, particularly in Africa. The findings of this study suggest a positive and significant impact of FDI in achieving growth, but that is contingent on the progress of financial institutions. How efficiently the financial institutions are working will determine the level of attraction of FDI, and as a result, the growth can be evaluated on

logical grounds. Moreover, the African countries should monitor the working of financial institutions and liberalize the policies of these intuitions so that economic growth can be attained.

Raza et al. (2021) conducted a comprehensive study to determine the relationship between FDI and economic growth by keeping the lens of appropriate governance by considering the OECD countries. This study applied different econometric models and their pre-testing criteria and concluded that there is a significant impact of FDI in attracting the growth options in the OECD counties. Furthermore, the findings of this study also suggest the numerous points that create a substantial score in attracting FDI and the attainment of growth options. The human capital and research and development expenditures are also endorsed for the betterment of the economy. These points are flagged stability in the political circumstances, a balanced system of accountability, and appropriate checks and balances.

The managerial impacts of FDI on growth cannot be denied up to a considerable level. It is not a meager phenomenon but a greater narrative to stamp the growth in different economies (Kurtishi-Kastrati, 2013; Economou et al., 2017). However, the subject matter impacts are negligible, but a mixed influence of these targeted areas prevails. The existing literature depicts this issue's ornament and certain elements/ areas that do not confirm its emergence. The majority of the studies showed the authentication stamp of FDI on the growth of the different economies (Economou et al., 2017; Jude and Levieuge, 2017; Kurtishi-Kastrati, 2013; Neanidis, 2019; Shahbaz et al., 2011; Tiwari and Mutascu, 2011; Ulubasoglu, 2015) but there are different studies like Herzer and Klasen (2008) and Elkomy et al. (2016) which are narrating the negative impact of FDI on the subject matter. The argumentation behind this is the dominance of the host country over the home country in the manner of operations and other relevant issues. However, the lack of consensus related to the concerned phenomena can be cited in the current body of literature.

2.10.4. Comparative Analysis of Literature of FDI & Economic Growth Nexus

The comparative view of the literature mentioned above is depicted in Table 2.3 to overview the bottom lines of the considered studies in the literature.

Table 2.3: Comparative Analysis of the Literature of FDI and Economic Growth Nexus

Empirical Study	Time Frame	Country/ Countries	Methodology	Major Findings
Major Studies on FDI-Growth Nexus				
Blomstrom et al. (1994).	1960-1985	101 (78 Developing, 23 Developed)	Regression Analysis	FORDI ⟶ EGRT Only in developing countries
Zhang (2001b)	1984-1998	China (Chinese Provinces)	Panel Cross-Section Estimation	FORDI ⟶ EGRT
Nair-Reichert and Weinhold (2001).	1971-1995	24 Developing Countries	MFR Estimator	Causal relationship between FORDI and EGRT
Omran and Bolbol (2003).	1975-1999	17 Arab Countries	Regression Analysis, Granger Causality	FORDI ⟶ EGRT
Makki and Somwaru (2004)	1971-1980, 1981-1990 and 1991-2000.	66 Developing Counties	SUR and TSLS	FORDI ⟶ EGRT
Li and Liu (2005)	1970-1999	84 Countries	Single and Simultaneous Equation System	Significant endogenous relationship FORDI and EGRT
Zhao and Du (2007)	1985-2003	China	VAR Model and Causality Tests	FORDI ⟷ EGRT
Wang (2009)	1987-1997	12 Asian Economies	Decomposition Analysis	Heterogeneous effect of FORDI on EGRT
Pradhan (2010)	1970-2007	India	Johansen's Cointegration, ECM	FORDI ⟷ EGRT

Table 2.3 Continued

Tiwari and Mutascu (2011)	1986-2008	23 Asian Countries	Fixed and Random Effect Model	FORDI ⟷ EGRT
Shahbaz et al. (2011)	1975-2008	Portugal	ARDL Approach to Co-integration, ECM	FORDI ⟶ EGRT
Tun et al. (2012)	1981-2005	77 Countries	GMM Estimator	Institutional quality helps in getting a significant relationship between FORDI and EGRT.
Chaudhry et al. (2013)	1985-2009	China	ARDL Approach to Co-integration, ECM	FORDI ⟶ EGRT
Mehic et al. (2013).	1998-2007	7 Transition Countries of Southeast Europe	Panel OLS, Granger Causality Test	FORDI ⟶ EGRT
Gui-Diby (2014)	1980–2009	50 African Countries	GMM Method	FORDI ⟶ EGR up to 1995–2009, the impact is (+), and before this period, the relationship between them is (-).
Elkomy et al. (2016)	1989-2013	61 transition and Developing Countries	Regression Analysis	Mix results, in some countries, the relationship is significant, and in some, it is insignificant
Zghidi et al. (2016)	1980-2013	4 North African Countries	GMM Approach	FORDI ⟶ EGRT
Economou et al. (2017)	1980–2012	24 OECD and 22 Non-OECD Countries	"Arellano–Bover/Blundell–Bond" Dynamic Panel Data Estimations	FORDI ⟶ EGRT
Nkoa (2018)	1995-2015	52 African Countries	GMM System Estimation	FDEV ⟶ FORDI FORDI ⟶ EGRT

Table 2.3 Continued

Raza et al. (2021)	1996-2013	32 OECD Countries	GMM Technique	FORDI↔RQ→EGRT
Inconclusive Results about FDI Growth Nexus				
Ericsson and Irandoust (2001)	1970-1997	4 Countries	Granger-Causality Test	Mix influence in case of different countries
Zhang (2001a)	1960-1997	11 Countries	Co-integration and Causality Analysis	Only 5 out of 11 countries' results are in favour
Alfaro et al. (2010)	-	Low, Middle and High-Income Countries	Cobb Douglas Production Function Calculations	Mix influence in case of low, middle and high-income countries

FDEV may read as financial development and EGRT is the abbreviation of economic growth. FIDEE = financial deepening, VAR = vector autoregressive, PMG = Pooled mean group, GMM = generalized method of moments, FORDI = foreign direct investment, TOPP= trade openness, ARDL = autoregressive distributive lag, ECM = error correction model, SUR = seemingly unrelated regression, TSLS = three-stage least squares, MFR = Mixed Fixed and Random, RQ = regulatory quality

Source: Authors' Compilation

2.10.5. Summary

The existing body of literature was devised to conclude the relationship between FDI and growth. However, a diverse impact can be cited, and the variation in the remarks is due to the varying trends and circumstances in the different economies. The gap identification through the existing literature is panchromatic because the variation in the results of different studies helps to draw the gap of further work. However, the current study intends to analyze empirically the impact of FDI on attaining growth in developing economies.

2.11. Theories Relevant to The Study

2.11.1. Introduction

This particular chapter aimed to explain the different theories relevant to the themes of the under consideration study. However, these theories are relevant to economic growth, financial development, and foreign direct investment.

2.11.2. Theories Related to the Study

The present study focuses on the issue of the economic growth of developing countries. It hence considers the endogenous growth theory, which emphasizes different factors, i.e., technical change, institutions, and human capital. However, financial development and FDI are mainly attributed in the present study to gauge economic growth.

2.11.3. Review of Theories of Financial Development and Economic Growth

Economic growth is a considerable agenda in the existing literature, and thereby, its relevance to financial development is evident through different theories. Due to the advancement in the existing literature on the financial development and economic growth nexus, this thesis will evaluate and highlight the existing theories of financial development to understand the basic concepts and theoretical layouts related to financial development and economic growth. The different theories related to financial development and economic growth are also part of Chapter 2. Financial development theories start from Schumpeter's (1911) theory of financial development to today's developments. However, the theories that are purely relevant to the finance-growth nexus are depicted below:

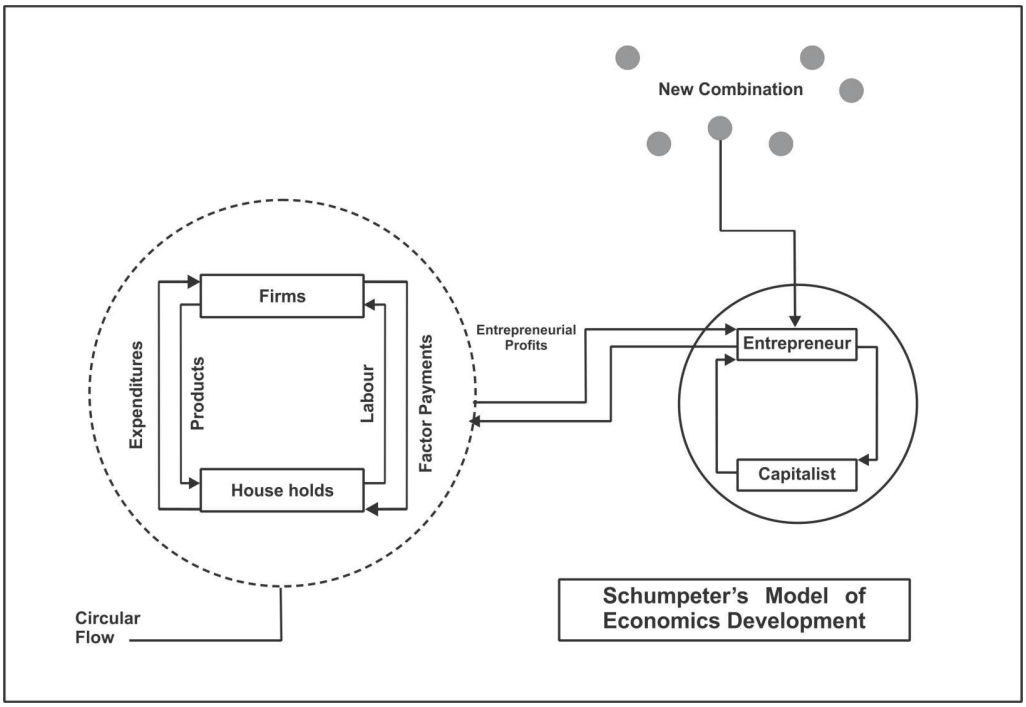
2.11.3.1. Theory of Financial Development and Economic Growth

Joseph Schumpeter was the first researcher who studied financial development to understand its impacts and other related areas. In 1911 Schumpeter highlighted financial development by keeping in view the financial innovation and other financial factors that contribute to the economic progress of an economy.

This theory introduced financial innovation, which focuses on the following agenda points. 1) The introduction of new ways of production and the innovative trends in the products and production procedures/system 2) according to Schumpeter, innovation means the new product, new procedures, new market, new ways of finding raw material, and appropriate new organization. According to Schumpeter (1911), discussion related to the financial factors in terms of economic growth, it is stated that interest rates, money supply, and the issues related to the credit will be the major tycoons in terms of financial innovation. However, financial intermediaries' involvement in sanctioning credit can play a vital role in financial innovation.

Figure 2.2. Schumpeter's Model of Economic Development[14]

Source: Singh and Mishra (2015).



Somehow, the phenomenological nature of growth options is of significant and relative importance and includes different aspects that can be served as a guideline to execute and get better results and economies of scale in the matters of growth options. The different aspects of Schumpeter's (1911) theory are reflected in a bird's eye view in Figure 2.2.

[14] The Figure 2.1 is the visual reflection of the Schumpeter's model of economic development devised by Schumpeter (1911). The thematic view is considered from the publication – as source – of Singh and Mishra (2015).

However, the theory of financial innovation connected to economic development is gaining an enormous attraction in academia, industry, and researchers to bridge it with their areas of interest (Jianwei, 2015). The financial aspects related to the growth options are addressed for the first time in Schumpeter's theory of economic literature (1911). The different elements of this particular theorem have their logical sense and can be interpreted according to the financial modernization and up-gradation of financial development. Financial innovation can bring drastic changes in the way of the financial environment. The normative concerns in financial innovation are standardization in terms of managerial effectiveness, computational advantages, technological competitive edge, and formalization of cost-effectiveness. The imperial managerial functionality in this varied concept originated due to the involvement of technology and standardization of transaction procedures. The competitive procedural edge and passive stimulation of the circulation of financial transactions cause cost-effectivity, time-saving, economies of scale, and competitive advantages (Carlsson and Eliasson, 2003; Islam et al., 2018; Jianwei, 2015; Ross, 1989).

The utmost challenge in deploying earlier discussed phenomena is implementing them in true letter and spirit. The institutions and countries involved in the deployment process face enormous hurdles in utilizing the innovation mythologies significantly. The hurdles might be regarded as the institutional, legal, and regulatory constraints that can be the countries' limitations and become the limitations of the institutions involved in the innovation deployment process. However, strategically, the institution may respond to the rustications imposed by the specific Govt. to implement the decided straggles of innovation to gain maximum profit, economies of scale, technological advancement, and appropriate and needful monitoring and evaluation of the processes (Herrera-Echeverri et al., 2014; Jianwei, 2015; Zhang et al., 2016).

In a concluding remark, the theory of economic development led theory of financial innovation is a kit for the financial innovation processing and the implementation and constraint evaluation. However, the financial institution’s wise policymaking, restructuring, and deployment process need appropriate monetization to reduce agency costs and gain economies of scale.

2.11.3.2. Theory of Financial Intermediation and Economic Growth

Schumpeter (1911), being the first documented observer of the finance-growth connection, concluded the significant insight into the resonance of the consensus between finance and growth. In continuation of Schumpeter's (1911) theorem, the study of Gurley and Shaw (1955) presents documented and comprehensive evidence on the monetary issue, financial intermediation, and their related areas concerning economic development.

The study of Gurley and Shaw (1955) rives the empirical and theoretical emergence in economic development and its related areas. However, this theorem rostrum the evidence that financial intermediation instigates national savings, mobilization of resources, appropriate monitoring of domestic credit, and cash flow circulation. Gurley and Shaw (1955) emphasized the emergence of financial intermediation by explaining the finance and financial sources for the economies. However, according to the theorem of Gurley and Shaw (1955), the admitted factors/ sources of finance are categorized into two main streams – internal sources and external sources (Jianwei, 2015).

These sources show the specialized version of financing in the countries involved. The monetization of internal and external resources has some differentiating points that can be termed as the differentiating points between these two sources of financing. As there is a concern of internal sources, it may be cited as the personalized income, internal investment, or saving mobility of the institutions and countries/ economies. However, as per their functionality and adaptive behavior, these types of sources are regarded as the internal source of finance as per the theorem of Gurley and Shaw (1955), and this has an endorsement through the empirical literature as well (Jianwei, 2015; Levine et al., 2000; Rioja and Valev, 2004). As for as the external sources are concerned, the theoretical view of Gurley and Shaw's (1955) theorem depicted and segregated them into further two parts – direct and indirect sources. Direct finance describes that it can be operationalized simply and lucidly by taking finance from institutions with surpluses and providing it to those in the surge of it. However, the terms and conditions are duly applicable, but this will serve as the simplest way of operationalization. The passive part of this type of financing is that the attributes

associated with this financing reflect meager results in development than its rival source of finance – the external source of finance.

The part of an external source of financing can be depicted by the theorem of Gurley and Shaw (1955) that by involving the financial intermediaries, there is a need to issue the indirect-financing – indirect bonds, etc. – to manage the external aspects of the financing and perform it in the way of taking from the sector that is in surplus and provide it to those sectors that are facing its deficit. The financial intermediaries are the major tycoon in implementing the financial policies that central banks devise.

The theory of financial intermediation strongly advocates for the bank's role in deploying the functionality of financial intermediation on a consensus basis. The way banks/ financial institutions manage financial issues and implement their competitive edge and role as financial intermediaries is indispensable. The theoretical literature on financial intermediaries is further studied by Gurley and Shaw (1960), in which the explanation of the financial intermediaries' categorization takes place. According to this study, the financial intermediaries are further sub-divided into two groups – monetary and non-monetary financial intermediaries. The roles of these intermediaries are independent and play their independent role in the stability and growth options.

The monetary financial intermediaries play a vital role compared to non-monetary in deploying a financial policy, fund circulation, and cash flow management. However, different financial assets prevail in different economies and are essential in the financial system. Moreover, on prevailing circumstances relevant to the financial intermediaries, this kind of institution contributes significantly to risk adjustment, economies of scale, and, most importantly, the implementation of overall financial policy. Hence, the theory of money and financial intermediaries follows the footprints marked by the theory of Schumpeter (1911) and enormously advocates the theory of the role of a financial institution in bringing economic progress and growth in an obvious manner. The diversity in financial instruments and financial services is also of considerable debate. Many of the venerable areas of financial intermediation should be addressed on an individual and priority basis. Still, the common agenda point of the theorem of Gurley and Shaw (1955) is that the financial intermediaries play a vital role in attaining economic growth and prosperity. One can link financial intermediation with economic growth for decision and policymaking.

2.11.3.3. Theories of Demand Following and Supply Leading

In continuation of the theories of Schumpeter (1911) and Gurley and Shaw (1955, 1960), Patrick (1966) considered the mainstream of financial development in the way of economic growth. The study of Patrick (1966) introduces the demand following and supply leading hypothesis in the existing literature on finance-growth inter-relationship. Patrick (1966) has logical and stated arguments for explaining the hypotheses – demand-following and supply-leading. As the demand-following hypothesis, there is a dependency on a real economy that intends to use financial services and financial intermediation. The promulgation of this concept is that the economies have better growth options and better incomes on the national level having the capacity to use more financial services compared to those economies that have passive circumstances for growth and productivity. However, financial development causes growth of the economy is associated with the supply leading hypothesis. Moreover, the bi-directional linkage between these two is termed the reciprocal hypothesis.

The study of Patrick (1966) is attributed to the detailed argument that the volatility in the economic progression is directly linked with financial intermediation. The more volatility, the more likely the demand for financial services. However, the primary theme behind the demand following hypothesis is that the economy's stability, well-organized growth options, and real economic growth can result in financial development. According to the theory of Patrick (1966), the financial system and financial intermediation may affect the economy and its progress in different ways and in different scenarios. However, the financial system can affect the economy in the following different ways:

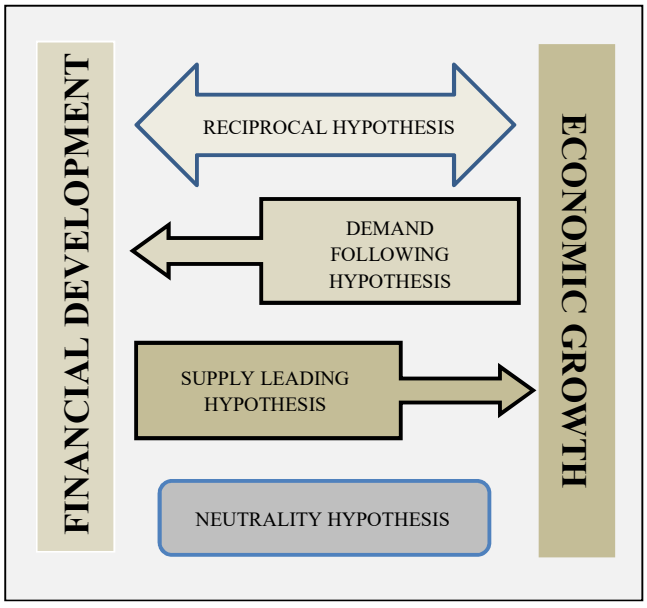
The sensible way of financial intermediation is to create an environment in the economy that encourages the institutional and entrepreneurial investors to through new investments in the market and create a new entrepreneurial pool that should attract further potential investors to invest in the local market. However, this will boost the individual anatomy of the economy and stamp the growth at its best (Patrick, 1966). The authenticity of these procedures has an authentication stamp through the study of Azman-Saini et al. (2010b), Bencivenga and Smith (1991), Badeeb and Lean (2017),

Combes et al. (2019), Christopoulos and Tsionas (2004), Campbell and Hopenhayn (2005), Greenwood and Jovanovic (1990) and Jianwei (2015).

The detailed version of the theory by Patrick (1966) is depicted in the discussion as mentioned earlier. However, the results are country-specific/ economies specific or the panel of economies specific. In terms of developing and emerging economies, the literature depicts, in most cases, supply leading hypothesis confirmation (De-Silva, 2016; Jianwei, 2015; Ndikumana, 2000; Yang and Yi, 2008). The logical reasoning behind this authentication is that the developing and emerging economies are at the struggling stage where there is a need to monitor, evaluate and stabilize their financial system, financial intermediation so that, as a result of it, the economies may attract the investors locally as well as globally (Christopoulos and Tsionas, 2004; Sehrawat and Giri, 2016; Sharma, 2016).

Figure 2.3[15]: Diagrammatic View of Key Hypothesis of Theories of Demand Following and Supply Leading

Source: Author's Compilation



[15] Source: the content and thematic version of this diagram is adopted through the study of De Silva (2016). However, in a case of exceptional circumstance where both the destined circumstance – finance led growth or growth led financial growth – didn't get the approval stamp after verification or after the empirical analysis of the data, that types of situation will be the advocate of neutrality hypothesis. Moreover, as per prescription of academicians and researchers the confirmation of this hypothesis is rare and up to some extent this phenomenon is not existing in any economy (Abubakar and Gani, 2013).

In an else case, if the struggling economies didn't bring the financial system into real consideration, then it might result in the lack of confidence of the investors to invest, mobilize savings, and start new entrepreneurial ventures that may attract the prospective local investor as well as attract the investment around the globe.

2.11.3.4. McKinnon (1973) and Shaw (1973) Theories of Economic Development

The emergence of McKinnon's (1973) and Shaw's (1973) theories on economic development opens up a new chapter in the existing body of knowledge on economic development. The existing knowledge/ theory on the issue of economic development was mainly presented by Schumpeter (1911), Gurley and Shaw (1955), Gurley and Shaw (1960), and Patrick (1966). However, the mainstream of this developmental process in the world, specifically in the developing and emerging economies, went through the evolutionary phases, showing the cumbersome and complex circumstances of this varied issue. These two theories mainly focused on finance, financial management, and financial intervention/ intermediation to determine the path of growth options and its direction. However, financial services are the integral element of growth in both the theorems of McKinnon (1973) and Shaw (1973).

The combined declamation of these theorems about the financial system is the main ingredient of bringing growth. The effect of the financial system may vary from circumstance to circumstance and economy to economy. Still, there is a consensus about its significance in stamping the growth options. This particular phenomenon of McKinnon (1973) and Shaw (1973) is further testified by many of the researchers who endorse the role of financial development in attaining economic prosperity (Apergis et al., 2007; Arestis and Demetriades, 1997; Creel, Hubert, and Labondance, 2015; Deidda, 2006; Ferreira and Matos, 2008; Nayak, and Choudhury, 2014; Singh and Mishra, 2015).

According to these theorems, the financial system in developing countries is somehow not in complete form and has anomalies in its working capacity. However, the major hurdle in financial system implementation is the Govt. intervention in the developing economies. Moreover, the financial system and its intervention are divided into two parts:

- The first and most significant part of the financial system is those institutions regarded as formal. These institutions are generally owned by the Govt. or have the entitlement with the multinational organizations. These institutions are regarded as working on a large scale (McKinnon, 1973; Shaw, 1973).
- The second part of the financial system is those financial institutions that are regarded as small-scale financial intuitions and are being worked on the traditional modes of financing. However, these financial institutions can work casually (McKinnon, 1973; Shaw, 1973).

The under consideration theorem evaluates different circumstances regarded as a locomotive in the finance-growth nexus. The considerable points in the light of these theories that are further prescribed in the study of Jianwei (2015) are as follows:

- The financial sector plays its role through its operations and working capacity as the developing economies are concerned. The larger financial institutions can fund the organizations that need it as per their prescribed terms and conditions.
- The second sector of financial services in the developing economies – small scale – is performing their notion to lend to the small scale organizations operating with limited functions. However, the interest rate co-integrations are marginal and are not having a competitive edge over the interest rate of the formal financial sector.
- The developing economies are facing the challenges of resource allocation. These types of economies are in the loop of misconduct in the allocation of resources. This misallocation damages the overall financial system and thus shows passive performance.
- The issue of capital accumulation is also dominating in the developing economies because this particular issue is contingent on the demand for funds by those organizations/individuals which require it. However, on the way of investment, the personals need funds to invest – in a way – faces this particular issue.
- The major problem in financial service is Govt. intervention because Govt. policies and procedures may be influenced by the policies and procedures of financial institutions, which as a result, cause misconduct in the financial institutions.

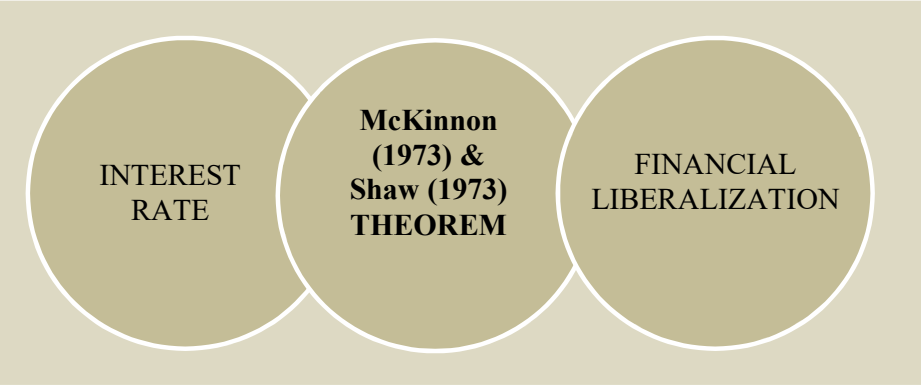
By reviewing all these circumstances of the developing countries' financial services provider organizations, the study of McKinnon (1973) and Shaw (1973) provides some prescriptions that could serve as a tool for developing economies' healing and growth process. However, the considerable points for the up-gradation of the financial system of the developing countries are to monetize the interest rate and focus on financial deepening in the developing countries. The financial institutions monitor fund and cash flows, and the appropriate mechanism and adjustment process can serve as a tool to do the needful. According to both these studies, the financial institutions of the developing countries should evaluate the supply and demand process by keeping in keen view these countries' saving and spending behavior. These financial institutions should take the appropriate steps to make reasonable adjustments in allocating resources to attain economies of scale.

In the concluding remark of this particular discussion, the theories of McKinnon (1973) and Shaw (1973) significantly contributed in the following ways:

- These theories introduced the interest rate issue when calculating the nexus of financial development and economic growth.
- These theories suggest that financial deepening uplifts developing economies. However, the issues of financial deepening and their areas should be adopted by the economies to gain economies of scale and a competitive edge to boost these economies.

Figure 2.4: Diagrammatic View of McKinnon (1973) and Shaw's (1973) Theorem Contribution

Source: Compiled by Author



2.11.4. Summary/ Underpinning Theory of the Study

The theories of financial development have been reviewed to analyze the different aspects given by the bottom line of different theories. Every theory studied in this research has its competitive points that differentiate the current from the latter. However, from Schumpeter's (1911) theory of financial development to McKinnon's (1973) and Shaw's (1973) Theorem, every theory has its agenda points and its declared vision to incorporate the prescribed areas of financial development and its associates. The development is a systematic process that has gone through the rigorous mechanism of its operations and categorization (Lucas, 1998; Carlsson and Eliasson, 2003; Levine, 2005; Ferreira and Matos, 2008; Nyasha and Odhiambo, 2018). Interestingly, the core agenda of all the theories relevant to financial development have dominating figures in the case of growth and well-being of the economies. Every theory of financial development has some commonalities, but some new agenda items are added to the former.

The appropriation in these theories relies on financial intermediation, accumulation of capital, sources of financing, the structure of a financial system, resource allocation, Govt. intervention, interest rates, and institutional involvement (Assefa and Mollick, 2017a; Bencivenga and Smith, 1991; Calderón and Liu, 2003; Ibrahim and Alagidede, 2018; Jokipii and Milne, 2008; Vaona and Patuelli, 2008; Younsi and Nafla, 2017;). However, the formal logical connection of every financial development can be cited with development issues (King and Levine, 1993; Khan and Senhadji, 2003; Odhiambo, 2007; Rajan, 2006; Singh and Mishra, 2015; Zang and Kim, 2007).

The earlier discussed literature envisions the theoretical aspects of financial development over the period and its connection with the growth options. However, these theories have their logical aspects and agenda points that connect or differentiate each theory from the other. The Gurley and Shaw (1955) theorem of financial intermediation supports the financial depth stance and plays a vital role in attaining economic growth in developing countries. Financial efficiency is supported by McKinnon's (1973) and Shaw's (1973) theories, which introduced the interest rate issue when calculating the nexus of financial development and economic growth. Financial stability, overall financial development, and economic growth nexus are also endorsed

by McKinnon's (1973) and Shaw's (1973) theories, suggesting that financial development uplifts developing economies. However, supply-leading and demand following hypothesis determination are backed by Patrick (1966).

2.12. Theories Relevant to Foreign Direct Investment and Economic Growth

2.12.1. Introduction

The outlook of the agenda of economic growth pertaining to FDI is of considerable debate, and their interrelationship has been presented by many researchers. These studies are based on the facts of different theories that are evolved, upgraded, and challenged by many researchers in different eras and in different intervals of time (Herrera-Echeverri et al., 2014; Herzer and Klasen, 2008; Islam, Hye, and Shahbaz, 2012; Li and Liu, 2005; Raza, Shah and Arif, 2019; Vasyechko, 2012). The reinforcement of the cruise of the FDI has implications explained through the following literature of theories related to FDI.

2.12.2. Neoclassical Theory

The undoubted benefits of FDI flows are somehow equally distributed in a host and the home country. The decentralization in the manner of investment in the host country is well tackled through the transformation process of production methodology, accumulation of extended capital, and a new scheme of doing work in the host country. Resultantly, the host country became a partner in sharing the benefits of investment through the rigorous process of FDI. The neoclassical theory explains that exchanging ideas, methods, and procedures helps the host country's well-being. By focusing on this belief, the different researchers put their authentication stamps to confirm the subject benefits in the host country (Borensztein et al., 1998; Fischer, 1998; Omri et al., 2015; Vasyechko, 2012).

2.12.3. Dependency Theory

The symptoms of dependency theory[16] were cited in the early 1960s in response to the theory of modernization. The dependency theory is the flag bearer of the

[16] It came into eminence in early 1960's most specifically it starts is functioning and application in Europe, Africa and in North American countries.

competitive edge of the recourses of the host country, which is regarded as the key component to cruse the FDI in the host countries. The advantage of developing countries is the natural resources which serve as a source of attraction to invest. However, sharing resources can be a significant tycoon in exchanging technology, the pattern of doing work, diversity, and skills. These sought of sharing may cause better output on the overall basis, which creates a completive edge and economies of scale for both the economies. The other theoretical viewpoint about the dependency theory is that this may cause an origination of mismatch and imbalance in the wealth creation of developing as well as developed nations (Buchanan et al., 2012; Herzer and Klasen, 2008; Nayak and Choudhury, 2014; Saini and Singhania, 2018; Vasyechko, 2012; Zang and Kim, 2007). Adams (2009) argued that the dependency theory could have its translation so that the developing/ less developed countries are impoverished and the developed countries dominate their influence of growth.

The philosophical assumption of this theory is of considerable importance for the developed countries compared to the developing because the developing countries may show their lethargic progress (Adams, 2009; Saini and Singhania, 2018). The reasoning behind this is the shift from developing to emerging and developed economies, and this shift brings structural as well as policy changes that didn't recommend the dependency theory on as strong footing as the developed countries can (Borensztein et al., 1998; Dixon and Boswell, 1996; Nayak and Choudhury, 2014).

2.12.4. Industrialization Theory and Spillover Effects

The industrialization theory and spillover effects are of considerable importance and hence are argued by many researchers in different time intervals (Ferreira and Matos, 2008; Lucas, 1998; Porter, 1998; Torissi, 1985; Xie, 1994). The iconic combination of this said theory is to gain a competitive edge by doing best managerial practices to manage the investment in the home and host country. However, it is the actual managerial expertise trial to manage the investment in the parent to the subsidiary organization by keeping in view the issues of internationalization/ globalization, risk, and other significant factors. However, the concluding remarks about this theory are as follows:

- Appropriate fund management/ capital management with cost efficiency

- Ascertainment of the risk level associated with the subsidiary's investment decision in the host country.
- Appropriate ascertainment of technological gap and make an investment decision by keeping in view the cost efficiency and absorptive capacity of the subsidiary company in the host country.

2.12.5. Summary/ Underpinning Theory of the Study

The above-discussed theories relevant to FDI have their descriptive stance that lets us know the fundamental theorem of understanding in these theories. The description is apportioned as per the boundaries and delimitation of these theories. The philosophical breakthrough revolves around the agendas of the following vital points I) How countries attract FDI and the sources of attraction for FDI (Kurtishi-Kastrati, 2013; Alvarado et al., 2017). II) Resources utilization and exchange of resources (Agbloyor et al., 2016; Inekwe, 2013). III) Technological and human resource exchange (Zhang, 2001b; Wang, 2009; Economou et al., 2017). IV) Benefits associated with the host and home country (De–Mello, 1997; Frenkel et al., 2004; Pegkas, 2015; Wang, 2009). V) Fund management (Hamdi, 2015; Iamsiraroj and Ulubaşoğlu, 2015). VI) Globalization management (Gui-Diby, 2014). VII) Benefits shift/ change with the change in the type of country (Adams, 2009; Saini and Singhania, 2018). However, the neoclassical theory and dependency theory have relevance to developing countries.

2.13. Theoretical Framework

2.13.1. Overview

This portion provides a theoretical base for this study. It gives a vision of the phenomena that will be empirically examined based on the identified gap through a literature review. This portion will provide a theoretical base by considering the key concepts and variables. The variables and the concepts that are part of this study are then devised into a hypothesis based on their expected and desired relationship. However, these particular relationships are integrated and negated with the relevant literature. A hypothesis is regarded as any testable statement that ultimately depicts the intentions of doing the work of any researcher based on collected data (Sekaran and Bougie, 2016).

However, this particular potion intends to perform two major tasks; first, to discuss the research framework, and second, to discuss the hypothesis based on the research framework.

2.13.2. Financial Development and Economic Growth Nexus

The emergence of determining the benefits of financial development is approximately a decade old. However, still, the real issue is its deployment process in a significant way so that the real results in the manner of growth option can be cited is debated (Asghar et al., 2015; Bencivenga and Smith, 1991; Beck et al., 2000; Bremus and Buch, 2017; Gurley and Shaw, 1955; McKinnon, 1973; Patrick, 1966; Pradhan, Arvin and Bahmani, 2018; Schumpeter, 1911; Shaw, 1973; Shahbaz et al., 2015; Sehrawat and Giri, 2016; Swamy and Dharani, 2019; Zouaoui et al., 2018). The managerial aspect of this core issue is to account for the terms and conditions of the under-consideration economy and to make a cost-benefit analysis of the financial intermediation led growth option (Acquah and Ibrahim, 2020; Blackburn, Bose and Capasso, 2005; Buchanan, Khan and Senhadji, 2003; Le and Rishi, 2012).

Financial development led economic growth has gone through the evolutionary phases and has evolved different significant issues that are should be addressed to get the authentication stamp of this destined inter-relationship – finance-led growth (Alvarado et al., 2017; Assefa et al., 2017b; Beck et al., 2014; Hsueh et al., 2013; Kaur et al., 2013; Singh and Mishra, 2015; Sehrawat and Giri, 2016). Financial development mainly has different key dimensions that should be addressed for the claim of real development to a considerable extent. These key dimensions are the betterment in investment opportunities, fund management, cash flow management, diversification, mobility of resources, and encouragement in the manner of savings, etc. (Apergis et al., 2007; Assefa and Mollick, 2017a; Berger, 2004; Saqib, 2015). Financial development may serve as a tool for many economies to uplift them in the manner of economic sovereignty, financial stability, and, most importantly, the receiver of direct investment from across the boarders (Chang, 2002; De-Silva, 2016; Desbordes and Wei, 2017; Ferreira and Matos, 2008; Khan and Senhadji, 2003; Zouaoui et al., 2018).

The engineering of financial development has diverse dimensions, and every dimension of this core issue is of considerable debate. The researchers are motivated to

develop a consensus about this varied issue so that the consensus/ results may serve as a standard in doing work in terms of financial development (Arteta and Hale, 2008; Barro, 1991; Kar et al., 2011). The emergence of financial intermediation and its development have strong footings since the early days of literature related to the growth. Financial development was regarded as a determinant rather than a product of the finance-growth nexus (Chow, 2008; Rajan, 2006; Thornton, 1996;).

In the preceding section, the different dimensions of financial development and its growth, along with the role of FDI in attracting the growth, were discussed through the involvement of different studies on this particular theme (Assefa et al., 2017b; Chow, 2008; Buchanan et al., 2012; Bremus and Buch, 2017; Cevik and Rahmati, 2018Herrera-Echeverri et al., 2014; Mankiw et al., 1992; Khan and Senhadji, 2003; Shahbaz et al., 2015; Sehrawat and Giri, 2016). The robustness of financial development in growth options is significant and empirically tested (Barro, 1991; King and Levine, 1993; Shaw, 1973).

According to Patrick (1966), the financial systems considerably influence the growth option through three categorically classified ways. These ways are financial intermediation, appropriate asset allocation, and significant capital accumulation. These three considerable areas are followed by a substantial debate that discusses their narrated circumstances. However, with the passage of every era and through the significant changes in the financial system over the period, the discussion is now turned into the varying trends of this system and its emergence with the economic growth (Assefa et al., 2017b; Jones, 2007; Mahoney et al., 2001; Vaona and Patuelli, 2008; Zhang et al., 2016).

Apart from the size of the financial system, its efficiency does matter (Beck et al., 2014). The hopes of the financial system did change after the snap short of global financial crises cited in 2008/2009. However, the analysts are re-consideration the circumstances of the financial system that how efficiently that is performing in the market rather than the other relevant matters. The formal working capacity is now having variations in the pattern of the financial system in developed and developing economies because the working capacity and overall climate for the said matter have variations as per the change in the considered economy (Beck et al., 2014; Rioja and Valev, 2004; Saqib, 2015; Ting, 2017; Wu et al., 2010).

The scope and vision of the financial system are contingent upon the operations, efficiency, and capacity to do work (Beck et al., 2014). Recently the working trends and the operating system are equipped with upgraded innovation and smart working capacity that has changed the functional style of the financial system. This change came through the changes in the demands of financial services and the change in the products of financial institutions. However, the traditional financial system has been changed with the modern financial system, which is mainly based on financial intermediation, comprehensive financial services, and upgraded processing systems (Arcand et al., 2015; Assefa et al., 2017b; Jokipii and Milne, 2008; Pradhan, Arvin, and Bahmani, 2018; Sandleris, 2014).

The causality between financial development and economic growth is debated in the theoretical and empirical literature (Shahbaz and Rahman, 2012; Kaur et al., 2013; Law and Singh, 2014; Alghantari, 2018). The emergence of finance-led growth is evident from literature, but there is a mixed influence on the direction of causality (Wu et al., 2010; Singh and Mishra, 2015). The variation in the trends of causality is confirmed based on variation in the time frame, economy, and circumstances (Vaona and Patuelli, 2008; Bittencourt, 2012; Uddin et al., 2014). However, the appropriate monitoring and management of the financial system thus lead to economic well-being. Suppose the economies fail to manage the size and functionality of the financial system. In that case, this may result in financial crises that will discourage savings, financial intermediation, and the misallocation of resources can be cited (Assefa et al., 2017b; Bist, 2018; Jalloh, 2015; Law and Singh, 2014; Majid and Mahrizal, 2007; Mehmood and Bilal, 2018; Thornton, 1996; Zang and Kim, 2007).

Management of finance relies on the managerial expertise of the economists to manage the investment and finance policy and its implementation simply and lucidly—the relevant management shell results in the appropriate circulation of funds. However, the streamlining of cash flows will help to allocate resources appropriately and attain timely development and economies of scale. It will be regarded as the financial depth in the manner of the financial system (De-Silva, 2016; Ibrahim and Alagidede, 2018; Levine, 2005; Pagano, 1993; Pradhan et al., 2018Rajan, 2006; Sehrawat and Giri, 2016).

The desired estimates of growth options are plausible to the appropriate financial intermediation by the financial institutions (Hassan et al., 2011; Kar et al., 2011; Rajan, 2006). The well-organized and on-target financial intermediation may bring the desired results for economies and financial institutions. The involvement of risk associated with the investment may be reduced up to a considerable extent by utilizing the financial intermediaries and their relevant financial services (Rajan, 2006). The privileges of financial intermediaries have connecting angles with the investment opportunities, mobility of savings, and ability to take the risk. However, the risk can be assumed as zero, but it has relative impacts on considerable areas and can affect the circumstance on a comparative basis. However, risk can be controlled, but it cannot be eliminated (Jones, 2007; Rajan, 2006).

The breakthrough of economic progress is associated with many indicators that serve as a panacea for its conformance. Here is an emergence of making a desirable understanding and the consensus for the development of the economy at every stage of its functionality (Ferguson, 2017; Fernández and Tamayo, 2017; Murinde and Eng, 1994; Zouaoui et al., 2018).

The physiognomy of financial development has many associations through which the functionality and performance can face many challenges in attaining their basic goal. The basic functionality of the bank and the financial institutions is the mobility of savings through financial access. These initiations took the excessive money from those who had it as extra. The motivation for the depositors is thus the amount of interest. After receiving such an amount, the banks and the financial institutions lend it to those who need it. The commonality between the receiving and lending agreement is interesting. However, banks and financial institutions took money at a low-interest rate and lent it to others who needed it at a higher interest rate. The difference between these two interest rates will be the banks' profit. Banks are one of the main parts of financial institutions and are of considerable importance in the financial system and other financial system elements (Jokipii and Milne, 2008).

The earlier discussed literature envisions the theoretical aspects of financial development over the period and its connection with the growth options. However, these theories have their logical aspects and agenda points that connect or differentiate each theory from the other. The Gurley and Shaw (1955) theorem of financial

intermediation supports the financial depth stance and plays a vital role in attaining economic growth in developing countries. Financial efficiency is supported by McKinnon's (1973) and Shaw's (1973) theories, which introduced the interest rate issue when calculating the nexus of financial development and economic growth. McKinnon's (1973) and Shaw's (1973) theories suggest that financial development uplifts developing economies. Supply-leading and demand following hypothesis determination are backed by Patrick (1966), which can help to conclude the causality in finance growth nexus.

However, based on the above discussion relevant to the theoretical aspects of the finance-growth nexus, which covers the financial depth, access, efficiency, and stability, the research hypothesis can be expressed as:

H1: There is a relationship between financial development and economic growth in developing countries.

