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THE SYSTEMIC DRIVERS OF ECONOMIC PERFORMANCE: PANEL DATA APPROACH TO THE GLOBAL COMPETITIVENESS INDEX

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ÖZ

THE SYSTEMATIC ANALYSIS OF COUNTRY-BASED DEVELOPMENT MODELS

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Bu çalışma, sistemik ekonomik yönetişim yaklaşımını kullanarak makroekonomik bileşenlerin yönetişimi açısından ülkelerin ekonomik kalkınma performanslarının değişkenlik göstermesinin nedenlerini araştırmaktadır. Bu çerçevede, sistemik yönetişim ve kurumsal tamamlayıcılık yaklaşımları benimsenerek, Küresel Rekabet Edebilirlik Endeksi'nin metodolojik yaklaşımı çerçevesinde ekonomik yönetişim perspektifi yeniden kurgulanmıştır. Ayrıca, Driscoll-Kraay ve Dumitrescu-Hurlin yöntemleri kullanılarak, makro iktisadi yönetişim, kurumsal yönetişim, finansal yönetişim, hükümet verimliliği, işgücü piyasası etkinliği, mal piyasası etkinliği, uluslararası iktisadi yönetişim, teknoloji ve inovasyonun kişi başına düşen GSYİH büyümesine bireysel ve tamamlayıcı etkileri 2007-2017 dönemi 3 farklı ülke grubunda 74 ülke için analiz edilmiştir. Sonuçlar yedi başlıkta özetlenebilir; birincisi makroekonomik yönetişim tüm ülke grupları için büyümeye fayda sağlamaktadır, ikinci olarak finansal yönetişim verimlilik odaklı ve inovasyon odaklı ülkelerde ekonomik büyümeyi teşvik etmektedir, üçüncü olarak hükümet verimliliği yalnızca verimlilik odaklı ülkelerde büyümeyi güçlendirmektedir, dördüncü olarak inovasyon büyümeyi verimlilik odaklı ve inovasyon odaklı ülkelerde olumlu etkilemektedir, beşinci olarak teknoloji faktör odaklı ve verimlilik odaklı ülkelerde büyüme için faydalıdır, altıncı olarak işgücü piyasası verimliliği verimlilik odaklı ülkelerde büyüme olumsuz etkilerken inovasyon odaklı ülkelerde olumlu katkı sağlamaktadır ve son olarak kurumsal yönetim tüm ülke grupları üzerinde büyümeye olumsuz etki yapmaktadır. Buna ek olarak, nedensellik testi sonuçları olumsuz kurumsal tamamlayıcılıklara dayalı sistemik bir yönetişimin varlığına işaret etmektedir.

Anahtar Kelimeler: Sistemik Yönetişim, Kurumsal Tamamlayıcılık, Ekonomik Büyüme

ABSTRACT

THE SYSTEMATIC ANALYSIS OF COUNTRY-BASED DEVELOPMENT MODELS

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This study aims to investigate the causes of varying economic development performance of countries with regard to governance of macroeconomic constituents by employing the systemic economic governance approach. In this framework, by adopting the systemic governance and institutional complementarity, the economic governance perspective was reconstructed within the framework of the methodological approach of the Global Competitiveness Index. Furthermore by using, Driscoll-Kraay and Dumitrescu-Hurlin methods, individual and complementary effects of economic governance, corporate governance, financial governance, government efficiency, labour market efficiency, goods market efficiency, international economic governance, technology and innovation into GDP growth per capita are analyzed for 23 factor-driven, 37 efficiency-driven, and 14 innovation-driven countries for the period of 2007-2017. Results can be summarized into seven; the first one is macroeconomic governance benefits growth for all country groups, the second financial market governance stimulates economic growth on efficiency-driven and innovation-driven countries, the third government efficiency strengthen growth only on efficiency driven countries, the forth innovation positively effects growth in innovation-driven and efficiency driven countries, the fifth technology is beneficial for growth on factor-driven and efficiency-driven countries, the sixth labor market efficiency poses negative effects growth on efficiency driven countries and positively related on innovation driven countries, and lastly corporate governance imposes negative effect to growth on all country groups. Moreover, causality test results demonstrates a existence of systemic governance based on the negative institutional complementarities.