H1a: There is a relationship between financial depth and economic growth in developing countries.

H1b: There is a relationship between financial access and economic growth in developing countries.

H1c: There is a relationship between financial efficiency and economic growth in developing countries.

H1d: There is a relationship between financial stability and economic growth in developing countries.

However, the models for these hypotheses are presented in Chapter 3 of the methodology.

2.13.3. FDI and Economic Growth Nexus

FDI has emerged as a contemporary issue in the manner of the well-being of the economies. The well-being feature of FDI is stamped, but the challenge is therefore assisted by the bodies to make sure the attraction of it in their concerned country (Alvarado et al., 2017; Blomstrom et al., 1994; Inekwe, 2013; Jude and Levieuge, 2017; Lensink and Morrissey, 2006; Pegkas, 2015; Sadik and Bolbol, 2001; Zang and Kim,

2007). The theoretical, empirical, and scientific investigations are being made on this way to conclude the varied issue as per consensus and as per the capacity of generalizability (Borensztein et al., 1998; Halicioglu and Ketenci, 2018; Shahbaz et al., 2011; Xie, 1994; Zghidi et al., 2016).

Both the inflows and outflows relevant to the FDI are considered a driver to gear the economy in the world (Scott-Kennel, 2004). However, in the most specific manner, the diversified impacts of FDI can be categorically cited in developed and developing economies (Iamsiraroj and Ulubaşoğlu, 2015; Sadik and Bolbol, 2001). The majority of the economies urge to deal in FDI inflows to get a significant spell of technology transformation, managerial expertise, and cross-border involvement in the operations (Inekwe, 2013; Lucas, 1998; Yao, 2006; Zhao and Du, 2007).

Different researches postulate that different sub-dimensions of FDI are contingent on its positive spillover. However, this issue arose from different researches conducted with due diligence (Pegkas, 2015). According to UNCTAD (2018), the FDI is regarded as a key driver in promoting growth and sustainability in developing the economies concerned for the whole world. The jolts in the economic development somehow reflect the keepsake of the emergence of FDI in the regions. Working to find the languid and active areas of FDI is laborious and is of great concern. The deliberate attraction of FDI is based on the lenient policies of the host country, which as a result, cause a mutual benefit for both the host and home countries (Alfaro et al., 2010; Ericsson and Irandoust, 2001; Flora and Agrawal, 2017).

The maintenance of effective decisions and the appropriate steps in developing the phenomenological structure to attract FDI is of great concern now and in the prior studies. The world is a global village, and no one can restrict the economies from spreading their investment in foreign countries. Still, the policies and infrastructure are on priority when investing anywhere globally (Alfaro et al., 2010; Chaudhry et al., 2013; Carré and L'œillet, 2018).

Investment opportunities lie in the three major concerns; country factors analysis, sartorial analysis, and company analysis. These three motives are of great concern among the other investment-relevant concerns. Every country/ organization has concerns when making any sought of investment anywhere in the world. However, these three concerns are regarded as of considerable importance (Jones, 2007).

Categorizing different countries for the declaration as favorite and un-favorite is based on many factors, and these factors are of relative importance for making any investment decision. These factors are security, technology, natural resources, labor force skills, environmental circumstance, etc. (Li and Liu, 2005; Jones, 2007; Loungani and Razin, 2001; Nayak and Choudhury, 2014; Sabir et al., 2019).

If the institutions and their quality are considered, this issue is important for attracting FDI in developing countries (Sabir et al., 2019). The contra is available among the developing and developed countries, and appropriate management of institutional quality is equally essential for both the group countries mentioned earlier. The implementation of this key agenda can be cited in the developed countries, but the developing countries can gain a competitive advantage on more strong footings if excellence in the concerned issue can be attained (Acquah and Ibrahim, 2020; Ashraf et al., 2019; Herrera-Echeverri et al., 2014; Sabir et al., 2019). However, the neoclassical theory and dependency theory have relevance to developing countries. However, based on the above discussion relevant to the theoretical aspects of the FDI-growth nexus, the research hypothesis can be expressed as:

H2: There is a relationship between foreign direct investment and economic growth in developing countries.

2.14. Summary

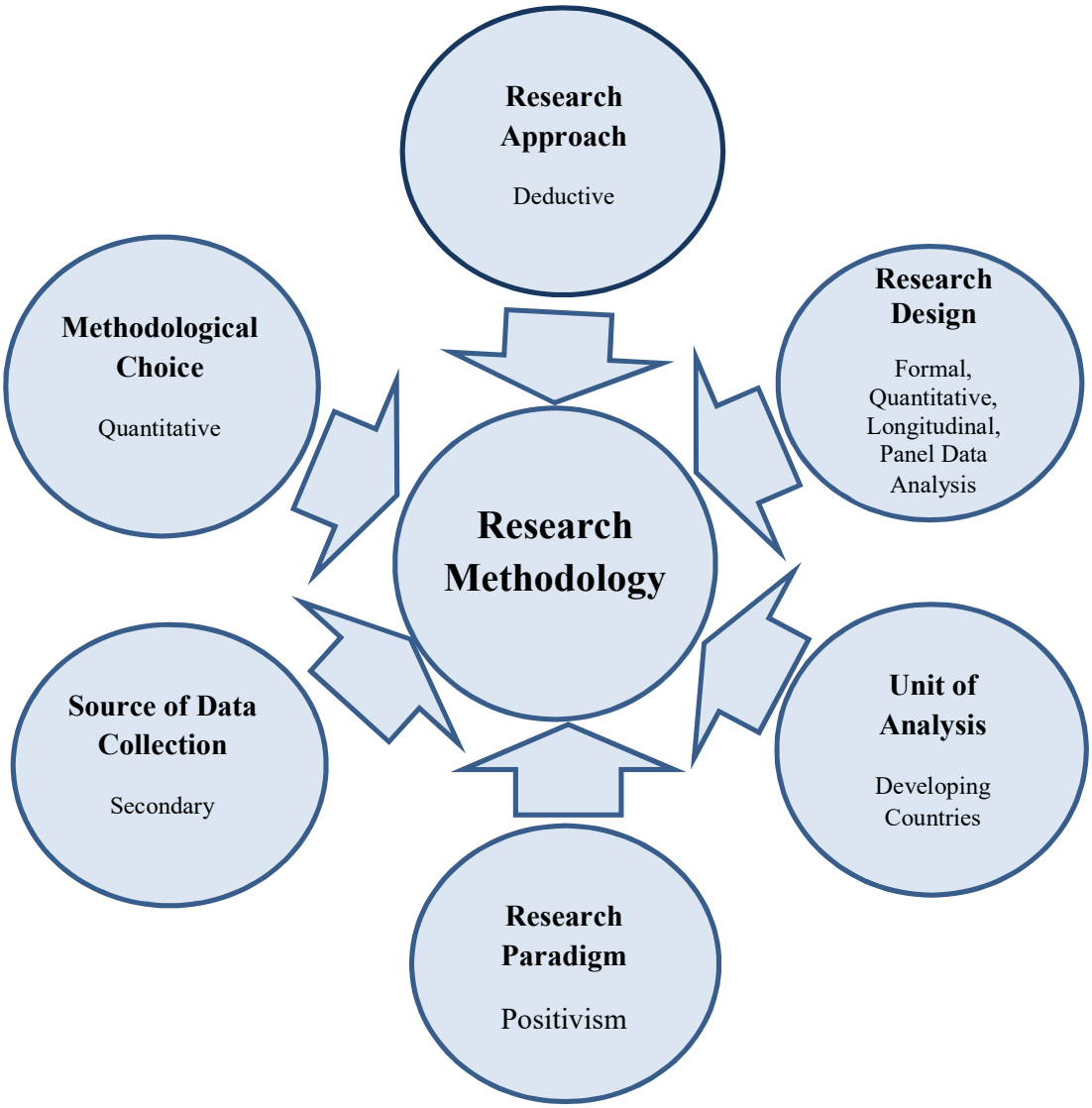
This chapter concluded the relevant literature, theories, and existing knowledge on financial development, FDI, and economic growth. However, the research gap is drawn based on this chapter, and research questions and objectives are generated. Moreover, the models for the hypotheses mentioned above are presented in Chapter 3 of the methodology.

CHAPTER 3: METHODOLOGY

3.1. Introduction

This chapter explains the method of doing work in the manner of data, data source, time frame, variables and their description, model specification, and other relevant information to understand the work.

Figure 3.1: Overview of the Methodology
Source: Authors' Compilation



In this chapter, this study's research methods and procedures are discussed and briefly depicted in diagrammatic form in Figure 3.1. It includes research philosophy,

paradigms, design, approach, methodology, panel data analysis, unit of analysis, sample, and operational definitions of the variables. Based on all the earlier methodology ingredients, the econometric models were presented to be tested empirically in the results and discussion chapter. Finally, the chapter concludes with a summary of the research methodology. In this regard, the following information is compiled.

3.2. Research Philosophy

Philosophy deals with the researcher's thoughts and how they think about the development of knowledge. A researcher needs specific assumptions and procedural claims to justify the under consideration work (Bryman and Bell, 2007; Cresswell, 2003; Pansiri, 2005). Different philosophical assumptions are considered in research, which facilitates the researcher to clear their narrative of doing research (Cresswell, 2003; Guba and Lincoln, 1994). However, the nature of reality – what knowledge is – deals with the ontological stance, and what is the acceptable knowledge – how we know it – deals with the epistemological stance. The consideration of values deals with axiology, and the research language deals with rhetoric. The way and the process of doing research are regarded as the methodology (Bryman and Bell, 2007; Cresswell, 2003; Saunders et al., 2009). The prudent selection of a research paradigm helps the researcher to implement the research philosophies/ the philosophical assumptions that have their functionality as per the paradigms (Cresswell, 2003).

3.3. Research Paradigms

In research, the term paradigm is of considerable importance, and it has been in practice in social sciences since the 1960s. The research paradigm is the path or the logical stance relevant to the under consideration phenomena (Saunders et al., 2009). The importance of paradigms cannot be overlooked in the manner of research because it provides an orientation to the researcher about the logical procedure and road map to perform their research. However, it is a cluster of beliefs that provides prescriptions to the researcher that in a given mode of study, what should be studied, how the research can be completed, and how the results of the under consideration research can be interpreted logically (Bryman and Bell, 2007; Cresswell, 2003; Saunders et al., 2009). Two distinct paradigms are considered appropriate while doing

research, and these paradigms are positivism/post-positivism and interpretivism (Bryman and Bell, 2007; Cresswell, 2003). However, the third paradigm – pragmatism – combines both positivism and interpretivism. The selection of a paradigm is a very critical task for a researcher as it provides a road map that gives an insight into the philosophical assumptions, goals, and methodological stance that should be followed while doing research (Cresswell, 2003; Guba and Lincoln, 1994).

3.3.1. Positivism

Positivism is a popular research paradigm in hypothesis and theory testing (Guba and Lincoln, 1994). This paradigm is uniquely depicted the quantitative research methodology and emphasizes the objectivity of the research process (Bryman and Bell, 2007; Cresswell, 2003; Guba and Lincoln, 1994). This particular paradigm believes in objectivism and hence follows the unbiased approach to working. The methodological stance for the positivism paradigm is deductive in nature (Cresswell and Clark, 2007).

3.3.2. Interpretivism

It is a paradigm based on the perceptions of the individual and hence regarded as subjective in nature. However, the interpretivism paradigm deals with the subjective experiences of the individuals following the experiences, perceptions, and information (Saunders et al., 2009). The methodological stance in interpretivism is inductive in nature, where the researchers seek from the views and build up different patterns and theories (Bryman and Bell, 2007; Cresswell, 2003).

3.3.3. Pragmatism

Pragmatism is a research paradigm that primarily combines positivism and interpretivism. However, it is referred to as the mixed-method approach, which is equally equipped with the characteristics of positivism and interpretivism to understand the problem. This paradigm is the flag bearer of objectivism and subjectivism, which deals with induction and deduction (Pansiri, 2005). It encompasses the objectivity of the problem and the subjective explanation (Cresswell, 2003; Pansiri, 2005).

3.3.4. Underpinning Paradigm of the Study

The present study intends to analyze financial development, FDI, and economic growth nexus and postulates positivism as a research paradigm.

3.4. Research Design

Research design served as a road map for the research because it will provide the directions on how research can follow the set criteria to complete the research. However, for the investigation of the concerned problem, a detailed research design is essential (Cresswell, 2003; Zikmund, 2003). The three basic research designs are discussed in the literature are: exploratory, descriptive, and explanatory (Churchill, 1995). However, exploratory research deals with the phenomena where the researcher doesn't have significant insight into the subject matter and wants to explore the conclusion of the concerned problem (Bryman and Bell, 2007; Cresswell, 2003; Pansiri, 2005). Descriptive research describes the characteristics of the under consideration problem or phenomena (Cooper et al., 2006). At the same time, the explanatory research design deals with explaining the relationship between two or more factors or the issues (Bryman and Bell, 2007; Cresswell, 2003).

The present study is exploratory in nature because this seeks to explore the effect of financial development and its components – financial depth, access, efficiency, and stability – individually and collectively on economic growth. The investigation of the impact of financial development's components on the collective manner will be exploratory in nature, while the investigation of the same issue on individual components basis will be explanatory. However, the study will also explain the relationship between FDI and economic growth in developing countries. This situation will also make it explanatory as well.

The research design can either be classified into a cross-sectional or longitudinal study. However, cross-sectional studies deal with the snapshot of the variables in the given period, and longitudinal studies provide insight or measure the changes in the under consideration phenomena (Churchill, 1995; Churchill and Iacobucci, 2006; Saunders et al., 2009).

The present study utilizes the panel data for estimations where the multiple cross-sections make its mechanism longitudinal (Baltagi, 2014).

3.4.1. Research Approach

There are two main research approaches: deductive and inductive (Saunders et al., 2009). The deductive approach deals with the phenomena of general to specific where the researcher concludes the vast subject matter in a logical stance. As the inductive approach is concerned, the research theory developed from the existing observations (Bryman and Bell, 2007; Cresswell, 2003). However, the deductive approach has more relevance to positivism as it has strong connections with objectivity and hence can be regarded as quantitative in nature. It follows its own ontological and epistemological stances (Bryman and Bell, 2007; Cresswell, 2003; Pansiri, 2005).

The deductive approach is known for the test of theory, and the inductive approach has its fame for the generation of theory (Bryman and Bell, 2007; Cresswell, 2003). The present study follows the deductive approach where the quantitative stance is under consideration, and the study believes in positivism. The present study follows a deductive approach where the literature is reviewed first to identify gaps. After identifying the gap, the hypothesis is developed, followed by the empirical data analysis and findings and recommendations. The present study is based on the deductive approach.

3.4.2. Research Methodology

There are two main types of methodologies in research, the first is quantitative, and the second is qualitative (Bryman and Bell, 2007). Different studies argued about the different methodological choices (Bryman and Bell, 2007; Cresswell, 2003; Churchill and Iacobucci, 2006; Pansiri, 2005; Saunders et al., 2009), but the main issue is that the methodological choice is perfectly associated with the research problem (Cresswell, 2003; Zikmund, 2003). The methodological choice addresses the research problem and method of working to conclude the problem. However, quantitative research deals with experiments and numerical methods, which need mathematical modeling (Bryman and Bell, 2007; Saunders et al., 2009). Whereas the qualitative method is concerned, it deals with the social, cultural, and ethical issues. The main difference between quantitative and qualitative research methods is in data collection (Zikmund, 2003). The data collected in the quantitative methods are usually numeric or numbers, whereas qualitative data usually deals in words or observations. However, the

qualitative data is non-numeric in nature (Bryman and Bell, 2007; Cresswell, 2003; Saunders et al., 2009). The present study considers the quantitative method of investigation.

3.4.3. Panel Data Analysis

Panel data, also stated as longitudinal data, contains observations about different cross-sections across time. Panel data analysis is used to avoid misrepresentations in size, which can be observed usually in the time-series data due to the limited number of observations (Babatunde, 2011; Bell and Jones, 2015). However, the panel data contains *i* cross-section and the *t* time-series aspect. Literature is the witness to some of the advantages and disadvantages of the panel data. However, in terms of advantages, the panel data i) provides a large number of observations (Baltagi, 2005; Babatunde, 2011; Bell and Jones, 2015), ii) it controls the issue of heterogeneity, iii) panel data increases the degree of freedom, and iv) it also increases the efficiency of the casualty tests (Babatunde, 2011). v) Panel data helps to study adjustment dynamics (Baltagi, 2005). vi) Panel data is regarded as more suitable to ascertain and evaluate the effects in any under consideration issue that are not measurable in pure cross-section or time-series data (Baltagi, 2005). Moreover, while dealing with the panel data, the accountability of cross-sectional dependence is of considerable importance (Ali et al., 2020; Aluko et al., 2020; Baltagi, 2005; Babatunde, 2011; Bell and Jones, 2015).

Certain tests are available for the detection of cross-sectional dependence in the panel data (Ali et al., 2020; Babatunde, 2011), and some of the tests for the detection of this particular issue are the Breusch-Pagan LM test (1979), Pesaran (2004) cross-sectional dependence test, etc. Due to the several advantages of panel data, the present study considers panel data for the analysis. It also provides due diligence for evaluating cross-sectional dependence and its related aspects.

3.5. Unit of Analysis

The developing countries may refer to those that are entitled to the concern of low industrial development and harmonization and less growth in the human development index in contrast to the other comparative countries (Patrick, 1966). Due to the paradigms of globalization, investment opportunities prevail where an investor

can invest (Moosa and Cardak, 2006; Sadik and Bolbol, 2001; Sabir, Rafique, and Abbas, 2019). The entitlement of attracting investment in developing countries gained much capitalization and opportunities since the 1990s, and the linkage of these countries with the financial integration has been increasing at a significant scale in the recent decade (Khan et al., 2019; Prasad, Rogoff, Wei, and Kose, 2005; Zouaoui, Mazioud, and Ellouz, 2018). The development procedure is an ongoing agenda of every economy, and it is deliberate in attaining the subject tasks as per the targeted time and schedule (Babatunde, 2011; Banday and Ismail, 2017; Khalid and Marasco, 2019; Kyophilavong et al., 2016; Younsi and Nafla, 2017).

The emergence of the developing countries came to the highlight at the start of the 21st century when these countries reflected their attributive performance and rapid growth beyond the anticipation of the concerned economists. However, the notable attention bearer developing economies are BRICS due to their viable growth and sustainable developmental procedures (Babatunde, 2011). The exchange of technology and the integration in the international processes help the developing countries to operate on an advanced footing and to let the economies – developing –grow at a significant level (Grassa and Gazdar, 2014; Loungani and Razin, 2001; Zouaoui, Mazioud, and Ellouz, 2018).

There are strong recommendations available for developing countries to consider FDI as their source of external finance. This particular subject matter is of considerable and significant importance in the growth options of the subject countries (Lensink and Morrissey, 2006; Pradhan, 2010). However, FDI spurs the integrity of the economies in attaining growth and better options in a commendable way (Agbloyor et al., 2016; Tun et al., 2012; Zhao and Du, 2007). The source of attraction behind the FDI inflows is not only the exchange – inflow – of capital, but the exchange of technology and the principle of doing work are the real-time attraction for the subject countries (Prasad, Rogoff, Wei and Kose, 2005; Zghidi, Sghaier, and Abida, 2016).

The literature had an extended version of the theoretical base of the under consideration subject matter. However, the viewpoint variation is still cited at the bottom line of many kinds of research (Nkoa, 2018). The variation in the findings is the beauty of the fair analytical procedure and the variation in the country-to-country circumstances (Ericsson and Irandoust, 2001; Raza, Shah, and Arif, 2019; Wolde-

Rufael, 2009; Yao, 2006). The individual characteristics of the country matter in attaining the share of FDI and other options, and resultantly, the capacity does matter to determine the extent of absorption, growth, and sustainability (Nayak and Choudhury, 2014; Kyophilavong et al., 2016).

The source of attraction in developing courtiers is significant investment opportunities and well-deserved growth options (Calderón and Liu, 2003; Majid and Mahrizal, 2007; Nair-Reichert and Weinhold, 2001). Developing economies have somehow attributes of developed countries but aren't regarded as developed (Cohen, 2006). The rationale behind the developing economies is that they can be developed in the near future (Alfaro, Chanda, Kalemli-Ozcan and Sayek, 2004; Omri, Daly, Rault and Chaibi, 2015). Financial development, along with its determinant factors, can cause the uplift of an economy. However, this specific emergence has its mechanical aspects while considering developing countries (Azman-Saini and Smith, 2011; Beck et al., 2000; Kyophilavong et al., 2016).

The concerned research intends to analyze the under consideration phenomena in selected developing countries. The inclusion criteria of the developing countries as a sample from the population are described in 3.5.1. section of the sample.

3.5.1. Sample

Sample selection is the most critical step toward the analysis and estimation (Bryman and Bell, 2007; Saunders et al., 2009). Selecting a sample from the population is known as sampling (Cresswell, 2003; Zikmund, 2003). The inclusion criteria in the sample from the population are decided based on an annual percentage change in the GDP of the developing country. The countries are selected as samples whose average annual percentage change in GDP was positive from 2009 to 2016 as per the facts and figures of World Economic Situation and Prospects 2018 (Appendix II). Many of the developing countries qualified the basic criteria for being considered in the sample, but the data of sixteen developing countries (Appendix I) is being taken by keeping in view the issue of data availability related to the series included in the models for estimation.

3.5.2. Data Description and Variable Specification

The study utilized panel data on an annual basis for the 16 selected developing countries from 1991 to 2017. The data were gathered from World Bank/ World Development Indicators and the IMF's International Financial Statistics (IFS) relevant to the variables considered for the under consideration study. However, the variable description is as follows:

3.5.2.1. Gross Domestic Product Per Capita

Gross domestic product per capita (GRCOPI) is considered as the proxy of economic growth. Gross domestic product per capita is calculated through the division of gross domestic production by the mid-year population (WDI, 2018).

3.5.2.2. Gross Domestic Product Growth Annual Percentage

GDP growth annual percentage (GRCOPII) is considered in this research as the second proxy of economic growth. Its aggregates are based on constant 2010 U.S. $. GDP per capita is gross domestic product divided by midyear population (WDI, 2018).

3.5.2.3. Broad Money

Broad money (FDVOPI-D) is considered as the proxy of financial development. This is considered as is the sum of currency outside banks (WDI, 2018)

3.5.2.4. Domestic Credit to the Private Sector

Domestic credit to the private sector (FDCOPII-D) is considered as the proxy for financial development. It denotes to financial resources provided to the private sector by financial corporations (WDI, 2018)

3.5.2.5. Commercial Bank Branches

Commercial bank branches (FDCOPIII-A) refer to financial institutions' access and consider commercial banks that provide customers with financial services. The data of this particular variable represented as per 100,000 of adults (WDI, 2018; IFS, 2018).

3.5.2.6. Number of Bank Accounts

The number of bank accounts (FDCOPIV-A) refers to the accessibility of funds available through the authorities and regulatory bodies. Specifically, it represents the number of bank accounts per 1000 population (WDI, 2018; IFS, 2018).

3.5.2.7. Interest Rate Spread

Interest rate spread (FDCOPV-E) is the interest rate charged by banks on loans to private sector customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits (WDI, 2018; IFS, 2018).

3.5.2.8. Bank Nonperforming Loans

Bank nonperforming loans (FDCOPVI-S) It is considered as the value of nonperforming loans divided by the total value of the loan portfolio (WDI, 2018; IFS, 2018).

3.5.2.9. Financial Development Index I

The financial development index I (FDINXI) represents the variables of financial depth and is generated by pooling different variables attributed by the different studies to measure financial development. However, it is based on the broad money and domestic credit provided by the banking sector to GDP (WDI, 2018; IFS, 2018). These particular agendas were considered an index by keeping in view the thought of combined effect evaluation. However, the principal component analysis is conducted to create that particular index to evaluate the combined effect of these financial development ingredients on the growth of the concerned economies (Asghar and Hussain, 2014; Mehmood and Bilal, 2021; Sehrawat and Giri, 2016).

3.5.2.10. Financial Development Index II

The financial development index II (FDINXII) in the representation of financial access is generated by pooling different variables attributed by the different studies to measure financial access/ financial development. However, these considerations are the commercial bank branches and the number of bank accounts per 1000 population (WDI, 2018; IFS, 2018). These particular agendas were considered an index by keeping in view the thought of combined effect evaluation. However, the principal component analysis is conducted to create that particular index to evaluate the combined effect of

these financial development ingredients on the growth of the concerned economies (Asghar and Hussain, 2014; Assefa, 2017b; Sehrawat and Giri, 2016).

3.5.2.11. Final Consumption Expenditure

Final consumption expenditures (LFCON) estimate includes any statistical discrepancy in the use of resources relative to the supply of resources (WDI, 2018).

3.5.2.12. General Government Final Consumption Expenditure

It includes all government current expenditures for purchases of goods and services. It also includes the expense of defense and security (WDI, 2018). It is abbreviated as (LGOGE).

3.5.2.13. Research and Development Expenditure

It includes the capital and current expenditures in the specific areas of consideration that are relevant to research and development. However, these expenditures cover the area of different types of research in the manner of business, Government, and other relevant areas (WDI, 2018). It is abbreviated as RNDX.

3.5.2.14. Human Development Index

It depicts the contributions toward the health and education of the concerned workers in an economy (WDI, 2018; HCI, 2018). It is abbreviated as HDINX.

3.5.2.15. Foreign Direct Investment Net Inflows

It shows the net inflows in the concerned economy from the foreign investors. It is calculated as new investment inflows–disinvestment/GDP (WDI, 2018). It is abbreviated as DICOP.

3.5.2.16. Financial Development Index

The financial development index (FDIFX) is generated by pooling different variables attributed by the various studies to gauge financial development. However, these considerations are i) the ratio of domestic credit to the private sector to GDP, ii) domestic credit provided by the banking sector to GDP, and iii) the broad money percentage of GDP (WDI, 2018; IFS, 2018). These particular agendas were considered

an index by keeping in view the thought of combined effect evaluation. However, the principal component analysis is conducted to create that specific index to evaluate the combined effect of these financial development ingredients on the growth of the concerned economies (Asghar and Hussain, 2014; Saqib, 2013; Sehrawat and Giri, 2016).

3.5.2.17. Gross Fixed Capital Formation

It reflects the expenditures that are utilized for the betterment of infrastructure and on their relevant areas (WDI, 2018). It is abbreviated as GRFX.

3.5.2.18. Trade Openness

Trade openness (TDOX) is calculated as the summation of exports and imports of goods as a percentage of GDP (WDI, 2018).

3.5.3. Model Specification for Finance-Growth Nexus

Based on the above discussion about data and variables, the following basic equation is being developed to depict the finance-growth nexus.

$$G = FDCOP \tag{1}$$

The following equations are arranged as per the objectives of the thesis and demonstrate the financial depth, access, efficiency, stability, and overall finance-growth nexus.

$$GRCOPI_{i,t} = \beta 0 + \beta 1\, FDCOPI - D_{i,t} + \beta 2\, FDCOPII - D_{i,t} + \beta 3\, LFCON_{i,t} + \beta 4\, LGOGE_{i,t} + \beta 5\, RNDX_{i,t} + \beta 6\, HDINX_{i,t} + \varepsilon_{i,t} \tag{2}$$

$$GRCOPI_{i,t} = \beta 0 + \beta 1\, FDCOPIII - A_{i,t} + \beta 2\, FDCOPIV - A_{i,t} + \beta 3\, LFCON_{i,t} + \beta 4\, LGOGE_{i,t} + \beta 5\, RNDX_{i,t} + \beta 6\, HDINX_{i,t} + \varepsilon_{i,t} \tag{3}$$

$$GRCOPI_{i,t} = \beta 0 + \beta 1\, FDCOPV - E_{i,t} + \beta 2\, LFCON_{i,t} + \beta 3\, LGOGE_{i,t} + \beta 4\, RNDX_{i,t} + \beta 5\, HDINX_{i,t} + \varepsilon_{i,t} \tag{4}$$

$$GRCOPI_{i,t} = \beta 0 + \beta 1\, FDCOPVI - S_{i,t} + \beta 2\, LFCON_{i,t} + \beta 3\, LGOGE_{i,t} + \beta 4\, RNDX_{i,t} + \beta 5\, HDINX_{i,t} + \varepsilon_{i,t} \tag{5}$$

$$GRCOPI_{i,t} = \beta 0 + \beta 1\, FDINXI_{i,t} + \beta 2\, FDINXII_{i,t} + \beta 3\, FDCOPV - E_{i,t} + \beta 4\, FDCOPIV - S_{i,t} + \beta 5\, LFCON_{i,t} + \beta 6\, RNDX_{i,t} + \varepsilon_{i,t} \quad (6)$$

Equations 2 to 6 are based on pooled regression for Panel A and demonstrate the general version of the classification as mentioned above. However, the basic functionality of these estimations is categorized by considering gross domestic product per capita (GRCOPI) as the dependent variable and financial depth, access, efficiency, stability, and overall finance-growth contents as an independent.

$$GRCOPII_{i,t} = \beta 0 + \beta 1\, FDCOPI - D_{i,t} + \beta 2\, FDCOPII - D_{i,t} + \beta 3\, LFCON_{i,t} + \beta 4\, LGOGE_{i,t} + \beta 5\, RNDX_{i,t} + \beta 6\, HDINX_{i,t} + \varepsilon_{i,t} \quad (7)$$

$$GRCOPII_{i,t} = \beta 0 + \beta 1\, FDCOPIII - A_{i,t} + \beta 2\, FDCOPIV - A_{i,t} + \beta 3\, LFCON_{i,t} + \beta 4\, LGOGE_{i,t} + \beta 5\, RNDX_{i,t} + \beta 6\, HDINX_{i,t} + \varepsilon_{i,t} \quad (8)$$

$$GRCOPII_{i,t} = \beta 0 + \beta 1\, FDCOPV - E_{i,t} + \beta 2\, LFCON_{i,t} + \beta 3\, LGOGE_{i,t} + \beta 4\, RNDX_{i,t} + \beta 5\, HDINX_{i,t} + \varepsilon_{i,t} \quad (9)$$

$$GRCOPII_{i,t} = \beta 0 + \beta 1\, FDCOPVI - S_{i,t} + \beta 2\, LFCON_{i,t} + \beta 3\, LGOGE_{i,t} + \beta 4\, RNDX_{i,t} + \beta 5\, HDINX_{i,t} + \varepsilon_{i,t} \quad (10)$$

$$GRCOPII_{i,t} = \beta 0 + \beta 1\, FDINXI_{i,t} + \beta 2\, FDINXII_{i,t} + \beta 3\, FDCOPV - E_{i,t} + \beta 4\, FDCOPIV - S_{i,t} + \beta 5\, LFCON_{i,t} + \beta 6\, RNDX_{i,t} + \varepsilon_{i,t} \quad (11)$$

Equations 7 to 11 are based on pooled regression for Panel B and demonstrate the general version of the classifications as mentioned above. However, the basic functionality of these estimations is categorized by considering gross domestic product growth annual percentage (GRCOPII) as the dependent variables and financial depth, access, efficiency, stability, and overall finance-growth contents as an independent.

The equations mentioned above represent the logical stance of the variables attributed to the estimation. GRCOPI represents the GDP growth annual percentage, and GRCOPII represents the growth attributed to the GDP per capita. These two are proxied for the evaluation of economic growth. Broad money percentage of GDP (FDCOPI-D) and domestic credit to the private sector to GDP (FDCOPII-D) represent

financial depth. FDCOPIII-A represents commercial bank branches, and FDCOPIV-A represents the number of bank accounts (Arteta and Hale, 2008; Asghar et al., 2015; Abubakar et al., 2015; Assefa and Mollick, 2017a). These two are proxied for the representation of financial access. Financial efficiency is represented by the interest rate spread (FDCOPV-E) in this study. However, bank nonperforming loans to total gross loans percentage (FDCOPVI-S) represent the financial stability.

However, the FDINXI demonstrates the ingredients of financial depth; broad money (FDCOPI) and domestic credit to the private sector to GDP (FDCOPII) (Asghar and Hussain, 2014; Omri et al., 2015; Ouyang and Li, 2018; Saqib, 2016; Tadesse and Abafia, 2019; Vaona and Patuelli, 2008; Yang and Yi, 2008; Zang and Kim, 2007; Zouaoui et al., 2018). FDINXII depicts financial access/ financial development ingredients, commercial bank branches (FDCOPIII), and the number of bank accounts per 1000 population (FDCOPIV). The other control variables are the final consumption expenditure percentage of GDP (LFCON), the general government final consumption expenditure percentage of GDP (LGOGE), the research and development expenditure percentage of GDP (RNDX), and the human development index (HDINX) (Alghantari, 2018; Ouyang and Li, 2018; Sehrawat and Giri, 2016; Swamy and Dharani, 2019; Tadesse and Abafia, 2019; Zouaoui et al., 2018). Whereas, ε_t represents the error term in the model.

3.5.4. Estimation

3.5.4.1. Unit Root Test (First Generation Unit Root Test)

It is highly considerable to check the unit root before implementing any sought of econometric work (Asghar et al., 2019; Ayyildiz and Erdal, 2021; Shahbaz and Rahman, 2010; Shahbaz, 2012; Shahbaz et al., 2015; Shahbaz et al., 2017a). Granger and Newbold (1974) confirmed that dealing with the non-stationary variables can bring spurious results which are inconclusive. To confirm the stationarity condition, the three different tests – Levin, Lin, and Chu (LLC) unit root test developed by Levin, Lin, and Chu (2002), Im, Pesaran, and Shin (IPS) unit root test developed by Im, Pesaran, and Shin (2003) and Augmented Dickey-Fuller (ADF) test for unit root proposed by Dickey and Fuller (1979, 1981) – are applied. However, these different tests are used to evaluate the exact level where they are integrated actually.

The null hypothesis for the unit root test showed that the series in the panel have a unit root, and whereas the alternate hypothesis of the unit root test is concerned, it depicts that the series in the panel does not have a unit root. The majority of the panel studies consider the results of the LLC (2002) and IPS (2003) unit root test (Adams, 2009; Asghar et al., 2019; Asghar and Hussain, 2014; Ghazali and Ali, 2019; Shahbaz et al., 2017a) but these results will not be appropriate if there is an involvement of macroeconomic linkage (Asghar et al., 2019). However, in that particular stance, the cross-sectional augmented IPS-CIPS is applicable, which accounts for the cross-sectional dependence (Asghar et al., 2019; Asteriou, Pilbeam and Pratiwi, 2020; Ali et al., 2020; Ayyildiz and Erdal, 2021; Bashir et al., 2021; Bist, 2018; Latif et al., 2018; Nasir, Huynh and Tram, 2019). This is also considered a second-generation unit root test (Arain, Han, and Meo, 2019; Meo et al., 2020).

3.5.4.2. Cross-Section Dependence Test

The evaluation of cross-sectional dependence (CD) in the panel data is considerable because of the macroeconomic linkages (Arain et al., 2019; Asghar et al., 2019; Meo et al., 2020; Nasir et al., 2019; Pesaran, 2004). Nowadays, cross-sectional dependence raised a new debate in panel studies regarding the accountability of some common shocks and important factors while doing panel-data research (Ali, 2021; Bashir et al., 2021; Chudik and Pesaran, 2015; Jianguo, Ali, Alnori and Ullah, 2022; Meo et al., 2020). However, for the accountability of the earlier mentioned circumstances, the present study considers the Pesaran (2004) cross-section dependence test. The null hypothesis of this test states the absence of CD in the data, whereas the alternative hypothesis states the presence of CD in the panel.

$$\mathrm{CD} = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{\rho}_{it}\right) \tag{12}$$

Where N is the size of the sample, T is the time, and $\hat{\rho}_{it}$ is the estimated cross-sectional correlation of errors of countries i and j.

3.5.4.3. Second Generation Unit Root Test

The majority of the panel studies consider the results of the LLC (2002) and IPS (2003) unit root test (Asghar and Hussain, 2014; Asghar et al., 2019; Shahbaz et al., 2017a; Ghazali and Ali, 2019), but these results will not be appropriate if there is an involvement of macroeconomic linkage (Asghar et al., 2019). However, in that particular stance, the cross-sectionally augmented IPS-CIPS by Pesaran (2007) is applicable, which accounts for the cross-sectional dependence (Ali et al., 2020; Asteriou, Pilbeam and Pratiwi, 2020; Ayyildiz and Erdal, 2021; Bashir et al., 2021; Bist, 2018; Latif et al., 2018; Nasir, Huynh and Tram, 2019). This is also considered a second-generation unit root test (Arain, Han, and Meo, 2019; Bashir et al., 2021).

3.5.4.4. Panel Co-integration Tests

Panel co-integration test is applied to determine the co-integration among the series considered for estimating the concerned model. However, determining the long-run association among the variables is desirable because this estimation helps to conclude the authenticity of the variables in the long run. There are different methods of evaluation of cointegration among the series, but Pedroni (1999, 2004) gained considerable importance in the panel data studies (Asghar et al., 2019; Bashir et al., 2021; Bist, 2018; Ghazali and Ali, 2019; Meo et al., 2020; Nasir et al., 2019). However, while considering the panel data, Westerlund (2007) is a more considerable technique than Pedroni (1999, 2004) because it took into account the structural breaks and the issue of cross-sectional dependency, which is usual in the case of panel data (Asghar et al., 2019; Arain, 2019).

Checking the order of integration is the pre-condition for applying any cointegration technique (Banday and Ismail, 2017; Shahbaz et al., 2008; Shahbaz et al., 2011; Sbia et al., 2017). Most cointegration techniques demand that the order of integration at the first difference – $I(1)$. Therefore, the Pedroni (1999, 2004) co-integration test is divided into two major categories. These estimations are; namely, i) within the dimensions and ii) between the dimensions and eleven in total. As a specified standard, if at least six statistics are significant out of eleven, we can declare the long-run association and vice-versa (Al-Mulali and Sab, 2012; Bist, 2018; Ghazali and Ali, 2019; Jianguo et al., 2022; Nasir et al., 2019). The null hypothesis for the Pedroni (1999, 2004) co-integration test is no cointegration, and whereas the alternative hypothesis is concerned, it is regarded as the existence of cointegration. As a rule of thumb, if at least

four out of seven outcomes are significant, then the cointegration can be endorsed and vice versa. However, the null hypothesis for the Westerlund (2007) cointegration test is similar to that of Pedroni (1999, 2004), which depicts no cointegration.

In contrast, the alternate hypothesis vows cointegration among the series (Westerlund and Edgerton, 2007). In the case of panel data, the considerable choice for the adoption of the cointegration test is Westerlund's (2007) cointegration test because it provides robustness in the notable formats of structural breaks and cross-sectional dependence (Ayyildiz and Erdal, 2021; Nasir et al., 2019; Arain, 2019).

The robustness checking of the cointegration tests is attributed to different relevant studies (Akinci, Akinci, and Yilmaz, 2014; Lee and Chang, 2009; Meo et al., 2020; Nasir et al., 2019). However, the concerned study will incorporate Pedroni (1999, 2004) and the Kao Residual Cointegration Test by Kao (1999, 2000) to check the long-run relationship. The following equations depict the approximate version of Westerlund and Edgerton (2007).

$$\Delta Y_{it} = \acute{\delta} d_t + \alpha_i\left(y_{i,t-1} - \beta \acute{i} x_{i,t-1}\right) + \sum_{j=qi}^{qi} \alpha_{ij} \Delta y_{i.t-1} + \sum_{j=qi}^{qi} \alpha_{ij} \Delta x_{i.t-1} + e_{i,t} \qquad (13)$$

Equation 13 shows the relationship for the endogenous variable = ΔY_{it}, d_t denote the deterministic component. Whereas *t* and *i* represent time-period and cross-sectional units, respectively.

After the confirmation of cointegration among the variables, it is desirable to apply the fully modified ordinary least square method (FMOLS) and dynamic ordinary least square method (DOLS) (Asghar and Hussain, 2014; Alghantari, 2018; Buchanan et al., 2012). These tests are applied to get robust estimates about the long run.

3.5.4.5. Dynamic Common Correlated Effects (DCCE) Approach

The data about the concerned variables of the study is collected, and the following model is designed to reflect the estimation of the model. However, as per the theme I of the under consideration study, the finance-growth nexus is considerable (Batuo et al., 2018; Buchanan et al., 2012; Combes et al., 2019; De Silva, 2016; Rajan, 2006; Sehrawat and Giri, 2016). In the case of cross-sectional dependence among

series, the traditional approaches, such as the GMM, random and fixed-effect models, and pooled regression, may provide misleading results. However, cross-sectional dependence in the current era of globalization is an obvious phenomenon (De Hoyos and Sarafidis, 2006).

The concerned study focuses on the finance growth nexus, which is determined by the help of the DCCE approach. The version of the DCCE method is superior to the other techniques due to its emergence in considering the ultimate stance of many issues related to the panel data. However, this estimation considers the issues of cross-sectional dependencies, heterogeneity in the parameters, and dynamics by considering the lag of the dependent variable as regressors (Ali et al., 2020; Ditzen, 2018; Ghazali and Ali, 2019; Meo et al., 2020). However, in the previous studies, different econometric techniques were applied to conclude the panel data, but these techniques had some limitations which misled the results (Ali et al., 2020; Ali et al., 2021; Ghazali and Ali, 2019; Zaidi et al., 2019). The considerable limitation of the traditional approaches is cross-sectional dependence (Ali et al., 2021; Ayyildiz and Erdal, 2021; Zaidi et al., 2019). The method of DCCE beliefs on the principles of the mean group technique by Pesaran and Smith (1995), pooled mean group estimation by Pesaran et al. (1996), and common correlated effects estimation by Pesaran (2006). However, the DCCE approach is considerable and can cope with the various issues mentioned earlier in panel data. This estimation is creating its uniqueness and is incorporated by many studies to get the bottom line of the concerned issues (Arain, Han, and Meo, 2019; Ali et al., 2020; Asteriou, Pilbeam and Pratiwi, 2020; Ayyildiz and Erdal, 2021; Bashir et al., 2021; Meo et al., 2020; Zaidi et al., 2019).