Key Words: Systemic Governance, Institutional Complementarity, Economic Growth

PREFACE

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LIST OF ABBREVIATIONS

G&D: Growth and Development

GCI: Global Competitiveness Index

GCR: Global Competitiveness Report

GDP: Gross Domestic Product

IC: Institutional Complementarity

ICT: Information and Communication Technologies

NIC: Negative Institutional Complementarity

OLS: Ordinary Least Square

PIC: Positive Institutional Complementarity

VIF: Variance Inflation Factor

WDI: World Development Indicators

GCI: Global Competitiveness Index

INTRODUCTION

Macroeconomic constituents have been widely analysed to explain the paths of development and cross-country differences from economists in theoretical and empirical aspects. Concerning paths of development, classical and neoclassical economists argued that technological progress and capital accumulation are the two ways to achieve economic development. However, it is based on the complexity of macroeconomic system driven by dynamic relationships among the other macroeconomic components (Jespersen, 2009). Other economists claimed that apart from capital and labour, other factors might determine the countries' economic performance. These factors are human capital, education (Lucas, 1988; Stokey, 1991), and governance of institutions (Akan, 2018; Bevir, 2010; Kaufmann et al., 2011; Mark Bevir, 2013; Sørensen & Torfing, 2007; Torfing et al., 2012). Therefore, the governance of these factors enables countries to create necessary processes to ignite the development processes

A complex framework requires investigating the following questions: Are country characteristics important to explain performance? What are the constituents of the macroeconomy, and how do they interact with others? What are the major factors influencing economic performance?

In this regard, this thesis aims to briefly explain the economic system and constituents in the first chapter, and then briefly investigate the theories on about macroeconomic development and governance. The third chapter will lay out an analytic framework for examining the effects of macroeconomic aggregates on economic performance for analysing the macroeconomic dynamics. The fourth chapter will present an empirical analysis of the economic performance of the 74 countries between 2007 and 2017 based on

the three models that estimate the effects of major determinants of economic performance on the three group of countries classified according to their levels of development. The last chapter wll discuss the conclusion.
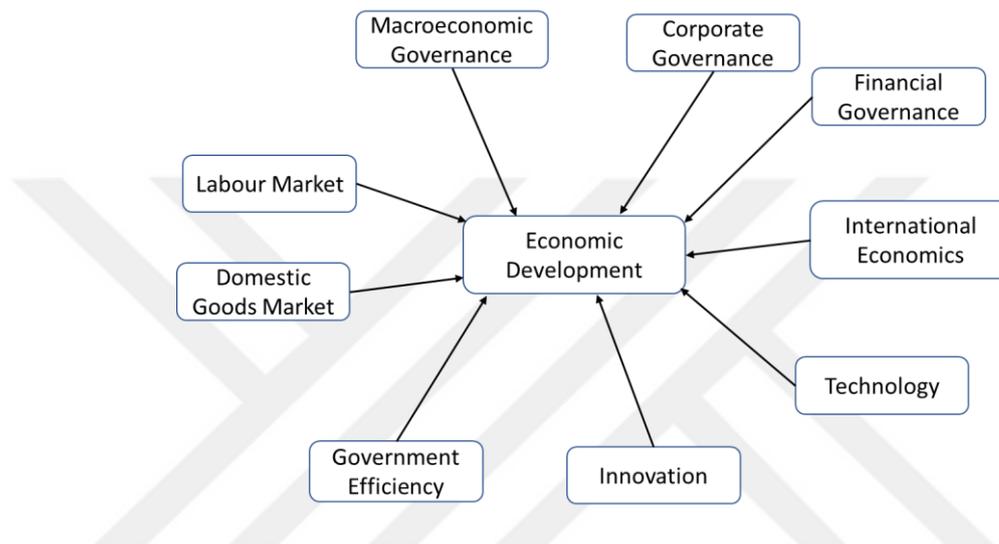
Graph 1.1.: Macroeconomic Landscape