However, the present study considers the DCCE approach to conclude the finance-growth nexus.

$$GRCOPI_{it} = \alpha_i GRCOPI_{it-1} + \delta_i x_{it} + \sum_{P=0}^{P_t} \gamma_{xip} \overline{X}_{t-p} + \sum_{P=0}^{P_t} \gamma_{yip} \overline{Y}_{t-p} + \mu_{it} \qquad (14)$$

$$GRCOPII_{it} = \alpha_i GRCOPII_{it-1} + \delta_i x_{it} + \sum_{P=0}^{P_t} \gamma_{xip} \overline{X}_{t-p} + \sum_{P=0}^{P_t} \gamma_{yip} \overline{Y}_{t-p} + \mu_{it} \qquad (15)$$

In equation 14 and 15, GRCOPI and GRCOPII refers to proxies for economic growth, $\alpha_i GRCOPI_{it-1}$ and $\alpha_i GRCOPII_{it-1}$ are the lag of GRCOPI and GRCOPII as an

independent variable, $\delta_i x_{it}$ denotes the set of independent variables, and P_t refers to the limit of lags included in the cross-section averages.

The equations mentioned above represent the logical stance of the variables attributed to the estimation. GRCOPI represents the gross domestic product growth annual percentage, and GRCOPII represents the GDP per capita. These two are proxied for the evaluation of economic growth. The broad money percentage of GDP (FDCOPI-D) and the ratio of domestic credit to the private sector to GDP (FDCOPII-D) represent financial depth. FDCOPIII-A represents commercial bank branches, and FDCOPIV-A represents the number of bank accounts. These two are proxied for the representation of financial access. This study accounts for financial efficiency through the interest rate spread (FDCOPV-E). However, bank nonperforming loans to total gross loans percentage (FDCOPVI-S) represent financial stability. However, the FDINXI demonstrates financial depth-related proxies. FDINXII depicts financial access-related proxies. The other control variables are LFCON, LGOGE, RNDX, and HDINX.

3.5.5. Model Specification for FDI-Growth Nexus

Based on the above discussion about data and variables, the following basic equation depicts the FDI, financial development, and growth nexus.

$$G = DICOP + FDIFX \tag{16}$$

The estimation of this theme is based on Panel C and Panel D. Panel C and D are further sub-divided into two panels for estimation. The following equations are arranged as per the study's objectives and demonstrate the FDI and financial development's impact on economic growth in developing countries.

$$GRCOPI_{it} = \beta 0 + \beta 1\, DICOPI_{it} + \beta 2\, LFCON_{it} + \beta 3\, LGOGE_{it} + \beta 4\, FDIFX_{it} + \beta 5\, HDINX_{it} + \beta 6\, GRFX_{it} + \varepsilon_{i,t} \tag{17}$$

$$GRCOPI_{i,t} = \beta 0 + \beta 1\, DICOPI_{i,t} + \beta 2\, LFCON_{i,t} + \beta 3\, FDIFX_{i,t} + \beta 4\, GRFX_{i,t} + \beta 5\, RNDX_{i,t} + \beta 6\, TDOX_{i,t} + \varepsilon_{i,t} \tag{18}$$

$$GRCOPII_{it} = \beta 0 + \beta 1\, DICOPII_{it} + \beta 2\, LFCON_{it} + \beta 3\, LGOGE_{it} + \beta 4\, FDIFX_{it} + \beta 5\, HDINX_{it} + \beta 6\, GRFX_{it} + \varepsilon_{i,t} \tag{19}$$

$$GRCOPII_{i,t} = \beta 0 + \beta 1\, DICOPII_{i,t} + \beta 2\, LFCON_{i,t} + \beta 3\, FDIFX_{i,t} + \beta 4\, GRFX_{i,t} + \beta 5\, RNDX_{i,t} + \beta 6\, TDOX_{i,t} + \varepsilon_{i,t} \quad (20)$$

Equations 17 to 20 are based on pooled regression of Panel C and D and demonstrate the classification's estimation version as mentioned above. However, the basic functionality of these estimations is categorized by considering GRCOPI and GRCOPII as the dependent variables. At the same time, different independent variables are considered to conclude the economic growth.

However, the consideration for FDI is to evaluate its impact on attaining economic growth, specifically in developing countries (Asteriou et al., 2021; Badeeb and Lean, 2017; Blonigen, 2005; Gokmenoglu, Amin, and Taspinar, 2015; Iamsiraroj and Ulubasoglu, 2015; Iamsiraroj, 2016; Shahbaz and Rahman, 2012; Wang, 2009). At the same time, the financial development index is generated by keeping in view the thought of combined effect evaluation of financial development on economic growth.

The other variables include final consumption expenditure percentage of GDP (LFCON), general government final consumption expenditure percentage of GDP (LGOGE), and human development index (HDINX) (Chaudhry et al., 2013; Iamsiraroj and Ulubaşoğlu, 2015; Moosa and Cardak, 2006; Olofin, Aiyegbusi, and Adebayo, 2019; Sadik and Bolbol, 2001; Saini and Singhania, 2018; Yao, 2006; Zghidi et al., 2016), gross fixed capital formation (GRFX) and research and development expenditure percentage of GDP (RNDX) (Adams, 2009; Akinci and Yilmaz, 2013; Akinci et al., 2014; Akinci, 2019; Asghar and Hussain, 2014; Inekwe, 2013; Lensink and Morrissey, 2006; Mehmood and Bilal, 2018; Olofin et al., 2019; Zghidi et al., 2016). ε_{it} represents the error term in the model.

3.5.6. Estimation

3.5.6.1. Pre-requisites for Estimations

The present study considers the same pattern of estimations for Theme II, which starts from unit root testing, checking of cross-sectional dependence, and determination of the cointegration followed in Theme I. However, these were explained in sections 3.5.4.1, 3.5.4.2, and 3.5.4.4.

3.5.6.2. Panel Autoregressive Distributed Lag (Panel ARDL) Approach

The panel autoregressive distributed lag (ARDL) approach to cointegration developed by Pesaran, Shin, and Smith (1999, 2001) is a technique to estimate the long-run relationship where even the series is not integrated at the same order of integration. Usually, the majority of the cointegration techniques have limitations in the manner of scope that they are applicable at the same order of integration. However, the ARDL approach has a competitive edge over its application procedure as it is equally applicable where the variables included in the model show the mix order of integration – stationary at the level and at first difference. Moreover, it should be estimated that the dependent variable of the model should be at first difference stationary *I*(I), and no variable that is included in the model should be stationary at the second difference *I*(II) before the application of the panel ARDL (Banday and Ismail, 2017; Chaudhry et al., 2013; Hoque and Yusop, 2010; Mehmood et al., 2021; Shahbaz, 2012; Shahbaz et al., 2015; Shahbaz et al., 2017a). However, if any of these preconditions are not fulfilled, the results of the ARDL approach may be misleading and considered spurious.

Another competitive edge of the ARDL approach is that it is considerable for long-run forecasting and short-run estimates of the error term. However, it depicts the short and long-run dynamics of the computations simultaneously (Asghar et al., 2019; Botev, Égert and Jawadi, 2019; Shahbaz, 2012; Shahbaz et al., 2015; Shahbaz et al., 2017a). To estimate appropriate lag length, the Akaike Information Criterion (AIC) is considered the most consistent and reliable criterion for completing the earlier mentioned task (Shahbaz and Rahman, 2012). The estimation version of the PMG-ARDL approach is given in the following equations.

$$\begin{aligned}\Delta GRCOPI_{it} = {} & \alpha_0 \\ & + \sum_{j=1}^{m} \varphi_{i,j} \Delta GRCOPI_{it-j} + \sum_{j=1}^{m} \theta_{i,j} \Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j} \Delta LFCON_{i,t-j} \\ & + \sum_{j=1}^{m} \beta_{i,j} \Delta LGOGE_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j} \Delta FDIFX_{i,t-j} + \sum_{\mathrm{j}=1}^{m} \pi_{i,j} \Delta HDINX_{i,t-j} \\ & + \sum_{\mathrm{j}=1}^{m} \phi_{i,j} \Delta GRFX_{i,t-j} + \Psi_1 GRCOPI_{i,t-1} + \Psi_2 DICOPI_{i,t-1} \\ & + \Psi_3 LFCON_{i,t-1} + \Psi_4 LGOGE_{i,t-1} + \Psi_5 FDIFX_{i,t-1} + \Psi_6 HDINX_{i,t-1} \\ & + \Psi_7 GRFX_{i,t-1} + \varepsilon_{i,t} \end{aligned} \quad (21)$$

$$\Delta GRCOPI_{it} = \alpha_0 + \sum_{j=1}^{m} \varphi_{i,j}\Delta GRCOPI_{it-j} + \sum_{j=1}^{m} \theta_{i,j}\Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j}\Delta LFCON_{i,t-j} + \sum_{j=1}^{m} \beta_{i,j}\Delta FDIFX_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j}\Delta GRFX_{i,t-j} + \sum_{j=1}^{m} \pi_{i,j}\Delta RNDX + \sum_{j=1}^{m} \phi_{i,j}\Delta TDOX_{i,t-j} + \Psi_1 GRCOPI_{i,t-1} + \Psi_2 DICOPI_{i,t-1} + \Psi_3 LFCON_{i,t-1} + \Psi_4 FDIFX_{i,t-1} + \Psi_5 GRFX_{i,t-1} + \Psi_6 RNDX_{i,t-1} + \Psi_7 TDOX_{i,t-1} + \varepsilon_{i,t} \quad (22)$$

$$\Delta GRCOPII_{it} = \alpha_0 + \sum_{j=1}^{m} \varphi_{i,j}\Delta GRCOPII_{it-j} + \sum_{j=1}^{m} \theta_{i,j}\Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j}\Delta LFCON_{i,t-j} + \sum_{j=1}^{m} \beta_{i,j}\Delta LGOGE_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j}\Delta FDIFX_{i,t-j} + \sum_{j=1}^{m} \pi_{i,j}\Delta HDINX_{i,t-j} + \sum_{j=1}^{m} \phi_{i,j}\Delta GRFX_{i,t-j} + \Psi_1 GRCOPII_{i,t-1} + \Psi_2 DICOPI_{i,t-1} + \Psi_3 LFCON_{i,t-1} + \Psi_4 LGOGE_{i,t-1} + \Psi_5 FDIFX_{i,t-1} + \Psi_6 HDINX_{i,t-1} + \Psi_7 GRFXi_{,t-1} + \varepsilon_{i,t} \quad (23)$$

$$\Delta GRCOPII_{it} = \alpha_0 + \sum_{j=1}^{m} \varphi_{i,j}\Delta GRCOPII_{it-j} + \sum_{j=1}^{m} \theta_{i,j}\Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j}\Delta LFCON_{i,t-j} + \sum_{j=1}^{m} \beta_{i,j}\Delta FDIFX_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j}\Delta GRFX_{i,t-j} + \sum_{j=1}^{m} \pi_{i,j}\Delta RNDX + \sum_{j=1}^{m} \phi_{i,j}\Delta TDOX_{i,t-j} + \Psi_1 GRCOPI_{i,t-1} + \Psi_2 DICOPI_{i,t-1} + \Psi_3 LFCON_{i,t-1} + \Psi_4 FDIFX_{i,t-1} + \Psi_5 GRFX_{i,t-1} + \Psi_6 RNDX_{i,t-1} + \Psi_7 TDOX_{i,t-1} + \varepsilon_{i,t} \quad (24)$$

Where GRCOPI and GRCOPII are, respectively, representing the proxies of economic growth. Δ represents the first difference operators, and *i* denotes a specific unit varying from 1 to N.

3.5.6.3. Error Correction Estimation

Error Correction Model (ECM) considers the short-run dynamics of the series that are included in the model Engle and Granger (1987).

$$\Delta GRCOPI_{it} = \alpha_0 + \sum_{j=1}^{m} \varphi_{i,j}\Delta GRCOPI_{it-} + \sum_{j=1}^{m} \theta_{i,j}\Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j}\Delta LFCON_{i,t-j} + \sum_{j=1}^{m} \beta_{i,j}\Delta LGOGE_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j}\Delta FDIFX_{i,t-j} + \sum_{j=1}^{m} \pi_{i,j}\Delta HDINX_{i,t-j} + \sum_{j=1}^{m} \phi_{i,j}\Delta GRFX_{i,t-j} = \alpha ECT_{it-1} + \varepsilon_{i,t} \quad (25)$$

$$\Delta GRCOPI_{it} = \alpha_0 + \sum_{j=1}^{m} \varphi_{i,j}\Delta GRCOPI_{it-j} + \sum_{j=1}^{m} \theta_{i,j}\Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j}\Delta LFCON_{i,t-j} + \sum_{j=1}^{m} \beta_{i,j}\Delta FDIFX_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j}\Delta GRFX_{i,t-j} + \sum_{j=1}^{m} \pi_{i,j}\Delta RNDX + \sum_{j=1}^{m} \phi_{i,j}\Delta TDOX_{i,t-j} + \alpha ECT_{it-1} + \varepsilon_{i,t} \quad (26)$$

$$\Delta GRCOPII_{it} = \alpha_0 + \sum_{j=1}^{m} \varphi_{i,j}\Delta GRCOPII_{it-j} + \sum_{j=1}^{m} \theta_{i,j}\Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j}\Delta LFCON_{i,t-j} + \sum_{j=1}^{m} \beta_{i,j}\Delta LGOGE_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j}\Delta FDIFX_{i,t-j} + \sum_{j=1}^{m} \pi_{i,j}\Delta HDINX_{i,t-j} + \sum_{j=1}^{m} \phi_{i,j}\Delta GRFX_{i,t-j} + \alpha ECT_{it-1} + \varepsilon_{i,t} \quad (27)$$

$$\Delta GRCOPII_{it} = \alpha_0 + \sum_{j=1}^{m} \varphi_{i,j}\Delta GRCOPII_{it-j} + \sum_{j=1}^{m} \theta_{i,j}\Delta DICOPI_{i,t-j} + \sum_{j=1}^{m} \omega_{i,j}\Delta LFCON_{i,t-j} + \sum_{j=1}^{m} \beta_{i,j}\Delta FDIFX_{i,t-j} + \sum_{j=1}^{m} \sigma_{i,j}\Delta GRFX_{i,t-j} + \sum_{j=1}^{m} \pi_{i,j}\Delta RNDX + \sum_{j=1}^{m} \phi_{i,j}\Delta TDOX_{i,t-j} + \alpha ECT_{it-1} + \varepsilon_{i,t} \quad (28)$$

$ECT_{it-1}$is the error correction term for the representation of the long-term relationship. The parameter α indicates the speed of adjustment to the equilibrium level. However, the mechanism that is associated with the EC is that its coefficient should equip with the negative sign, which indicates its tendency to converge towards its equilibrium (Asghar and Hussain, 2014; Banday and Ismail, 2017; Ferreira and Matos, 2008; Hoque and Yusop, 2010). The estimation version of the error correction model is depicted in Equations 25, 26, 27, and 28 for different panels considered in this study.

3.6. Summary

This chapter was designed to outlay the plan of how the objectives of this study were achieved. However, different philosophical assumptions, paradigms, and statistical procedures are tracked in this portion for hypotheses testing. In conclusion, the chapter ascertains the overall research plan for responding to the research questions.

CHAPTER 4: RESULTS AND DISCUSSION

4.1. Introduction

This particular chapter is designed to report the results of the models of the under consideration study. However, the relevant discussion of the concerned results is also reported in this chapter. The theme wise discussion is as follows:

4.2. Descriptive Statistics

The overall descriptive statistics of the main variables considered in the present study for different panels based on original data are presented in Table 4.1. However, the descriptive statistics represent variables and their abbreviations, mean, median, minimum, and maximum values.

4.3. Results and Discussion for Financial-Growth Nexus

4.3.1. Panel Unit Root Tests

Before applying any sought of econometric work, the stationarity checking of the variables is considered a prerequisite. As per the viewpoint of Granger and Newbold (1974), dealing with the non–stationary variables can bring spurious results which are inconclusive. To confirm the stationarity condition of the series included in the model, the three different tests – LLC (2002), IPS (2003), and ADF (1979, 1981) – are applied after data standardization. However, these different tests are applied to evaluate the exact level where they are integrated actually. The results of these unit root tests are depicted in Tables 4.2, 4.3, and 4.4.

The results of the LLC panel unit root test are presented in Table 4.2. The results showed that the FDCOPI–D, FDCOPII–D, FDCOPIII–A, FDCOPV–E, and HDINX are integrated at the level-form at a 10% significance level. However, the results of earlier mentioned variables are evaluated at drift and no–trend. At drift and trend, FDCOPV–E, FDCOPVI–S, and RNDX are integrated at a 10% significance level.

The level of integration of series – GRCOPI, GRCOPII, FDCOPI–D, FDCOPII–D, FDCOPIII–A, FDCOPIV–A, FDCOPV–E, FDCOPIV–S, FDINXI, FDINXII, LFCON, LGOGE, RNDX, and HDINX – is also tested at first difference

through LLC panel unit root test. Series included in this model are stationary at first–difference at 1% level of significance by keeping both the themes in view, i.e., at drift and no–trend and at drift and trend. This particular test considers a variable stationary if its *p*-value is less than 0.05. However, not even a single variable is stationary at a 5% level of significance in level form.

The IPS panel unit root test results are presented in Table 4.3. The results showed that the FDCOP–E and HDINX are the variables integrated at the level form at 10% level of significance at drift and no–trend and at drift and trend. However, at drift and trend, FDCOVI–S is integrated at a 10% significance level at level form.

The level of integration of series – GRCOPI, GRCOPII, FDCOPI–D, FDCOPII–D, FDCOPIII–A, FDCOPIV–A, FDCOPV–E, FDCOPIV–S, FDINXI, FDINXII, LFCON, LGOGE, RNDX, and HDINX – is also tested at first difference through IPS panel unit root test. Series included in this model are stationary at the first difference at a 1% level of significance by keeping both the themes in view, i.e., at drift and no–trend and at drift and trend. However, not even a single variable is stationary at a 5% significance level at the level form. Hence, the variables of this study are stationary at the first difference by keeping in view the Im, Pesaran, and Shin panel unit root test.

The results of the ADF panel unit root test are presented in Table 4.4. The result of stationarity in the case of FDCOPV–E is integrated at a 10% level of significance at drift and no–trend. However, this estimate also confirms the IPS panel unit root test results, integrated at the level form at 10% level of significance. FDCOPVI–S and LGOGE are integrated at drift and trend at a 10% significance level. However, RNDX and HDINX are integrated at both considerations – at drift and no–trend and drift and trend – at a 10% level of significance.

The level of integration of all the variables – GRCOPI, GRCOPII, FDCOPI–D, FDCOPII–D, FDCOPIII–A, FDCOPIV–A, FDCOPV–E, FDCOPIV–S, FDINXI, FDINXII, LFCON, LGOGE, RNDX, and HDINX – is also tested at first difference through Augmented Dickey-Fuller panel unit root. All the variables included in this model are stationary at the first difference at a 1% level of significance by keeping both the themes in view, i.e., at drift and no–trend and at drift and trend.

Table 4.1: Descriptive Statistics

Variable	Abbreviation	Mean	Median	Min.	Max.
GDP Per Capita	GRCOPI	4059.227	2184.107	138.4475	29742.84
GDP (Growth Annual %)	GRCOPII	3.329173	3.520885	-14.35055	13.63634
Broad Money	FDCOPI-D	68.09945	56.14780	9.063329	209.4513
Domestic Credit to Private Sector	FDCOPII-D	54.43650	37.94001	5.241096	166.5041
Commercial Bank Branches	FDCOPIII-A	10.11533	8.315000	1.760000	32.21561
Number of Bank Accounts	FDCOPIV-A	558.7106	472.3000	6.520000	1418.960
Interest Rate Spread	FDCOPV-E	6.147237	3.986250	-6.912500	58.36000
Non-Performing Loans	FDCOPVI-S	3.154851	2.147999	0.100000	37.25329
Foreign Direct Investment, Net Inflows (% of GDP)	DICOP	2.170060	1.638387	-2.757440	11.93948
Final Consumption Expenditures	LFCON	72.85717	74.88290	40.12215	98.21614
General Govt. Final Consumption Expenditures	LGOGE	10.94937	11.12920	0.911235	20.92792
Research and Development Expenditures	RNDX	0.865023	0.599900	0.047560	4.553240
Human Development Index	HDINX	0.536695	0.555000	0.020000	0.780000
Gross Fixed Capital Formation	GRFX	5.165793	6.051443	-44.02647	47.92434
Trade Openness	TDOX	62.81613	48.95889	15.63559	220.4068

Source: Authors' calculations

Table 4.2: Levin, Lin & Chu Test

Variables	Drift and no trend	*p*-Value	Drift & trend	*p*-Value
		At Level		
GRCOPI	-0.89459	0.1855	0.62243	0.7332
GRCOPII	-0.56421	0.1124	0.4311	0.3241
FDCOPI–D	-1.49934*	0.0669	-0.00794	0.4968
FDCOPII–D	-1.40233*	0.0804	0.00517	0.5021
FDCOPIII–A	-2.39280*	0.0844	1.70332	0.9557
FDCOPIV–A	-2.44781	0.7653	-1.89757	0.5645
FDCOPV–E	-3.33777*	0.0804	-3.65803*	0.0801
FDCOPVI-S	-0.70261	0.2412	-2.05045*	0.0802
FDINXI	-1.09891	0.14551	-0.98761	0.12133
FDINXII	-1.45901	0.29080	-2.22461	0.19098
LFCON	-0.82020	0.2061	0.66301	0.7463
LGOGE	-1.09195	0.1374	-0.33700	0.3681
RNDX	-1.12163	0.1310	-1.35113*	0.0883
HDINX	-2.20422*	0.0938	-0.31998	0.3745
		At First Difference		
GRCOPI	-7.69742***	0.0000	-5.95083***	0.0000
GRCOPII	-6.34245***	0.0000	-4.89765***	0.0000
FDCOPI–D	-7.12023***	0.0000	-5.44801***	0.0000
FDCOPII–D	-4.87462***	0.0000	-4.23860***	0.0000
FDCOPIII–A	-2.98573***	0.0014	-2.48933***	0.0064
FDCOPIV–A	-5.43543***	0.0000	-5.11987***	0.0000
FDCOPV–E	-14.1231***	0.0000	-13.2827***	0.0000
FDCOPVI–S	-13.5378***	0.0000	-10.8033***	0.0000

Table 4.2 Continued

FDINXI	-3.44521***	0.0000	-2.89760***	0.0000
FDINXII	-1.45901***	0.0000	-2.22461***	0.0000
LFCON	-7.06562***	0.0000	-4.57519***	0.0000
LGOGE	-6.42390***	0.0000	-3.85791***	0.0001
RNDX	-9.26638***	0.0000	-7.07997***	0.0000
HDINX	-8.21738***	0.0000	-6.17897***	0.0000

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

Table 4.3: Im, Pesaran and Shin W-stat

	At Level			
Variables	**Drift and no trend**	***p*-Value**	**Drift & trend**	***p*-Value**
GRCOPI	3.07613	0.9990	0.23821	0.5941
GRCOPII	2.89001	0.7654	1.11091	0.4671
FDCOPI–D	0.57863	0.7186	-0.93303	0.1754
FDCOPII–D	0.36989	0.6443	0.41112	0.6595
FDCOPIII-A	0.59259	0.7233	2.01289	0.9779
FDCOPIV–A	5.67541	0.9809	2.43211	0.3398
FDCOPV-E	-1.35355*	0.0879	-3.60450*	0.0902
FDCOPVI-S	-0.99863	0.1590	-1.54490*	0.0612
FDINXI	-0.77609	0.4543	-1.65908	0.1123
FDINXII	-1.67555	0.3456	-0.77865	0.1090
LFCON	-0.15913	0.4368	0.75493	0.7749
LGOGE	-1.02778	0.1520	-1.73072	0.4018
RNDX	-0.74867	0.2270	-1.25856	0.1041
HDINX	-5.32311*	0.0654	-3.41327*	0.0719

Table 4.3 Continued

	At First Difference			
GRCOPI	-7.74625***	0.0000	-5.29027***	0.0000
GRCOPII	-799098***	0.0000	-4.76881***	0.000
FDCOPI-D	-9.54896***	0.0000	-8.27730***	0.0000
FDCOPII-D	-7.07192***	0.0000	-5.67052***	0.0000
FDCOPIII-A	-4.92683***	0.0000	0.0009***	0.0000
FDCOPIV-A	-8.11891***	0.0000	-7.90861***	0.0000
FDCOPV-E	-12.5215***	0.0000	-11.8157***	0.0000
FDCOPVI-S	-14.9973***	0.0000	-12.9782***	0.0000
FDINXI	8.88651***	0.0000	6.90081***	0.0000
FDINXII	5.45631***	0.0000	4.55674***	0.0000
LFCON	-9.85836***	0.0000	-8.06237***	0.0000
LGOGE	-9.07344***	0.0000	-6.64618***	0.0000
RNDX	-9.26638***	0.0000	-7.07997***	0.0000
HDINX	-8.21738***	0.0000	-6.17897***	0.0000

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

Table 4.4: ADF – Fisher Chi-square

	At Level			
Variables	**Drift and no trend**	***p*-Value**	**Drift & trend**	***p*-Value**
GRCOPI	13.3863	0.9984	26.0020	0.7635
GRCOPII	15.2134	1.8767	29.9800	0.9676
FDCOPI-D	30.3575	0.5498	41.5738	0.1198
FDCOPII-D	26.7734	0.7284	26.4636	0.7427
FDCOPIII-A	23.7969	0.8517	17.6900	0.9808

Tabel 4.4 Continued

FDCOPIV-A	3.7866	1.0000	19.4414	0.2290
FDCOPV-E	42.6052*	0.0996	290.948	0.9117
FDCOPVI-S	39.4216	0.1720	43.7337*	0.0809
LFCON	31.2802	0.5028	28.3111	0.6539
LGOGE	37.6367	0.2268	43.3433*	0.0870
RNDX	46.2494*	0.0694	58.6226*	0.0728
HDINX	92.8541*	0.0700	71.0062*	0.0711
		At First Difference		
GRCOPI	124.375***	0.0000	87.8182***	0.0000
GRCOPII	100.111***	0.0000	74.7678***	0.0000
FDCOPI-D	153.230***	0.0000	131.660***	0.0000
FDCOPII-D	112.899***	0.0000	95.8625***	0.0000
FDCOPIII-A	83.2375***	0.0000	0.0012***	0.0000
FDCOPIV-A	88.6543***	0.0000	122.777***	0.0000
FDCOPV-E	196.994***	0.0000	186.962***	0.0000
FDCOPVI-S	242.265***	0.0000	193.758***	0.0000
LFCON	157.062***	0.0000	125.567***	0.0000
LGOGE	143.103***	0.0000	103.181***	0.0000
RNDX	149.147***	0.0000	115.247***	0.0000
HDINX	210.863***	0.0000	166.229***	0.0000

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

However, this estimation confirms that no variable is integrated at *I*(II). Moreover, at level form, the unit root test revealed that the null hypothesis was accepted, which shows that data is non–stationary. The application of the unit root test at first difference shows that all variables included in the series reject the null

hypothesis of non–stationary. The level of integration/ stationary level is highly considered and serves as the deciding criteria to follow the logical estimation techniques relevant to the characteristics of the concerned data (Mehmood, 2017; Swamy and Dharani, 2019; Younsi and Nafla, 2019).

4.3.2. Financial Development and Economic Growth Nexus

Different estimations are tested to conclude the finance-growth nexus. Table 4.5 depicts the financial development and economic growth nexus results based on panel regression. GRCOPI is considered a predicted variable, and different variables are considered explanatory variables in different estimations, i.e., estimation I to estimation V. These estimations are based on the data of Panel A, which is further estimated as Panel A-I, A-II, A-III, A-IV, and A-V. These estimations are based on the different sub-dimensions of financial development. However, the first estimation (A–I) reflects the explanatory variables representing the depth of financial development and their impact on economic growth (gross domestic product per capita). This study showed that FDCOPI-D and FDCOPII-D significantly and positively affect economic growth (GRCOPI) at a 1% level of significance. The findings of this study are aligned with the results of Odhiambo (2008b), Chukwu and Agu (2009), Rousseau and Wachtel (2011), and Türsoy and Faisal (2018), which confirm the significant and positive impact of financial depth on the economic growth. The other control variables of this particular estimation are LFCON, LGOGE, RNDX, and HDINX.

The findings suggest that the LFCON, LGOGE, and HDINX positively affect economic growth at a 1% significance level. HDINX significantly and positively impacts economic growth at a 5% significance level. These results report that a 1% increase in FDCOPI–D and FDCOPII–D increases GRCOPI by 0.11% and 0.95%, respectively, while a 1% increase in LFCON, RNDX, and HDINX causes a 0.19%, 0.11%, and 0.61% increase in economic growth. The overall motive of this particular estimation was to test the emergence of financial development – financial depth – in attaining economic growth in developing countries. However, findings equally endorse the emergence of financial depth in achieving economic growth. Developing countries should focus on the ingredients of financial depth to achieve economic growth.

Table 4.5: Financial Development and Economic Growth Nexus. GRCOPI as Dependent Variable.

	Panel A				
Variable(s)	**Estimation A–I**	**Estimation A–II**	**Estimation A–III**	**Estimation A–IV**	**Estimation A–V**
C	2.1112***	1.9451***	2.2298***	1.7652***	2.2215***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FDCOPI-D	0.1121***				
	(0.000)				
FDCOPII-D	0.9599***				
	(0.000)				
FDCOPIII-A		0.1989***			
		(0.000)			
FDCOPIV-A		0.4131***			
		(0.000)			
FDCOPV-E			-0.1987***		-0.1110**
			(0.000)		(0.022)
FDCOPVI-S				-0.2879***	-0.2043***
				(0.000)	(0.000)
FDINXI					0.1543***
					(0.000)
FDINXII					0.9321***
					(0.000)
LFCON	0.1981***	0.1231***	0.8841***	0.7765***	1.1143***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LGOGE	0.6512	0.8714***	1.2191**	0.4237***	
	(0.109)	(0.000)	(0.042)	(0.000)	
RNDX	0.1143***	0.1012**	0.0453***	0.9851***	0.8754***
	(0.001)	(0.031)	(0.000)	(0.000)	(0.000)
HDINX	0.6112**	0.3441***	0.7652	1.1134***	
	(0.020)	(0.000)	(0.119)	(0.000)	
R-squared	0.8412	0.8110	0.7798	0.7910	88.1561
Adj. R-squared	0.8011	0.7862	0.7543	0.7651	83.987
F-statistic	81.2181***	82.9861***	0.7541***	101.0965***	103.761***
Prob. (F-stat)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

** and *** denote the significance at 0.05 and 0.01 level

Source: Authors' calculations

The second estimation (A-II) concerns access to financial development and its impact on economic growth (gross domestic product per capita). This estimation considers FDCOPIII–A and FDCOPIV–A to represent financial access in the cadre of financial development. In A-II estimation, results show that FDCOPIII–A and FDCOPIV–A significantly affect economic growth at a 1% significant level. Outcomes align with Arora (2014) and Ratnawati (2020), which endorse the importance of financial access in confirming economic growth.

The findings suggest that the LFCON, LGOGE, and RNDX positively affect economic growth at a 1% significance level. HDINX significantly affects economic growth at a 5% significance level. These results report that with 1% increase in FDCOPIII–A and FDCOPIV–A increases GRCOPI by 0.19% and 0.41%, respectively. In comparison, a 1% increase in LFCON, LGOGE, RNDX and HDINX causes 0.123%, 0.87%, 0.10% and 0.34% increase in economic growth respectively.

The third estimation of panel A (A-III) concerns financial efficiency and its impact on economic growth. The efficiency of the financial system gained much attraction in the financial literature as it reflects how efficiently a country is utilizing its financial resource and attaining economic growth (Blejer, 2006; Saqib, 2015; Saqib, 2016). The present study considers the interest rate spread (FDCOPV–E) to represent financial sector efficiency (financial development). The estimated results of FDCOPV–E reflect the negative but statistically significant effects at a 1% level of significance.

As per expectations, the negative and significant results are desired because the efficiency level is measured through the calculation of interest rate spread which states that a fall in FDCOPV–E depicts an increase in efficiency and may result in higher economic growth. The coefficient associated with FDCOPV–E is –0.1987, reflecting a 1% increase in FDCOPV–E, 0.19% decrease in economic growth, and vice versa. This is due to the negative sign associated with FDCOPV–E. the developing economies should control the interest rate spread to attain the appropriate financial efficiency, and hence economic growth can be achieved (Akinci, Akinci, and Yilmaz, 2014; Bremus and Buch, 2017; Ozili, 2019). LFCON and RNDX positively affect economic growth at a 1% level of significance. LGOGE positively affects the GRCOPI at a 5% significance level. The coefficient associated with HDINX is positive, but the

probability value is greater than 0.05, indicating positive but insignificant results in HDINX and GRCOPI.

The findings of this study are aligned with the study of Beck et al. (2000), Kar et al. (2011), and Narayan and Narayan (2013), which endorsed the impact of financial development along with other control variables in bringing the economic growth. However, in addition to the variables that reflect financial development, other factors/ variables significantly impact the growth of developing countries – LFCON, LGOGE, and RNDX. However, the study by Mahoney et al. (2001) and Görg and Greenaway (2004) can endorse the evidence of these particular variables' significance.

The fourth estimation of panel A (A-IV) is concerned with the stability (FDCOPVI–S) of the financial sector, which ultimately represents financial development. The stability is thus proxied through non-performing loans. The appropriate performance of loans depicts the efficiency of the financial system (Jayakumar et al., 2018; Younsi and Nafla, 2019). The coefficient associated with the non-performing loans is -0.28, reflecting a 1% increase in the non-performing loans will reduce the economic growth by 0.28% and vice-versa. In estimation A-V, the results also emphasize the ingredients of financial development to attain economic growth in developing countries. Higher the non-performing loans, lower stability and growth (Manu et al., 2011; Zhang, 2001a).

The fifth estimation reflects the overall financial development and economic growth nexus. However, the estimated results of the fifth estimation are presented in Table 4.5, which reflects the desired results and endorses the results of estimations A-I to A-IV. However, financial development is the key concern in attaining economic growth. The estimation reflects that approximately all the variables representing financial development are sizable in evaluating the issue of economic growth. The R-square and adjusted R-square values are also considerable in all the estimations of panel A. However, the value of F-statistics is also considerable and is significant at a 1% level of significance.

The second panel – Panel B – is generated by focusing on the second proxy of economic growth (GDP growth annual %) to estimate financial development and

economic growth nexus in the developing countries. Table 4.6 depicts the results of financial development and economic growth nexus. GDP growth annual% is considered as a predicted variable, and different variables are deemed explanatory to different estimations, i.e., estimation I to estimation V. These estimations are based on the data of Panel B, which is further estimated as Panel B–I, B–II, B–III, B–IV and B–V. These estimations are based on the different sub-themes of financial development and economic growth nexus. B-I reflects the explanatory variables representing the depth of financial development and their impact on economic growth (GDP growth annual %). Following the footprints of panel A's estimation, panel B also considers FDCOPI-D and FDCOPII-D to represent financial depth. However, the findings relevant to these variables showed that the financial depth significantly and positively affects economic growth. Specifically, the representatives of financial depth – FDCOPI-D and FDCOPII-D – are affecting the (GRCOPII) at a 1% significance level. The findings suggest that financial depth strongly and positively impacts economic growth. However, a 1% increase in the financial depth – FDCOPI-D and FDCOPII-D – caused a 0.88% and 0.76% increase in economic growth, respectively.

The LGOGE and HDINX are also the same as Panel A because both positively affect the GRCOPII at a 1% significance level. Whereas LFCON and RNDX significantly and positively impact the GRCOPII at a 5% level of significance. These results report that a 1% increase in LFCON, LGOGE, RNDX, and HDINX, increases GRCOPII by 0.098% and 0.46%, 0.70%, and 0.11%, respectively. The results of Panel B-I depict the overall confirmation of the importance of financial depth to attain economic growth in developing countries.

The second estimation (B–II) concerns financial access and economic growth (GDP growth annual %). For the representation of financial access, FDCOPIII–A, and FDCOPIV–A are catered by the present study, which ultimately depicts financial development. The results of the B-II estimation show that FDCOPIII–A and FDCOPIV–A are significantly and positively affecting the economic growth at 5% and 1% significance levels, respectively. Results align with Arora (2014) and Ratnawati (2020), which endorse the importance of financial access in confirming economic growth.

Table 4.6: Financial Development and Economic Growth Nexus. GRCOPII as Dependent Variable.

	Panel B				
Variable(s)	Estimation B–I	Estimation B–II	Estimation B–III	Estimation B–IV	Estimation B–V
C	3.8721***	2.8772***	1.9861***	2.7632***	3.0981***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
FDCOPI-D	0.8871***				
	(0.000)				
FDCOPII-D	0.7651***				
	(0.000)				
FDCOPIII-A		0.2210**			
		(0.022)			
FDCOPIV-A		0.4561***			
		(0.000)			
FDCOPV-E			-0.4112***		-0.3871***
			(0.000)		(0.000)
FDCOPVI-S				-0.3651***	-0.2987***
				(0.000)	(0.000)
FDINXI					0.4321***
					(0.000)
FDINXII					0.7782 ***
					(0.000)
LFCON	0.09871***	0.1715***	0.8752***	1.001**	0.5513***
	(0.000)	(0.000)	(0.000)	(0.040)	(0.000)
LGOGE	0.4651**	0.6321***	0.9982**	0.5561***	
	(0.021)	(0.000)	(0.020)	(0.000)	
RNDX	0.7013**	0.3091***	1.012***	0.8871***	0.7661***
	(0.030)	(0.000)	(0.000)	(0.000)	(0.000)
HDINX	0.1129***	0.4351***	0.6541***	1.2241***	
	(0.000)	(0.000)	(0.000)	(0.000)	
R-squared	0.8229	0.7801	0.8864	80.981	83.431
Adj. R-squared	0.7861	0.7354	0.8487	0.7701	80.444
F-statistic	104.8711***	100.0981***	99.1119***	107.5541***	101.988***
Prob. (F-stat)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

** and *** denote the significance at 0.05 and 0.01 level

Source: Authors' calculations

The findings suggest that the LFCON, LGOGE, RNDX, and HDINX positively and significantly affect economic growth at a 1% significance level. These results report

that with 1% increase in FDCOPIII–A and FDCOPIV–A increases GRCOPI by 0.22% and 0.45%, respectively. In comparison, a 1% increase in LFCON, LGOGE, RNDX and HDINX causes 0.17%, 0.62%, 0.30% and 0.43% increase in economic growth respectively.

The third estimation of panel B (B-III) is concerned with the efficiency of financial development and its impact on economic growth. The efficiency of the financial system gained much attraction in the financial literature as it reflects how efficiently a country is utilizing its financial resource and attaining economic growth (Alfaro et al., 2010; Saqib, 2015; Saqib, 2016). Panel B considers interest rate spread as the proxy of financial efficiency. The estimated FDCOPV–E results reflect the negative but statistically significant effects on economic growth at a 1% significance level.

The negative and effective results are desired because the efficiency level is measured by calculating the interest rate spread, which states that a well-managed spread can better reflect the efficiency of the financial system and result in the smooth circulation of funds in the concerned countries. The coefficient associated with FDCOPV–E is –0.41, reflecting a 1% increase in FDCOPV–E, 0.41% decrease in economic growth, and vice versa.

LFCON, RNDX, and HDINX positively and significantly affect economic growth at a 1% significance level. At the same time, LGOGE is positively affecting the GRCOPII at a 5% significance level. The findings of this study are aligned with the study of Beck et al. (2000), Kar et al. (2011), and Narayan and Narayan (2013), which endorsed the impact of financial development along with other control variables in bringing the economic growth. However, besides the variables reflecting financial development, some other factors/ variables significantly impact the growth of developing countries – LFCON, LGOGE and RNDX, and HDINX. However, the evidence of these particular variables' significance can be endorsed by the study of Mahoney et al. (2001) and Zang and Kim (2007).

The fourth estimation of panel B (B-IV) is concerned with the financial sector's stability (FDCOPVI–S), which ultimately represents financial development. The stability is thus proxied through non-performing loans. The appropriate performance of

loans depicts the efficiency of the financial system (Akinci, Akinci, and Yilmaz, 2014; Assefa et al., 2017b; Bremus and Buch, 2017; Ozili, 2019). The endorsement of this concept is reflected in B-IV estimation and concludes that a 1% increase in non-performing loans can cause a decrease in economic growth.

The estimation reflects that approximately all the variables representing financial development are substantial in evaluating the issue of economic growth. The R-square and adjusted R-square values are also meaningful in all the estimations. However, the value of F-statistics is also meaningful and is significant at a 1% level of significance.

4.3.3. Cross–Section Dependence Test

Table 4.7 depicts the results of cross-section dependence. Checking of cross-section dependency is considerable in panel data (Ali et al., 2021; Arain et al., 2019; Asghar et al., 2019; Pesaran, 2004; Nasir et al., 2019). The present study considers the Pesaran (2004) cross-section dependence test for this estimation. The results of this specific test reveal the cross-sectional dependence. The results of Estimation-I showed that the coefficient associated with the Pesaran CD test is 7.6743, which is statistically significant at a 1% level of significance, which ultimately rejects the null hypothesis of no cross-sectional dependence and accepts the alternate hypothesis of the existence of cross-sectional dependence in the series included in the model.

The results of estimations II, III, IV, and V follow the same pattern as estimation I and reject the null hypothesis of no cross-sectional dependence and accept the alternate hypothesis of cross-sectional dependence. The deciding criteria for accepting or rejecting the null hypothesis in the CD test are based on the p-value. The significance level in all the estimations is less than 0.05, which confirms the alternate hypothesis of the existence of cross-sectional dependence. Table 4.8 depicts the results of cross-section dependence for Panel B. The results of Panel B also followed the pattern of Panel A and showed the statistically significant value of the coefficients of the CD test. However, the CD can be authenticated in all the estimations of Panel B.

Table 4.7: Cross-Section Dependence Test

Panel A					
Test	**Estimation A-I**	**Estimation A-II**	**Estimation A-III**	**Estimation A-IV**	**Estimation A-V**
Breusch-Pagan LM	17.9871***	34.1981***	14.9871***	19.0981***	26.7761***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pesaran scaled LM	54.9811***	43.9871***	19.9981***	61.1128***	50.1112***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pesaran CD	7.6743***	4.4432***	9.4531***	3.3312***	4.7651***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)

*** denote the significance at 0.01 level

Source: Authors' calculations

Table 4.8: Cross-Section Dependence (CD) Test

Panel B					
Test	**Estimation B-I**	**Estimation B-II**	**Estimation B-III**	**Estimation B-IV**	**Estimation B-V**
Breusch-Pagan LM	12.1209***	20.4540***	10.8912***	15.5601***	30.1432***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Pesaran scaled LM	45.5410**	38.8978***	17.4432***	55.1206***	58.3454***
	(0.040)	(0.000)	(0.000)	(0.000)	(0.000)
Pesaran CD	9.5643***	5.8486***	12.8001***	4.8438***	6.5678**
	(0.000)	(0.000)	(0.001)	(0.000)	(0.030)

*** denote the significance at 0.01 level

Source: Authors' calculations

The CD test will conclude which econometric and statistical technique will be suitable to address the under consideration problem (Ali et al., 2021; Mehmood and Bilal, 2021). However, the first generation unit root tests are not appropriate in case of the existence of cross-sectional dependence and recommended the second generation unit root test as the deciding criteria for the order of integration among the series (Ali et al., 2021; Ghazali and Ali, 2019, Mehmood and Bilal, 2021).

The different unit root tests were applied in this study, but these represent the first generation unit root test. However, the results of these tests will not be considered appropriate due to the cross-section dependence reported in Tables 4.7 and 4.8. However, in that particular stance, IPS-CIPS is deemed appropriate for the

accountability of cross-sectional dependence (Asghar et al., 2019; Bist, 2018; Latif et al., 2018; Mehmood and Bilal, 2021; Nasir, Huynh and Tram, 2019).

The results of IPS-CIPS are given in Table 4.9. This test showed that the variable is non-stationary at level but stationary at the first difference at a 1% significance level. However, the FDCOPII-D and FDCOPIV-S are stationary variables at the first difference at a 5% significance level. All the rest of the variables are stationary at the first difference at a 1% significance level.

4.3.4. IPS-CIPS Unit Root Test

Table 4.9. IPS-CIPS Unit Root Test

Variables	I(0)	*p*-value	I(1)	*p*-value
GRCOPI	-3.4764	0.1276	-4.9861***	0.0000
GRCOPII	-2.7611	0.1011	-4.9809***	0.0000
FDCOPI-D	-3.7812	0.1154	-5.1256***	0.0001
FDCOPII-D	-4.2431	0.2167	-5.6781**	0.0211
FDCOPIII-A	-2.4332	0.1101	-3.1451***	0.0000
FDCOPIV-A	-2.1109	0.2013	-3.0341***	0.0000
FDCOPV-E	-1.2671	0.1341	-2.9854***	0.0001
FDCOPIV-S	-4.7861	0.3561	-5.9701**	0.0229
LFCON	-3.1125	0.2987	-4.5569***	0.0000
LGOGE	-5.8721	0.4633	-7.8761***	0.0000
RNDX	-6.8765	0.3101	-7.8712***	0.0000
HDINX	-3.2241	0.2123	-4.1190***	0.0000

** and *** denote the significance at 0.05 and 0.01 level

Source: Authors' calculations

4.3.5. Panel Cointegration Tests

The under consideration study evaluated the authenticity of the results through different panel cointegration tests. Pedroni's panel co-integration approach is applied to verify the association among the variables included in the model for this specific motivation. However, Pedroni (2004) is well famed and widely accepted cointegration technique to confirm the cointegration among the series (Al-Mulali et al., 2015; Ghazali and Ali, 2019; Lee and Chang, 2009). Pedroni's panel co-integration test's application is followed by the Kao Residual Cointegration Test defined by Kao (1999) for the robustness estimation of the cointegration technique applied earlier by the study – Pedroni (2004) cointegration test. Most importantly, the present study had also applied the Westerlund (2007) cointegration test, which is regarded as the second-generation cointegration test which accounts for the issues of heteroscedasticity, structural breaks, and the issues of serial correlation, which were usually omitted by the conventional cointegration techniques (Arain et al., 2019; Jianguo et al., 2022).

Moreover, the Westerlund (2007) cointegration test is recommended for cross-sectional dependence (Jianguo, 2022; Meo et al, 2020). The different studies utilize FMOLS and DOLS to confirm the long-run association among the series included in the model (Al-Mulali, Ozturk, and Lean, 2015; Aslan, Oğuz, and Shahbaz, 2017; Khan et al., 2019; Pradhan, Arvin, and Bahmani, 2018). However, this procedure is applied to authenticate the results after applying DCCE estimations.

4.3.5.1. Pedroni Panel Cointegration Test

The pre-requisite for applying the Pedroni test is to check the unit root through different unit root tests. However, this study applied different unit root tests (LLC test, 2002; IPS test, 2003; ADF test), which confirmed the stationarity of the variables at first difference. However, the first difference integration authenticates the application of Pedroni (2004). For the authentication of cointegration among the series depicting the different dimensions of finance-growth nexus, the Pedroni (2004) test is applied.

The results of the Pedroni co-integration test for the specified variables are presented in Tables 4.10 and 4.11 for Panel A and B. There are two major categories available for the estimated results of Pedroni (2004). These estimations are; namely, i) within the dimensions and ii) between the dimensions and eleven in total. As a specified

standard, if at least six statistics are significant out of eleven, we can declare the cointegration and vice-versa. This particular scenario has authority in the study of Al-Awad, and Harb (2005), Al-Mulali and Sab (2012), Akinci, Akinci, and Yilmaz (2014), Asghar and Hussain (2014), Ghazali and Ali (2019), and Hussain et al. (2021).

Table 4.10: Pedroni Panel Cointegration Test

	Estimation A-I			
	Within the Dimensions (Common Coefficients)			
	t-stat	Prob.	Weighted *t*-stat	Prob.
Panel *v*-stat	0.4876	0.119	0.2243	0.129
Panelρ-stat	1.7689	0.450	2.9081	0.776
PanelPP-stat	-4.8901***	0.000	-3.1765**	0.030
PanelADF-stat	-6.1543***	0.001	-4.1989***	0.001
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	1.1987	0.457		
GroupPP-stat	-3.0981***	0.001		
GroupADF-stat	-5.9088***	0.000		
	Estimation A-II			
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-1.8761	0.378	-1.2211	0.765
Panelρ-stat	1.1190	0.341	1.0987	0.665
PanelPP-stat	-5.9871**	0.022	-4.1451***	0.000
PanelADF-stat	-4.9891**	0.043	-3.0761***	0.000
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	3.9981	0.776		
GroupPP-stat	-3.8971***	0.002		
GroupADF-stat	-4.9871***	0.000		
	Estimation A-III			
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-1.001	0.119	0.9989	0.230
Panelρ-stat	2.229	0.765	2.1106	0.690
PanelPP-stat	-1.8890	0.112	-1.7121	0.229
PanelADF-stat	-2.1989	0.224	-3.0901	0.456
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	4.1987	0.565		
GroupPP-stat	-4.9989***	0.001		

Table 4.10 Continued

GroupADF-stat	3.1191**	0.043		
	Estimation A-IV			
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-7.2299***	0.000	-5.1890**	0.025
Panelρ-stat	5.4576**	0.040	2.1109***	0.001
PanelPP-stat	-4.1865**	0.039	-3.8866**	0.033
PanelADF-stat	-1.3678	0.444	-1.0134	0.546
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	3.4477***	0.001		
GroupPP-stat	-5.1871***	0.001		
GroupADF-stat	-2.9991	0.310		
	Estimation A-V			
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	2.9801	0.110	2.1099	0.112
Panelρ-stat	4.5681	0.998	3.8971	0.878
PanelPP-stat	-3.3301***	0.000	-3.1109**	0.022
PanelADF-stat	-5.4421**	0.039	-4.9823***	0.000
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	2.3390	0.445		
GroupPP-stat	-4.9091***	0.005		
GroupADF-stat	-8.1176***	0.000		

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

However, the first estimation focuses on the financial depth and economic growth nexus. However, domestic credit to the private sector by the banks and broad money represents the financial depth, and the other control variables are also considered for the estimation. However, the series of the first estimation includes (GRCOPI, FDCOPI-D, FDCOPII-D, LFCON, LGOGE, RNDX, and HDINX). However, the results of estimation A-I are depicted in Table 4.10, which shows that six out of eleven statistics are significant, endorsing the existence of cointegration among the series included in the estimation A-I. This can be inferred that the finance-growth nexus designed in estimation A-1 has a considerable cointegration and can be considered for further estimation.

The second estimation (A-II) is concerned with the financial access and economic growth nexus. However, the major ingredients included in the estimation A-II are GRCOPI, FDCOPIII-A, FDCOPIV-A, LGOGE, LFCON, RNDX, and HDINX. Pedroni's (2004) test for A-II is also depicted in Table 4.10, confirming the cointegration among the series included in the A-II estimation. The results fulfill the cointegration test's basic assumption that at least six out of eleven statistics should be significant. However, the outcome of this estimation authenticates the cointegration.

The third estimation (A-III) is concerned with the financial efficiency and economic growth nexus. However, the interest rate spread is the flag bearer for financial efficiency. However, the major ingredients included in the estimation A-III are GRCOPI, FDCOPV-E, LGOGE, LFCON, RNDX, and HDINX. The findings of the Pedroni (2004) test for A-III are also depicted in Table 4.10, which does not confirm the cointegration among the series included in the A-III estimation. The results do not fulfill the cointegration test's basic assumption that at least six out of eleven statistics should be significant. This estimation showed that only two out of eleven statistics are significant; however, no cointegration among the series can be inferred.

The fourth estimation is the flag bearer of the financial stability and economic growth nexus. However, the non-performing loans depict the stability of financial development. Moreover, the series of estimations A-IV includes the GRCOPI, FDCOPVI-S, LGOGE, LFCON, RNDX, and HDINX. This estimation showed eight out of eleven statistically significant statistics; hence, the cointegration can be confirmed in estimations A-IV. The fifth estimation considers all the four dimensions of financial development and shows how these dimensions affect economic growth. However, estimation A-V includes the GRCOPI, FDINXI, FDINXII, FDCOPIV-E, FDCOPVI-S, LGOGE, LFCON, and RNDX. The results are presented in Table 4.10, and the findings of this particular estimation showed that six out of eleven statistics are statistically significant. Hence, the cointegration can be confirmed in estimation A-V.

However, earlier discussion and the estimation of Pedroni's (2004) test confirm the overall desired results: the existence of cointegration among the series included in the model except in the estimation A-III. Different studies argued that various tests are available to check the cointegration among the series apart from Pedroni's (2004) test. These tests include the Kao (1999, 2000) test and Westerlund's (2007) cointegration

test (Ali et al., 2020; Majeed and Asghar, 2021; Meo et al., 2020). However, the present study had also applied Kao's (1999, 2000) and Westerlund's (2007) cointegration test to conclude the existence of cointegration among the series of different estimations.

The second panel (Panel B) is also tested in the manner of Pedroni's (2004) panel cointegration, and the different estimations have been calculated. However, the series of the first estimation (B-I) mainly depicts the financial depth and economic growth nexus and includes (GRCOPII, FDCOPI-D, FDCOPII-D, LGOGE, LFCON, RNDX, HDINX). The results of estimation B-I are depicted in Table 4.11, which shows that six out of eleven statistics are significant, endorsing cointegration among the series included in the estimation B-I. This can be inferred that the finance-growth nexus designed in assessment B-I has a considerable cointegration and can be considered for further computation.

The second estimation (B-II) is concerned with the financial access and economic growth nexus. However, the major ingredients included in the assessment B-II are GRCOPII, FDCOPIII-A, FDCOPIV-A, LGOGE, LFCON, RNDX, and HDINX. The Pedroni (2004) test findings for B-II are depicted in Table 4.11, confirming the cointegration among the series included in the B-II estimation. The results fulfill the cointegration test's basic assumption that at least six out of eleven statistics should be significant. However, the outcome of this estimation authenticates the cointegration.

The third estimation (B-III) is concerned with the financial efficiency and economic growth nexus. The financial efficiency is measured here through interest rate spread. However, the major ingredients included in the estimation B-III are GRCOPII, FDCOPV-E, LGOGE, LFCON, RNDX, and HDINX. The findings of the Pedroni (2004) test for A-III are also depicted in Table 4.11, which confirms the cointegration among the series included in the estimation of B-III. The results fulfill the basic assumption of the cointegration test that at least six out of eleven statistics should be significant. The fourth estimation (B-IV) represents financial stability and economic growth nexus. However, for the measurement of financial stability, the non-performing loans are catered in estimation B-IV. Moreover, the analysis series B-IV includes the GRCOPII, FDCOPVI-S, LGOGE, LFCON, RNDX, and HDINX. This estimation showed that six out of eleven statistically significant statistics; hence, the cointegration can be confirmed in estimation B-IV.

Table 4.11: Pedroni Panel Cointegration Test

Estimation–B-I				
	Within the Dimensions (Common Coefficients)			
	t-stat	Prob.	Weighted *t*-stat	Prob.
Panel *v*-stat	-0.2231	0.311	0.4565	0.223
Panelρ-stat	3.6643***	0.001	3.0091**	0.021
PanelPP-stat	-7.8901	0.209	-5.2211	0.114
PanelADF-stat	-4.5403***	0.000	-6.0987***	0.000
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	1.3422	0.311		
GroupPP-stat	-3.7270***	0.000		
GroupADF-stat	-4.4440***	0.000		
Estimation–B-II				
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-1.1090	0.222	-1.4456	0.456
Panelρ-stat	2.4590	0.100	1.9908	0.402
PanelPP-stat	-4.0901***	0.000	-3.3331***	0.001
PanelADF-stat	-7.2234**	0.020	-5.1988***	0.000
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	2.4561	0.223		
GroupPP-stat	-3.6898***	0.003		
GroupADF-stat	-5.5453***	0.000		
Estimation–B-III				
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-2.6656	0.208	1.7809	0.111
Panelρ-stat	1.4213	0.876	1.6780	0.109
PanelPP-stat	-8.0900**	0.030	-6.4561***	0.000
PanelADF-stat	-4.4132***	0.000	-3.6590***	0.000
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	0.9943	0.341		
GroupPP-stat	-7.5434***	0.000		
GroupADF-stat	4.1161***	0.000		
Estimation–B-IV				
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-5.9876***	0.000	-3.4489***	0.000
Panelρ-stat	1.1234	0.120	2.5421	0229

Table 4.11 Continued

PanelPP-stat	-1.0989	0.222	-2.4765	0.198
PanelADF-stat	-3.5169**	0.010	-1.5434**	0.045
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	4.9060***	0.000		
GroupPP-stat	-2.2220***	0.001		
GroupADF-stat	-1.2541	0.209		
	Estimation–B-V			
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	1.5400	0.311	0.6509	0.221
Panelρ-stat	3.6560	0.878	2.4887	0.9093
PanelPP-stat	-4.7178***	0.000	-3.5543***	0.000
PanelADF-stat	-5.5543***	0.001	-4.0114***	0.000
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	2.3390	0.445		
GroupPP-stat	-7.6098***	0.001		
GroupADF-stat	-5.3321***	0.000		

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The fifth estimation considers all the four dimensions of financial development and shows how these dimensions affect economic growth. However, the series of estimation B-V includes the GRCOPII, FDINXI, FDINXII, FDCOPIV-E, FDCOPVI-S, LGOGE, LFCON, and RNDX. This estimation showed six out of eleven statistically significant statistics; hence, the cointegration can be confirmed in estimation B-V.

4.3.5.2. Kao Residual Cointegration Test

Kao Residual Cointegration Test, defined by Kao (1999) and updated in Kao (2000), is also applied to authentic cointegration among the series. Kao's (1999) tests are presented in Tables 4.12 and 4.13, respectively, stating Kao's (1999, 2000) estimations for Panel A and B. However, the Kao Residual Cointegration Test for estimations A-I, A-II, A-III, A-IV, and A-V is depicted in Table 4.12. The first estimation (A-I) includes the series of GRCOPI, FDCOPI-D, FDCOPII-D, LGOGE, LFCON, RNDX, and HDINX, and estimation A-II includes GRCOPI, FDCOPIII-A, FDCOPIV-A, LGOGE, LFCON, RNDX, and HDINX. The third estimation, A-III, includes GRCOPI, FDCOPV-E, LGOGE, LFCON, RNDX, HDINX, and the fourth estimation includes GRCOPI, FDCOPVI-S, LGOGE, LFCON, RNDX, and HDINX.

However, the fifth estimation (A-V) has GRCOPI, FDINXI, FDINXII, FDCOPIV-E, FDCOPVI-S, LGOGE, LFCON, and RNDX. All the five estimations showed that the series included in the different estimations are statistically significant are these estimates authenticate the cointegration among the series included in the model. Particularly, the third estimation showed the no-cointegration in Pedroni's (2004) cointegration test, but as per the results of Kao (1999, 2000), the results confirm the presence of cointegration.

Table 4.12: Kao Residual Cointegration Test by Kao (1999)

	Panel A				
	Estimation–A-I	**Estimation–A-II**	**Estimation–A-III**	**Estimation–A-IV**	**Estimation–A-V**
	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**
ADF	-4.1287***	-3.8751***	-2.2291***	-7.1724**	-4.4101***
	(0.000)	(0.001)	(0.005)	(0.014)	(0.000)
Residual Variance	0.001	0.004	0.003	0.016	0.001
HAC Variance	0.003	0.006	0.004	0.025	0.002

*** denote the significance at 0.01 level

Source: Authors' calculations

The Kao (1999) tests are presented in Table 4.13, which states the Kao (1999, 2000) estimations for Panel B. However, the Kao Residual Cointegration Test for estimates B-I, B-II, B-III, B-IV, and B-V is depicted in Table 4.13. The first estimation (B-I) includes the series of GRCOPII, FDCOPI-D, FDCOPII-D, LGOGE, LFCON, RNDX, and HDINX, and estimation B-II includes GRCOPII, FDCOPIII-A, FDCOPIV-A, LGOGE, LFCON, RNDX, and HDINX. The third estimation, B-III, includes GRCOPII, FDCOPV-E, LGOGE, LFCON, RNDX, HDINX, and the fourth estimation includes GRCOPII, FDCOPVI-S, LGOGE, LFCON, RNDX, and HDINX. However, the fifth estimation (B-V) has GRCOPII, FDINXI, FDINXII, FDCOPIV-E, FDCOPVI-S, LGOGE, LFCON, and RNDX.

The estimated results for all the five computations followed the footings of Panel A and showed that the series included in the different estimations are statistically significant. These estimates authenticate the cointegration among the series included in the model.

Table 4.13: Kao Residual Cointegration Test by Kao (1999)

	Panel B				
	Estimation–B-I	**Estimation–B-II**	**Estimation–B-III**	**Estimation–B-IV**	**Estimation–B-V**
	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**	***t*-Statistic (*p* value)**
ADF	-5.3090** (0.040)	-2.1110*** (0.000)	-1.8166*** (0.000)	-3.4534** (0.022)	-4.7877*** (0.000)
Residual Variance	0.010	0.003	0.001	0.015	0.001
HAC Variance	0.021	0.005	0.002	0.022	0.002

*** denote the significance at 0.01 level

Source: Authors' calculations

4.3.5.3. Westerlund ECM Panel Cointegration Test

In the case of panel data, the considerable choice for the adoption of the cointegration test is Westerlund's (2007) cointegration test because it provides robustness in the considerable formats of structural breaks and cross-sectional dependence (Arain, 2019; Ayyildiz and Erdal, 2021; Nasir et al., 2019). The traditional methods – Pedroni (2004) and Kao (1999, 2000) – for the estimations of cointegration lack in addressing the earlier mentioned issue. So, the present study utilized the Westerlund (2007) cointegration test to address the specified issue and the robustness checking of the previous estimates. However, the Westerlund Panel Cointegration Test (2007) is also known as the second-generation cointegration test (Ali et al., 2021). However, the Westerlund (2007) cointegration test for estimations A-I, A-II, A-III, A-IV, and A-V is depicted in Table 4.14.

The first estimation (A-I) includes the series of GRCOPI, FDCOPI-D, FDCOPII-D, LGOGE, LFCON, RNDX, and HDINX, and estimation A-II includes

GRCOPI, FDCOPIII-A, FDCOPIV-A, LGOGE, LFCON, RNDX, and HDINX. The third estimation, A-III, includes GRCOPI, FDCOPV-E, LGOGE, LFCON, RNDX, HDINX, and the fourth estimation includes GRCOPI, FDCOPVI-S, LGOGE, LFCON, RNDX, and HDINX. However, the fifth estimation (A-V) has GRCOPI, FDINXI, FDINXII, FDCOPIV-E, FDCOPVI-S, LGOGE, LFCON, and RNDX.

Table 4.14. Westerlund ECM Panel Cointegration Test

Panel A					
	Estimation–A-I	**Estimation–A-II**	**Estimation–A-III**	**Estimation–A-IV**	**Estimation–A-V**
Ga	-5.3417***	-3.4141***	-4.1919**	-7.9987**	-4.1010***
	(0.000)	(0.000)	(0.021)	(0.026)	(0.000)
Gt	-12.8971***	-15.5467**	2.8891***	4.4141***	-18.2261***
	(0.000)	(0.032)	(0.000)	(0.000)	(0.000)
Pa	-8.2245***	-5.0981***	-10.8761***	5.5090**	-7.7990***
	(0.000)	(0.000)	(0.000)	(0.028)	(0.000)
Pt	14.2323***	-18.2221***	-7.1871**	8.0991***	-13.4411***
	(0.000)	(0.000)	(0.021)	(0.000)	(0.000)

*** denote the significance at 0.01 level

Source: Authors' calculations

All the five estimations showed that the series included in the different estimations are statistically significant are these estimates authenticate the cointegration among the series included in the model. However, the results of the Westerlund (2007) cointegration test of the present study align with the findings of Latif (2018), Ali et al. (2020), Ali et al. (2021), and Bashir et al. (2021). They also confirmed the long-run relationship among the variables by applying the Westerlund (2007) cointegration test.

Westerlund's (2007) test results are presented in Table 4.15, stating Westerlund's (2007) cointegration test estimations for Panel B. However, the Westerlund (2007) cointegration test for estimations B-I, B-II, B-III, B-IV, and B-V is depicted in Table 4.15. The first estimation (B-I) includes the series of GRCOPII, FDCOPI-D, FDCOPII-D, LGOGE, LFCON, RNDX, and HDINX, and estimation B-II includes GRCOPII, FDCOPIII-A, FDCOPIV-A, LGOGE, LFCON, RNDX, and HDINX. The third estimation, B-III, includes GRCOPII, FDCOPV-E, LGOGE, LFCON, RNDX, HDINX, and the fourth estimation includes GRCOPII, FDCOPVI-S,

LGOGE, LFCON, RNDX, and HDINX. However, the fifth estimation (B-V) includes GRCOPII, FDINXI, FDINXII, FDCOPIV-E, FDCOPVI-S, LGOGE, LFCON, and RNDX. The estimated results for all the five estimations followed the footings of Panel A and showed that the series included in the different estimations are statistically significant. These estimates authenticate the cointegration among the series included in the model. However, the long-run relationship among the variables can be endorsed.

Table 4.15. Westerlund ECM Panel Cointegration Test

	Panel B				
	Estimation–B-I	**Estimation–B-II**	**Estimation–B-III**	**Estimation–B-IV**	**Estimation–B-V**
Ga	-4.8768***	-5.2543***	-3.8870***	-9.0012**	-3.1876**
	(0.000)	(0.000)	(0.000)	(0.033)	(0.020)
Gt	-10.1232***	-12.7686**	4.1722***	5.9132**	-16.2790***
	(0.000)	(0.011)	(0.000)	(0.021)	(0.000)
Pa	-11.8978***	-9.4554***	-15.3211***	8.1145***	-5.6510***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Pt	-7.9888***	-17.0923***	-4.9096**	12.3330***	-11.6019***
	(0.000)	(0.000)	(0.040)	(0.000)	(0.000)

*** denote the significance at 0.01 level

Source: Authors' calculations

4.3.6. Dynamic Panel Common Correlated Effects (DCCE) Approach

The results of estimation A-I of DCCE for the short and long run are presented in Tables 4.16 and 4.17, representing financial depth and economic growth. However, A-I estimation confirms the finance-growth connection as the variables FDCOPI-D and FDCOPII-D positively and significantly affect the GRCOPI at a 1% and 5% significance level, respectively. It means that a 1% increase in the indicators of financial depth causes a 0.30% and 0.45% increase in the economic growth, respectively, in the short run and 0.72% and 0.67% increase in the economic growth in the long run. Broad money and domestic credit circulation served as the rehabilitation process for the developing countries because the appropriate circulation of credit will result in the significant utilization of cred. In estimation A-I of DCCE, the other variables include LFCON, LGOGE, RNDX, and HDINX, which positively and significantly influence the predicted variable (GRCOPI). However, in terms of LFCON and HDINX, a 1%

increase in LFCON and HDINX increases the economic growth by 0.96% and 0.41%, respectively, in the short run. However, in the long-run case, the results follow the pattern of the short-run except in HDINX, which shows a positive but statistically insignificant impact.

In comparison, a 1% increase in LGOGE and RNDX causes a 0.45% and 0.66% increase in economic growth in the short-run and 0.33% and 1.97% in the case of the long run, respectively. Final consumption expenditures (LFCON), general Govt. final consumption expenditures to GDP (LGOGE), research and development expenditure (RNDX), and human development index (HDINX) are significantly contributing to the growth of developing countries. The developing countries should focus on the ingredients of this estimation to attain growth. As the lagged dependent variable is concerned, its coefficient shows negative signs and significance at a 1% significance level—moreover, the lagged dependent variable is considered an explanatory variable (Chudik and Pesaran, 2015). The consideration of the same pattern can be endorsed by the study of Ghazali and Ali (2019), Swamy and Dharani (2019), and Mensah et al. (2020). However, it shows negative and significant impacts on the dependent variable.

The results of estimation A-II of DCCE are presented in Table 4.16, representing financial access and economic growth. The variables included in this particular estimation for the representation of financial access are FDCOPIII-A and FDCOPIV-A. Commercial bank branches per 100,000 adults (FDCOPIII-A) and the number of bank accounts per 1000 population (FDCOPIV-A) are proxied for financial access. Both positively affect the GRCOPI at a 1% significance level, respectively. It can be inferred from the results that the 1% increase in the indicators of financial access causes a 0.78% and 0.60% increase in economic growth in the short run and 1.43% and 0.88% in case of the long run, respectively. In estimation A-II of DCCE, the other variables include LFCON, LGOGE, RNDX, and HDINX, which positively and significantly influence the GRCOPI. However, in terms of LFCON, LGOGE, and HDINX, it can be concluded that a 1% increase in LFCON, LGOGE, and HDINX increases the economic growth by 0.45% and 0.54% and 11%, respectively, in the short run and 0.04%, 0.11 and 0.59% in case of long-run. In comparison, a 1% increase in RNDX causes a 0.22% increase in economic growth in the short run and 0.87% in the long run. The lagged dependent variable's outcome is consistent with the result of

estimation I, which shows negative signs and significance at a 1% level of significance in the short and long run.

The estimation A-III of the DCCE model is presented in Tables 4.16 and 4.17 for the short and long run, representing financial efficiency and economic growth. The present study takes the representation of financial efficiency (FDCOPV-E) is taken by the present study to evaluate the under consideration circumstances. The coefficient associated with the FDCOP-E is negative and significant. The interest rate spread backs the logical reasoning for being the negative sign associated with the FDCOPV-E. It is inferred from the literature that the interest rate spread is negatively and significantly related to economic growth. The coefficient associated with FDCOPV-E is -0.34 in the short run and -1.12 in the long run, which states that the interest rate spread is inversely affecting the economic growth of the developing countries. The economies should control their interest rate spread to attain better growth options. However, it can be concluded from the results that the higher the interest rate spread, the lower will be the economic growth (Saqib, 2013; Waheed and Younus, 2010). The present study also endorses the management of interest rate spread for the smooth and logical circulation of funds. In estimation A-III of DCCE, the LFCON, RNDX, and HDINX positively and significantly influence the GRCOPI in the short and long run. Whereas the LGOGE is positively but insignificantly affecting the economic growth in this estimation in the short run.

The results of LGOGE depict a positive and significant impact on economic growth, which means that in the long run, the Govt. expenditures on security and related areas served as a support to attain economic growth. The coefficient associated with the LFCON is 0.68, which means that a 1% increase in LFCON causes a 0.68% increase in GRCOPI at a 1% level of significance. The outcome of LGOGE reflects a 0.22 value with its coefficient, which means that Govt.'s current expenditures for goods and services and the expense of defence and security significantly impact economic growth. The coefficient associated with the RNDX is 0.23, which means that a 1% increase in RNDX causes a 0.23% increase in GRCOPI at a 1% level of significance in the short run and 1.02% in the long run. The coefficient associated with the HDINX is 0.03, which means that a 1% increase in HDINX causes a 0.03% increase in GRCOPI at a 1% level of significance in the short run and 0.21% in the long run. The lagged

dependent variable's outcome shows negative signs and significance at a 1% significance level in the short and long run.

Table 4.16: DCCE Estimations. GRCOPI as the Dependent Variable.

Short-Run Estimates Panel A					
Variable(s)	**Estimation A-I**	**Estimation A-II**	**Estimation A-III**	**Estimation A-IV**	**Estimation A-V**
LDV	-0.9121***	-1.8761***	-0.9971***	-0.7651***	-0.4531***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
FDCOPI-D	0.3091***				
	(0.000)				
FDCOPII-D	0.4512**				
	(0.041)				
FDCOPIII-A		0.7871***			
		(0.000)			
FDCOPIV-A		0.6001***			
		(0.000)			
FDCOPV-E			-0.3451***		-0.5281**
			(0.000)		(0.040)
FDCOPVI-S				-0.1122***	-0.3412***
				(0.000)	(0.000)
FDINXI					0.8781***
					(0.000)
FDINXII					0.7991**
					(0.038)
LFCON	0.9678***	0.4561***	0.6823***	0.1230**	0.2221***
	(0.000)	(0.000)	(0.000)	(0.033)	(0.000)
LGOGE	0.4531**	0.5412***	0.2231	0.4309***	
	(0.032)	(0.000)	(0.110)	(0.000)	
RNDX	0.6612**	0.2213**	0.2342***	0.7712***	0.8675***
	(0.041)	(0.030)	(0.000)	(0.000)	(0.000)
HDINX	0.4123***	0.1110***	0.0365**	0.0451***	
	(0.000)	(0.000)	(0.022)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The estimation A-IV of DCCE is also reflected in Tables 4.16 and 4.17 for the short and long run. The assessment A-IV represents the financial stability and economic growth nexus. For the representation of financial stability, the non-performing loans are

considered for the estimation, and the results represent the predicted results. The negative and significant relationship with the FDCOPVI-S showed that the financial institutions showed control of their non-performing loans to get financial stability; otherwise, in case of an increase in the non-performing loans, the financial instability may be faced by the economies. The coefficient associated with FDCOPVI-S is -0.11 in the short-run and -0.77 in the long run, which states that increasing non-performing loans can cause financial instability and vice-versa. These findings could infer that developing countries should control their non-performing loans to attain financial stability and stamp economic growth.

In estimation A-IV of DCCE, the LFCON, LGOGE, RNDX, and HDINX positively and significantly influence the GRCOPI. The coefficient is associated with the LFCON is 0.12 in the short run and 1.00 in the long run, which states that a 1% increase in LFCON causes a 0.12% and 1.00% increase in GRCOPI at a 1% level of significance in the case of the short and long run. In the short run, the coefficient associated with the LGOGE is 0.43, which means that a 1% increase in LGOGE causes a 0.43% increase in GRCOPI at a 1% level of significance LGOGE is affecting the economic growth by 0.20% in the long run. The coefficient associated with the RNDX is 0.77, which means that a 1% increase in RNDX causes a 0.77% increase in GRCOPI at a 1% level of significance. Whereas the HDINX is concerned, its coefficient is 0.04, which means a 1% increase in HDINX causes a 0.04% increase in GRCOPI at a 1% level of significance in the short run. However, the HDINX is affecting economic growth in the long run by 0.11%.

The lagged dependent shows a negative sign with its coefficient and significance at a 1% significance level. These results have their endorsement in the studies of Ferreira and Matos (2008), Gabor and Brooks (2017), Mlambo and Asongu (2018); Pradhan et al. (2018); Asteriou and Spanos (2019), and Olaniyi and Oladeji (2021). As the estimated results in the lagged dependent variable are concerned, these variables are showing the same results depicted in the previous estimations of different DCCE models – statistically significant and negative effects.

The estimation A-V of DCCE considers the study's overall variables and, most specifically, financial depth, access, efficiency and stability, and the other control variables. This estimation reflects how all the representations of financial development

affect economic growth. For this purpose, the indexes are generated with the help of principal component analysis (PCA) to see the combined effect of the variables included in the model. However, the PCA for the financial depth and access is being conducted because more than one variable proxied these two financial development indicators.

For joint representation, the PCA is helpful (Shahabaz and Rehman, 2010; Asghar and Hussain, 2014; Aluko et al., 2020). The FDINXI and FDINXII represent the indexes created through PCA to describe the financial depth and financial access. However, the coefficients associated with FDINXI and FDINXII are 0.87 and 0.79, which means that a 1% increase in FDINXI and FDINXII causes a 0.87% and 0.79% increase in GRCOPI at a 1% level of significance in the short run. The results of the long run related to the indexes of financial depth and access showed that they are significantly and positively affecting the economic growth by 0.67% and 1.00%, respectively. The FDCOPIV-E and FDCOPVI-S significantly and negatively impact economic growth because the FDCOPIV-E and FDCOPVI-S represent the interest rate spread and non-performing loans that negatively and significantly affect economic growth in both the short and long run. It can be inferred that if the interest rate spread and non-performing loans will increase, the economic growth will decrease. The results endorse the previous estimations conducted in Tables 4.5 and 4.6. LFCON and RNDX positively and significantly influence the GRCOPI in the short run. In the long run, both these elements are also impacting economic growth positively and significantly. The coefficient associated with the LFCON is 0.22% which means that a 1% increase in LFCON causes a 0.22% increase in GRCOPI at a 1% level of significance in the short run. The coefficient associated with the RNDX is 0.86, which means that a 1% increase in RNDX causes a 0.86% increase in GRCOPI at a 1% level of significance in the short run. LFCON and RNDX also showed a positive and significant impact on economic growth. The lagged dependent shows a negative sign with its coefficient and significance at a 1% significance level. These results endorse the study of Jun et al. (2007), Kar et al. (2011), Shahbaz and Rahman (2012), Karimo and Ogbonna (2017), and Shahbaz et al. (2017a).

The results of estimation Panel B related to DCCE are presented in Table 4.18 and 4.19 for the short and long run, which addresses the issues of financial depth, access, efficiency, and stability of financial development and their nexus with economic

growth. Panel B of the current study considers the GDP growth annual % as the dependent variable for the representation of economic growth. However, for the first estimation –B-I – of Panel B, the financial depth represents financial development and confirms the finance-growth nexus's agenda. The variables FDCOPI-D and FDCOPII-D represent the financial depth, and both are positively and significantly affecting the GRCOPII in both the long and short- run. In the short run, the coefficients associated with FDCOPI-D and FDCOPII-D are 0.5788 and 0.3224, which positively and significantly affect economic growth at 1% and 5% levels of significance, respectively.

It can be inferred that a 1% increase in the indicators of financial depth causes a 0.57% and 0.32% increase in economic growth, respectively. In the long run, the effects of financial depth on the representation of financial development are also tested. The results showed positive and significant impacts of financial depth on economic growth. A 1% increase in the FDCOPI-D and FDCOPII-D brings 0.33% and 0.25% change in the economic growth at 1% and 5% significance levels, respectively.

The DCCE estimates about the estimation I represent the strong positive and significant impact of financial depth on economic growth in the short and long run in the developing countries. In estimation B-I of DCCE, the other variables, including LFCON, LGOGE, RNDX, and HDINX, positively and significantly influence the predicted variable (GRCOPII) in the short and long term. However, in the short run, from the estimated results of LFCON, RNDX, and HDINX, it can be concluded that a 1% increase in LFCON, RNDX, and HDINX increases the economic growth by 1.11%, 0.30%, and 0.52%, respectively, at a 5% level of significance in the short run. Whereas the LGOGE is concerned, it is depicted that a 1% increase in LGOGE causes a 0.87% increase in economic growth, respectively, in the short run. The lagged dependent variable is concerned; it depicts the negative and insignificant impact on economic growth in short and long-run estimates of Panel B. In the long run, the LFCON, LGOGE, RNDX, and HDINX are also playing a significant and positive role in uplifting the economy.

The DCCE estimates for B-II of Panel B are presented in Tables 4.18 and 4.19 for the short and long run, representing financial access and economic growth. The variables included in this particular estimation for the representation of financial access

are FDCOPIII-A and FDCOPIV-A. Both are positive and significantly affect GRCOPII in the short and long run.

Table 4.17: DCCE Estimations. GRCOPI as the Dependent Variable.

Long-Run Estimates Panel A					
Variable(s)	**Estimation A-I**	**Estimation A-II**	**Estimation A-III**	**Estimation A-IV**	**Estimation A-V**
LDV	-0.0451**	-0.9901	-0.3110**	-0.3980	-0.4432**
	(0.041)	(0.120)	(0.039)	(0.253)	(0.044)
FDCOPI-D	0.7221**				
	(0.046)				
FDCOPII-D	0.6760**				
	(0.040)				
FDCOPIII-A		1.4321***			
		(0.000)			
FDCOPIV-A		0.8851***			
		(0.000)			
FDCOPV-E			-1.1201**		-0.6610***
			(0.031)		(0.000)
FDCOPVI-S				-0.7765***	-0.9951**
				(0.000)	(0.019)
FDINXI					0.6768***
					(0.000)
FDINXII					0.9009**
					(0.040)
LFCON	0.9986***	0.0411***	0.5714***	1.0041**	1.7861**
	(0.000)	(0.000)	(0.000)	(0.044)	(0.039)
LGOGE	0.3331**	0.1198**	1.1341	0.2098***	0.4511
	(0.020)	(0.040)	(0.311)	(0.000)	(0.221)
RNDX	1.9765**	0.8761***	1.021***	0.1109**	0.6661***
	(0.047)	(0.001)	(0.000)	(0.030)	(0.000)
HDINX	0.9123	0.5951**	0.2191***	0.1121***	
	(0.312)	(0.011)	(0.000)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

However, in the short run, the results showed that FDCOPIII-A is significantly affecting the economic growth at a 1% level of significance and the coefficient associated with FDCOPIII-A is 1.11, which means that a 1% increase in the FDCOPIII-A is increasing the economic growth by 1.11% in the short run. Whereas the FDCOPIV-

A is concerned, its coefficient shows a 0.67 value which means that a 1% increase in the FDCOPIV-A results in a 0.67% increase in the economic growth of the developing countries.

It can be inferred from the results that the 1% increase in the indicators of financial access causes a 0.87% and 0.71% increase in economic growth, respectively, in the long run. In estimation B-II of DCCE, the other variables include LFCON, LGOGE, RNDX, and HDINX, which positively and significantly influence the GRCOPII in the short run. However, in terms of LGOGE, a 1% increase in LGOGE increases the economic growth by 0.54% at a 1% level of significance in the short run.

Whereas the LFCON, RNDX, and HDINX are concerned, they also meaningfully and positively affect economic growth at a 5% significance level in the short run. In the long run, LFCON, LGOGE, RNDX, and HDINX are also playing their positive and significant role in uplifting the economies of developing countries. The lagged dependent variable is also significant and shows a negative sign with its coefficient. In long-run estimates of estimation II of Panel-B, the present study also reflects the endorsement of financial access in attaining economic growth. The positive and significant association between financial access and economic growth confirms that developing countries should focus on financial access to increase their economic growth. The number of bank branches and the no. of accounts represent financial access. This can be inferred that if appropriate access is provided to the peoples of these countries, the attribution for the utilization of financial instruments will be significant, and hence economic growth can be attained (Arora, 2014; Chinoda and Kwenda, 2019; Moraes et al., 2021; Ratnawati, 2020).

The estimates of B-III for the DCCE model B are also presented in Tables 4.18 and 4.19 for the short and long run, respectively. These represent the issue of financial efficiency and economic growth nexus. FDCOPV-E is in the representation of financial efficiency and is backed by the interest rate spread. The coefficient associated with the FDCOPV-E is negative and significant in both the short and long run, which means that the increase in interest rate spread will decrease the economic growth in developing countries. Interest rate spread negatively and is significantly associated with economic growth. The coefficient value associated with FDCOPV-E is -0.99 and -0.77 in the short and long run, respectively, which means that if there is a 1% increase in the interest rate

spread, there will be a 0.99% 0.77% decrease in the economic growth. However, it can be concluded from the results that a higher interest rate spread can reduce economic growth. The outcomes of Panel B are aligned with the results of Panel A's estimations of financial efficiency, which were measured through the interest rate spread.

Table 4.18: DCCE Estimations. GRCOPII as the Dependent Variable.

	Short-Run Estimates Panel B				
Variable(s)	**Estimation B-I**	**Estimation B-II**	**Estimation B-III**	**Estimation B-IV**	**Estimation B-V**
LDV	-0.1098	-1.1011**	-0.3341**	-1.4543*	-0.3239***
	(0.231)	(0.029)	(0.047)	(0.054)	(0.000)
FDCOPI-D	0.5788***				
	(0.000)				
FDCOPII-D	0.3224**				
	(0.037)				
FDCOPIII-A		1.1190***			
		(0.000)			
FDCOPIV-A		0.6790**			
		(0.030)			
FDCOPV-E			-0.9992***		-0.8087**
			(0.001)		(0.030)
FDCOPVI-S				-0.9009***	0.4786***
				(0.000)	(0.000)
FDINXI					0.3120***
					(0.000)
FDINXII					0.2112**
					(0.044)
LFCON	1.1134**	0.1787***	0.8189***	0.5713**	0.7174**
	(0.030)	(0.000)	(0.000)	(0.023)	(0.044)
LGOGE	0.8711***	0.5431**	1.1987**	0.0765***	
	(0.001)	(0.025)	(0.043)	(0.000)	
RNDX	0.3098**	0.7190***	0.1651***	0.2243**	0.4598***
	(0.022)	(0.003)	(0.000)	(0.040)	(0.000)
HDINX	0.5280**	2.001**	0.8090***	0.3654***	
	(0.0289)	(0.041)	(0.000)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

However, developing economies should monitor the fluctuations in the interest rate to manage economic growth (Sethi and Acharya, 2018; Barra et al., 2020). In

DCCE estimation B-III of Panel B, the LFCON, LGOGE, RNDX, and HDINX positively and significantly influence the GRCOPII in the short run. The results show little variation in the long run as the LGOGE is positively but insignificantly affecting the economic growth in this estimation. These results endorse the concluding remarks of Hasan et al. (2009), Vaona and Patuelli (2008), Asghar and Hussain (2014), Akinci, Akinci, and Yilmaz (2014), Shahbaz et al. (2017a), Shahbaz et al. (2017b) and Mehmood and Bilal (2018).