CHAPTER ONE

ECONOMIC SYSTEM AND ITS CONTITUENTS

1.1 Brief Explanation of Economic System and Constituents

The macroeconomic landscape consists of the following three categories actors, markets, and institutions. The main actors of the landscape consist of private firms, households, private organisations, and the government. Private firms primarily interact with the labour and financial market by providing employment, making investments, and financing their investments and expenditures. Households miscellaneously interact with the markets by supplying labour, buying houses and goods, and accumulating savings. The second group of actors are non-governmental mechanisms such as, employer associations and trade unions that have effects primarily in the market structures in which they exist, and they have the potential indirect effect on the entire economy. Thirdly, government can change structural framework and shape actors' activities by regulating markets and implementing economic policies through institutional mechanisms.(Jespersen, 2009).

Macroeconomic markets are exchange organisms exist based on the specific type of macroeconomic activity that takes place in an institutionally determined framework (Jespersen, 2009). Furthermore, the interaction of macroeconomic actors' actions on markets on an institutional structure is important in determining the economic performance (Akan, 2016), and thus success and failure of the nations (Acemoglu & Robinson, 2012).

Institutions, by determining incentives, constraints, and transaction costs, canalise actors to where to invest, what skills to acquire, whom to cooperate, where to be opportunistic, therefore shaping the organisational structures (Amable, 2003). Institutions can be defined as established and embedded social rules that

structure social interactions (Hodgson, 2006), which are considered a fundamental element of social and economic intercourse (Bromley, 2009) by being building blocks of social order (Streeck & Thelen, 2005), and for the economic trajectory, they can be referred to as intermediation mechanisms (Bromley, 2009; Hodgson, 2006) between markets and actors. Therefore, to achieve targeted and desired results among the unlimited possibilities that may occur within the existing power relations, determination of institutional design should be made to channel the corresponding outcome, which is also the measurement of the effectiveness of institutional form(Akan, 2018; Amable, 2003).

CHAPTER TWO

ECONOMIC GROWTH, DEVELOPMENT AND GOVERNANCE NEXUS

Economic growth and the disparities across nations have been one of the most controversial and widely analysed topics in economics for a long time. Economic growth has often been considered a function of factors such as human and physical capital accumulation, technical progress and productivity increase, as well as the effects of these factors on economic growth. However some others claimed that institutional and structural factors are the core determinants of overall economic performance such as governance of macroeconomic constituents (Acemoglu et al., 2003), innovation(Romer, 1990), education(Stokey, 1991) and human capital(Lucas, 1988). Therefore, in this chapter, economic development and governance theories will be briefly explained by their propositions and priorities in terms of economic development and economic governance.

2.1 Brief Review of Economic Growth and Development Theories

The theories of the classical economic approach to development mainly focused on increasing the efficiency of production inputs, such as technology, capital, and labour, therefore stimulating factors prioritised as savings, investment and technology. According to Adam Smith, with the existence of a competitive market environment, increasing the efficiencies of workforce and capital by division of labour and introducing new technologies will generate specialisation and cost reduction, which will improve productivity, and, therefore ingenerate the welfare (Smith, 1776). Like his predecessor, Ricardo claimed that productivity increase as the essence of economic development. However, he differentiated production as industrial and agriculture and suggested that

determination of optimal production and technological innovation are the core elements of productivity, respectively (Cypher, 2008). Solow, on the other hand, argued that all of the determinants of production except for technology, have declining returns in the short run and constant returns in the long run. Furthermore, technology is determined exogenously and is available for all countries with the same effects regardless of the existing degree of development of any particular country. Moreover, savings and investment determines the rate of growth; as a result, on ceteris paribus, a greater rate of savings will stimulate investments, which in turn boost the equilibrium level of per capita income by increasing the stock of physical capital in the economy (Solow, 1956).