The estimation B-IV of DCCE is also reflected in Tables 4.18 and 4.19 for the short and long-run estimates. The estimation B-IV represents the financial stability and economic growth nexus. To represent financial stability, the non-performing loans are considered for the estimation. The results represent the predicted results in the long and the short run. The negative and significant relationship with the FDCOPVI-S showed that if the non-performing loans in these countries will increase, economic growth will be reduced. However, the financial institutions should control their non-performing loans to get financial stability; otherwise, in case of an increase in the non-performing loans, the economies may face financial instability. The coefficient associated with FDCOPVI-S is -0.90 and -0.43, which means that a 1% increase in non-performing loans could reduce the economic growth by 0.90% and 043% in the short and long run, respectively. However, it can be inferred that the increase in non-performing loans can cause financial instability and vice-versa. These results have their endorsement in the studies of Ferreira and Matos (2008), Gabor and Brooks (2017), Mlambo and Asongu (2018), Pradhan et al. (2018); Asteriou and Spanos (2019), and Olaniyi and Oladeji (2021) which emphasize on the financial development and stability in attaining the growth,

In estimation B-IV of DCCE, the LFCON, LGOGE, RNDX, and HDINX positively and significantly influence the GRCOPII in the short and long run. The coefficient associated with the LFCON is 0.57 and 0.93, which means that a 1% increase in LFCON causes a 0.57% and 0.93% increase in GRCOPII at a 1% level of significance in the short and long run. The LGOGE, RNDX, and HDINX follow the previous pattern of their estimation that all of them positively and significantly affect the GRCOPII in both the short and long run. The lagged dependent shows a negative sign with its coefficient and significance at a 1% significance level. As the estimated

results in lagged dependent variables are concerned, these variables show the same results depicted in the previous estimations of different DCCE models – statistically significant and negative results in the short and long run.

Table 4.19: DCCE Estimations. GRCOPII as the Dependent Variable.

	Long-Run Estimates Panel B				
Variable(s)	**Estimation B-I**	**Estimation B-II**	**Estimation B-III**	**Estimation B-IV**	**Estimation B-V**
LDV	-0.7453***	-0.9987**	-0.5768**	-1.1287**	-0.2254***
	(0.000)	(0.020)	(0.037)	(0.043)	(0.000)
FDCOPI-D	0.3354***				
	(0.000)				
FDCOPII-D	0.2546**				
	(0.021)				
FDCOPIII-A		0.8765***			
		(0.000)			
FDCOPIV-A		0.7169**			
		(0.026)			
FDCOPV-E			-0.7784***		-0.2087**
			(0.000)		(0.020)
FDCOPVI-S				-0.4352***	-0.3371***
				(0.000)	(0.000)
FDINXI					0.3221***
					(0.000)
FDINXII					0.4412**
					(0.022)
LFCON	0.2908**	0.2897***	0.5662***	0.9361***	0.3309**
	(0.022)	(0.000)	(0.000)	(0.001)	(0.033)
LGOGE	0.7654***	0.4765**	1.0890	0.1876***	
	(0.000)	(0.029)	(0.125)	(0.000)	
RNDX	0.5621***	0.8.009***	0.4212***	0.3421**	0.0198**
	(0.000)	(0.000)	(0.000)	(0.040)	(0.040)
HDINX	0.2122**	0.7650***	0.3657***	0.5886***	
	(0.033)	(0.002)	(0.000)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The estimation B-V of DCCE also follows the previous pattern of analysis because the B-V estimate also considers the study's overall variables and, most

specifically, the variables of financial depth, access, efficiency and stability, and the other control variables. This estimation is also working on the slogan to represent the nexus between financial development and economic growth in both the short and long run. The results of this particular estimation confirmed the results of earlier estimates. They responded that financial development significantly affects economic growth in both the short and long run.

The players attributed in the concerned study reflect their likewise impacts on the predicted variable. However, in the short and the long run, the majority of the financial development variables reflect their significant and positive impact on economic growth. This could mean that these explanatory variables significantly impact the GRCOP in the short and long run. After the different estimations of the DCCE approach, it can be easily concluded that the financial development and the other explanatory variables influence economic growth, most specifically in developing countries.

4.3.7. Robustness Analysis

Many studies consider the traditional mindset for evaluating long-run association among the variables included in the series through FMOLS and DOLS (Asghar and Hussain, 2014; Apostolakis and Papadopoulos, 2019; Ghazali and Ali, 2019; Jalloh and Guevera, 2017; Menyelim et al., 2021; Swamy and Dharani, 2019). After the Pedroni (2004), Kao (1999, 2000) test, and the Westerlund (2007) cointegration test, the FMOLS and DOLS tests are applied, and the results of these estimations are given in Tables 4.20, 4.21, 4.22, and 4.23. The estimation procedure followed here in the FMOLS by Pedroni (2001) is based on the variables selection made earlier in the estimation of DCCE's. However, the re-estimation through the FMOLS and DOLS is the robustness check for assessing DCCE estimates (Ghazali and Ali, 2019).

4.3.7.1. Results of FMOLS

The FMOLS and DOLS tests are categorized into two panels – Panel A and Panel B – as estimated in the earlier DCCE estimates. The calculated results of FMOLS

for Panel A and B are depicted in Tables 4.20 and 4.21. However, the first estimation (A-I and B-I) is based on the version of financial depth to represent financial development, economic growth, and other control variables. The results are in line with the results of DCCE that the financial depth is significantly and positively affecting the economic growth. The representatives of financial depth (FDCOPI-D and FDCOPII-D) significantly and positively impact economic growth at a 1% level of significance in both estimations A-I and B-I.

The coefficients associated with the FDCOPI-D in assessments A-I and B-I are 0.51 and 0.18, suggesting that a 1% increase in FDCOPI-D brings 0.51% and a 0.18% increase in GRCOPI and GRCOPII at 1% level of significance, respectively. However, the estimates of FDCOPII-D are concerned for estimation A-I and B-I; the coefficients associated are 0.29 and 0.06, which suggests that a 1% increase in FDCOPII-D brings a 0.29% and 0.06% increase in GRCOPI and GRCOPII respectively at a 1% level of significance. Whereas the LFCON, LGOGE, RNDX, and HDINX are concerned, they also influence the GRCOPI and GRCOPII in the estimations of A-I and B-I. The results also endorsed DCCE estimations, which confirm the emergence of LFCON, LGOGE, RNDX, and HDINX in attaining economic growth.

However, the second estimations (A-II and B-II) are based on the version of financial access to represent financial development and economic growth and the other control variables. For the representation of financial access, the present study considered the FDCOPIII-A and FDCOPIV-A. Both these representatives are showing a significant impact on economic growth for both the panels –Panel A and Panel. The coefficients associated with the FDCOPIII-A in estimation A-II and B-II are 1.00 and 0.91, suggesting that a 1% increase in FDCOPIII-A brings 1.00% and 0.91% increase in GRCOPI and GRCOPII at 1% level of significance, respectively. However, the estimates of FDCOPIV-A are concerned with estimations A-II and B-II. The coefficients associated are 0.46 and 0.35, which suggests that a 1% increase in FDCOPIII-A brings a 0.46% and 0.35% increase in GRCOPI and GRCOPII, respectively, at a 1% level of significance.

Whereas the LFCON, LGOGE, RNDX, and HDINX are concerned, they are also following the footprints of estimations A-II and B-II. These positively and significantly influence the GRCOPI and GRCOPII in the estimations of A-II and B-II

except LFCON in estimation B-II. The results also endorsed DCCE estimations, which confirm the emergence of LFCON, LGOGE, RNDX, and HDINX in attaining economic growth.

Table 4.20: Long Run Estimates Via FMOLS. GRCOPI as Dependent Variable.

	Panel A				
Variable(s)	**Estimation A-I**	**Estimation A-II**	**Estimation A-III**	**Estimation A-IV**	**Estimation A-V**
FDCOPI-D	0.5112***				
	(0.000)				
FDCOPII-D	0.2990***				
	(0.001)				
FDCOPIII-A		1.0011***			
		(0.001)			
FDCOPIV-A		0.4609**			
		(0.022)			
FDCOPV-E			-0.2209***		-1.4378***
			(0.000)		(0.000)
FDCOPVI-S				-0.1091***	-0.6654***
				(0.000)	(0.000)
FDINXI					0.3765**
					(0.040)
FDINXII					0.5431**
					(0.030)
LFCON	0.0761***	0.3234***	0.1076***	0.8790***	0.1231**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.021)
LGOGE	0.2451***	0.4109**	0.3220***	0.0459***	
	(0.000)	(0.020)	(0.000)	(0.000)	
RNDX	0.0981**	0.5990***	0.1194**	0.1121**	0.0410***
	(0.031)	(0.000)	(0.030)	(0.033)	(0.000)
HDINX	0.0651***	0.3332**	0.2231***	0.0431***	
	(0.000)	(0.030)	(0.001)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The third-estimations (A-III and B-III) related to FMOLS are also represented in Tables 4.20 and 4.21. The third estimation means the financial efficiency proxied through interest rate spread (FDCOPIV-E) in panels A and B. The coefficients associated with the FDCOPIV-E (interest rate spread) in assessments A-I and B-I are -0.22 and -0.42,

suggesting that a 1% increase in FDCOPIV-E brings 0.22% and 0.42% decrease in GRCOPI and GRCOPII at 1% level of significance, respectively. Whereas the LFCON, LGOGE, RNDX, and HDINX are concerned, they also influence the GRCOPI and GRCOPII in the estimations of A-III and B-III.

Table 4.21: Long Run Estimates Via FMOLS. GRCOPII as Dependent Variable.

	Panel B				
Variable(s)	**Estimation B-I**	**Estimation B-II**	**Estimation B-III**	**Estimation B-IV**	**Estimation B-V**
FDCOPI-D	0.1871***				
	(0.000)				
FDCOPII-D	0.0651***				
	(0.000)				
FDCOPIII-A		0.9112***			
		(0.000)			
FDCOPIV-A		0.3561***			
		(0.000)			
FDCOPV-E			-0.4242***		-0.9095***
			(0.000)		(0.000)
FDCOPVI-S				-0.0654***	-0.1689***
				(0.001)	(0.000)
FDINXI					0.2890***
					(0.000)
FDINXII					0.7765***
					(0.001)
LFCON	0.9876***	0.6987	0.4767**	0.2210***	0.4461*
	(0.000)	(0.211)	(0.033)	(0.001)	(0.059)
LGOGE	0.7651***	0.1787***	0.3810***	0.0341**	
	(0.000)	(0.001)	(0.000)	(0.040)	
RNDX	1.1109**	0.2547***	0.1112***	0.0153**	0.0908***
	(0.033)	(0.002)	(0.000)	(0.029)	(0.000)
HDINX	0.7161**	0.1209**	0.0615**	0.3456***	
	(0.041)	(0.040)	(0.021)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The negative association originated from the fact of interest-rate spread. The inefficiency of the financial institutions causes the higher interest rate spread and hence can be resulted in a reduction in the economic growth of the concerned economy. The

endorsement of the negative and significant impact of interest rate spread can be endorsed by different studies, i.e., Blejer (2006), Chinoda and Kwenda (2019), and Saqib (2013).

The fourth estimations (A-IV and B-IV) related to FMOLS are also represented in Tables 4.20 and 4.21. The fourth estimation represents the financial stability proxied through non-performing loans (FDCOPV-S) in panels A and B. The coefficients associated with the FDCOPV-S in assessments A-IV and B-IV are -0.10 and -0.06, suggesting that a 1% increase in FDCOPIV-E brings 0.10% and a 0.06% decrease in GRCOPI and GRCOPII at 1% level of significance, respectively. The non-performing loans represent the non-stability of the functionality of the financial institutions. The higher non-performing loans results in the instability of the financial institutions and hence should be controlled to attain economies of scale and growth. Whereas the LFCON, LGOGE, RNDX, and HDINX are concerned, they also influence the GRCOPI and GRCOPII in the estimations of A-IV and B-IV.

The fifth-estimations for A-V and B-V related to FMOLS are also represented in Tables 4.20 and 4.21. The fifth estimation represents the overall impact of financial development – financial depth, access, efficiency, and stability – on economic growth in panels – Panel A and Panel B – along with the other control variables. The findings of the FMOLS for both the panels endorse the results of DCCE estimates related to estimation A-V and B-V. It can be concluded that on an overall basis, the financial development and the control variables are significantly and positively affecting the economic growth in developing countries.

4.3.7.2. Results of DOLS

The estimations of the DOLS are presented in Tables 4.22 and 4.23, specifically estimated to confirm the long-run association among the series included in the model. The present study employed the DCCE approach and FMOLS to check the relationship among the variables included in the model. The different studies used the DOLS test to check the long-run relationship among the variables included in the under consideration model (Ghazali and Ali, 2019; Muye and Muye, 2017; Mehmood and Bilal, 2021; Shahbaz, 2009). However, for the reassessment of the results of the DCCE, FMOLS, the present study employed the DOLS test. The estimations of DOLS are based on the

criterion used in the analyses of DCCE and FMOLS. However, the findings reflect the same pattern reflected in the estimated results of DCCE and FMOLS. The four major attributes of financial development are tested independently and jointly to conclude their impact on the economic growth in developing countries.

Table 4.22: Long Run Estimates Via DOLS. GRCOPI as Dependent Variable.

	Panel A				
Variable(s)	**Estimation A-I**	**Estimation A-II**	**Estimation A-III**	**Estimation A-IV**	**Estimation A-V**
FDCOPI-D	0.5467***				
	(0.001)				
FDCOPII-D	0.1432**				
	(0.022)				
FDCOPIII-A		0.9769***			
		(0.001)			
FDCOPIV-A		0.2209**			
		(0.031)			
FDCOPV-E			-0.1050***		-0.7090**
			(0.000)		(0.020)
FDCOPVI-S				-0.0331***	-0.4321***
				(0.000)	(0.000)
FDINXI					0.7901**
					(0.030)
FDINXII					0.5609***
					(0.000)
LFCON	0.0543***	0.1432***	0.0212**	0.1221***	0.0167**
	(0.000)	(0.000)	(0.040)	(0.002)	(0.011)
LGOGE	0.7651	0.1090**	0.6609***	0.1909**	
	(0.121)	(0.030)	(0.000)	(0.039)	
RNDX	0.1870***	0.1198*	0.0981***	0.2431***	0.2367***
	(0.001)	(0.055)	(0.000)	(0.001)	(0.000)
HDINX	0.0410***	0.2234**	0.5556**	0.0645***	
	(0.000)	(0.020)	(0.041)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The findings from DOLS also suggest that financial development is the key contributor to attaining economic growth because the coefficients associated with the attributes of financial development reflect their significant relationship in explaining

the economic growth. The results are relevant to the past patterns reflected in the DCCE and FMOLS estimates in panels – Panel A and Panel B. The players of financial depth are significantly and positively impacting the economic growth in estimations A-I and B-I. The relevant control variables also contribute to attaining economic growth in developing countries. However, financial access is also a contributing factor in achieving economic growth in both the estimates of A-II and B-II. The significant contribution of financial efficiency can also be verified through DOLS in estimates A-III and B-III because it also showed a negative sign with its coefficient.

Table 4.23: Long Run Estimates Via DOLS. GRCOPII as Dependent Variable.

	Panel B				
Variable(s)	**Estimation B-I**	**Estimation B-II**	**Estimation B-III**	**Estimation B-IV**	**Estimation B-V**
FDCOPI-D	0.3314**				
	(0.029)				
FDCOPII-D	0.2290**				
	(0.030)				
FDCOPIII-A		0.7540***			
		(0.000)			
FDCOPIV-A		0.3342**			
		(0.029)			
FDCOPV-E			-0.0456***		-0.4531**
			(0.001)		(0.040)
FDCOPVI-S				-0.4300**	-0.3343***
				(0.040)	(0.000)
FDINXI					0.2987***
					(0.000)
FDINXII					0.1167***
					(0.000)
LFCON	0.3320***	0.0243***	0.0776***	0.3365***	0.3090**
	(0.000)	(0.001)	(0.000)	(0.000)	(0.031)
LGOGE	0.0981**	0.1340***	0.1211***	0.2340	
	(0.044)	(0.000)	(0.002)	(0.201)	
RNDX	0.1079***	0.1109	0.2561***	1.0091***	0.0834***
	(0.000)	(0.431)	(0.000)	(0.000)	(0.000)
HDINX	0.0390***	0.3409**	0.0787***	0.2432***	
	(0.001)	(0.038)	(0.000)	(0.000)	

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The efficiency is proxied through interest rate spread. The negative sign indicates that developing countries should control the interest rate spread to show financial efficiency and fair distribution of funds. Higher interest rate spread showed an inverse relationship with the growth of developing countries. The financial stability indicators also confirm the results of DCCE and provide the robustness of the results. The developing countries should control their non-performing loans to attain financial strength, which ultimately helps to achieve economic growth. The inverse relationship with non-performing loans is endorsed in the DOLS results because the higher the non-performing loans, the lower the economic growth in the developing countries. The human development indicator and research and development expenditures are also provided robustness to the DCCE estimates. They contribute to attaining economic development in the selected developing countries. However, in the overall estimation of A-V and B-V, the endorsement for the previous estimates can be found logically. However, the financial development index I and II represent financial depth, access, and other control variables contributing to developing countries economic growth.

4.3.8. Dumitrescu and Hurlin Causality Tests

For the estimation of panel causality of the finance-growth model, the Dumitrescu and Hurlin causality tests presented by Dumitrescu and Hurlin (2012) are applied. However, the results related to Dumitrescu and Hurlin (2012) are shown in Tables 4.24 and 4.25 for panels A and B. This test report's finding for Panel A shows unidirectional causality directing FDINXII to GRCOPI, FDCOPV-E to GRCOPI, and FDCOPVI-S to GRCOPI. However, there is a bidirectional causality relationship between FDINXI to GRCOPI. The relationship between GRCOPI and FDCOPVI-S is significant but at a 10% significance level. However, the findings of this particular study for Panel A suggest that financial development is the key icon that is influencing economic growth.

The results of the ingredients of Panel A also confirm the flow of financial development towards the conformation of economic growth. This particular estimation also ensures the agenda of the supply-leading hypothesis because it is approved by the findings of the under consideration study that financial development results in economic growth.

Table 4.24: Dumitrescu and Hurlin Panel Causality Test.

Panel A				
		W **Statistic**	***Z*** **bar Statistic**	***p*-value**
FDINXI	**GRCOPI**	7.113***	2.981	0.001
FDINXII	**GRCOPI**	5.098***	1.113	0.000
FDCOPV-E	**GRCOPI**	5.114**	1.764	0.032
FDCOPVI-S	**GRCOPI**	1.654***	0.114	0.000
LFCON	**GRCOPI**	3.659**	0.765	0.023
LGOGE	**GRCOPI**	4.678	1.092	0.128
RNDX	**GRCOPI**	6.564**	1.871	0.031
HDINX	**GRCOPI**	4.991***	2.445	0.001
GRCOPI	**FDINXI**	8.561**	3.761	0.041
GRCOPI	**FDINXII**	7.987	2.327	0.339
GRCOPI	**FDCOPIV-E**	11.874	5.981	0.136
GRCOPI	**FDCOPVI-S**	2.981*	0.114	0.061
GRCOPI	**LFCON**	5.443	1.119	0.342
GRCOPI	**LGOGE**	1.342*	0.447	0.054
GRCOPI	**RNDX**	7.765***	3.119	0.000
GRCOPI	**HDINX**	5.444**	2.991	0.022

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The results for Panel B are presented in Table 4.25. The findings of this test report that there is unidirectional causality directing from FDINXI to GRCOPII and FDINXII to GRCOPII. However, there is a bidirectional causality relationship between FDCOPV-E to GRCOPII and FDCOPVI-S to GRCOPII. This study suggests that financial development is the key factor influencing economic growth because FDINXI

and FDINXII are more than one indicator blend. Hence, the inclination for financial development to economic growth can be endorsed.

Table 4.25: Dumitrescu and Hurlin Panel Causality Test.

			Panel B		
			W **Statistic**	***Z*** **bar Statistic**	***p*-value**
FDINXI	→	**GRCOPII**	4.224***	1.115	0.000
FDINXII	→	**GRCOPII**	6.123***	2.775	0.000
FDCOPV-E	→	**GRCOPII**	4.001***	2.290	0.001
FDCOPVI-S	→	**GRCOPII**	7.767***	3.897	0.000
LFCON	→	**GRCOPII**	5.554**	2.765	0.041
LGOGE	→	**GRCOPII**	3.548**	2.876	0.000
RNDX	→	**GRCOPII**	8.326***	3.897	0.000
HDINX	→	**GRCOPII**	4.943**	1.998	0.043
GRCOPII	→	**FDINXI**	5.621	2.165	0.367
GRCOPII	→	**FDINXII**	4.343*	1.765	0.061
GRCOPII	→	**FDCOPIV-E**	9.222**	5.564	0.045
GRCOPII	→	**FDCOPVI-S**	7.771**	3.999	0.023
GRCOPII	→	**LFCON**	4.675***	2.309	0.011
GRCOPII	→	**LGOGE**	3.876	1.654	0.190
GRCOPII	→	**RNDX**	4.440***	1.431	0.001
GRCOPII	→	**HDINX**	3.425**	1.098	0.034

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The consideration for demand-following and supply-leading hypotheses is of considerable importance. Different studies showed different concluding remarks in demand-following and supply-leading hypotheses, but this agenda was still debatable

(Adeyeye et al., 2015; Chang, 2002; Calderón and Liu, 2003; Murinde and Eng, 1994; Odhiambo, 2007; Tadesse and Abafia, 2019).

The study under consideration applied the Dumitrescu and Hurlin causality tests presented by Dumitrescu and Hurlin (2012), confirming the unidirectional causality directing financial development to economic growth. The endorsement of the supply-leading hypothesis is based on most of the leading actors of the finance-growth nexus depicting causality from financial development to economic growth. This study also confirms the findings of Calderón and Liu (2003), Karimo and Ogbonna (2017), and Nayan et al. (2014), which ensures the prevalence of the supply-leading hypothesis in the finance-growth relationship.

4.3.9. Overall Discussion/ Conclusion

The present study considers financial development as the key indicator of developing countries economic growth. For this purpose, financial development was categorized into five different concerns – financial depth, access, efficiency, stability, and overall impact of financial development to evaluate their effects on attaining economic growth. The panel data of 16 developing countries on an annual basis were under consideration. The different unit root tests were applied for the estimation purpose because it is considered a prerequisite before applying any econometric technique. The LLC, IPS, and ADF test for unit root – first-generation unit root test – showed that all variables included in the model are stationary at the first difference – *I*(I). This study considers panel data for analysis, and it is admirable to check the cross-sectional dependence among the series included in the different models of the study (Ali et al., 2021; Asghar et al., 2019; Ayyildiz and Erdal, 2021; Pesaran, 2004; Zaidi et al., 2019). However, the Pesaran CD test (2004) finding depicts the cross-sectional dependence. The present study had employed IPS-CIPS for the accountability of the cross-sectional dependence (Asghar et al., 2019; Bist, 2018; Latif et al., 2018; Nasir, Huynh and Tram, 2019; Zaidi et al., 2019).

The present study applied the DCCE approach to estimate the concerned model by considering the earlier described scenarios. However, the results indicate that financial depth, access, efficiency, stability, and overall financial development significantly affect developing countries' economic growth. These results also validate

the results of Christopoulos and Tsionas (2004), Campbell and Hopenhayn (2005), Shahbaz and Rahman (2010), and Botev (2019), which endorse the role of financial development to attain economic growth.

However, the short and long-run dynamics were also verified from the estimated results. The present study applied the Pedroni (2004) panel cointegration test and Kao residual cointegration test (Kao, 1999, 2000) to determine cointegration authenticity. However, both of these tests confirm the long-run association among the variables. The results also get the authentication stamp from the effects of FMOLS and DOLS.

For the specific discussion related to the ingredients of the study, financial depth was the first icon associated with financial development. The rationale behind taking financial depth as an indicator of economic growth in developing countries is that the financial system may impact the economy significantly through the appropriate financial intermediation by allocating the funds in an economy in a significant. This appropriate allocation of funds can ease the circulation of resources and streamline financial management. The financial intermediation instigates the investors to invest logically to utilize the financial assets efficiently. It may cause economies of scale and efficient mobilization of limited resources. Similar outcomes are commendably proved by different studies (Chukwu and Agu, 2009; Isu et al., 2013; Islam et al., 2018; Jalloh and Guevera, 2017; Karimo and Ogbonna, 2017; Türsoy and Faisal, 2018) endorsing the financial depth in attaining the economic growth. This rationale is submitting the arguments that the finance intermediation monitored by the financial institutions can bring fruitful and drastic changes in the financial performance and the utilization of financial instruments. The best operation of financial instruments and better monetization of financial intermediation can cause economic development in the concerned economy. The developing countries should prudently monitor their financial system because this study's findings conclude that financial depth is one of the major icons in uplifting these economies.

The financial intermediaries – as per earlier discussion – are playing their role in all the ways of intermediary services regulations and money supply. According to the statistics of this theorem, the financial intuitions are the flag bearers of financial policies deployment, money supply, circulation of funds, and appropriate services providers in the concern of financial services. However, this particular stance is

supported by the Gurley and Shaw (1955) theorem of financial intermediation and plays a vital role in attaining economic growth in developing countries. The financial depth's emergence in achieving economic growth is presented in Tables 4.5 and 4.6 for Panel A and B. The estimates presented in these tables suggest the positive and significant vibes in attaining the economic growth of developing countries. However, the emergence of the ingredients of Panel A and B can be endorsed in terms of long-term linkages because the results of cointegration tests – Pedroni (2004), Kao (1999, 2000), and Westerlund test – presented in Tables 4.10, 4.11, 4.12, 4.13, 4.14, and 4.15 are endorsing their emergence to measure financial depth and economic growth nexus in the developing countries.

Moreover, endorsement of the positive and significant impacts can be seen in the outcome of DCCE estimates presented in Tables 4.16, 4.17, 4.18, and 4.19. The robustness of these results is attained by applying FMOLS and DOLS techniques. These techniques also authenticated the emergence of financial depth in achieving economic growth in developing countries. However, the endorsement of the positive and significant signs with the ingredients of financial depth can also be cited in the estimated results of FMOLS, and DOLS presented in Tables 4.20, 4.21, 4.22, and 4.23 for both panels – A and B.

Financial access is also concluded as the key contributor to attaining economic growth in developing countries because the outcomes of the financial access models perfectly reveal that access to the financial institutions makes possible the awareness of the financial instruments and financial intermediation. Financial access has dynamic linkages concerning the economic growth of developing countries. Considering the scenario mentioned above, the basic identification here is the origination of the concept of financial innovation in both a theoretical and empirical manner. The innovation and access in the financial system are the induction of new procedures and ways in the financial management and money supply. The advancement in the financial system and the specialized functions of financial intermediation can cause fair distribution of finance and money supply. As a result of the earlier mentioned situation, economic progress and well-being can be concluded. The number of bank branches and the number of bank accounts is the flag bearer of financial access in this study. However, it would help to ascertain financial access and awareness to the people to utilize these channels to connect with the financial institutions to get financial services.

The positive and significant sign with the coefficients associated with the icons of financial access demonstrates that the increase in the bank branches and the number of accounts may represent the utilization of financial services and the awareness about the financial services that strengthen the financial institutions' activity – financial development – and stamp the economic growth in the developing countries. The developing countries are catered to in the struggling phase where the financial access/ inclusion may serve as a rehabilitation process to uplift the growth. The outcome of the estimated models of the present study confirms the positive and significant signs associated with the icons of financial access. The general nexus results of financial access and economic growth represent that financial access positively and significantly affects economic growth. However, this particular ingredient can be endorsed in terms of long-term linkages because the cointegration tests applied in these estimations approve their emergence in the case of Panel A and B to measure financial efficiency and economic growth nexus in the developing countries. However, the rationale for utilizing different cointegration tests is to get robust results that authenticate the long-run relationship among the ingredients of the under consideration models of the study.

The dynamic modelling for financial access and growth nexus is also estimated through the DCCE model, where the outcomes of these estimates confirm that financial intermediation plays a vital role in bringing economic growth to developing countries. The robustness of these results is attained by applying FMOLS and DOLS techniques. These techniques also authenticated the emergence of financial access in achieving economic growth in developing countries. However, the endorsement of the positive and significant signs with the ingredients of financial access can conclude that these economies should consider financial access while considering the financial system and its success. The present study also endorses that better fund management and appropriate utilization of these funds are contingent on the better opportunities that were provided by the financial or banking sector. However, financial access is one of them and on priority task where the individuals get benefits in the form of better investment opportunities, financial management, and other relevant advantages related to funding management.

It is very much important to distinguish for the stakeholder that the use of financial services and access to financial services are two different points. However, the present study emphasizes the general access to financial services that will attract the

stakeholder to deal in these kinds of services. It is worth mentioning that the availability of these kinds of services will tend the stakeholders to deal with the financial institutions and get better financial services. The endorsement of this subject matter can be cited in the studies of Adedokun and Ağa (2021), Sharma (2016), Sethi and Acharya (2018), and Shen et al. (2021), which endorse financial access as one of the determining facts while concluding economic growth.

The efficiency of the financial system is evaluated through different means in the literature to gauge the financial development of the concerned economy. However, the present study utilized the interest rate spread to gauge financial efficiency. Moreover, the level of interest rates directly impacts the behavior of the personals that what they have to save, and what they invest. It is highly appreciable for the financial institutions to attract the personals for financial intermediation. Still, this particular stance is mainly contingent on deposit and lending rates. The difference between the deposit and the lending rate is the interest rate spread. However, a theoretical and empirical linkage for gauging the efficiency of the financial sector is termed through the spread of interest rates. Credit management can help the economies to stabilize or increase their purchasing power parity (PPP). This will ultimately energize the economies to purchase new combinations, improve the existing working capacities/ procedures, and form new business combinations – the calculation of real interest and the inflation rate is quite difficult. The interest rate spread, directly and indirectly, impacts the purchasing power parity. The empirical findings of this study conclude the negative sign with the coefficients associated with the interest rate spread in all the models and estimations considered in this study.

The negative and significant sign with the coefficients associated with interest rate spread demonstrates that the fall in the value of this gauge represents efficiency and may result in higher economic growth. The present study prudently confirms the negative and significant signs associated with the measuring rod of financial efficiency – interest rate spread. The financial efficiency and economic growth nexus represent that the interest rate spread is negatively and significantly affecting the economic growth of the developing countries. However, this particular ingredient can be endorsed in terms of long-term linkages because the results of cointegration tests are endorsing its appearance in the case of Panel A and B to measure financial efficiency and

economic growth nexus in developing countries. Pedroni (2004) does not support the cointegration of financial efficiency and economic growth, specifically in Panel A. Still, the same endorsement can be cited in Kao's (1999, 2000) and Westerlund's (2007) tests – the Westerlund (2004, 2007) test caters to cross-sectional dependence and structural breaks in the data, while Pedroni's (2004) test may miss.

Interest rates were considered the optimistic variables while discussing the financial system. It originates due to the difference between lending and deposit rates. The present study considered interest rate spread which postulates that the financial intermediation spread is usually high in developing countries due to high financial intermediation cost, operating cost, and comparatively high inflation rates. The outcome of the dynamic models of the present study estimates endorses negative and significant impacts that were associated with interest rate spread. The robustness of these results is attained through different cointegration techniques that were applied in the present study. These techniques also authenticated financial efficiency in achieving economic growth in developing countries. This financial efficiency results in stable money circulation in the market/ economy, which will help considerably stabilize the economy.

Due to the mismatch in the interest rates of formal and informal financial service organizations and the inappropriate allocation of funds in the developing economies – through Govt. interventions – this may result in financial inefficiency. However, developing countries should focus on the ingredients of financial efficiency to attain economic growth. McKinnon's (1973) and Shaw's (1973) theories introduced the interest rate issue when calculating the nexus of financial development and economic growth. This study endorses these theorems for attaining economic growth in developing countries. These theories suggest that financial deepening uplifts developing economies. However, the issues of financial deepening, efficiency and their areas should be adopted by the economies to gain economies of scale and a competitive edge to boost these economies, most specifically, the developing countries. The Govt. and the policy-making bodies of the developing countries should focus on financial efficiency to stamp economic growth.

Financial stability is a promising figure for financial development and economic growth. The present study endorses this phenomenon and concludes that financial

stability should be assured to confirm economic growth, most specifically, in developing countries. The developing countries are struggling in various ways to transform themselves into emerging and developed economies. The findings of this study conclude that among the different focused agendas, financial stability is also a key concern while discussing the economic growth of developing countries. The present study utilized non-performing loans as the demonstrator of financial stability. The rationale behind this choice is that the lower the non-performing loans, the higher the financial stability. However, before the 2008 financial crisis, the amount of non-performing loans was relatively low, but the increasing trend can be cited during and after the 2008 financial crisis. However, appropriate supervision and real implantation of banking regulations are required to cope with this issue. Different countries/ financial institutions devise their phenomenological framework to manage this issue and strengthen their financial stability. However, this study argued with the logical stance that non-performing loans are negatively and significantly affecting the financial development and economic growth nexus.

The rationale for considering non-performing loans to represent financial stability is that the countries managing their credit and loan granting capacity have lower non-performing loans and vice versa. However, the basic argument is that the lower the non-performing loans the better will be the financial stability. The findings of the present study implicitly state that the developing countries should consider the stabilized loan granting criterion, which strengthens the financial institution's stability. Stable financial activities are directly or indirectly associated with the repayment of principal and interest payments to the financial institutions that may strengthen their efficiency. The endorsement insight for the ingredient of financial stability of the present study can also be cited in the studies of Ozili (2019), Ratnawati (2020), and Younsi and Nafla (2019), where the performance of loans is debated.

The negative and significant sign with the coefficients associated with non-performing loans demonstrates that it has an inverse effect on the economic growth of the developing countries. The present study prudently confirms the negative and significant signs associated with non-performing loans in Panel A and B through which it can be inferred that non-performing loans negatively affect the economic growth of developing countries. However, the present study also tested the long-run trustworthiness of the ingredients of the present study through different cointegration

tests that conclude the authenticity for being considered in the long run. Moreover, DCCE estimates also endorse their negative and significant impacts, which authenticate the emergence of financial stability in achieving economic growth in developing countries.

The key competitive edge of the present study is to hold accountable the financial depth, access, efficiency, stability, and the other control variables to conclude the economic growth in developing countries. However, the overall findings of these estimates also endorse the signs and significance of the individual impacts of financial depth, access, efficiency, and stability. The overall financial development is the key attribute in confirming the economic growth of the developing countries. The findings of this present study emphasize that developing countries should design significant financial policies and devise a strong mechanism to monitor the financial system to attain economic growth. The outcomes of estimation V of all the model highlights the emergence of overall financial development and economic growth nexus in the developing countries. These estimates in all the versions of estimations and models depict the emergence of individual ingredients of financial development and the overall concern of financial development in attaining economic growth in developing countries. This concern confirms the viewpoint of McKinnon's (1973) and Shaw's (1973) theorem about the financial system because it has a liaison with growth. Still, the variation in its impact can be cited in developing, emerging, and developed countries in the literature. As the developing countries are concerned, these countries have more inclination toward financial development through financial intermediation in attaining growth than the rest of the economies (Apostolakis and Papadopoulos, 2019; Arcand et al., 2015; Chen, 2020; Ehigiamusoe and Lean, 2019). However, the developing countries should focus on achieving financial development, which ultimately results in economic growth.

The direction of causality is one of the concerns of the present study in the case of the finance-growth nexus. However, the study focuses on Patrick's (1966) stance of demand-following and supply-leading hypotheses. However, in the demand-following hypothesis, there is a dependency on a real economy that intends to use financial services and financial intermediation. The promulgation of this concept is that the economies have better growth options and better incomes on the national level having the capacity to use more financial services compared to those economies that have

passive circumstances for growth and productivity. The supply leading hypothesis encompasses the criterion of financial development in the economies that may ultimately lead to economic growth.

The existence of both these hypotheses at the same time is denied because different economies have their circumstances of economic growth and financial development, which may vary from one country to another. However, some studies advocate the demand-following hypothesis where the circumstance showed growth led to financial development, i.e., Chang (2002). However, at the same time, there are a lot of studies that are significantly proving the existence of supply leading behavior which confirms the phenomena of financial development led growth connection (Adeyeye et al., 2015; Beck et al., 2000; Calderón and Liu, 2003; Chow et al., 2019; Odhiambo, 2007; Tadesse and Abafia, 2019). The current study's findings endorse the emergence of the supply-leading hypothesis in developing countries. The outcome of the devised models is presented in Tables 4.24 and 4.25, where Dumitrescu and Hurlin (2012) are applied to attain the direction of causality in the finance-growth nexus.

The findings suggest that most of the ingredients of the finance-growth nexus inclined financial development to growth rather than economic growth to financial development. These two hypotheses are important and have an independent version of their functionality. The main theme of these two concepts has a clear reflection in the literature on finance-growth connection and is implemented independently in different economies and in different circumstances (Akinci et al., 2013; Chang, 2002; Chow et al., 2019; Fan et al., 2018; Jalloh, 2015; Karimo and Ogbonna, 2017; Murinde and Eng, 1994; Sehrawat and Giri, 2016). However, the present study advocates the supply-leading hypothesis, emphasizing financial development to attain economic growth. The present study endorses the theory of financial intermediation, which strongly advocates for the bank's role in deploying the functionality of financial intermediation on a consensus basis. The way banks/ financial institutions manage financial issues and implement their competitive edge and role as financial intermediaries is indispensable. However, concerned state banks of these developing countries and the relevant regulatory bodies should concentrate on financial efficiency by strengthening the banking sector to produce desired results.

On the specific discussion of the other control variables, the developing countries have a competitive edge of cheap and skilled human resources. Human capital is also one of the significant icons in attaining economic growth in developing countries. At the same time, the findings of the prescribed models suggest that the final consumption expenditure, general government final consumption expenditure, research and development expenditure, and human development index are the contributing factors in attaining economic growth in developing countries. The policymakers of the developing countries should consider emphases on the emergence of human capital, research, development expenditures, and infrastructure to cope with the emerging demands of the current competitive era. The real capital of the economy is their trained and skilled labor. Specifically, developing economies have a competitive edge to use this capital to attain more productivity and economic growth. The present study's findings emphasize that infrastructure development also uplifts developing economies.

In the concluding remarks, the findings of this study are relevant to the Theme-I conclude that financial development plays a positive and significant role in the economic development of the selected developing countries. However, the short and long-run dynamic estimation also confirmed the finance-growth nexus.

4.4. Results and Discussion for FDI, Financial Development, and Economic Growth Nexus

4.4.1. Panel Unit Root Test

Checking stationarity is the basic criteria for the application of any econometric work. Granger and Newbold (1974) state that dealing with the non-stationary variables can bring spurious results which are inconclusive. To confirm the stationarity condition for the whole series included in the model, three different tests are applied: i) Levin, Lin, and Chu unit root test developed by Levin, Lin, and Chu (2002) ii) Im, Pesaran, and Shin (IPS) unit root test developed by Im, Pesaran and Shin (2003) and iii) Augmented Dickey-Fuller test for unit root proposed by Dickey and Fuller (1979, 1981). However, these different tests are applied after standardization to evaluate the exact level where they have integrated actually, and the outcomes can be cited in Tables 4.26, 4.27, and 4.28.

The results of the LLC panel unit root test are presented in Table 4.26. The results showed that the HDINX and RNDX are integrated at the level form a 10% significance level at drift and no trend and drift and trend, respectively. However, the remaining variables included in the series are non-stationary at level form. However, the unit root test is applied to all the variables and evaluated at drift and no-trend. Moreover, all the variables' integration levels are tested at first through Levin, Lin, and Chu panel unit root test. The whole series included in this model are stationary at the first difference at a 1% significance level by keeping both the themes in view, i.e., at drift and no-trend and drift and trend. The results of the IPS panel unit root test are presented in Table 4.27. The results showed that the DICOP, HDINX, and GRFX are integrated at the level form at 10% significance level. However, the results of earlier mentioned variables are evaluated at drift and no-trend. At drift and trend, DICOP, HDINX, and GRFX are also integrated at a 10% significance level at level form. Variables' integration level is also tested at first difference through the IPS panel unit root test. The whole series included in this model are stationary at the first difference at a 1% level of significance by keeping both the themes in view, i.e., at drift and no-trend and drift and trend.

The Augmented Dickey-Fuller panel unit root test proposed by Dickey and Fuller (1979, 1981) is presented in Table 4.28. The results of stationarity in the case of DICOP, HDINX, and GRFX verify the IPS panel unit root test, integrated at the level form at a 10% level of significance. However, RNDX is also integrated at a 10% significance level at drift and no-trend. DICOP, LGOGE, HDINX, GRFX, and RNDX are integrated at a 10% significance level at drift and trend. The whole series integration level is tested at first difference through Augmented Dickey-Fuller panel unit root. All the variables included in the series are stationary at the first difference at a 1% significance level by keeping both the themes in view, i.e., at drift and no-trend and drift and trend. All three tests for checking the unit root depict that the whole series is stationary at first difference. Some of the variables are integrated at level but significant at a 10% level of significance, which is not considered significantly important to be declared integrated at the level. However, the whole series is integrated at level form *I*(I) form – at first difference.

To empirically examine the combined impact of foreign direct investment (DICOP) and financial development on economic growth, the different estimations are tested to better understand the under consideration matter. Table 4.29 depicts the results of FDI and financial development and economic growth nexus through panel regression. GRCOPI is considered as a predicted variable, and different variables are considered as explanatory variables in different estimations, i.e., estimation C-I and C-II for panel C. Whereas, the GRCOPII is regarded as a predicted variable in estimates of D-I and D-II for Panel D.

The estimations are based on the different sub-themes of FDI, financial development, and economic growth nexus. However, C–I reflect the explanatory variables that represent the FDI and financial development and, along with the other explanatory variables, conclude economic growth (gross domestic product per capita). The findings of this study showed that DICOP is significantly effacing the economic growth (GRCOPI) at a 1% level of significance. The coefficient associated with DICOP is 0.65, which indicates that a 1% increase in the DICOP results in a 0.65% increase in the economic growth of developing countries.

Table 4.26: Levin, Lin & Chu Panel Unit Root Test

Variables	Drift and no trend	*p*-Value	Drift & trend	*p*-Value
		At Level		
GRCOPI	-0.8945	0.1855	0.6224	0.7332
GRCOPII	-0.5642	0.1124	0.4311	0.3241
DICOP	-3.4877	0.1002	-0.9900	0.1611
LFCON	-0.8202	0.2061	0.6630	0.7463
LGOGE	-1.0919	0.1374	-0.3370	0.3681
FDIFX	-1.0890	0.1381	0.17472	0.5693
HDINX	-2.2042*	0.0938	-0.3199	0.3745
GRFX	-6.9231	0.2271	-4.7651	0.1231
RNDX	-1.1216	0.1310	-1.3511*	0.0883
TDOX	-8.7654	0.2341	-6.6541	0.1176
		At First Difference		
GRCOPI	-7.6974***	0.0000	-5.9508***	0.0000
GRCOPII	-6.3424***	0.0000	-4.8976***	0.0000
DICOP	-9.7239***	0.0000	-7.4444***	0.0000
LFCON	-7.0656***	0.0000	-4.5751***	0.0000
LGOGE	-6.4239***	0.0000	-3.8579***	0.0001
FDIFX	-6.02862***	0.0000	-5.3672***	0.0000
HDINX	-8.2173***	0.0000	-6.1789***	0.0000
GRFX	-7.1101**	0.0232	-8.9076***	0.0000
RNDX	-9.2663***	0.0000	-7.0799***	0.0000
TDOX	-13.8671**	0.0479	-10.1176**	0.0221

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

Table 4.27: Im, Pesaran and Shin W-stat

Variables	Drift and no trend	*p*-Value	Drift & trend	*p*-Value
		At Level		
GRCOPI	3.0761	0.9990	0.2382	0.5941
GRCOPII	2.8900	0.7654	1.1109	0.4671
DICOP	-4.0119*	0.7132	-1.9141*	0.6027
LFCON	-0.1591	0.4368	0.75493	0.7749
LGOGE	-1.0277	0.1520	-1.7307	0.4018
FDIFX	0.8053	0.7897	0.3355	0.6314
HDINX	-5.3231*	0.0654	-3.4132*	0.0719
GRFX	-4.6693*	0.0711	-2.2263*	0.0830
RNDX	-0.7486	0.2270	-1.2585	0.1041
TDOX	-7.8709	0.1134	-5.8911	0.2341
		At First Difference		
GRCOPI	-7.74625***	0.0000	-5.29027***	0.0000
GRCOPII	-7.9909***	0.0000	-4.7688***	0.000
DICOP	-12.0406***	0.0000	-9.9771***	0.0000
LFCON	-9.8583***	0.0000	-8.0623***	0.0000
LGOGE	-9.0734***	0.0000	-6.6461***	0.0000
FDIFX	-7.5972***	0.0000	-6.1288***	0.0000
HDINX	-8.2173***	0.0000	-6.1789***	0.0000
GRFX	-5.1232***	0.000	-6.6751***	0.000
RNDX	-9.2663***	0.0000	-7.0799***	0.0000
TDOX	-4.3090***	0.0000	-3.9989***	0.0000

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

Table 4.28: ADF – Fisher Chi-square

	At Level			
Variables	**Drift and no trend**	***p*-Value**	**Drift & trend**	***p*-Value**
GRCOPI	13.3863	0.9984	26.0020	0.7635
GRCOPII	15.2134	1.8767	29.9800	0.9676
DICOP	65.6751*	0.0804	44.3481*	0.0719
LFCON	31.2802	0.5028	28.3111	0.6539
LGOGE	37.6367	0.2268	43.3433*	0.0870
FDIFX	23.8035	0.8514	28.7841	0.6301
HDINX	92.8541*	0.0700	71.0062*	0.0711
GRFX	91.1789*	0.0805	69.8338*	0.0678
RNDX	46.2494*	0.0694	58.6226*	0.0728
TDOX	33.1232	0.1190	40.1312	0.1165
	At First Difference			
GRCOPI	124.375***	0.0000	87.8182***	0.0000
GRCOPII	100.111***	0.0000	74.7678***	0.0000
DICOP	193.554***	0.0000	151.555***	0.0000
LFCON	157.062***	0.0000	125.567***	0.0000
LGOGE	143.103***	0.0000	103.181***	0.0000
FDIFX	121.978***	0.0000	109.030***	0.0000
HDINX	210.863***	0.0000	166.229***	0.0000
GRFX	118.574***	0.0000	79.3851***	0.0000
RNDX	149.147***	0.0000	115.247***	0.0000
TDOX	111.145***	0.0000	104.675***	0.0000

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

Whereas the findings of the LFCON and FDIFX are concerned, these are also positively affecting the economic growth at a 1% level of significance. HDINX and GRFX are significantly and positively impacting the economic growth at a 5% level of significance. As the LGOGE is concerned, it shows positive but insignificant results in boosting economic growth. The coefficient associated with the FDIFX is 0.61, which indicates that a 1% increase in the DICOP results in a 0.65% increase in the economic growth of the developing countries.

The second estimation (C-II) considers some different explanatory variables than the estimation of C-I. The motive behind this is to involve various factors in a series to get a robust stance about the estimated results. The findings of C-II estimations are also presented in Table 4.29. The results showed that the DICOP, FDIFX, and GRFX positively and significantly affect economic growth at a 1% significance level. Whereas LFCON, RNDX, and TDOX also considerably affect economic growth at a 5% significance level. By following the footings of the estimation C-I, the C-II results also depict that the DICOP is significantly effacing the economic growth (GRCOPI) at a 1% level of significance. The coefficient associated with DICOP is 0.45, which indicates that a 1% increase in the DICOP results in a 0.45% increase in the economic growth of the developing countries. Whereas the findings of the LFCON and FDIFX are concerned, these are also positively and significantly affecting the economic growth at a 1% level of significance. HDINX and GRFX are significantly and positively impacting the economic growth at a 5% level of significance. As the LGOGE is concerned, it shows positive but insignificant results in boosting economic growth.

Panel D of the under consideration study considers GDP growth annual percentage representative of economic growth in both estimations, i.e., D-I and D-II. The findings related to DICOP in both the estimates – D-I and D-II – suggest that it positively and significantly affects developing countries' economic growth. The coefficients associated with DICOP in both the estimates showed 0.44 and 0.77 values, respectively, indicating that a 1% increase in DICOP brings 0.44% and 0.77% change in developing countries' economic growth. Whereas the LFCON is concerned, it is depicted positive but insignificant results in D-I but the positive and significant effect of 0.11 in D-II. LGOGE is also significantly affecting economic growth at a 1% significance level. The coefficients associated with FDIFX are 0.92 and 0.89, which are

stitched for the positive impacts on the economic growth at 1% and 5% levels of significance, respectively.

Table 4.29. FDI, Financial Development, and Economic Growth Nexus

	Panel C		Panel D	
Variable(s)	**Estimation C-I**	**Estimation C-II**	**Estimation D-I**	**Estimation D-II**
	GRCOPI		**GRCOPII**	
C	0.7165***	0.3431***	0.5446**	0.2954**
	(0.000)	(0.000)	(0.022)	(0.040)
DICOP	0.6587***	0.4590***	0.4451**	0.7789***
	(0.001)	(0.001)	(0.022)	(0.000)
LFCON	0.0768***	0.0651**	0.1045	0.1191**
	(0.000)	(0.022)	(0.209)	(0.044)
LGOGE	0.4490		0.3767***	
	(0.231)		(0.001)	
FDIFX	0.6108***	0.7112***	0.9210***	0.8987**
	(0.000)	(0.000)	(0.000)	(0.029)
HDINX	0.0189**		0.0677**	
	(0.033)		(0.045)	
GRFX	0.1098**	0.4009***	0.2209***	0.1644***
	(0.041)	(0.001)	(0.000)	(0.001)
RNDX		0.3455**		0.2290**
		(0.040)		(0.031)
TDOX		0.1189**		0.3791**
		(0.012)		(0.039)

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The HDINX and GRFX are affecting the economic growth at a 5% and 1% level of significance in estimation D-I. GRFX, RNDX, and TDOX also positively and significantly affect economic growth at 1%, 5%, and 5% significance levels, respectively. These results report that with a 1% increase in GRFX, RNDX and TDOX increase GRCOPII in estimation D-II by 0.16%, 22%, and 0.37%, respectively.

4.4.2. Cross-Section Dependence Test

The cross-sectional dependence is also checked before applying any model, as the data under consideration is in panel form. Checking of cross-section dependency is

considerable in panel data (Asghar et al., 2019; Pesaran, 2004; Zaidi et al., 2019). However, the absence of cross-section dependence can be cited in Table 4.30 through Pesaran's (2004) cross-section dependence test. The estimated results presented in Table 4.30 endorse the study of Asghar et al. (2019), which confirms the absence of cross-sectional dependence in the panel data set.

Table 4.30: Cross-Section Dependence Test

Test	Panel C		Panel D	
	Estimation C-I	Estimation C-II	Estimation D-I	Estimation D-II
Pesaran CD Test	3.8971	2.2209	2.3224	1.1765
	(0.245)	(0.134)	(0.119)	(0.125)

Source: Authors' calculations

4.4.3. Panel Cointegration Tests

The study has applied different panel cointegration tests to authenticate cointegration among the series considered for theme II. Pedroni's panel co-integration approach is used to verify the cointegration among the variables included in the model for this specific motivation. Pedroni's panel co-integration application is followed by the application of the Kao Residual Cointegration Test defined by Kao (1999). However, the present study had applied FMOLS and DOLS for the estimation of long-run relationships among the series (Ali et al., 2020; Ayyildiz and Erdal, 2021; Aslan, Oğuz, and Shahbaz, 2017; Khan et al., 2019; Pradhan, Arvin, and Bahmani, 2018; Swamy and Dharani, 2019).

4.4.3.1. Pedroni Panel Cointegration Test

For the application of the Pedroni (2004) test, the pre-requisite is to check the unit root through different unit root tests. However, this study applied different unit root tests (LLC, IPS, and ADF unit root tests) to check the level of integration among the different variables included in the model. The unit root test results are presented in Tables 4.26, 4.27, and 4.28, and the results showed that the whole series included in this study are stationary at the first difference –*I*(I). However, the first difference integration authenticates the application of Pedroni (2004). Pedroni's (2004) test is

applied from different perspectives to evaluate cointegration among the series to determine the long-run association among the variables included in the model.

Table 4.31: Results of Pedroni Panel Cointegration Test

Panel C				
Estimation C-I				
	Within the Dimensions (Common Coefficients)			
	t-stat	Prob.	Weighted *t*-stat	Prob.
Panel *v*-stat	-0.331**	0.048	-1.111**	0.028
Panelρ-stat	1.098	0.220	0.121	0.341
PanelPP-stat	-11.223**	0.020	-7.432**	0.011
PanelADF-stat	-3.432***	0.000	-3.331**	0.010
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	7.442	0.543		
GroupPP-stat	-7.765***	0.000		
GroupADF-stat	-4.390***	0.000		
Estimation C-II				
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-0.674	0.339	-1.896	0.543
Panelρ-stat	1.908	0.221	1.821	0.887
PanelPP-stat	-3.777**	0.033	-2.601**	0.022
PanelADF-stat	-4.870**	0.040	-3.425**	0.040
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	1.444	0.809		
GroupPP-stat	-9.675**	0.010		
GroupADF-stat	-7.119**	0.035		

** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The results of the Pedroni co-integration test for the specified variables are presented in Tables 4.31 and 4.32. Two major categories are available for the estimated effects of Pedroni (2004), as depicted in theme II of the present study. These estimations are; namely, i) within the dimensions and ii) between the dimensions and are eleven in total. As a specified standard, if at least six statistics are significant out of eleven, we can declare the long-run association and vice-versa. This particular scenario has authority in the study of Akinci, Akinci, and Yilmaz (2014), Asghar and Hussain (2014), and Swamy and Dharani (2019). However, the first estimation of panel C (C-I)

is presented in Table 4.31, and it is based on the selected variables considered in the series for the analysis. The outcome of the Pedroni (2004) test suggests a cointegration as eight out of eleven outcomes are statistically significant and show that there is an existence of cointegration among the series included in the model. It could be an indicator of the long-run association.

Table 4.32: Results of Pedroni Panel Cointegration Test

Panel D				
Estimation D-I				
	Within the Dimensions (Common Coefficients)			
	t-stat	Prob.	Weighted *t*-stat	Prob.
Panel *v*-stat	-0.390	0.870	-0.832	0.711
Panelρ-stat	1.887	0.664	1.221	0.541
PanelPP-stat	-8.190***	0.001	-5.659***	0.000
PanelADF-stat	-3.211***	0.000	-4.650**	0.030
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	2.098	0.767		
GroupPP-stat	-15.909**	0.026		
GroupADF-stat	-9.881**	0.039		
Estimation D-II				
	Within the Dimensions (Common Coefficients)			
Panel *v*-stat	-0.768	0.444	-0.321	0.709
Panelρ-stat	1.943	0.845	0.991	0.335
PanelPP-stat	-7.083**	0.046	-2.260**	0.011
PanelADF-stat	-4.133***	0.007	-2.090**	0.025
	Between the Dimensions (Individual Coefficients)			
Group ρ-stat	0.225	0.675		
GroupPP-stat	-11.999***	0.000		
GroupADF-stat	-3.432***	0.000		

** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

Moreover, the second estimation of panel C (C-II) is presented in Table 4.31, and it is based on the selected variables considered in the series for the estimation. The outcome of the Pedroni (2004) test suggests a cointegration as six out of eleven outcomes are statistically significant and show that there is an existence of cointegration

among the series included in the model. It could be an indicator of the long-run association.

Estimated results for panels D – D-I and D-II – are presented in Table 4.32. The D-I showed that six out of eleven outcomes are statistically significant and indicate that cointegration exists among the series included in the model. It could be an indicator of the long-run association. The second estimation for panel D – D-II – is also estimated through Pedroni's (2004) test. The results of that particular estimation are given in Table 4.31. The results showed that six out of eleven estimates are significant at 1% and 5% significance levels. This estimation also confirms that cointegration exists among the variables included in the overall model.

4.4.3.2. Kao Residual Cointegration Test

Kao (1999, 2000) is also applied to evaluate cointegration among the variables. The results of Kao's (1999, 2000) tests are presented in Tables 4.33 and 4.34. However, the Kao Residual Cointegration Test results for the estimation of panels C – C-I and C-II – are shown in Table 4.32, which depicts the significant values of ADF for C-I and C-II -3.769 and -3.353, which are effective at a 1% level of significance, respectively.

Table 4.33: Kao Residual Cointegration Test

	Panel C			
	Estimation C-I		**Estimation C-II**	
	***t*-Statistic**	**Prob.**	***t*-Statistic**	**Prob.**
ADF	-3.769***	0.000	-3.353***	0.000
Residual variance	0.002		0.003	
HAC variance	0.003		0.004	

*** denote the significance at 0.01 level

Source: Authors' calculations

Whereas the results of estimation of panel D are concerned, the estimated results of both the estimations of panel D – D-I and D-II – related to Kao (1999) test are depicted in Table 4.34. Likewise, the results of the estimated effects of panel C and the

estimations of panel D also confirm the significant cointegration among the variables. The ADF values are statistically significant at 1% for both estimates of panel D.

Table 4.34: Kao Residual Cointegration Test

	Panel D			
	Estimation D-I		Estimation D-II	
	t-Statistic	Prob.	*t*-Statistic	Prob.
ADF	-4.889**	0.000	-4.651***	0.000
Residual variance	0.002		0.003	
HAC variance	0.003		0.004	

*** denote the significance at 0.01 level

Source: Authors' calculations

4.4.3.3. Results of FMOLS and DOLS

After applying Pedroni's (2004) and Kao's (1999) cointegration test, the FMOLS and DOLS tests are used. These estimations are given in Tables 4.35 and 4.35, which depict the FDI and financial development and economic growth nexus. GRCOPI is considered as a predicted variable, and different variables are considered as explanatory variables in different estimations, i.e., estimation C-I and C-II for panel C. Whereas, the GRCOPII is regarded as a predicted variable in estimates of D-I and D-II for Panel D. These estimates are based on the different sub-themes of FDI, financial development and economic growth nexus. However, C-I reflects that the explanatory variables are significant to conclude the economic growth (gross domestic product per capita). The results of the C-I estimation are presented in Table 4.35. The findings of this study showed that DICOP is significantly effacing the economic growth (GRCOPI) at a 1% level of significance.

The coefficient associated with DICOP is 0.64, which indicates that a 1% increase in the DICOP results in a 0.64% increase in the economic growth of the developing countries. Whereas the findings of the LFCON and FDIFX are concerned, they are also significantly affecting the economic growth at a 1% level of significance. Whereas LGOGE and HDINX significantly affect economic growth at a 5% level of significance. GRFX is showing positive but insignificant results in boosting economic

growth. It can be concluded that foreign direct investment and financial development are considered important while considering the economic growth in developing countries.

The second estimation (C-II) considers some different explanatory variables than the estimation of C-I. The motivation behind this is to involve different factors in a series to get a robust stance about the estimated results. The results of the C-II estimation are presented in Table 4.35. The results showed that the DICOP, FDIFX, and GRFX significantly affect economic growth at a 1% significance level. Whereas LFCON, RNDX, and TDOX also considerably affect economic growth at a 5% significance level. By following the footings of the estimation C-I, the C-II results also depict that the DICOP is effacing the economic growth (GRCOPI) at a 1% level of significance. The coefficient associated with DICOP is 0.88, which indicates that a 1% increase in the DICOP results in a 0.88% increase in the economic growth of the developing countries.

Whereas the findings of the LFCON and FDIFX are concerned, these are also positively and significantly affecting the economic growth at a 1% level of significance and the coefficients associated with these are 0.49 and 0.42, respectively. Whereas GRFX is significantly and positively affecting the economic growth at a 5% level of significance and the coefficient associated with it is 0.05, the 1% increase in GRFX brings a 0.05% increase in the economic growth of the developing countries. Whereas the RNDX and TDOX are concerned, they show positive and significant results at a 5% level of significance in boosting economic growth. The coefficients associated with these are 0.44 and 0.076, indicating that a 1% increase in the RNDX and TDOX results in a 0.44% and 0.076% increase in the economic growth of the developing countries, respectively.

Panel D of the under consideration study considers GDP growth annual percentage representative of economic growth in both estimations, i.e., D-I and D-II. The findings related to DICOP in both the estimations – D-I and D-II – suggest that it positively and significantly affects developing countries' economic growth. The coefficients associated with DICOP in both the estimations showed 0.26 and 0.34 values, indicating that a 1% increase in DICOP brings 0.26% and 0.34% change in the

economic growth of the developing countries, respectively. Whereas the LFCON is concerned, it is depicted positive and significant results in D-I and D-II.

Table 4.35: Long Run Estimates via FMOLS.

	Panel C		Panel D	
Variable(s)	**Estimation C-I**	**Estimation C-II**	**Estimation D-I**	**Estimation D-II**
	GRCOPI		**GRCOPII**	
DICOP	0.6542***	0.8809***	0.2671**	0.3451***
	(0.000)	(0.000)	(0.013)	(0.000)
LFCON	0.1121***	0.4971**	0.0760**	0.1765**
	(0.000)	(0.034)	(0.044)	(0.023)
LGOGE	0.3100**		0.4908***	
	(0.021)		(0.000)	
FDIFX	0.5420***	0.4254***	0.8712***	0.7456***
	(0.001)	(0.001)	(0.001)	(0.000)
HDINX	0.0901**		0.1876**	
	(0.012)		(0.024)	
GRFX	0.2701	0.0543***	0.3561***	0.0943***
	(0.113)	(0.000)	(0.000)	(0.001)
RNDX		0.4412**		0.1176
		(0.029)		(0.116)
TDOX		0.0765**		0.4321**
		(0.022)		(0.044)

*,** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The coefficients associated with LFCON in both the estimations showed 0.07 and 0.17 values, indicating that a 1% increase in DICOP brings 0.07% and 0.17% change in the economic growth of the developing countries, respectively. LGOGE is also significantly affecting the economic growth at a 1% level of significance in estimation I of panel D. The coefficient associated with LGOGE is 0.49, which indicates that a 1% increase in LGOGE brings a 0.49% change in the economic growth of the developing countries in estimation D-I. The coefficients associated with FDIFX are 0.87 and 0.74, which are stitched for the positive impacts on the economic growth at a 1% level of significance, respectively. The HDINX and GRFX are affecting the economic growth at a 5% and 1% level of significance in estimation D-I. The effects of GRFX are also endorsed as positive and significant in estimation D-II. RNDX shows

insignificant but positive impacts on the economic growth of the developing countries in estimation D-II. Whereas the TDOX is concerned, it positively and significantly affects economic growth at a 5% level of significance in estimation D-II. However, the results depict that the FDI and financial development are also significant factors in discussing the economic growth in developing countries. The endorsement of these factors is also evident from Bittencourt (2012), Sehrawat and Giri (2016), Nyasha and Odhiambo (2018), and Swamy and Dharani (2019) to attain economic growth.

The estimated results related to DOLS are presented in Table 4.36. Panel C – C-I and C-II – showed that DICOP significantly affects economic growth (GRCOPI and GRCOPII) at a 1% significance level. The coefficient associated with DICOP are 0.83 and 0.55, which indicates that a 1% increase in the DICOP results in the 0.83% and 0.55% increase in the economic growth of the developing countries in both the estimations of Panel C. Whereas, the findings of the LFCON and LGOGE are concerned, they are also positively and significantly effecting the economic growth at 1% and 5% level of significance respectively in estimation D-I. LFCON significantly and positively affects the under consideration issue at a 1% significance level in estimation II of panel C. In contrast, FDIFX and GRFX significantly and positively impact the economic growth in both the estimations of panel C. The coefficients associated with the FDIFX in both the estimates are 0.80 and 0.50, which depicts that a 1% increase in FDIFX brings a 0.80% and 0.50% increase in GRCOPI and GRCOPII, respectively. The coefficients associated with the GRFX in both the estimations are 0.21 and 0.33, which depicts that a 1% increase in GRFX brings a 0.21% and 0.33% increase in GRCOPI and GRCOPII, respectively.

The HDINX is also significantly and positively impacting the GRCOPI at a 5% level of significance. The coefficient associated with the HDINX in estimation C-I is 0.11, which depicts that a 1% increase in HDINX brings a 0.11% increase in GRCOPI. Whereas the RNDX and TDOX are concerned, they show positive and significant results at a 5% level of significance in boosting economic growth in C-II. The coefficients associated with these are 0.22 and 0.20, respectively.

Table 4.36: Long Run Estimates via DOLS.

	Panel C		Panel D	
Variable(s)	**Estimation C-I**	**Estimation C-II**	**Estimation D-I**	**Estimation D-II**
	GRCOPI		**GRCOPII**	
DICOP	0.8340***	0.5543***	0.5032***	0.6572***
	(0.001)	(0.000)	(0.000)	(0.000)
LFCON	0.1091***	0.2134***	0.2901**	0.0871***
	(0.000)	(0.000)	(0.021)	(0.000)
LGOGE	0.2245**		0.1564***	
	(0.034)		(0.001)	
FDIFX	0.8099***	0.5087***	0.5901***	0.7050**
	(0.000)	(0.000)	(0.000)	(0.044)
HDINX	0.1167**		0.1688**	
	(0.029)		(0.030)	
GRFX	0.2129***	0.3325**	0.1147***	0.3422***
	(0.000)	(0.023)	(0.000)	(0.000)
RNDX		0.2254**		0.1908**
		(0.024)		(0.043)
TDOX		0.2007**		0.2564**
		(0.045)		(0.047)

** and *** denote the significance at 0.05 and 0.01 level

Source: Authors' calculations

The outcomes of panel D are also presented in Table 4.36. The findings related to DICOP in both the estimations – D-I and D-II – suggest that it positively and significantly affects the developing countries' economic growth. The coefficients associated with DICOP in both the estimates showed 0.50 and 0.65 values, indicating that a 1% increase in DICOP brings 0.50% and 0.65% change in the economic growth of the developing countries, respectively. Whereas the LFCON is concerned, it is depicted positive and significant results in D-I and D-II. The coefficients associated with LFCON in both the estimations showed 0.29 and 0.08 values, indicating that a 1% increase in DICOP brings 0.29% and 0.08% change in the economic growth of the developing countries, respectively. LGOGE is also significantly affecting economic growth at a 1% level of significance in estimation I of panel D. The coefficient associated with LGOGE is 0.15, indicating that a 1% increase in LGOGE brings a 0.15% increase change in the economic growth of the developing countries in estimation D-I.

The coefficients associated with FDIFX are 0.59 and 0.70 in both the estimates of panel D, which are stitched for the positive impacts on the economic growth at 1% and 5% levels of significance, respectively. The HDINX and GRFX are affecting the economic growth at a 5% and 1% level of significance in estimation D-I. The effects of GRFX are also endorsed as positive and significant in estimation D-II. RNDX shows insignificant but positive impacts on the economic growth of the developing countries in estimation D-II. Whereas the TDOX is concerned, it positively and significantly affects economic growth at a 5% level of significance in estimation D-II. However, the results depict that the FDI and financial development are also significant factors while discussing the economic growth in developing countries.

4.4.4. Panel ARDL Approach to Co-integration

In the light of the results of all the unit root tests, the best suitable option is to apply pooled mean group (PMG) autoregressive distributed lag (ARDL) approach to co-integration (Pesaran et al., 2001) because it is equally applicable if the series is stationary at the first difference *I*(I). However, this particular technique can be applied if some of the variables are integrated at the level form *I*(0) and some of the variables are integrated at the first difference *I*(I) (Pesaran and Pesaran, 1997; Pesaran et al., 2001). Panel ARDL approach is applied in different empirical studies (Belloumi, 2014; Chaudhry et al., 2013; Islam et al., 2012; Shahbaz and Rahman, 2010) that also authenticates its application in case of mixed order of integration or at the same order of integration. However, if the series considered for the present study is integrated at the second difference *I*(II), then the ARDL approach will not be considered suitable for application (Ilyas et al., 2010).

The long-run estimates for the panel ARDL approach to co-integration are presented in Table 4.37. The Akaike Information Criterion selected the optimal lag length for the variables included in the model. However, the results showed that most of the variables included in the study significantly affect economic growth except for GRFX in C-I. However, the DICOP positively affects the GRCOPI and II at a 5% significance level for the specific interpretation. The coefficients associated with the DICOP are 0.31 and 0.39, indicating that a 1% increase in DICOP will result in a 0.31% and 0.39% increase in the economic growth of the developing countries in the long run.

However, the specific consideration of foreign direct investment inflows in developing countries can bring economic prosperity, and its effects are significant and positive.

LFCON is also positively and significantly affecting the economic growth in both the estimations of Panel C. this particular estimation endorses the findings of Chaudhry et al. (2013) and Agbloyor (2016), which authenticates the Govt. final consumption expenditures on security and infrastructure in attaining the economic growth. The estimates associated with the LFCON showed that a 1% increase in LFCON would result in 0.05% and 0.10% in economic growth in the long run. However, similar results can be found in the study of Azman-Saini et al. (2010a), Buchanan et al. (2012), Chaudhry et al. (2013), and Kalai and Zghidi (2019).

LGOGE is positively affecting the economic growth at a 5% level of significance in C-I. The coefficient associated with the LGOGE is 0.25, indicating that a 1% increase in LGOGE will result in a 0.25% increase in GRCOPI in the long run. HDINX is positively and significantly affecting the GRCOPI at a 5% level of significance. The endorsement of these kinds of results can be seen in the study of Omran and Bolbol (2003), Makki and Somwaru (2004), Chaudhry et al. (2013) Raza et al. (2021). The coefficient associated with the HDINX is 0.023, which indicates that a 1% increase in HDINX will result in 0.23% in GRCOPI in the long run. The empirical results showed that human development could improve the economy, specifically in selected developing countries. This study also confirms the results of Chaudhry et al. (2013), Gokmenoglu and Taspinar (2015), and Agbloyor (2016).

The financial development index is prepared and considered for this model and presented by FDIFX. FDIFX is positively affecting the economic growth of developing countries at a 1% level of significance in both the estimates of Panel C. The coefficients associated with the FDIFX are 0.59 and 0.39, which indicates that a 1% increase in FDIFX will result in a 0.59% and 0.37% increase in economic development in the long run. However, the particular estimation is meaningful in the positive and significant effects of FDIFX on GRCOPI. The specified meaning of this estimation is that financial development significantly impacts the economic growth of selected developing countries. The results are consistent with the study of Chang (2002), Shahbaz and Rahman (2010), Batuo et al. (2018), Botev et al. (2019), and Kalai and Zghidi (2019).

Table 4.37: Panel ARDL Long Run Estimates for FDI, Financial Development, and Economic Growth Nexus.

	Panel C		Panel D	
Variable(s)	**Estimation C-I**	**Estimation C-II**	**Estimation D-I**	**Estimation D-II**
	GRCOPI		**GRCOPII**	
DICOP	0.3167**	0.3955**	0.2260**	0.5312***
	(0.031)	(0.022)	(0.000)	(0.000)
LFCON	0.0541***	0.1098***	0.0843**	0.1011***
	(0.000)	(0.000)	(0.012)	(0.000)
LGOGE	0.2543**		0.0143***	
	(0.048)		(0.001)	
FDIFX	0.5908***	0.3701***	0.4211***	0.2735**
	(0.000)	(0.000)	(0.000)	(0.044)
HDINX	0.0231**		0.0221**	
	(0.040)		(0.036)	
GRFX	0.1765	0.2032***	0.0154***	0.0512***
	(0.221)	(0.001)	(0.000)	(0.000)
RNDX		0.1321**		0.1258
		(0.033)		(0.165)
TDOX		0.1967***		0.2540**
		(0.020)		(0.026)

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

GRFX is the only variable that is insignificant in affecting the GRCOPI. The particular estimation of GRFX has a positive sign with its coefficient, but the significance level is greater than 0.05, which confirms that GRFX is not significantly affecting the GRCOPI. RNDX is the representative of research and development expenditures. RNDX is also positively and significantly affecting the GRCOP at a 5% level of significance. The coefficient associated with the RNDX is 0.13, indicating that a 1% increase in RNDX will result in a 0.13% increase in economic growth in the long run. However, the particular estimation is meaningful in the positive and significant effects of RNDX on GRCOPI. The results also suggest that the selected developing countries should focus on RNDX for attaining economic growth in the long run. These kinds of expenses result in better opportunities to grow.

The results relevant to the RNDX of the under consideration study also confirm the findings of Rioja and Valev (2004), Gui-Diby (2014), Alvarado et al. (2017), and Shahbaz et al. (2017). The majority of the indicators included in the study showed a significant impact on economic growth and can be considered for long-run impact on the under consideration issue. Whereas trade openness is concerned, it is also significantly and positively affecting the economic growth in developing countries.

Table 4.38: Short Run Results and Error Correction Representation.

	Panel C		Panel D	
Variable(s)	**Estimation C-I**	**Estimation C-II**	**Estimation D-I**	**Estimation D-II**
	ΔGRCOPI		**ΔGRCOPII**	
ΔDICOP (-1)	0.2213***	0.1987***	0.1272***	0.3305***
	(0.000)	(0.000)	(0.001)	(0.000)
ΔLFCON (-1)	0.0112**	0.0410***	0.0170**	0.0768**
	(0.040)	(0.000)	(0.043)	(0.014)
ΔLGOGE (-1)	0.0569**		0.6654**	
	(0.021)		(0.024)	
ΔFDIFX (-1)	0.2947***	0.4120***	0.3522***	0.2451**
	(0.000)	(0.000)	(0.000)	(0.046)
ΔHDINX (-1)	0.0321**		0.0119**	
	(0.044)		(0.031)	
ΔGRFX (-1)	0.0165**	0.0209***	0.0432***	0.1093***
	(0.022)	(0.001)	(0.000)	(0.001)
ΔRNDX (-1)		0.0625**		0.0981
		(0.029)		(0.111)
ΔTDOX (-1)		0.1982***		0.2091***
		(0.000)		(0.000)
ECM (-1)	-0.5891***	-0.6112***	-0.4865***	-0.4098***
	(0.000)	(0.000)	(0.001)	(0.001)

*, ** and *** denote the significance at 0.10, 0.05 and 0.01 level

Source: Authors' calculations

The outcomes of Panel D are also concerned with the ingredients playing their role in uplifting the economic growth of the developing countries. The endorsement of the selected ingredients can be found in Table 4.37. Both the estimates of Panel D endorse that foreign direct investment and financial development are the key concern in attaining economic growth in developing countries. In comparison, the Govt. final

consumption expenditures, research and development expenditures, and trade openness play a significant role in confirming the economic growth in developing countries.

4.4.5. Short Run Results and Error Correction Representation

Table 4.38 reflects the estimated results of error correction representation for - the selected ARDL model. However, the Δ sign shows elasticities in the short run. The results of Panel C and D are presented in Table 4.38, showing that most variables significantly and positively impact developing countries' economic growth. Foreign direct investment and financial development are considerably impacting the economic growth in developing countries in the short run as well. The coefficients associated with these indicators are positive and statistically significant, indicating that they can be considered in concluding the economic growth in the short-run for both the estimates of Panel C and D. Govt. final consumption expenditures on security and infrastructure are also considerably affecting the economic growth.

At the same time, research and development expenditures, human development expenditures, and trade openness are reliable sources in attaining economic growth in developing countries. The coefficients with the error correction term in both the estimates of Panel C are -0.58 and -0.61, significant at a 1% significance level. At the same time, the coefficients with the error correction term in both the estimates of Panel D are -0.48 and -0.40, which are also significant at a 1% significance level. However, the significant and negative sign of the error correction term strengthens the prevalence of the long-run relationships among the variables considered in this study. The endorsement of negative and significant results of the error correction term can be seen in the study of Bannerjee et al. (1998), Chaudhry et al. (2013), Islam et al. (2012), Shahbazet al. (2015). However, the extent of ECM showed that concerned adjustments are completed in the first period (Acquah and Ibrahim, 2020; Kalai and Zghidi, 2019; Makki and Somwaru, 2004; Pradhan, 2010).

4.4.6. Overall Discussion/ Conclusion

The second theme of the under consideration study is to empirically evaluate the impact of foreign direct investment and financial development on economic growth by considering selected developing countries' contexts. The panel data of 16 selected developing countries are considered, and empirical investigations related to the said

data are made. The different studies reflect different concluding remarks relevant to foreign direct investment and economic growth nexus (Borensztein et al., 1998; 2011; Chaudhry et al., 2013; Islam et al., 2012; Iamsiraroj and Ulubaşoğlu, 2015; Kumari and Sharma, 2017; Mehic et al., 2013; Olofin et al., 2019; Shahbaz et al., 2011; Tiwari and Mutascu, Raza et al., 2021; Yao, 2006). However, these studies utilized different attributes to estimate the under consideration issue and came up with different bottom lines.

The two different panels are devised – panels C and D – to conclude the under consideration subject matter. The variables included in the study are GRCOPI, GRCOPII, DICOP, LFCON, LGOGE, FDINX, HDINX, GRFX, RNDX, and TDOX. These variables are considered as the proxies of different factors that have significant relevance to the subject matter of the study. The inflows of foreign direct investment are always considerable for both developing and developing countries, and this thing is evident from different studies (Acquah and Ibrahim, 2020; Buchanan et al., 2012; Belloumi, 2014; Flora and Agrawal, 2017; Kalai and Zghidi, 2019; Loungani and Razin, 2001), but its relevance for uplifting the economies of the developing countries is more considerable than the developed countries (Alfaro, 2010, Chaudhry et al., 2013; Makki and Somwaru, 2004; Muhammad et al., 2019; Ndikumana, 2000; Nkoa, 2018; Wang, 2009; Zhao and Du 2007;).

To obtain the study's empirical results, different types of analysis are conducted. However, the first step performed before applying any econometric work is unit root checking. Different tests for unit root checking are applied – LLC, IPS, and ADF tests for unit root, and the outcome of these tests are presented in Tables 4.26 to 4.28. These are also regarded as the first-generation unit root test. All the three-unit root tests showed a consensus on the same level of integration, i.e., stationary at *I*(I). The results also confirmed that there is not even a single variable in the study that is stationary at *I*(II).

This study considers panel data for analysis, and it is admirable to check the cross-sectional dependence among the series included in the different models of the study (Hussain et al., 2021; Nasir et al., 2019; Pesaran, 2004). However, the Pesaran CD test (2004) finding depicts the absence of cross-sectional dependence, and these results are displayed in Table 4.30. The general nexus between FDI, financial

development, and economic growth has been evaluated for Panel C and D and presented in Table 4.29. The findings suggest that the FDI and financial development are the key attributes while defining the economic growth in developing countries. However, the economic growth is also proxied through different variables in Panel C and D – gross domestic product per capita is considered as the proxy of economic development, and GDP growth annual percentage is considered in this research as the second proxy of economic development. However, DICOP shows foreign investors' net inflows in the concerned economy. At the same time, the financial development index is generated by pooling different variables attributed by the different studies to measure financial development. However, these considerations are the ratio of domestic credit to the private sector to GDP, the ratio of domestic credit provided by the banking sector to GDP, and the broad money percentage of GDP (WDI, 2018; IFS, 2018). These particular agendas were considered an index by keeping in view the thought of combined effect evaluation. However, the principal component analysis is conducted to create that specific index to evaluate the combined effect of these financial development ingredients on the growth of the concerned economies (Asghar and Hussain, 2014; Saqib, 2013; Sehrawat and Giri, 2016).

However, the short and long-run dynamics were also verified from the estimated results. Due to the same order of integration *I*(I), the study applied different cointegration techniques to check the existence of cointegration among the series and, after that, the presence of a long-run relationship among the variables. The present study applied the Pedroni (2004) and Kao residual cointegration test (Kao, 1999, 2000) to confirm the cointegration among the variables. The results of these cointegration tests are presented in Tables 4.31 to 4.34. However, both of these tests confirm the long-run association among the variables.

The results of the Pedroni co-integration test for the specified variables are presented in Tables 4.31 and 4.32. Two major categories are available for the estimated effects of Pedroni (2004), as depicted in theme II of the present study. These estimations are; namely, i) within the dimensions and ii) between the dimensions and are eleven in total. As a specified standard, if at least six statistics are significant out of eleven, we can declare the long-run association and vice-versa. This particular scenario has authority in the study of Akinci, Akinci, and Yilmaz (2014), Asghar and Hussain

(2014), and Swamy and Dharani (2019). However, the first estimation of panel C (C-I) is presented in Table 4.31, and it is based on the selected variables considered in the series for the analysis.

The outcome of the Pedroni (2004) test suggests a cointegration as eight out of eleven outcomes are statistically significant and show that there is an existence of cointegration among the series included in the model. It could be an indicator of the long-run association. The same pattern can be seen in estimations C-II, D-I, and D-II.

The present study employed the FMOLS and DOLS to authenticate the long-run relationship among the series considered in the estimation procedure. However, the results of these techniques are presented in Tables 4.35 and 4.36. However, the findings narrate that the FDI and financial development are purposeful while discussing the developing countries' economic growth.

The long-run estimation of the PMG-ARDL approach depicts that foreign direct investment is the dominant factor in attaining developing countries' economic growth. Apart from DICOP, the HDINX and FDIFX are also the main players in achieving growth in these specific countries. FDI and FDIFX bring appropriate growth to developing countries. Different researchers (Asongu and Nwachukwu, 2017; Badeeb and Lean, 2017; Blomstrom et al., 1994; Carkovic and Levine, 2005; Chowdhury and Mavrotas, 2006) endorse the findings of the present study.

The present study's findings conclude that the integral part of the operational process of the developing countries is having a source of attraction in terms of FDI. The endorsement is attained through Narayan and Narayan (2013) and Chaudhry et al. (2013). Moreover, the overall circumstances are challenging in nature by keeping a view of the context of their operations; the FDI is relatively a source of rehabilitation for developing countries. This attraction for the subject countries is contingent on many developing countries' competitive edges relative to the other countries. (Adams, 2009; Aiyegbusi and Adebayo, 2019; Belloumi, 2014; Olofin, Sabir, Rafique and Abbas, 2019). The error correction term of the specified ARDL model is also negative and significant, confirming the long-run relationship among the model's parameters.

The other contributive factors/ control variables play a significant role in attaining economic growth in developing countries. The findings of the prescribed

models suggest that the final consumption expenditure, general government final consumption expenditure, research and development expenditure, human development index, and trade openness are the contributing factors in attaining economic growth in developing countries.

The policymakers of the developing countries should consider emphases on the emergence of human capital, research, development expenditures, and infrastructure to cope with the emerging demands of the current competitive era. The developing economies have a competitive edge to use this capital to attain more productivity and economic growth. The present study's findings emphasize that infrastructure development also uplifts developing economies. Basically, when these countries invest in research and development, they could find new competitive ways to manage their working capacities and generate new working designs. This will create their competitive edge and attract international customers to invest in these countries. Trade openness is also considered a degree of globalization where the economies are attracting investors around the globe. However, it will not only significantly affect domestic affairs of the economy but also settle the international image around the world. The present study also supports trade openness as one of the deterministic criteria for attaining economic growth. Human capital is also one competitive edge of the developing countries. At the same time, this present study's findings link this particular competitive edge to confirm economic growth.

In a concluding remark, the FDI significantly affects economic growth and all the other variables used in the study. Hence, the model used in this study is reliable and can be used for decision-making, specifically in developing countries.

4.5. Overall Summary of Results and Discussion

The overall research findings and hypothesis testing results are presented in Table 39, which reviews the main contribution at a glance. Based on the present study's findings, different implications were drawn and are presented in Chapter 5 of the present study.