The Harrod-Domar model proposes a fixed proportion of capital and labour on production, and suggests that growth rate is determined by investments that are accompanied by the current rate of savings that needs precise determination relative to the capital ratio. The miss determination of the ratio would eventually lead economies to either grow too fast or too slow than natural rate which may increase in unemployment or inflation rates. In both cases, the economy would move away from its equilibrium point (Domar, 1946; Harrod, 1949).

In general, classical models of theories orientated around the inputs of production and output, emphasising savings, investment, and exogenously determined technology as the main determinants of the development process. Assuming technology is available to all countries, the rate of profit earned by capitalist investors is considered the most important factor in determining the speed of the economic process. Moreover, allocating of a set of limited resources to optimal use is the main emphasis of the neoclassical economic perspective, which inevitably results in putting efficiency at the centre of the economic development process.

Besides general propositions for economic development, after World War II, specific catch-up strategies were proposed for the nations that experiencing a blockage in their growth and development. One of the theories about catch-up strategies by Rosenstein-Rodan (Rosenstein-Rodan, 1943) suggested that developing nations suffer from lacking availability of savings to finance economic development. For this reason, it is proposed that catch-up should be started with extensive and simultaneous investments in major sectors in order for countries to "take off" and move towards a rapid and sustainable growth path (Easterly et al., 2006). According to Rosenstein-Rodan, important sectors for big-push are social overhead capital or infrastructure, which will create a chain reaction to gain technological externalities and contribute to labour training by generating significant positive externalities in the other markets and revealing the hidden potential of countries. Ragnar Nurkse (Nurkse, 1953) shared the same perspective with Rosenstein-Rodan about the lack of savings and investment. However, he suggested that the low level of output of developing nations is caused by the low productivity per worker. Like the big-push approach, he believed in the inability of small increments of investment to solve the problem; however, he argued that simultaneous, balanced, coordinated and planned investments in a large number of industrial sectors is ignite the development process to create much-needed demand by increasing income. Hirschman (Hirschman, 1984) suggested that, due to the non-availability of savings and investments for the implementation of a big push, unbalancing of the economy by rapid industrialisation by creating excess capacity in some sectors and opportunities for profit to new entrepreneurial areas is needed to speed up the development process.

Rostow's propositions are distinctly separated from other catch-up strategies and suggest a five-stage historical development process

that all nations must go through. According to Rostow (Rostow, 1959), all societies characteristically begin as traditional societies with no systemic scientific knowledge of production and evolve into highly diverse, innovative, entrepreneurial, and technologically versatile societies of high-invome level with an orientation around security and leisure by creating a political, social and institutional framework.

Endogenous growth theories emerged on the basis of objection to the approach of classical and neoclassical models' fundamentals about exogenously determination of technological change, and core element as savings to promote growth. Theories suggested that the main propositions of mentioned models are incapable of explaining the cross-country differences with capital accumulation and emphasise the increasing returns on productivity by efficiency increases to explain the cross-country differences on the economic performance (Romer, 1986). Furthermore, the theories of economic growth have come to concentrate on the concept of productivity by abandoning the diminishing marginal returns concept of classical economic theories.

Endogenous growth theories suggest that an increase in the level of education in the economy, apart from the gaining in productivity increase as suggested in the classical approach, can contribute to the productivity increase in the labour force by creating synergy among them while other variables within the country remain constant (Lucas, 1988). In addition, the higher average level of education in the economy may also allow for 'learning by doing' effects, such as the workforce may gain higher efficiency by making better use of training and past experiences and training, which result in higher levels of individual productivity over time. Furthermore, it can also enable economies to achieve higher growth rates by contributing to reducing the negative effects of the decreasing returns of capital and

labour (Stokey, 1991). To explain the path of variations of long-run growth by including the effects of R&D and human capital (Lucas, 1988; Romer, 1990), the possibility of utilisation of learning by doing economy-wide (Stokey, 1991), and gains from the efficiency increase from innovation (Romer, 1986), endogenous theories imply much more complex types of interactions than the neoclassical models, thus new understandings.