Table 4.39: Summary of Accepted/ Rejected Hypotheses

Sr.#	Hypothesis	Decision
H1.	Financial development significantly affects the economic growth in developing countries.	**Accepted**
H1(a).	Financial depth significantly affects the economic growth in developing countries.	**Accepted**
H1(b).	Financial access significantly affects the economic growth in developing countries.	**Accepted**
H1(c).	Financial efficiency significantly affects the economic growth in developing countries.	**Accepted**
H1(d).	Financial stability significantly affects the economic growth in developing countries.	**Accepted**
H2.	Foreign direct investment significantly affects the economic growth in developing countries.	**Accepted**

CHAPTER 5: CONCLUSION

5.1. Introduction

This chapter is designed to conclude the issues under consideration in this study. However, the concerned chapter provides a bottom line about the theoretical and empirical aspects discussed in the study. This chapter narrates the whole work done in this study.

5.2. Summary of the Research Findings

The study is conducted to investigate the relationship between financial development, foreign direct investment, and economic growth by keeping in view the context of developing countries. The study under consideration was divided into two different themes that depict the study's concern. The current research addresses the two main research questions, and four sub-questions stated in chapter one. However, a general look at these research questions is as follows:

1. What is the impact of financial development on economic growth in developing countries?
    a. What is the impact of financial depth on economic growth in developing countries?
    b. What is the impact of financial access on economic growth in developing countries?
    c. What is the impact of financial efficiency on economic growth in developing countries?
    d. What is the impact of financial stability on economic growth in developing countries?
2. What is the impact of foreign direct investment on economic growth in developing countries?

However, to accomplish the purpose of the study and answer these questions, the data from the World Development Indicators of the World Bank and International Financial Statistics (IFS) of IMF were taken throughout 1991-2017. The key competitive edge of the present study is to hold accountable the financial depth, access,

efficiency, stability, and the other control variables to conclude the economic growth in developing countries. However, the overall findings of these estimates also endorse the signs and significance of the individual impacts of financial depth, access, efficiency, and stability. The overall financial development is the key attribute in confirming the economic growth of the developing countries.

However, the first theme/ **hypothesis 1** aimed to conclude the impact of financial development on economic growth by keeping in view the context of developing countries. The present study considers financial development as the key indicator of developing countries' economic growth. For this purpose, financial development was categorized into five concerns – financial depth, access, efficiency, stability, and overall impact of financial development to evaluate their effects on attaining economic growth. The three different first-generation unit root tests were applied because it is considered a prerequisite before using any econometric technique. However, the conclusion drawn through these tests is that all variables included in the model are stationary at the first difference – *I*(I). This study considers panel data for analysis, and it is admirable to check the cross-sectional dependence among the series included in the different models of the study (Asghar et al., 2019; Hussain et al., 2021; Pesaran, 2004; Zaidi et al., 2019). However, the Pesaran CD test (2004) was applied, confirming the cross-sectional dependence. However, IPS-CIPS was used for the accountability of the cross-sectional dependence (Asghar et al., 2019; Bist, 2018; Latif et al., 2018; Nasir, Huynh, and Tram, 2019).

The present study applied the Pedroni (2004) panel cointegration test and Kao residual cointegration test (Kao, 1999, 2000) to determine cointegration authenticity. However, both of these tests confirm the long-run association among the variables. The study mainly employed the DCCE approach to get the outcomes of the prescribed models. However, the findings endorse the emergence of financial development in attaining economic growth. The results also get the authentication stamp from the effects of FMOLS and DOLS.

The estimation V of all the models highlights the overall financial development and economic growth nexus in developing countries. These estimates in all the versions of estimations and models depict the emergence of individual ingredients of financial development and the overall concern of financial development in attaining economic

growth in developing countries. This concern confirms the viewpoint of McKinnon's (1973) and Shaw's (1973) theorem about the financial system because it has a liaison with growth. The present study concludes the inclination for financial development in attaining growth in developing countries. However, the answer to the first research question is attained, which narrates that developing countries should focus on achieving financial development, which ultimately results in economic growth.

Hypothesis H1a was generated to conclude the financial depth and economic growth nexus. For the specific discussion related to the ingredients of the study, financial depth was the first icon associated with financial development. The rationale behind taking financial depth as an indicator of economic growth in developing countries is that the financial system may impact the economy significantly through the appropriate financial intermediation by allocating the funds in an economy in a significant. The financial intermediation instigates the investors to invest logically to utilize the financial assets efficiently. This rationale is submitting the arguments that the finance intermediation monitored by the financial institutions can bring fruitful and drastic changes in the financial performance and the utilization of financial instruments. The best utilization of financial instruments and better monetization of financial intermediation can cause economic development in the concerned economy. The positive sign can be seen with the ingredients of the financial depth and their significant impacts on the countries' economic growth that are under consideration. This study answers research question 1(a) and concludes that developing countries should farsightedly monitor their financial system because financial depth is regarded as the key concern in uplifting these economies.

The financial intermediaries are playing their role in all the ways of intermediary services regulations and money supply. However, the financial intuitions are the flag bearers of financial policies deployment, money supply, and circulation. However, this particular stance is supported by the Gurley and Shaw (1955) theorem of financial intermediation and plays a vital role in attaining economic growth in developing countries.

Hypothesis H1b: Financial access and economic growth nexus in the developing countries were considered under this hypothesis. The advancement in the financial system and the specialized functions of financial intermediation can cause fair

distribution of finance and money supply. The number of bank branches and bank accounts is the flag bearer of financial access in this study. The findings of this study conclude that financial access is an integral part of attaining economic growth because the success of the financial system is based on access to financial intermediation and financial instruments. However, it would help to ascertain financial access and awareness to the people to utilize these channels to connect with the financial institutions to get financial services.

The findings of this study conclude the positive and significant sign with the coefficients associated with the icons of financial access demonstrates that the increase in the bank branches and the number of accounts depict the utilization of financial services and the awareness about the financial services that strengthen the financial institutions' activity that endorses the economic growth in the concerned economies. This study answers research question 1(b) and concludes that financial access can contribute to achieving economic growth in developing countries.

Hypothesis H1c: Financial efficiency and economic growth nexus were concerned in this hypothesis. However, the present study utilized the interest rate spread to gauge financial efficiency. This study concludes that the negative and significant sign associated with the coefficients interest rate spread demonstrates that the fall in the value of this indicator represents an increase in efficiency and may result in higher economic growth. This financial efficiency results in stable money circulation in the market/ economy, which will help considerably stabilize the economy. However, developing countries should focus on the ingredients of financial efficiency to attain economic growth. McKinnon's (1973) and Shaw's (1973) theories introduced the interest rate issue when calculating the nexus of financial development and economic growth. This study endorses these theorems for attaining economic growth in developing countries. These theories suggest that financial deepening uplifts developing economies. Financial efficiency is concerned with how well the investment in each alternative has been made to ensure the maximum return, which answers this study’s research question 1(c), which postulates the concern of financial efficiency and growth nexus. However, the issues of financial deepening, efficiency, and their areas should be adopted by the economies to gain economies of scale and a competitive edge to boost these economies, most specifically, the developing countries.

Hypothesis H1d: The present study's findings conclude that financial stability is a promising figure for financial development and economic growth. The present study supports this phenomenon and concludes that developing countries focus on financial stability to attain economic growth—the present study utilized non-performing loans as the demonstrator of financial stability. The rationale behind this choice is that the lower the non-performing loans, the higher the financial stability. The outcomes of the models related to financial stability suggest that the non-performing loans are negatively and significantly affecting the financial development and economic growth nexus. The rationale for considering non-performing loans to represent financial stability is that the countries managing their credit and loan granting capacity have lower non-performing loans and vice versa. However, the findings conclude the basic argument that the lower the non-performing loans, the higher the financial institutions' stability, which endorses economic growth. The negative and significant sign with the coefficients associated with non-performing loans demonstrates that it has an inverse effect on the economic growth of the developing countries. The present study prudently confirms the negative and significant signs associated with non-performing loans.

The direction of causality between the finance-growth nexus was also evaluated. However, the study focuses on Patrick's (1966) stance concerning demand-following and supply-leading hypotheses. However, in the demand-following hypothesis, there is a dependency on a real economy that intends to use financial services and financial intermediation. The supply leading hypothesis encompasses the criterion of financial development in the economies that may ultimately lead to economic growth. The findings suggest that most of the ingredients of the finance-growth nexus inclined financial development to growth rather than economic growth to financial development. However, the present study advocates the supply-leading hypothesis, emphasizing financial development to attain economic growth.

In the concluding remarks, the findings of this study are relevant to the theme I conclude that financial development plays a positive and significant role in the economic development of the selected developing countries. However, the short and long-run dynamic estimation also confirmed the finance-growth nexus. The developing countries should focus on financial development to attain economic growth.

For the concluding remarks of the second theme/ **hypothesis 2**, the FDI, financial development, and economic growth nexus were considered. This particular estimation addresses the second research question of this study. However, different types of analysis are conducted for the procedural conclusion of theme II and for obtaining the study's empirical results. However, the first step performed before applying any econometric work is unit root checking. Different tests for unit root checking are used – LLC, IPS, and ADF tests for unit root are applied and regarded as the first-generation unit root test. All the three-unit root tests showed a consensus on the same level of integration, i.e., stationary at *I*(I). The results also confirmed that there is not even a single variable in the study that is stationary at *I*(II). This study applied the Pesaran CD test (2004), which confirms the absence of cross-sectional dependence.

Two panels were generated to get robust results related to theme II of the study. However, findings suggest that the FDI and financial development are the key attributes while defining the economic growth in developing countries. However, the economic growth is also proxied through different variables in Panel C, and D – gross domestic product per capita is considered the proxy of economic development, and GDP growth annual percentage is considered in this research as the second proxy of economic development. At the same time, the financial development index is generated by pooling different variables attributed by the various studies to measure financial development. However, these considerations are the ratio of domestic credit to the private sector to GDP, domestic credit provided by the banking sector to GDP, and the broad money (WDI, 2018; IFS, 2018). These particular agendas were considered an index by keeping in view the thought of combined effect evaluation. However, the principal component analysis is conducted to create that specific index to evaluate the combined effect of these financial development ingredients on the growth of the concerned economies (Saqib, 2013; Asghar and Hussain, 2014; Sehrawat and Giri, 2016).

The present study applied Pedroni (2004) and Kao's residual cointegration test (Kao, 1999, 2000) to determine the status of cointegration. However, both of these tests confirm the long-run association among the variables. The present study employed the FMOLS and DOLS to authenticate the long-run relationship among the series considered in the estimation procedure. The present study's findings conclude that the

FDI and financial development are highly significant when considering the economic growth of the developing countries.

The same order of integration also allows applying the panel ARDL approach. The long-run estimation of the panel ARDL approach depicts that FDI and financial development are the dominant factors in attaining developing countries' economic growth. The ARDL approach provides robust results related to the earlier estimations. The present study's findings conclude that the integral part of the operational process of the developing countries is having a source of attraction in terms of FDI and attaining financial development. The error correction term of the specified ARDL model is also negative and significant, confirming the long-run association among the model's parameters. The study confirms the findings of Omran and Bolbol (2003), Makki and Somwaru (2004), Pradhan (2010), Chaudhry et al. (2013), and Raza et al. (2021) and narrates that the FDI and financial development are the key players in attaining economic growth.

Moreover, the different diagnostic tests were also applied, and the desired results can be cited, which authenticate the outcome of the concerned study. In a concluding remark, the foreign direct investment and financial development, along with all the other variables used in the study, significantly affect economic growth. Hence, the model used in this study is reliable and can be used for decision-making, specifically in developing countries. By answering the second research question of the present study, it can be concluded that FDI contributes significantly to achieving economic growth in developing countries.

Neoclassical and dependency theories relate to the FDI's benefits in the host and the home country. The decentralization in the manner of investment in the host country is well tackled through the transformation process of production methodology, accumulation of extended capital, and a new scheme of working in the host country. However, the host country became a partner in sharing the benefits of investment through the rigorous process of FDI. However, the sharing of resources can be a significant tycoon in exchanging technology/ infrastructure, work patterns, diversity, and skills as per the dependency theory.

5.3. Implications of the Study

The main contributions of this study in terms of knowledge, policy, and methodology are presented below.

5.3.1. Contribution to Knowledge

After the comprehensive review of literature and theories relevant to the research in chapter two, the study contributed to financial development, foreign direct investment, and economic growth in the selected developing countries. However, this study contributes knowledge in the following manner:

- The study considers the World Bank's GFDD (World Bank, 2013) framework for financial development, which includes the four distinct components: financial depth, access, efficiency, and stability. However, a comprehensive study was missed as per the researcher's knowledge, which addresses the economic growth through the lens considered by the present study.
- The study concludes that financial depth and intermediation significantly allocate the funds, which instigates the investors to invest logically to utilize the financial assets efficiently.
- The study contributes that financial access is the key concern in confirming the success of the financial system. The financial access will assure the utilization of services provided by the financial sector, which causes financial development that leads to the economic growth of the developing countries.
- The presents study provides an insight into the financial efficiency of developing countries. The financial efficiency is attributed to the interest rate spread, which the concerned economies should control to ensure the fair distribution and management of funds. The interest rate spread is the defining term for the investors of the developing countries regarding what to save and what to invest. However, the financial institutions of the developing countries should prudently devise policies that reflect their financial efficiency and hence directly or indirectly affects the investment decision of the personals.
- The study considered financial stability to stamp the economic growth in developing countries. Economic growth is contingent on how stable the financial system of the concerned economy is. However, the present study highlighted non-performing loans to check the stability or instability of the

financial sector. The lower the non-performing loans, the higher the financial sector's stability and vice versa.

- The study also authenticates the importance of financial depth, access, efficiency, and stability and investigates their combined effect in attaining economic growth in developing countries.
- The study pooled a set of variables to generate financial development indexes to conclude the combined effect of these variables on economic growth. This will create new insight for the stakeholders of this study in terms of the broader perspective.
- The interest rate spread in the developing countries is comparatively high due to operating costs, inflation rates, and taxes.
- The study contributes to the literature by endorsing Schumpeter's (1911) and Patrick's (1966) supply-leading hypothesis because the findings of this study suggest that the flow is from financial development to economic growth.
- The study endorses the emergence of FDI in attaining economic growth. However, it provides fresh evidence by considering World Bank's GFDD (World Bank, 2013) framework for financial development and FDI to conclude the target variable.
- On an overall basis, this study provides a comprehensive critical literature review on the concerned areas of this study. However, both theoretical and empirical findings of various studies are concluded.
- The present study employed advanced econometric techniques to conclude economic growth. Whereas, the robustness of these techniques was also checked through the traditional techniques.
- The study primarily considers developing countries and has implications and policy recommendations drawn from the study's findings. The present study will serve as a panacea for developing countries while considering economic growth.

5.3.2. Policy Prescriptions

Based on the empirical findings of chapter four, certain policy prescriptions are worthful for readers, practitioners, and academicians. The study is conducted primarily on financial development, foreign direct investment, and economic growth nexus in the

context of selected developing countries. The different models are developed based on the availability of data and concern. However, the present study has some policy implications:

- The developing countries should focus on financial development to attain economic growth.
- The developing countries could rely on the ingredients of the under consideration study because the long-run association is confirmed.
- Financial intermediation will be a considerable agenda point toward financial development and economic growth. However, financial depth can play a role where financial reforms and policymaking are integral elements.
- Reduce the information asymmetry as the significant information about the financial instruments and the financial intermediation can cause the better utilization of financial instruments, specifically in developing countries. Financial access is the key concern when discussing the financial system's success.
- Developing countries are in a struggling phase where they have to compete with rival economies and transform themselves into emerging and developed economies. These countries should focus on their financial efficiency for the fair distribution of funds and implement appropriate financial policies.
- Developing countries should develop a reliable mechanism to channel the credit system and cope with non-performing loans through their respective state banks. These non-performing loans are regarded as a hurdle to growth, and the inverse relationship of non-performing loans with economic growth can be cited in the study.
- The financial system's stability should be a priority task for the financial institutions of developing countries. The stability thus comes through the appropriate financial performance and credit management. However, funds circulation should be monitored, and a fair policy should be devised for loan sanctioning.
- Financial institutions can help the developing economies by doing substantial intermediation to investors by fascinating them through *"capital accumulation."* By doing this, the financial institutions encourage the investors by providing more incentives than before to motivate them to interact with the

financial institutions. These interactions will result in the development of financial intuitions and then the growth of the concerned economy.

- There is a huge differentiation between the availability of financial services and their use. However, the stakeholders may have direct or indirect access to the financial services, but the financial regulatory authorities and the respective state banks of the developing countries should launch financial literacy programs to make awareness and generate demand for financial products by attracting potential customers of financial services.
- The unidirectional causality is estimated in the present study, which confirms Schumpeter's (1911) and Patrick's (1966) supply-leading hypothesis, which states that financial development can cause economic growth for these selected countries. However, the developing countries are on their way toward development as per Schumpeter (1911) and Patrick's (1966) supply-leading hypothesis. However, the findings of this study suggest that the countries under consideration should focus on their financial development to attain their ultimate growth.
- The FDI inflows are considerably and significantly substantial in attaining economic development.
- Government and the regulatory bodies of developing countries should strengthen their contribution to the process of financial depth and access by developing small and medium-sized financial institutions. This will endorse the funding proficiency and pooling of financial resources.
- Concerned regulatory bodies of the developing countries should focus on the appropriate allocation of resources and funds, which will reduce the mismatch in the flow of funds. Resultantly, the issues of inflation and marginal interest rates will remain under control. However, this could be possible due to financial institutions' appropriate and effective financial services.
- The performance of financial sectors depicts the trend of doing work in an economy. These trends may be conditional or cyclic but are of significant importance in decision-making for the economies. The performance of the various sectors in an economy advocates and is inclined to the financial performance and financial depth. This common factor depicts that one sector's performance in an economy may serve as a bailout process for the many other

relevant areas of interest. However, when discussing economic growth, credit management and money circulation are the deterministic agendas.

- FDI inflows from the home country will result in the exchange of ideas, technology, and currency that will result in economies of scale.
- The Govt. of these selected developing countries should also focus on infrastructure management, which is also considered in attaining economic growth.
- Research and development expenditures are termed as the way forward on the road of the developmental procedure.
- The developing countries should also invest in their human resources to educate them and make them their human capital, which will be a persistent source of economic growth for developing countries.

5.3.3. Methodological Contributions

This present study allowed a broader perspective concerning the economic growth of developing countries. This perspective contributed to concluding the economic growth of the developing countries concerning financial development and foreign direct investment by adopting a framework of positivism approach. The main objectives of this research are to investigate the impact of financial development on economic growth in developing countries and the impact of foreign direct investment on economic growth in developing countries.

Methodologically, this study improved the understanding of the main dimensions of financial development devised in the financial development framework (World Bank, 2013) and investigated all the four components of financial development individually and collectively under one study to conclude the economic growth in the developing countries. However, different indexes were generated – the financial development index I represent the variables of financial depth, which considers broad money and domestic credit provided by the banking sector to GDP (WDI, 2018; IFS, 2018). The financial development index II in the representation of financial access is generated by pooling commercial bank branches and the number of bank accounts per 1000 population (WDI, 2018; IFS, 2018). The financial development index (FDIFX) is generated by considering domestic credit to the private sector, domestic credit provided

by the banking sector, and broad money (WDI, 2018; IFS, 2018). These particular agendas were considered an index by keeping in view the thought of combined effect evaluation. However, the principal component analysis is conducted to create that particular index to evaluate the combined effect of these financial development ingredients on the growth of the concerned economies (Asghar and Hussain, 2014; Assefa, 2017b; Mehmood and Bilal, 2021; Sehrawat and Giri, 2016).

The majority of the panel studies consider the LLC (2002) and IPS (2003) unit root test (Asghar et al., 2019; Chaudhry et al., 2013; Shahbaz et al., 2017a; Ghazali and Ali, 2019), which represents the first generation unit root test, but these results will not be appropriate if there is an involvement of macroeconomic linkage (Arain et al., 2019; Asghar et al., 2019). However, in the case of cross-section dependence, these tests will not be considered appropriate (Bist, 2018; Asghar et al., 2019). However, the present study considers the cross-sectionally augmented IPS-CIPS – second-generation unit root test – by Pesaran (2007) to account for the cross-sectional dependence (Ali et al., 2020; Asteriou et al., 2020). The present study incorporated Westerlund's (2007) cointegration test because, in the case of panel data, the considerable choice for the adoption of the cointegration test is Westerlund (2007) cointegration test because it provides robustness in the notable formats of structural breaks and cross-sectional dependence (Ayyildiz and Erdal, 2021; Nasir et al., 2019; Arain, 2019).

The concerned study focuses on the finance growth nexus, which is determined by the help of the DCCE approach. The version of Chudik and Pesaran (2015) is superior to the other techniques due to its emergence in considering the ultimate stance on many issues related to the panel data. However, this estimation considers the issues of cross-sectional dependencies, heterogeneity, and dynamics by considering the lag of the dependent variable as regressors (Ali et al., 2020; Ditzen, 2018; Meo et al., 2020). However, in the previous studies, different econometric techniques were applied to conclude the panel data, but these techniques had some limitations which misled the results (Ali et al., 2020; Ali et al., 2021; Ghazali and Ali, 2019; Zaidi et al., 2019). The considerable limitation of the traditional approaches is cross-sectional dependence (Ali et al., 2020; Ali et al., 2021; Zaidi et al., 2019). The dynamic modeling, where applicable, and robustness of analysis will create its competitive methodological edge.

However, in the case of FDI and economic growth nexus in the developing countries, the present study decides that long-run association among the variables is desirable because this estimation helps to understand whether the variables included in the model are considerable or not. The present study applied Pedroni (1999, 2004) and the Kao Residual Cointegration Test (1999, 2000) to get the endorsement stamp for the long-run relationship. Moreover, the FMOLS and DOLS tests are applied to obtain robust estimates about the long run. The panel ARDL approach is applied because it is considerable for long-run forecasting estimations and through the short-run estimates of the error term. However, the present study results simultaneously depict the short and long-run dynamics of the computations. Finally, the present study contributes to the literature on methodological stance by employing different econometric methodologies to get robust results from panel data. However, dynamic modeling was applied where applicable.

Therefore, this study is methodologically significant in drawing a generalized version of economic growth for developing countries. The robustness of the analysis endorsed the findings of this study for the academicians, practitioners, and specifically the administrators and policymakers of the developing countries.

5.4. Limitations and Future Research

Despite the study's considerable results, the following limitations are encountered and appraised to be addressed in future research.

The main limitation of this study is that it considered only 16 developing countries for the estimation, and the logic for this consideration was the availability of data. There was inadequacy and an absence of accord in the obtainability of series for all countries and periods in the data obtained from the World Bank's World Development Indicator and IMF's International Financial Statistics (IFS). Future research is recommended based on increased sample size and time frame by making prudent availability of data through different recourses.

The present study is framed for developing economies. The implications of this study may encounter the issue of generalizability for the rest of the economies because there is a variation in terms and conditions of developing, emerging, and developed economies. However, a comparative study for the developing, emerging, and developed

countries can be conducted, which may provide more robust implications to conclude economic growth.

The present study tested the direct linkage between dependent and independent variables. This study investigated the direct relationships between financial development, FDI, and economic growth. However, a range of more complex interactions may exist for future research, including some moderators and mediators to conclude the under consideration issue.

This study generated different indexes by pooling different variables that may give a robust representation of financial development as per data availability and scope. However, future work is recommended to increase the number of variables or use variables other than this study for financial development representation. The present study didn't encounter the issue of geographical boundaries, as many of the countries are geographically associated with each other and may face some common issues due to locational relevance. However, future research may be concerned with geographical boundaries while concluding economic growth.

This study mainly applied the DCCE approach and panel ARDL approach as per the logical requirements of the data. However, future studies may incorporate more advanced methodologies to conclude the themes of this study.

5.5. Concluding Remarks

This study concluded that financial development and FDI are the leading actors in attaining economic growth in developing economies. This study adds value to the existing literature by considering the World Bank's GFDD (World Bank, 2013) framework for financial development, which includes the four distinct components: financial depth, access, efficiency, and stability, along with FDI to conclude economic growth in the developing countries.

REFERENCES

Abu-Bader, S., & Abu-Qarn, A. S. (2008). Financial development and economic growth: empirical evidence from six MENA countries. *Review of Development Economics*, *12*(4), 803-817.

Abubakar, A., & Gani, I. M. (2013). Impact of banking sector development on economic growth: Another look at the evidence from Nigeria. *Journal of Business Management & Social Sciences Research*, *2*(4), 47-57.

Abubakar, A., Kassim, S. H., & Yusoff, M. B. (2015). Financial development, human capital accumulation and economic growth: empirical evidence from the Economic Community of West African States (ECOWAS). *Procedia-Social and Behavioral Sciences*, *172*, 96-103.

Acquah, A. M., & Ibrahim, M. (2020). Foreign direct investment, economic growth and financial sector development in Africa. *Journal of Sustainable Finance & Investment*, *10*(4), 315-334.

Adams, S. (2009). Foreign direct investment, domestic investment, and economic growth in Sub-Saharan Africa. *Journal of Policy Modeling*, *31*(6), 939-949.

Adedokun, M. W., & Ağa, M. (2021). Financial inclusion: A pathway to economic growth in Sub-Saharan African economies. *International Journal of Finance & Economics*. DOI: 10.1002/ijfe.2559

Adeyeye, P. O., Fapetu, O., Aluko, O. A., & Migiro, S. O. (2015). Does supply-leading hypothesis hold in a developing economy? A Nigerian focus. *Procedia Economics and Finance*, *30*, 30-37.

Agbloyor, E. K., Gyeke-Dako, A., Kuipo, R., & Abor, J. Y. (2016). Foreign direct investment and economic growth in SSA: The role of institutions. *Thunderbird International Business Review*, *58*(5), 479-497.

Ahad, M., Afza, T., & Shahbaz, M. (2017). Financial Development and Estimation of Import Demand Function in Pakistan: Evidence from Combined Cointegration and Causality Tests. *Global Business Review*, *18*(1), 118-131.

Akbas, Y. E. (2015). Financial development and economic growth in emerging market: bootstrap panel causality analysis. *Theoretical & Applied Economics*, *22*(3), 171-186.

Akinci, G. Y., Akinci, M., & Yilmaz, Ö. (2013). Demand following or supply leading? A panel data analysis for developed, developing, and less developed countries. *METU Studies in Development*, *40*(3), 553.

Akinci, G. Y., Akinci, M., & Yilmaz, Ö. (2014). Financial development-economic growth nexus: A panel data analysis upon OECD countries. *Hitotsubashi Journal of Economics*, *55*, 33-50.

Alam, K. J., & Sumon, K. K. (2020). Causal relationship between trade openness and economic growth: a panel data analysis of Asian countries. *International Journal of Economics and Financial Issues*, *10*(1), 118-126.

Alam, M. S., Raza, S. A., Shahbaz, M., & Abbas, Q. (2016). Accounting for contribution of trade openness and foreign direct investment in life expectancy: The long-run and short-run analysis in Pakistan. *Social Indicators Research*, *129*(3), 1155-1170.

Al-Awad, M., & Harb, N. (2005). Financial development and economic growth in the Middle East. *Applied Financial Economics*, *15*(15), 1041-1051.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and economic growth: the role of local financial markets. *Journal of International Economics*, *64*(1), 89-112.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2010). Does foreign direct investment promote growth? Exploring the role of financial markets on linkages. *Journal of Development Economics, 91*(2), 242-256.

Alghantari, M. F. A. (2018). *Financial development and economic growth: evidence from G20 countries*. Doctoral dissertation, University of Huddersfield. http://eprints.hud.ac.uk/id/eprint/34881/

Ali, S., Yusop, Z., Kaliappan, S. R., & Chin, L. (2020). Dynamic common correlated effects of trade openness, FDI, and institutional performance on environmental quality: evidence from OIC countries. *Environmental Science and Pollution Research*, *27*, 11671-11682.

Ali, S., Yusop, Z., Kaliappan, S. R., Chin, L., & Nazar, R. (2021). Impact of trade openness, human capital, and institutional performance on economic growth: Evidence from Organization of Islamic Cooperation countries. *Journal of Public Affairs*, DOI: 10.1002/pa.2654

Almfraji, M. A., & Almsafir, M. K. (2014). Foreign direct investment and economic growth literature review from 1994 to 2012. *Procedia-Social and Behavioral Sciences*, *129*(15), 206-213.

Al-Mulali, U., & Sab, C. N. B. C. (2012). The impact of energy consumption and CO2 emission on the economic and financial development in 19 selected countries. *Renewable and Sustainable Energy Reviews*, *16*(7), 4365-4369.

Al-Mulali, U., Ozturk, I., & Lean, H. H. (2015). The influence of economic growth, urbanization, trade openness, financial development, and renewable energy on pollution in Europe. *Natural Hazards*, *79*(1), 621-644.

Aluko, O. A., Adeyeye, O. P., & Oladele, P. O. (2020). Finance–growth nexus in sub-Saharan Africa revisited: evidence based on a new composite index. *Economic Change and Restructuring*, *53*(2), 333-355.

Alvarado, R., Iniguez, M., & Ponce, P. (2017). Foreign direct investment and economic growth in Latin America. *Economic Analysis and Policy*, *56*, 176-187.

Apostolakis, G., & Papadopoulos, A. P. (2019). Financial stability, monetary stability and growth: a PVAR analysis. *Open Economies Review*, *30*(1), 157-178.

Arain, H., Han, L., & Meo, M. S. (2019). Nexus of FDI, population, energy production, and water resources in South Asia: a fresh insight from dynamic common correlated effects (DCCE). *Environmental Science and Pollution Research*, *26*(26), 27128-27137.

Arcand, J. L., Berkes, E., & Panizza, U. (2015). Too much finance?. *Journal of Economic Growth*, *20*(2), 105-148.

Ardic, O. P., Heimann, M., & Mylenko, N. (2011). Access to financial services and the financial inclusion agenda around the world: a cross-country analysis with a new data set. *World Bank Policy Research Working Paper*, (5537).

Arestis, P., & Demetriades, P. (1997). Financial development and economic growth: assessing the evidence. *The Economic Journal*, *107*(442), 783-799.

Arora, R. U. (2014). Access to finance: an empirical analysis. *The European Journal of Development Research*, *26*(5), 798-814.

Arteta, C., & Hale, G. (2008). Sovereign debt crises and credit to the private sector. *Journal of International Economics*, *74*(1), 53-69.

Asghar, N., & Hussain, Z. (2014). Financial development, trade openness and economic growth in developing countries: Recent evidence from panel data. *Pakistan Economic and Social Review*, *52*(2), 99-126.

Asghar, N., Anwar, A., Rehman, H. U., & Javed, S. (2019). Industrial practices and quality of environment: evidence for Asian economies. *Environment, Development and Sustainability*, *22*, 7807–7829.

Asghar, N., Qureshi, D. S., & Nadeem, M. (2015). Institutional quality and economic growth: Panel ARDL analysis for selected developing economies of Asia. *South Asian Studies*, *30*(2), 381-404.

Ashraf, I., Yong, S., Afzal, R. M., & Kun, G. (2019). Empirical analysis of foreign direct investment and economic growth in Pakistan using VECM model, *African Journal of Business Management*, *13*(16), 544-556.

Aslan, A., Oğuz, Ö. C. A. L., & Shahbaz, M. (2017). Energy Consumption–Trade Openness–Economic Growth Nexus in G-8 Countries. *Kapadokya Akademik Bakış*, *1*(1), 71-97.

Asongu, S. A., & Nwachukwu, J. C. (2017). Foreign aid and inclusive development: Updated evidence from Africa, 2005–2012. *Social Science Quarterly*, *98*(1), 282-298.

Assefa, T. A., & Mollick, A. V. (2017a). Financial Development and Economic Growth in Africa. *Journal of African Business*, *18*(3), 320-339.

Assefa, T. A., Esqueda, O. A., & Mollick, A. V. (2017b). Stock returns and interest rates around the World: A panel data approach. *Journal of Economics and Business*, *89*, 20-35.

Asteriou, D., & Spanos, K. (2019). The relationship between financial development and economic growth during the recent crisis: Evidence from the EU. *Finance Research Letters*, *28*, 238-245.

Asteriou, D., Pilbeam, K., & Pratiwi, C. E. (2020). Public debt and economic growth: panel data evidence for Asian countries. *Journal of Economics and Finance*, *45*(2), 270-287.

Ayyildiz, M., & Erdal, G. (2021). The relationship between carbon dioxide emission and crop and livestock production indexes: a dynamic common correlated effects approach. *Environmental Science and Pollution Research*, *28*(1), 597-610.

Azman-Saini, W. N. W., & Smith, P. (2011). Finance and growth: new evidence on the role of insurance. *South African Journal of Economics*, *79*(2), 111-127.

Azman-Saini, W. N. W., Baharumshah, A. Z., & Law, S. H. (2010a). Foreign direct investment, economic freedom and economic growth: International evidence. *Economic Modelling*, *27*(5), 1079-1089.

Azman-Saini, W. N. W., Law, S. H., & Ahmad, A. H. (2010b). FDI and economic growth: New evidence on the role of financial markets. *Economics Letters*, *107*(2), 211-213.

Babatunde, A. F. (2011). *Financial development, foreign direct investment and economic growth: challenges for developing countries* (Doctoral dissertation, University of Hull).

Badeeb, R. A., & Lean, H. H. (2017). Financial Development, Oil Dependence and Economic Growth: Evidence from the Republic of Yemen. *Studies in Economics and Finance*, *34*(2), 281-298.

Bagehot, W. (1873). *Lombard Street: A Description of the Money Market: By Walter Bagehot*. Henry S. King & Company 65 Cornhill & 12 Paternoster Row, London.

Bahmani-Oskooee, M., & Bohl, M. T. (2000). German monetary unification and the stability of the German M3 money demand function. *Economics Letters*, *66*(2), 203-208.

Baltagi, B. H. (2014). Panel data and difference-in-differences estimation. *Encyclopedia of Health Economics*, 425-433.

Baltagi, B. H., Demetriades, P. O., & Law, S. H. (2009). Financial development and openness: Evidence from panel data. *Journal of Development Economics*, *89*(2), 285-296.

Baltagi, B.H. (2005). Econometric Analysis of Panel Data, 3rd edition, John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England.

Banday, U. J., & Ismail, S. (2017). Does tourism development lead positive or negative impact on economic growth and environment in BRICS countries? A panel data analysis. *Economics Bulletin*, *37*(1), 553-567.

Bannerjee, A., Dolado, J. and Mestre, R. (1998). Error-correction mechanism tests for cointegration in single equation framework. *Journal of Time Series Analysis*, *19*, 267-83.

Barra, C., Ruggiero, N., & Zotti, R. (2020). Short-and long-term relation between economic development and government spending: the role of quality of institutions. *Applied Economics*, *52*(9), 987-1009.

Barro, R. J. (1991). Economic growth in a cross section of countries. *The Quarterly Journal of Economics*, *106*(2), 407-443.

Bashir, M. F., Benjiang, M. A., Shahbaz, M., & Shahzad, U. (2021). Unveiling the Heterogeneous Impacts of Environmental Taxes on Energy Consumption and Energy Intensity: Empirical Evidence from OECD Countries. *Energy*, *26*, 120366.

Batuo, M., Mlambo, K., & Asongu, S. (2018). Linkages between financial development, financial instability, financial liberalisation and economic growth in Africa. *Research in International Business and Finance*, *45*, 168-179.

Bayraktar, N. (2013). Foreign direct investment and investment climate. *Procedia Economics and Finance*, *5*, 83-92.

Beck, T., Degryse, H., & Kneer, C. (2014). Is more finance better? Disentangling intermediation and size effects of financial systems. *Journal of Financial Stability*, *10*, 50-64.

Beck, T., Levine, R., & Loayza, N. (2000). Finance and the Sources of Growth. *Journal of Financial Economics*, *58*(1-2), 261-300.

Bell, A., & Jones, K. (2015). Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, *3*(1), 133-153.

Belloumi, M. (2014). The relationship between trade, FDI and economic growth in Tunisia: An application of the autoregressive distributed lag model. *Economic Systems*, *38*(2), 269-287.

Bencivenga, V. R., & Smith, B. D. (1991). Financial intermediation and endogenous growth. *The Review of Economic Studies*, *58*(2), 195-209.

Berger, A. N., Demirgüç-Kunt, A., Levine, R., & Haubrich, J. G. (2004). Bank concentration and competition: An evolution in the making. *Journal of Money, Credit and Banking*, *36*(3), 433-451.

Bist, J. P. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non-African low-income countries. *Cogent Economics & Finance*, *6*(1), 1-17. DOI: 10.1080/23322039.2018.1449780

Bittencourt, M. (2012). Financial development and economic growth in Latin America: Is Schumpeter right?. *Journal of Policy Modeling*, *34*(3), 341-355.

Blackburn, K., & Hung, V. T. (1998). A theory of growth, financial development and trade. *Economica*, *65*(257), 107-124.

Blackburn, K., Bose, N., & Capasso, S. (2005). Financial development, financing choice and economic growth. *Review of Development Economics*, *9*(2), 135-149.

Blejer, M. I. (2006). Economic growth and the stability and efficiency of the financial sector. *Journal of Banking & Finance*, *30*(12), 3429-3432.

Blomstrom, M., Lipsey, R. E., & Zejan, M. (1994). *What explains the growth of developing countries?.* Convergence of productivity: Cross-national studies and historical evidence, Oxford University Press, Inc., New York.

Blonigen, B. A. (2005). A review of the empirical literature on FDI determinants. *Atlantic Economic Journal*, *33*(4), 383-403.

Bodner, T. E. (2016). Tumble graphs: Avoiding misleading end point extrapolation when graphing interactions from a moderated multiple regression analysis. *Journal of Educational and Behavioral Statistics*, *41*(6), 593-604.

Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth?. *Journal of international Economics*, *45*(1), 115-135.

Botev, J., Égert, B., & Jawadi, F. (2019). The nonlinear relationship between economic growth and financial development: Evidence from developing, emerging and advanced economies. *International Economics*, *160*, 3-13.

Bremus, F., & Buch, C. M. (2017). Granularity in banking and growth: Does financial openness matter?. *Journal of Banking & Finance*, *77*, 300-316.

Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica: Journal of the Econometric Society*, 1287-1294.

Brown, R.L., Durbin, J. and Evans, J.M. (1975). Techniques for testing the constancy of regression relationship over time. *Journal of the Royal Statistical Society, 37*, 149-63.

Bryman, A., & Bell, E. (2007). *Business Research Methods,* 2/e, Oxford University Press, Oxford, UK.

Buchanan, B. G., Le, Q. V., & Rishi, M. (2012). Foreign direct investment and institutional quality: Some empirical evidence. *International Review of Financial Analysis*, *21*, 81-89.

Calderón, C., & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics*, *72*(1), 321-334.

Campbell, J. R., & Hopenhayn, H. A. (2005). Market size matters. *The Journal of Industrial Economics*, *53*(1), 1-25.

Carkovic, M., and Levine, R. (2005). *Does Foreign Direct Investment Accelerate Economic Growth?* Washington: Institute for International Economics Center for Global Development, 1-16.

Carlsson, B., & Eliasson, G. (2003). Industrial dynamics and endogenous growth. *Industry and Innovation*, *10*(4), 435-455.

Carré, E., & L'œillet, G. (2018). The Literature on the Finance–Growth Nexus in the Aftermath of the Financial Crisis: A Review. *Comparative Economic Studies*, *60*(1), 161-180.

Cevik, S., & Rahmati, M. H. (2018). Searching for the finance–growth nexus in Libya. *Empirical Economics*, 1-15.

Chang, T. (2002). Financial development and economic growth in Mainland China: a note on testing demand-following or supply-leading hypothesis. *Applied Economics Letters*, *9*(13), 869-873.

Chaudhry, N.I., Mehmood, A., & Mehmood, M.S., (2013). Empirical relationship between foreign direct investment and economic growth: An ARDL co-integration approach for China. *China Finance Review International*, *3*(1), 26-41.

Chen, H., Hongo, D. O., Ssali, M. W., Nyaranga, M. S., & Nderitu, C. W. (2020). The asymmetric influence of financial development on economic growth in Kenya: evidence from NARDL. *Sage Open*, DOI: 10.1177/2158244019894071

Chinoda, T., & Kwenda, F. (2019). Do mobile phones, economic growth, bank competition and stability matter for financial inclusion in Africa?. *Cogent Economics & Finance*, *7*(1), 1-20.

Chow, J. (2008). *The study of the causal relationship of financial development and economic growth,* Doctoral dissertation, University of Surrey, United Kingdom.

Chow, S. C., Vieito, J. P., & Wong, W. K. (2019). Do both demand-following and supply-leading theories hold true in developing countries?. *Physica A: Statistical Mechanics and its Applications*, *513*, 536-554.

Chowdhury, A., & Mavrotas, G. (2006). FDI and growth: What causes what?. *World economy*, *29*(1), 9-19.

Christopoulos, D. K., & Tsionas, E. G. (2004). Financial development and economic growth: evidence from panel unit root and cointegration tests. *Journal of Development Economics*, *73*(1), 55-74.

Chudik, A., & Pesaran, M. H. (2015). Common correlated effects estimation of heterogeneous dynamic panel data models with weakly exogenous regressors. *Journal of Econometrics*, *188*(2), 393-420.

Chukwu, J. O., & Agu, C. C. (2009). Multivariate causality between financial depth and economic growth in Nigeria. *African Review of Money Finance and Banking*, 7-21.

Churchill, G. A. (1995). Marketing Research Methodological Foundations. the Dryden Press. *Fort Worth, USA*.

Churchill, G. A., & Iacobucci, D. (2006). *Marketing research: methodological foundations*. New York: Dryden Press.

Cohen, B. (2006). Urbanization in developing countries: Current trends, future projections, and key challenges for sustainability. *Technology in Society*, *28*(1-2), 63-80.

Combes, J. L., Kinda, T., Ouedraogo, R., & Plane, P. (2019). Financial flows and economic growth in developing countries. *Economic Modelling*, *83*, 195-209.

Cooper, D. R., Schindler, P. S., & Sun, J. (2006). *Business research methods*. New York: Mcgraw-Hill.

Creel, J., Hubert, P., & Labondance, F. (2015). Financial stability and economic performance. *Economic Modelling*, *48*, 25-40.

Cresswell, J. W. (2003). Research design: qualitative and mixed-method approaches. Thousand Oaks, California: Sage

Cresswell, J. W., & Clark, V. P. (2007). Designing and Conducting Mixed Methods Research. Thousand Oaks CA: Sage.

De Gregorio, J., & Guidotti, P. E. (1995). Financial development and economic growth. *World Development*, *23*(3), 433-448.

De Hoyos, R. E., & Sarafidis, V. (2006). Testing for cross-sectional dependence in panel-data models. *The Stata Journal*, *6*(4), 482-496.