2.2 Brief Review of Economic Governance Theories

Governance of economic systems' variables matters in terms of explaining the economic performance disparities of the countries(Acemoglu et al., 2001; Knack & Keefer, 1995; Rodrik et al., 2002). Therefore, investigating the economic performance of countries requires the necessity of including governance to the analysis. However, there is no consensus about on the role, instruments, function and practice procedure of governance. Furthermore with the variety of definitions of the concept of governance, some of which are direct opposite to one another. **(Table 2.1)**.

	Role of Governance	Instruments of Implementation	Function, Objectives	Practice procedure, Conduct
Democratic Governance (Addink, 2019; Bevir, 2010)	Authority of govern to ensure the effectiveness of market reforms	through appropriate political institutions	to guarantee security, manage an effective and accountable framework for the public sector, and promote the economic and social aims of the country	with the core values of properness, transparency, participation, effectiveness, accountability, and human rights
Good governance (Madacumura & Morçöl, 2014; UNDP 2002)	Power exercisement through traditions, values and institutions	constitution of the institutional barriers	to control political, economic, and social development, eradicate poverty and promote human development	by preventing corruption and establishing the requirements of a functioning market economy
Interactive Governance (Kooiman, 2003; Sørensen & Torfing, 2007; Torfing et al., 2012)	Metagovernance to promote interaction among social and political actors	establishment and consistence of legitimate and effective governing in the administrative and regulatory framework	create a discourse to achieve shared targets	interchanging and building up ideas, rules and resources
Network Governance (Candace Jones et al., 1997; Powell, 1990; Ring & Ven, 1992)	Interconnection of individuals, organizations, and institutions	coordination between public and private sector networks	to achieve greater learning, more efficient resource use, increased capacity to prepare and manage for difficult situations and increase competitiveness	by informal social systems rather than bureaucratic structures within firms and formal contractual relationships between them
Systemic Governance (Akan, 2018)	The managerial capacity to steer or provide coherence to an institutional stock	establishment of coherence and sustainability of an overall institutional stock	to manage present and evolutionary complications of micro-macro NICs and PICs	process of decision-making, regulation, monitoring, and mediation of actors through governance mechanisms

Table 2.1: Economic Governance Approaches

With the varying definitions of governance, a broad definition in the objectives of macroeconomics can be expressed as "modes and manner of governing" (Jessop, 1998), which comprehends every aspect of organisms, whether formal or informal (Mark Bevir, 2013) The concept of governance encompasses every aspect of the country with the interaction channels; however, when it is considered under the shadow of the economic dimension, it can be expressed as the manner of conduct in the administrative and regulatory framework in state affairs that shapes the framework of all actors in economic terrain according to the limits of functioning and capability of the public sector. Thus, governing as an instrument of economic development trajectory can be expressed as 'an institutionalised interactions between interdependent public and private actors for adjusting or monitoring a certain part or all of a developmental process under the guidance of predetermined rules and procedures"(Akan, 2018). Therefore in this study, systemic governance approach has been embraced as it enables to analysing positive and negative complementarities between economic systems' variables and enables a more comprehensive analysis of the entire macroeconomic constituents.

2.3 The Relationship Between Systemic Governance of Economic Development

By the linkages constructed between micro and macro levels, and with the ability to shape the actors' decisions and organisational forms, institutions have a direct effect on the economic construct and discourse, therefore economic trajectory by major proportion (Rode & Coll, 2012). Macroeconomic institutions do not stand in isolation but, in reality, exert interactive complementarity over time. Institutional interactions take place in the economy, including but not limited to education, training, financial systems, and also inter-firm and labour relations, which are governed by institutional sub-

systems that are key to promoting systemic coordination by implementing reinforcing arrangements (Akan, 2018; Amable, 2003; Hall & Soskice, 2001). Therefore, to understand countries varying successes and failures on the path of economic development, the inter-institutional linkages need to be established by the coordination and institutional complementarity

A comprehensive definition of institutional complementarity can be defined as "The mutual reinforcement of a certain group of institutions in part or all of a social structure that improves or worsens clustering relative to alternative configurations" (Akan, 2016; Hall & Soskice, 2001). The type of institutional complementarity can be distinguished into two: Positive Institutional Complementarity (PIC) and Negative Institutional Complementarity (NIC). While PICs "contribute to the formation and consolidation of economic efficiency, industrial sophistication and social equity, NICs create economic inefficiency, industrial leisure and social inequity". In the case of positive complementarity, there are two types of externalities that institutions generate. The first one is synergy, which is "mutually reinforcing effects of compatible incentive structures in different sub-systems of an economy". The second one is supplementarily "in which one institution makes up for the deficiencies of the others" (Crouch, 2006; Deeg, 2007). In the case of negative complementarity, the institutional influence hinders the desired goals, either completely or to the desired extent.

There are three different regimes of structure based on the employed type of management to ensure coherence and viability of institutional stock. The first one is systemic governance, which is a "process of decision-making, regulation, and monitoring that aims to manage present and evolutionary complications of micro-macro NICs and PICs through the establishment of coherence and sustainability of an overall institutional stock". The second one is

fragmentation and drift, " denotes that a country's G&D strategy fails or achieves limited success mainly as a result that this country has been unable to orchestrate its own proper ICs under a mode of systemic governance, but instead manages its developmental institutions through either ad hoc or transposed strategies". The third one is, institutional trap, where "policy-makers become stuck between the requirement of making structural or systemic changes and the path dependencies of enduring institutional fragmentation." The current form of the government system is irrelevant for the evaluation for the evaluation of proper governance structure; what matters is whether the current form of governance is capable of assuring the viability and sustainability of the coherence of overall institutional stock (Akan, 2018) and the ability to make and enforce rules (Fukuyama, 2013). To distinguish which of the aforementioned three formats the structure of a management form fits in, it is necessary distinguish between three interdependent and related concepts. The first is the managerial capacity to steer or provide coherence to an institutional stock of decision-making body, the second is the available stock of political, economic and cultural institutions, and the third is the institutional interaction mediation of actors through governance mechanisms. While the first element provides systemic coordination of existing institutions, the structure and quality of the available institutions and mediating actors' strategies determine the operation scope. Therefore, the possibility of the first element performing the commanding function and steering on its own is limited, and its mobility depends on the second element and the intercomplementary feedback from the third element (Akan, 2018).

In the absence of systemic governance, the lack of intercomplementary dynamics between formal and informal institutions and the strategies of major economic-political actors

leads to fragmentation and drift in institutional structure. Metagovernance structure and mediating actors cannot ensure the coordination among institutional interactions to generate a path to achieve the intended objective. Unilateral design, the regime's lack of power or discretion to steer or command the other two elements and the absence of a competitive and innovative private sector cannot harness the destabilising and efficiency-reducing impact of fragmentation. The long-run existence of fragmentation and drift ultimately leads to the imprisonment of policy-makers in a specific stage where they are incarcerated to transform the effects of negative institutional complementarities' without making the structural or systemic changes due to the evolvement of long-run fragmentation and drift (Akan, 2018).

Although it is the desired result that institutions operate in harmony and that the institutional structure existing in one area does not characteristically conflict with the existing institutional structure in another area of the economy, it is not a very realistic analytical implication that the institutional framework should have a consistently positive impact on all actors and all circumstances.