De Silva, M. D. (2016). Financial intermediation development and economic growth nexus in Sri Lanka. *Staff Studies*, *46*(1-2), 69-91.

Deidda, L. G. (2006). Interaction between economic and financial development. *Journal of Monetary Economics*, *53*(2), pp. 233-248.

De–Mello Jr, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The Journal of Development Studies*, *34*(1), 1-34.

Desbordes, R., & Wei, S. J. (2017). The effects of financial development on foreign direct investment. *Journal of Development Economics*, *127*, 153-168.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association*, *74*(366a), 427-431.

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, *49*, 1057-1072.

Ditzen, J. (2018). Estimating dynamic common-correlated effects in Stata. *The Stata Journal*, *18*(3), 585-617.

Dixon, W. J., & Boswell, T. (1996). Dependency, disarticulation, and denominator effects: Another look at foreign capital penetration. *American Journal of Sociology*, *102*(2), 543-562.

Dumitrescu, E. I., & Hurlin, C. (2012). Testing for Granger non-causality in heterogeneous panels. *Economic Modelling*, *29*(4), 1450-1460.

Dunning, J.H. (1988). *Explaining International Production. Unwin Hyman Ltd.*, London.

Economou, F., Hassapis, C., Philippas, N., & Tsionas, M. (2017). Foreign direct investment determinants in OECD and developing countries. *Review of Development Economics*, *21*(3), 527-542.

Ehigiamusoe, K. U., & Lean, H. H. (2019). Effects of energy consumption, economic growth, and financial development on carbon emissions: evidence from heterogeneous income groups. *Environmental Science and Pollution Research*, *26*(22), 22611-22624.

Ehigiamusoe, K. U., & Samsurijan, M. S. (2021). What matters for finance-growth nexus? A critical survey of macroeconomic stability, institutions, financial and

economic development. *International Journal of Finance & Economics*, *26*(4), 5302-5320.

Elkomy, S., Ingham, H., & Read, R. (2016). Economic and political determinants of the effects of FDI on growth in transition and developing countries. *Thunderbird International Business Review*, *58*(4), 347-362.

Engle, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: journal of the Econometric Society*, *55*(2), 251-276.

Ericsson, J., & Irandoust, M. (2001). On the causality between foreign direct investment and output: a comparative study. *The International Trade Journal*, *15*(1), 1-26.

Fan, J. J., Xu, R., Su, C. W., & Shi, Q. H. (2018). Demand-following or supply-leading? Trade openness and financial development in China. *The Journal of International Trade & Economic Development*, *27*(3), 314-332.

Ferguson, N. (2017). Financial Systems, Economic Growth, and Globalization in the Era of the Cold War. *Financial Systems and Economic Growth: Credit, Crises, and Regulation from the 19th Century to the Present*, 132-147.

Fernández, A., & Tamayo, C. E. (2017). From institutions to financial development and growth: what are the links? *Journal of Economic Surveys*, *31*(1), 17-57.

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics*, *88*(3), 499-533.

Fischer, S. (1998). The Asian crisis: A view from the IMF. *Journal of International Financial Management & Accounting*, *9*(2), 167-176.

Flora, P., & Agrawal, G. (2017). FDI and economic growth nexus for the largest FDI recipients in Asian emerging economies: a panel co-integration analysis. *International Business Strategy Chapter,* 261-275. Palgrave Macmillan, London.

Frenkel, M., Funke, K., & Stadtmann, G. (2004). A panel analysis of bilateral FDI flows to emerging economies. *Economic Systems*, *28*(3), 281-300.

Gabor, D., & Brooks, S. (2017). The digital revolution in financial inclusion: international development in the fintech era. *New Political Economy*, *22*(4), 423-436.

Ghassan, H. B., Boulanouar, Z., & Hassan, K. M. (2021). Revisiting Banking Stability Using a New Panel Cointegration Test. *International Journal of Financial Studies*, *9*(21), 1-8. DOI: 10.3390/ijfs9020021

Ghazali, A., & Ali, G. (2019). Investigation of key contributors of CO2 emissions in extended STIRPAT model for newly industrialized countries: a dynamic common correlated estimator (DCCE) approach. *Energy Reports*, *5*, 242-252.

Gokmenoglu, K. K., Amin, M. Y., & Taspinar, N. (2015). The relationship among international trade, financial development and economic growth: The case of Pakistan. *Procedia Economics and Finance*, *25*, 489-496.

Goldsmith, R. (1969). Financial Structure and Development, New Haven, Yale University Press.

Görg, H., & Greenaway, D. (2004). Much ado about nothing? Do domestic firms really benefit from foreign direct investment? *The World Bank Research Observer*, *19*(2), 171-197.

Granger, C.W.J., & P. Newbold (1974). Spurious regressions in econometrics. *Journal of Econometrics, 2*, 111–120.

Grassa, R., & Gazdar, K. (2014). Financial development and economic growth in GCC countries. *International Journal of Social Economics*. *41*(6), 493-514.

Greenwood, J., & Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *Journal of political Economy*, *98*(5, Part 1), 1076-1107.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, *2*, 105-117.

Gui-Diby, S. L. (2014). Impact of foreign direct investments on economic growth in Africa: Evidence from three decades of panel data analyses. *Research in Economics*, *68*(3), 248-256.

Gujarati, D. N. (2009). *Basic econometrics*. Tata McGraw-Hill Education, Inc., New York.

Gurley, J. G., & Shaw, E. S. (1955). Financial aspects of economic development. *The American Economic Review*, *45*(4), 515-538.

Gurley, J. G., & Shaw, E. S. (1960). *Money in a theory of finance*, the Brookings Institution, Washington, DC.

Habibullah, M. S., & Eng, Y. K. (2006). Does financial development cause economic growth? A panel data dynamic analysis for the Asian developing countries. *Journal of the Asia Pacific Economy*, *11*(4), 377-393.

Hagan, E., & Amoah, A. (2019). Foreign direct investment and economic growth nexus in Africa. *African Journal of Economic and Management Studies*, *11*(1), 1-17.

Halicioglu, F., & Ketenci, N. (2018). Output, renewable and non-renewable energy production, and international trade: Evidence from EU-15 countries. *Energy*, *159*, 995-1002.

Hamdi, K. (2015). The determinants of financial development: Empirical evidence from developed and developing countries. *Applied Economics and Finance*, *2*(4), 1-9.

Hasan, I., Koetter, M., & Wedow, M. (2009). Regional growth and finance in Europe: Is there a quality effect of bank efficiency?. *Journal of Banking & Finance*, *33*(8), 1446-1453.

Hassan, M. K., Sanchez, B., & Yu, J. S. (2011). Financial development and economic growth: New evidence from panel data. *The Quarterly Review of Economics and Finance*, *51*(1), 88-104.

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods*, *41*(3), 924-936.

Herrera-Echeverri, H., Haar, J., & Estévez-Bretón, J. B. (2014). Foreign direct investment, institutional quality, economic freedom and entrepreneurship in emerging markets. *Journal of Business Research*, *67*(9), 1921-1932.

Herzer, D., & Klasen, S. (2008). In search of FDI-led growth in developing countries: The way forward. *Economic Modelling*, *25*(5), 793-810.

Higgins, J. P., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in medicine*, *21*(11), 1539-1558.

Hoque, M. E., & Yakob, N. A. (2017). Revisiting stock market development and economic growth nexus: The moderating role of foreign capital inflows and exchange rates. *Cogent Economics & Finance*, *5*(1), 1329975.

Hoque, M. M., & Yusop, Z. (2010). Impacts of trade liberalisation on aggregate import in Bangladesh: An ARDL Bounds test approach. *Journal of Asian Economics*, *21*(1), 37-52.

Hou, H., & Cheng, S. Y. (2017). The dynamic effects of banking, life insurance, and stock markets on economic growth. *Japan and the World Economy*, *41*, 87-98.

Hsueh, S. J., Hu, Y. H., & Tu, C. H. (2013). Economic growth and financial development in Asian countries: a bootstrap panel Granger causality analysis. *Economic Modelling*, *32*, 294-301.

Hung, F. S. (2003). Inflation, financial development, and economic growth. *International Review of Economics & Finance*, *12*(1), 45-67.

Hussain, M., Ye, Z., Bashir, A., Chaudhry, N. I., & Zhao, Y. (2021). A nexus of natural resource rents, institutional quality, human capital, and financial development in resource-rich high-income economies. *Resources Policy*, *74*, 102259.

Hussey, J. & Hussey, R. (2003). *Business research,* London: Palgrave Macmillan.

Iamsiraroj, S. (2016). The foreign direct investment–economic growth nexus. *International Review of Economics & Finance*, *42*, 116-133.

Iamsiraroj, S., & Ulubaşoğlu, M. A. (2015). Foreign direct investment and economic growth: A real relationship or wishful thinking? *Economic Modelling*, *51*, 200-213.

Ibrahim, M., & Alagidede, P. (2018). Nonlinearities in financial development–economic growth nexus: Evidence from sub-Saharan Africa. *Research in International Business and Finance*, *46*, 95-104.

Ilyas, M., Ahmad, H. K., Afzal, M., & Mahmood, T. (2010). Determinants of manufacturing value added in Pakistan: An application of bounds testing approach to cointegration. *Pakistan Economic and Social Review*, *48*(2), 209-223.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, *115*(1), 53-74.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, *115*(1), 53-74.

Inekwe, J. N. (2013). FDI, employment and economic growth in Nigeria. *African Development Review*, *25*(4), 421-433.

International Monetary Fund (1998). Balance of Payments Statistics Yearbook.

Islam, F., Hye, Q. M. A., & Shahbaz, M. (2012). Import-economic growth nexus: ARDL approach to cointegration. *Journal of Chinese Economic and Foreign Trade Studies*, *5*(3), 194–214.

Islam, M. A., Liu, H., Khan, M. A., Reza, S. M., Yahia, Y. E., & Nasrin, L. (2018). Causal relationship between economic growth, financial deepening, foreign

direct investment and innovation: Evidence from China. *Asian Economic and Financial Review*, *8*(8), 1086.

Isu, H. O., Okpara, G. C., & Ch, G. (2013). Does financial deepening follow supply leading on demand following hypothesis? A look at the Nigerian evidence. *Asian Journal of Science and Technology*, *5*(1), 10-15.

Jalloh, M. (2015). Demand-following or supply-leading: an examination of the finance-growth nexus in selected sub-Sahara African countries. *Afro-Asian Journal of Finance and Accounting*, *5*(3), 193-215.

Jalloh, M., & Guevera, Y. (2017). Financial deepening, interest rate spread and economic growth: New evidence from Sub-Sahara Africa. *International Journal of Business, Economics and Management*, *4*(3), 52-64.

Jayakumar, M., Pradhan, R. P., Dash, S., Maradana, R. P., & Gaurav, K. (2018). Banking competition, banking stability, and economic growth: Are feedback effects at work?. *Journal of Economics and Business*, *96*, 15-41.

Jianguo, D., Ali, K., Alnori, F., & Ullah, S. (2022). The nexus of financial development, technological innovation, institutional quality, and environmental quality: evidence from OECD economies. *Environmental Science and Pollution Research*, 1-22.

Jianwei, W. (2015). *The relationship between banking development and economic growth in China,* Doctoral dissertation, University of the West of Scotland, Paisley, United Kingdom.

Jokipii, T., & Milne, A. (2008). The cyclical behaviour of European bank capital buffers. *Journal of banking & finance*, *32*(8), 1440-1451.

Jones, C. P. (2007). *Investments: analysis and management,* John Wiley & Sons, New York.

Jude, C., & Levieuge, G. (2017). Growth effect of foreign direct investment in developing economies: The role of institutional quality. *The World Economy*, *40*(4), 715-742.

Jun, Z., Wan, G., & Jin, Y. (2007). The financial deepening-productivity nexus in China: 1987–2001. *Journal of Chinese Economic and Business Studies*, *5*(1), 37-49.

Kalai, M., & Zghidi, N. (2019). Foreign direct investment, trade, and economic growth in MENA countries: empirical analysis using ARDL bounds testing approach. *Journal of the Knowledge Economy*, *10*(1), 397-421.

Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, *90*(1), 1-44.

Kao, C. (2000). On the Estimation and Inference of a Cointegrated Regression in Panel Data. *Advances of Econometrics,* 15, 7-51.

Kar, M., Nazlıoğlu, Ş., & Ağır, H. (2011). Financial development and economic growth nexus in the MENA countries: Bootstrap panel granger causality analysis. *Economic Modelling*, *28*(1-2), 685-693.

Karimo, T. M., & Ogbonna, O. E. (2017). Financial deepening and economic growth nexus in Nigeria: Supply-leading or demand-following?. *Economies*, *5*(4), 1-18.

Kaur, M., Yadav, S. S., & Gautam, V. (2013). Financial system development and foreign direct investment: A panel data study for BRIC countries. *Global Business Review*, *14*(4), 729-742.

Khalid, A. M., & Marasco, A. (2019). Do channels of financial integration matter for FDI's impact on growth? Empirical evidence using a panel. *Applied Economics*, *51*(37), 4025-4045.

Khan, M. S., & Senhadji, A. S. (2003). Financial development and economic growth: A review and new evidence. *Journal of African Economies*, *12*(2), 89-110.

Khan, M. W. A., Panigrahi, S. K., Almuniri, K. S. N., Soomro, M. I., Mirjat, N. H., & Alqaydi, E. S. (2019). Investigating the dynamic impact of CO2 emissions and economic growth on renewable energy production: Evidence from FMOLS and DOLS tests. *Processes*, *7*(8), 496.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics*, *108*(3), 717-737.

Kónya, L. (2006). Exports and growth: Granger causality analysis on OECD countries with a panel data approach. *Economic Modelling*, *23*(6), 978-992.

Kumari, R., & Sharma, A. K. (2017). Determinants of foreign direct investment in developing countries: a panel data study. *International Journal of Emerging Markets*. *12*(4), 658–682.

Kurtishi-Kastrati, S. (2013). The effects of foreign direct investments for host country's economy. *European Journal of Interdisciplinary Studies*, *5*(1), 26-38.

Kyophilavong, P., Uddin, G. S., & Shahbaz, M. (2016). The nexus between financial development and economic growth in Lao PDR. *Global Business Review*, *17*(2), 303-317.

Lardy, N. R. (1995). The role of foreign trade and investment in China's economic transformation. *The China Quarterly*, *144*, 1065-1082.

Latif, Z., Latif, S., Ximei, L., Pathan, Z. H., Salam, S., & Jianqiu, Z. (2018). The dynamics of ICT, foreign direct investment, globalization and economic growth: Panel estimation robust to heterogeneity and cross-sectional dependence. *Telematics and Informatics*, *35*(2), 318-328.

Law, S. H., & Singh, N. (2014). Does too much finance harm economic growth?. *Journal of Banking & Finance*, *41*, 36-44.

Law, S. H., Azman-Saini, W. N. W., & Ibrahim, M. H. (2013). Institutional quality thresholds and the finance–growth nexus. *Journal of Banking & Finance*, *37*(12), 5373-5381.

Lee, C. C., & Chang, C. P. (2009). FDI, financial development, and economic growth: international evidence. *Journal of Applied Economics*, *12*(2), 249-271.

Lensink, R., & Morrissey, O. (2006). Foreign direct investment: Flows, volatility, and the impact on growth. *Review of International Economics*, *14*(3), 478-493.

Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics*, *108*(1), 1-24.

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature*, *35*(2), 688-726.

Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of Economic Growth*, *1*, 865-934.

Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, *46*(1), 31-77.

Li, X., & Liu, X. (2005). Foreign direct investment and economic growth: an increasingly endogenous relationship. *World Development*, *33*(3), 393-407.

Liu, H., Islam, M. A., Khan, M. A., Ismail, H. M., & Pervaiz, K. (2020). Does financial deepening attract foreign direct investment? Fresh evidence from panel threshold analysis. *Research in International Business and Finance*, *53*, 101198.

Lopez, L., & Weber, S. (2017). Testing for Granger causality in panel data. *The Stata Journal*, *17*(4), 972-984.

Loungani, P., & Razin, A. (2001). How beneficial is foreign direct investment for developing countries?. *Finance and Development*, *38*(2), 6-9.

Lucas, R. E. (1998). On the mechanics of economic development. *Econometric Society Monographs*, *29*, 61-70.

Maddala, G. S., & Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics*, *61*(S1), 631-652.

Mahoney, D., Trigg, M., Griffin, R., & Pustay, M. (2001). *International Business: a managerial perspective*. Pearson Education Publishers, Australia.

Majeed, M. T., & Asghar, N. (2021). Trade, energy consumption, economic growth, and environmental quality: an empirical evidence from D-8 and G-7 countries. *Environmental Science and Pollution Research*, *28*(43), 61302-61316.

Majid, M. S. A., & Mahrizal (2007). Does financial development cause economic growth in the ASEAN-4 countries?. *Savings and development*, 369-398.

Makki, S. S., & Somwaru, A. (2004). Impact of foreign direct investment and trade on economic growth: Evidence from developing countries. *American Journal of Agricultural Economics*, *86*(3), 795-801.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics*, *107*(2), 407-437.

Manu, L. P., Adjasi, C. K., Abor, J., & Harvey, S. K. (2011). Financial stability and economic growth: a cross-country study. *International Journal of Financial Services Management*, *5*(2), 121-138.

McKinnon, R. I. (1973). *Money and capital in economic development*. Brookings Institution Press, Massachusetts Avenue, N.W., Washington, D.C.

Mehic, E., Silajdzic, S., & Babic-Hodovic, V. (2013). The impact of FDI on economic growth: Some evidence from Southeast Europe. *Emerging Markets Finance and Trade*, *49*(1), 5-20.

Mehmood, S., & Bilal, A. R. (2018). Financial Development and Economic Growth Nexus: An Empirical Modeling and Assessment for China. *Journal of Managerial Sciences*, *11*(3), 103-126.

Mehmood, S., & Bilal, A. R. (2021). Investigation for Finance–Growth Nexus: A Dynamic Common Correlated Estimator Approach. *Global Business Review*, DOI: 10.1177/09721509211016250

Mehmood, U., Tariq, S., Ul-Haq, Z., & Meo, M. S. (2021). Does the modifying role of institutional quality remains homogeneous in GDP-CO 2 emission nexus? New

evidence from ARDL approach. *Environmental Science and Pollution Research*, *28*(8), 10167-10174.

Mensah, I. A., Sun, M., Gao, C., Omari-Sasu, A. Y., Sun, H., Ampimah, B. C., & Quarcoo, A. (2020). Investigation on key contributors of energy consumption in dynamic heterogeneous panel data (DHPD) model for African countries: fresh evidence from dynamic common correlated effect (DCCE) approach. *Environmental Science and Pollution Research*, *27*(31), 38674-38694.

Menyelim, C. M., Babajide, A. A., Omankhanlen, A. E., & Ehikioya, B. I. (2021). Financial inclusion, income inequality and sustainable economic growth in sub-Saharan African countries. *Sustainability*, *13*(4), 1-15.

Meo, M. S., Sabir, S. A., Arain, H., & Nazar, R. (2020). Water resources and tourism development in South Asia: an application of dynamic common correlated effect (DCCE) model. *Environmental Science and Pollution Research*, *27*(16), 19678-19687.

Meyer, K. E., & Sinani, E. (2009). When and where does foreign direct investment generate positive spillovers? A meta-analysis. *Journal of International Business Studies*, *40*(7), 1075-1094.

Miller, M. H. (1998). Financial markets and economic growth. *Journal of applied corporate finance*, *11*(3), 8-15.

Moosa, I. A., & Cardak, B. A. (2006). The determinants of foreign direct investment: An extreme bounds analysis. *Journal of Multinational Financial Management*, *16*(2), 199-211.

Moraes, C. D., Galvis-Ciro, J. C., & Gargalhone, M. (2021). Financial access and interest rate spread: An international assessment. *Journal of Economics and Business*, *114*, 105958.

Muhammad, N. A., Huynh, T. L. D., & Tram, H. T. X. (2019). Role of financial development, economic growth & foreign direct investment in driving climate change: A case of emerging. *Journal of Environmental Management*, *242*, 134-41.

Murinde, V., & Eng, F. S. (1994). Financial development and economic growth in Singapore: demand-following or supply-leading? *Applied Financial Economics*, *4*(6), 391-404.

Muyambiri, B., & Odhiambo, N. M. (2018). The causal relationship between financial development and investment: A review of related empirical literature. *Comparative Economic Research*, *21*(2), 119-136.

Muye, I. M., & Muye, I. Y. (2017). Testing for causality among globalization, institution and financial development: Further evidence from three economic blocs. *Borsa Istanbul Review*, *17*(2), 117-132.

Nair-Reichert, U., & Weinhold, D. (2001). Causality tests for cross-country panels: a New look at FDI and economic growth in developing countries. *Oxford bulletin of economics and statistics*, *63*(2), 153-171.

Narayan, P. K., & Narayan, S. (2013). The short-run relationship between the financial system and economic growth: New evidence from regional panels. *International Review of Financial Analysis*, *29*, 70-78.

Nasir, M. A., Huynh, T. L. D., & Tram, H. T. X. (2019). Role of financial development, economic growth & foreign direct investment in driving climate change: A case of emerging ASEAN. *Journal of Environmental Management*, *242*, 131-141.

Nayak, D., & Choudhury, R. N. (2014). *A selective review of foreign direct investment theories,* working paper series No. 143, Asia-Pacific research and training network on trade (ARTNeT), Bangkok.

Nayan, S., Kadir, N., & Abdullah, M. S. (2014). Financial Development and Economic Growth: A Panel Test of Supply-leading Hypothesis from the Perspective of Sukuk Market. In *Proceedings of International Conference on Contemporary Economic Issues,*17-25.

Ndikumana, L. (2000). Financial determinants of domestic investment in Sub-Saharan Africa: Evidence from panel data. *World Development*, *28*(2), 381-400.

Neanidis, K. C. (2019). Volatile capital flows and economic growth: The role of banking supervision. *Journal of Financial Stability*, *40*, 77-93.

Nkoa, B. E. O. (2018). Determinants of foreign direct investment in Africa: An analysis of the impact of financial development. *Economics Bulletin*, *38*(1), 221-233.

Nyasha, S., & Odhiambo, N. M. (2018). Financial development and economic growth nexus: A revisionist approach. *Economic Notes: Review of Banking, Finance and Monetary Economics*, *47*(1), 223-229.

Odhiambo, N. M. (2007). Supply-leading versus demand-following hypothesis: Empirical evidence from three SSA countries. *African Development Review*, *19*(2), 257-280.

Odhiambo, N. M. (2008a). Financial Development in Kenya: a Dynamic Test of the Finance-led Growth Hypothesis. *Economic issues*, *13*(2), 21-36.

Odhiambo, N. M. (2008b). Financial depth, savings and economic growth in Kenya: A dynamic causal linkage. *Economic Modelling*, *25*(4), 704-713.

Olaniyi, C. O., & Oladeji, S. I. (2021). Moderating the effect of institutional quality on the finance–growth nexus: insights from West African countries. *Economic Change and Restructuring*, *54*(1), 43-74.

Olofin, O. P., Aiyegbusi, O. O., & Adebayo, A. A. (2019). Analysis of Foreign Direct Investment and Economic Growth in Nigeria: Application of Spatial Econometrics and Fully Modified Ordinary Least Square (FMOLS). *Foreign Trade Review*, *54*(3), 159-176.

Omran, M., & Bolbol, A. (2003). Foreign direct investment, financial development, and economic growth: evidence from the Arab countries. *Review of Middle East Economics and Finance*, *1*(3), 231-249.

Omri, A., Daly, S., Rault, C., & Chaibi, A. (2015). Financial development, environmental quality, trade and economic growth: What causes what in MENA countries. *Energy Economics*, *48*, 242-252.

Ouyang, Y., & Li, P. (2018). On the nexus of financial development, economic growth, and energy consumption in China: New perspective from a GMM panel VAR approach. *Energy Economics*, *71*, 238-252.

Ozili, P. K. (2019). Non-performing loans and financial development: new evidence. *The Journal of Risk Finance*, *20* (1), 59–81

Pagano, M. (1993). Financial markets and growth: an overview. *European economic review*, *37*(2-3), 613-622.

Pansiri, J. (2005). Pragmatism: A methodological approach to researching strategic alliances in tourism. *Tourism and Hospitality Planning & Development*, *2*(3), 191-206.

Patrick, H. T. (1966). Financial development and economic growth in underdeveloped countries. *Economic development and Cultural change*, *14*(2), 174-189.

Pearce, D. (2011). Financial inclusion in the Middle East and North Africa: Analysis and roadmap recommendations. *World Bank Policy Research Working Paper*, (5610).

Pedroni, P. (2001). Fully modified OLS for heterogeneous cointegrated panels. *Nonstationary panels, panel cointegration, and dynamic panels* (Advances in Econometrics), *15*, 93-130.

Pegkas, P. (2015). The impact of FDI on economic growth in Eurozone countries. *The Journal of Economic Asymmetries*, *12*(2), 124-132.

Pesaran, M. H. (2004). General diagnostic tests for cross-sectional dependence in panels. *Empirical Economics*, *60*, 13-50.

Pesaran, M. H. (2015). Testing weak cross-sectional dependence in large panels. *Econometric reviews, 34*(6-10), 1089-1117.

Pesaran, M. H. and B. Pesaran (1997). *MicroFit 4.0*: *Interactive Econometric Analysis*. Oxford: Oxford University Press.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, *94*(446), 621-634.

Pesaran, M.H., Shin, Y. and Smith, R.J. (2001). Bounds testing approaches to the analysis of long run relationships. *Journal of Applied Econometrics*, *16*(3), 289-326.

Phillips, P. C. (1986). Understanding spurious regressions in econometrics. *Journal of Econometrics*, *33*(3), 311-340.

Polat, A., Shahbaz, M., Rehman, I. U., & Satti, S. L. (2015). Revisiting linkages between financial development, trade openness and economic growth in South Africa: fresh evidence from combined cointegration test. *Quality & Quantity*, *49*(2), 785-803.

Porter, M. E. (1990). The Competitive Advonioge of Notions. *Harvard business review,* 73-93.

Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review. 76(*6), 77-90.

Pradhan, R. P. (2010). Financial deepening, foreign direct investment and economic growth: are they cointegrated, *International Journal of Financial Research, 1*(1), 37-43.

Pradhan, R. P., Arvin, M. B., & Bahmani, S. (2018). Are innovation and financial development causative factors in economic growth? Evidence from a panel granger causality test. *Technological Forecasting and Social Change*, *132*, 130-142.

Prasad, E., Rogoff, K., Wei, S. J., & Kose, M. A. (2005). Effects of financial globalization on developing countries: some empirical evidence. *India's and China's recent experience with reform and growth* (pp. 201-228). Palgrave Macmillan, London.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, *31*(4), 437-448.

Rajan, R. G. (2006). Has finance made the world riskier?. *European financial management*, *12*(4), 499-533.

Ratnawati, K. (2020). The impact of financial inclusion on economic growth, poverty, income inequality, and financial stability in Asia. *The Journal of Asian Finance, Economics, and Business*, *7*(10), 73-85.

Raza, S. A., Shah, N., & Arif, I. (2021). Relationship between FDI and economic growth in the presence of good governance system: Evidence from OECD Countries. *Global Business Review*, *22*(6), 1471-1489.

Rioja, F., & Valev, N. (2004). Does one size fit all?: a reexamination of the finance and growth relationship. *Journal of Development economics*, *74*(2), 429-447.

Robinson, J. (1952). *The generalization of the general theory. The rate of interest and other essays*, 2nd edition, MacMillan, London.

Ross, S. A. (1989). Institutional markets, financial marketing, and financial innovation. *The Journal of Finance*, *44*(3), 541-556.

Rousseau, P. L., & Wachtel, P. (2011). What is happening to the impact of financial deepening on economic growth?. *Economic Inquiry*, *49*(1), 276-288.

Sabir, S., Rafique, A., & Abbas, K. (2019). Institutions and FDI: evidence from developed and developing countries. *Financial Innovation*, *5*(8), 1-20.

Sadik, A. T., & Bolbol, A. A. (2001). Capital flows, FDI, and technology spillovers: evidence from Arab countries. *World Development*, *29*(12), 2111-2125.

Saini, N., & Singhania, M. (2018). Determinants of FDI in developed and developing countries: a quantitative analysis using GMM. *Journal of Economic Studies*, *45*(2), 348–382.

Sánchez-Robles, B. (1997). Financial efficiency and economic growth: The case of Spain. *International Advances in Economic Research*, *3*(4), 333-351.

Sandleris, G. (2014). Sovereign defaults, credit to the private sector, and domestic credit market institutions. *Journal of Money, Credit and Banking*, *46*(2-3), 321-345.

Saqib, N. (2013). Impact of development and efficiency of financial sector on economic growth: Empirical evidence from developing countries. *Journal of Knowledge Management, Economics and Information Technology*, *3*(3), 1-15.

Saqib, N. (2015). Review of literature on finance-growth Nexus. *Journal of Applied Finance & Banking*, *5*(4). 175-195.

Saqib, N. (2016). Banking sector liberalization and economic growth: case study of Pakistan. *Journal of Business Economics and Management*, *17*(1), 125-139.

Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of international development*, *23*(5), 613-628.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Pearson education.

Sbia, R., Shahbaz, M., & Ozturk, I. (2017). Economic growth, financial development, urbanisation and electricity consumption nexus in UAE. *Economic research-Ekonomska Istraživanja*, *30*(1), 527-549.

Schumpeter, J. A. (1911). (English edition, 1934). *The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle.*

Scott-Kennel, J. (2004). Foreign direct investment: a catalyst for local firm development?. *The European Journal of Development Research*, *16*(3), 624-652.

Sehrawat, M., & Giri, A. K. (2016). The impact of financial development on economic growth. *International Journal of Emerging Markets*, *11*(4), 569-583.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*, 7/e, New Jersey: John Wiley & Sons Ltd.

Sethi, D., & Acharya, D. (2018). Financial inclusion and economic growth linkage: Some cross country evidence. *Journal of Financial Economic Policy*, *10*(3), 369–385.

Shahbaz, M. (2009). A reassessment of finance-growth nexus for Pakistan: under the investigation of FMOLS and DOLS techniques. *IUP Journal of Applied Economics*, *8*(1), 65-80.

Shahbaz, M. (2012). Does trade openness affect long run growth? Cointegration, causality and forecast error variance decomposition tests for Pakistan. *Economic Modelling*, *29*(6), 2325-2339.

Shahbaz, M., & Rahman, M. M. (2010). Foreign capital inflows-growth nexus and role of domestic financial sector: an ARDL co-integration approach for Pakistan. *Journal of Economic Research*, *15*(3), 207-231.

Shahbaz, M., & Rahman, M. M. (2012). The dynamic of financial development, imports, foreign direct investment and economic growth: cointegration and causality analysis in Pakistan. *Global Business Review*, *13*(2), 201-219.

Shahbaz, M., Ahmed, N., & Ali, L. (2008). Stock market development and economic growth: ARDL causality in Pakistan. *International Research Journal of Finance and Economics*, *14*(1), 182-195.

Shahbaz, M., Kandil, M., Mahalik, M. K., & Nguyen, D. K. (2017b). The drivers of economic growth in China and India: globalization or financial development? *International Journal of Development Issues*, *16*(1), 54-84.

Shahbaz, M., Leitão, N. C., & Malik, S. (2011). Foreign direct investment-economic growth nexus: the role of domestic financial development in Portugal. *Economics Bulletin*, *31*(4), 2824-2838.

Shahbaz, M., Rehman, I. U., & Muzaffar, A. T. (2015). Re-Visiting Financial Development and Economic Growth Nexus: The Role of Capitalization in Bangladesh. *South African Journal of Economics*, *83*(3), 452-471.

Shahbaz, M., Van Hoang, T. H., Mahalik, M. K., & Roubaud, D. (2017a). Energy consumption, financial development and economic growth in India: New evidence from a nonlinear and asymmetric analysis. *Energy Economics*, *63*, 199-212.

Sharma, D. (2016). Nexus between financial inclusion and economic growth: Evidence from the emerging Indian economy. *Journal of Financial Economic Policy*, *8*(1), 13-36.

Shaw, E. S. (1973). *Financial deepening in economic development.* Oxford University Press, New York.

Shen, Y., Hu, W., & Hueng, C. J. (2021). Digital Financial Inclusion and Economic Growth: A Cross-country Study. *Procedia Computer Science*, *187*, 218-223.

Singh, B. P., & Mishra, A. K. (2015). Researching the relationship between Financial and Real sectors in India. *Indian Journal of Economics and Development*, *11*(4), 861-868.

Söderlund, B., & Tingvall, P. G. (2017). Capital Freedom, Financial Development and Provincial Economic Growth in China. *The World Economy*, *40*(4), 764-787.

Soedarmono, W., Machrouh, F., & Tarazi, A. (2011). Bank market power, economic growth and financial stability: Evidence from Asian banks. *Journal of Asian Economics*, *22*(6), 460-470.

Song, C. Q., Chang, C. P., & Gong, Q. (2021). Economic growth, corruption, and financial development: Global evidence. *Economic Modelling*, *94*, 822-830.

Stock, J. H., & Watson, M. W. (1993). A simple estimator of cointegrating vectors in higher order integrated systems. *Econometrica: Journal of the Econometric Society*, *61*(4), 783-820.

Svirydzenka, K. (2016). Introducing a new broad-based index of financial development. IMF working paper WP/16/5.

Swamy, V., & Dharani, M. (2019). The dynamics of finance-growth nexus in advanced economies. *International Review of Economics & Finance*, *64*, 122-146.

Tadesse, T., & Abafia, J. (2019). The causality between Financial Development and Economic Growth in Ethiopia: Supply Leading vs Demand Following Hypothesis. *Journal of Economics and Financial Analysis*, *3*(1), 87-115.

Thanawala, K. (1994). Schumpeter's theory of economic development and development economics. *Review of Social Economy*, *52*(4), 353-363.

Thornton, J. (1996). Financial deepening and economic growth in developing economics. *Applied Economics Letters*, *3*(4), 243-246.

Ting, H. I. (2017). Financial development, role of government, and bank profitability: evidence from the 2008 financial crisis. *Journal of Economics and Finance*, *41*(2), 370.

Tiwari, A. K., & Mutascu, M. (2011). Economic growth and FDI in Asia: A panel-data approach. *Economic Analysis and Policy*, *41*(2), 173-187.

Torissi, C. R. (1985). The determinants of foreign direct investment in a small LDC. *Journal of Economic Development*, *10*(1), 29-45.

Tun, Y. L., Azman-Saini, W. N. W., & Law, S. H. (2012). International evidence on the link between foreign direct investment and institutional quality. *Engineering Economics*, *23*(4), 379-386.

Türsoy, T., & Faisal, F. (2018). Does financial depth impact economic growth in North Cyprus?. *Financial Innovation*, *4*(1), 1-13.

Uddin, G. S., Shahbaz, M., Arouri, M., & Teulon, F. (2014). Financial development and poverty reduction nexus: A cointegration and causality analysis in Bangladesh. *Economic Modelling*, *36*, 405-412.

Uddin, G. S., Sjö, B., & Shahbaz, M. (2013). The causal nexus between financial development and economic growth in Kenya. *Economic Modelling*, *35*, 701-707.

UN DESA (2015). *World Economic Situation and Prospects,* United Nations Department of Economic and Social Affairs, United Nations, New York.

UN DESA (2018). *World Economic Situation and Prospects,* United Nations Department of Economic and Social Affairs, United Nations, New York.

UN DESA (2019). *World Economic Situation and Prospects,* United Nations Department of Economic and Social Affairs, United Nations, New York.

UNCTAD (2018). *World investment report 2018,* United Nations Conference on Trade and Development, New York.

UNCTAD (TDR 2019). *Trade and Development Report 2019*: Financing A Global Green New Deal (United Nations publication. Sales No. E.19.II.D.15. Geneva).

Vaona, A., & Patuelli, R. (2008). New empirical evidence on local financial development and growth. *Letters in Spatial and Resource Sciences*, *1*(2-3), 147-157.

Vasyechko, O. (2012). A review of FDI theories: an application for transition economies. *International Research Journal of Finance and Economics*, *89*, 118-137.

Waheed, A., & Younus, N. (2010). Effects of financial sector's development and financial sector's efficiency on economic growth: empirical evidence from developing and developed countries. *International Journal of Economic Perspectives*, *4*(2), 449-458.

Wang, M. (2009). Manufacturing FDI and economic growth: evidence from Asian economies. *Applied Economics*, *41*(8), 991-1002.

Wang, Z., Zhang, B., & Wang, B. (2018). The moderating role of corruption between economic growth and CO2 emissions: Evidence from BRICS economies. *Energy*, *148*, 506-513.

Westerlund, J. (2007). Testing for error correction in panel data. *Oxford Bulletin of Economics and Statistics*, *69*(6), 709-748.

Westerlund, J., & Edgerton, D. L. (2007). A panel bootstrap cointegration test. *Economics letters*, *97*(3), 185-190.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica: journal of the Econometric Society*, *48*(4), 817-838.

Wolde-Rufael, Y. (2009). Re-examining the financial development and economic growth nexus in Kenya. *Economic Modelling*, *26*(6), 1140-1146.

World Bank. (2013). *Little Data Book on Financial Development 2014*. The World Bank. DOI: 10.1596/978-0-8213-9754-1

World Development Indicators (2018). World Bank, Washington, DC.

World Economic Forum (2008). *The financial development report 2008*. World Economic Forum USA Inc.

Wu, J. L., Hou, H., & Cheng, S. Y. (2010). The dynamic impacts of financial institutions on economic growth: Evidence from the European Union. *Journal of Macroeconomics*, *32*(3), 879-891.

Xie, D. (1994). Divergence in economic performance: transitional dynamics with multiple equilibria. *Journal of Economic Theory*, *63*(1), 97-112.

Yang, Y. Y., & Yi, M. H. (2008). Does financial development cause economic growth? Implication for policy in Korea. *Journal of Policy Modeling*, *30*(5), 827-840.

Yao, S. (2006). On economic growth, FDI and exports in China. *Applied Economics*, *38*(3), 339-351.

Younsi, M., & Nafla, A. (2019). Financial stability, monetary policy, and economic growth: panel data evidence from developed and developing countries. *Journal of the Knowledge Economy*, *10*(1), 238-260.

Zaidi, S. A. H., Wei, Z., Gedikli, A., Zafar, M. W., Hou, F., & Iftikhar, Y. (2019). The impact of globalization, natural resources abundance, and human capital on financial development: Evidence from thirty-one OECD countries. *Resources Policy*, *64*, 101476. DOI: 10.1016/j.resourpol.2019.101476

Zang, H., & Kim, Y. C. (2007). Does financial development precede growth? Robinson and Lucas might be right. *Applied Economics Letters*, *14*(1), 15-19.

Zghidi, N., Mohamed Sghaier, I., & Abida, Z. (2016). Does economic freedom enhance the impact of foreign direct investment on economic growth in North African countries? A panel data analysis. *African Development Review*, *28*(1), 64-74.

Zhang, K. H. (2001a). Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy*, *19*(2), 175-185.

Zhang, K. H. (2001b). How does foreign direct investment affect economic growth in China?. *Economics of Transition*, *9*(3), 679-693.

Zhang, L., Zhang, S., & Tao, N. (2016). Financial system risk tolerance capacity and economic growth: evidence from a cross-country analysis. *Global Economic Review*, *45*(2), 97-115.

Zhang, R., & Naceur, S. B. (2019). Financial development, inequality, and poverty: Some international evidence. *International Review of Economics & Finance*, *61*, 1-16.

Zhao, C., & Du, J. (2007). Causality between FDI and economic growth in China. *Chinese Economy*, *40*(6), 68-82.

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2003). Business research methods 7th ed. *Thomson/South-Western*.

Zouaoui, H., Mazioud, M., & Ellouz, N. Z. (2018). A semi-parametric panel data analysis on financial development-economic volatility nexus in developing countries. *Economics Letters*, *172*, 50-55.

APPENDIX I

Table A-I: List of Countries

Sr#	Selected Countries
1.	Bangladesh
2.	Brazil
3.	China
4.	Egypt, Arab Republic
5.	India
6.	Indonesia
7.	Iran, Islamic Republic
8.	Malaysia
9.	Mexico
10.	Nigeria
11.	Pakistan
12.	Philippines
13.	Siri Lanka
14.	Turkey
15.	Thailand
16.	Vietnam

APPENDIX II

Table A-II: Annual Percentage Change in GDP

Years	Annual Percentage Change in GDP			
	Bangladesh	**Brazil**	**China**	**Egypt**
1997–2011	5.7	3.2	9.9	4.8
2009–2016	6.2	1.1	8.3	3.3
2012	6.5	1.9	7.9	2.2
2013	6.0	3.0	7.8	2.2
2014	6.1	0.5	7.3	2.9
2015	6.6	-3.5	6.9	4.4
2016	7.1	-3.3	6.7	4.3
2017	7.3	1.3	6.8	4.2
	India	**Indonesia**	**Iran**	**Malaysia**
1997–2011	6.4	5.4	3.9	4.4
2009–2016	7.4	5.4	2.5	4.5
2012	5.5	4.3	-7.4	5.5
2013	6.4	6.4	-0.2	4.7
2014	7.4	6.4	4.6	6.0
2015	8.0	6.4	-1.3	5.1
2016	8.2	3.5	13.4	4.4
2017	7.2	3.8	3.8	5.7
	Mexico	**Nigeria**	**Pakistan**	**Philippines**
1997–2011	2.5	6.8	3.7	4.2
2009–2016	2.8	5.4	3.8	5.6
2012	3.6	4.3	4.4	6.7
2013	1.4	5.4	4.7	7.1
2014	2.8	6.3	4.7	6.1
2015	3.3	2.7	5.5	6.1
2016	2.9	-1.6	5.6	6.9
2017	2.1	0.8	5.8	6.7
	Siri Lanka	**Turkey**	**Thailand**	**Vietnam**
1997–2011	5.4	4.3	3.0	6.6
2009–2016	5.8	5.0	3.0	5.9
2012	9.1	4.8	7.2	5.2
2013	3.4	8.5	2.7	5.4
2014	5.0	5.2	1.0	6.0
2015	5.0	6.1	3.1	6.7
2016	4.5	3.2	3.4	6.2
2017	3.4	7.5	4.0	6.8

Source: World Economic Situation and Prospects 2018 and World Economic Situation and Prospects 2020