As complementarities are dynamic rather than static mechanisms (Aoki, 2007), the interdependence of institutions on the whole economy may also reveal contradictions between institutions. When one institutional rule contradicts another, the dominance of one institution imposes the conditions for the type of complementarity and supplementation on the specific institutional structure. In the determination of economic discourse, dissatisfaction with certain conditions from the dominant social bloc, political demands from different socio-political groups, and the non-perfect vision of interdependencies and complementarities of agents may cause some hierarchical superiority (Amable, 2003). Therefore, the evaluation and classification of impacts of any institution should be

made according to its "influence on the systemic conduct of an institutional stock" (Akan, 2018; Amable, 2003).

CHAPTER THREE

METHODOLOGY, DATA and EMPIRICAL RESULTS

3.1 Literature Review and Analytical Methodology

To address the effects of macroeconomic constituents on economic development, there are three main gaps in the extant literature concerning macroeconomic systems. The first is a partial investigation of constituent variables (For more detailed results, see Appendix 1). The second is the contradictions of the findings, and the third is the lack of systemic evaluation of the macroeconomic constituents

The ambiguity of the findings of macroeconomic variables on economic growth in the literature. For example, institutions enhance economic growth in emerging countries (Ahmad & Hall, 2017; Arya et al., 2019; Sabir et al., 2019), in high-income countries (Nawaz, 2015), especially in low-income countries compared to middle income (Hayat, 2019). Performance of corporate governance persistently and negatively affects economic growth (Tiwari, 2010); improving the quality of corporate governance results higher economic growth (De Nicolò et al., 2008). Financial development negatively effects growth (Moosa, 2018; Sassi & Goaied, 2013), and positively affects competitiveness in high-income countries (Alomari et al., 2019; Rioja & Valev, 2004), however, it negatively affects growth after certain threshold (Bucci et al., 2018; Cecchetti & Kharroubi, 2012). Trade enhances growth only in developed countries and is detrimental to developing countries (Herzer, 2013; D. H. Kim et al., 2011), with no causal relationship between trade and growth (Ben Jebli et al., 2019).

Lastly, although numerous studies have been conducted to understand the outcomes of economic interactions, to the best of author's knowledge, the majority of the studies have evaluated the context of the economy from an atomistic perspective. Against the context that has captured common focus, this study seeks to analyse countries' economies as a holistic approach by introducing the actors and markets with the interaction channels of institutions to understand the macroeconomic structure with its dynamic relationship among constituents

Previous research has also shown that, institutions are positively associated with growth (Acemoglu et al., 2001; Efendic & Pugh, 2015; Young & Sheehan, 2014) in both the short and long run (Alexiou et al., 2020), and higher institutional quality is the most important factor in terms of determinants of income (Rodrik et al., 2002). The diversity of institutional structure reveals different institutional incentives that effect firms' decisions, which shape economic activity in a given economy. Furthermore, enabling firms to perform better in different areas, may constitute comparative institutional advantage for the countries (Hall & Soskice, 2001). The legal and administrative part of the institutional framework conducted by public actors, and the interactions of public and private stakeholders, affect countries' competitiveness and growth by shaping production, impacting investment decisions, and determining the allocation of contemporary resources and future outcomes. Furthermore, the consistency of the country's macroeconomic environment is critical to the success of businesses and, as a result, plays a key role in the overall competitiveness of a nation (GCI 2007-2017). As government efficiency may contribute to the ability of macroeconomic governance to react to business cycles and reduce debt (Bergman et al., 2016; Heylen et al., 2013), it also helps to indirectly ensure the system's stability. Furthermore,

a competitive environment may increase in productivity and welfare (Joanna, 2014; Teng et al., 2014); thus, domestic competition is included for analysis to measure competitiveness, market efficiency, and productivity. Financial development is an important factor explaining countries' varying economic performance (Cecchetti & Kharroubi, 2012; Masten et al., 2008; Rioja & Valev, 2004), labour markets affects economic efficiency (Radukic et al., 2019) and productivity growth (Buchele & Christiansen, 1992). The market competition enables the most efficient enterprises to prosper by driving market efficiency and corporate productivity (GCI, 2017). Innovation and technology enable countries to increase their productivity (K. Lee & Kim, 2009; Sultanuzzaman et al., 2019) and are an important factor in explaining output growth (Molinari & Torres, 2018)

Although there are numerous approaches to the role of institutions and type of governance, in this study we will use the Systemic Governance approach proposed by Akan to evaluate the macroeconomic constituent's effect on economic growth on holistic manner in the proposed macroeconomic landscape. On the employed analytical approach, macroeconomic governance is considered as the evaluation of the implementation of monetary and fiscal policies for to ensure stability and create a positive atmosphere in the system. Corporate governance represents all of the interactions of firms with the entire macroeconomic system, including relations with their own employees, industrial relations, and inter-firm relations respectively. Government efficiency shows how effectively the government is able to apply macroeconomic governance not only in fiscal policy but also in the governance of the entire economic system. Furthermore, to measure the performance of the country's financial and labour market governance, financial development and labour market efficiency are included in the analysis. Moreover, based on

the existing literature and employed analytical approach led to the hypothesiss as follows;

H_0: Macroeconomic governance and government efficiency are positively effected with economic growth on all country groups

H_1: International economic governance and corporate governance are positively associated with economic growth

H_2: Domestic competition, Labour market efficiency, financial governance, and technology is positively associated with economic growth on efficiency-driven and innovation-driven countries

H_3: Innovation is positively related with economic growth on innovation-driven countries
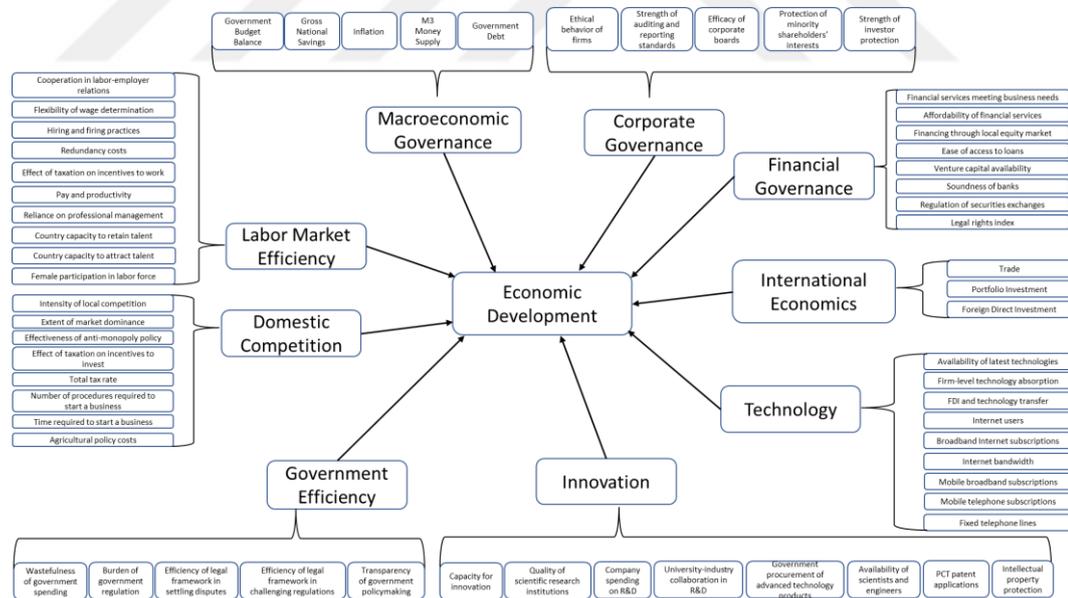
Graph 3.1: Constituents of Economic System

3.2 Data

To meet the intended objective, the study employs data from World Development Indicators and Global Competitiveness Index

from 2007 to 2017 for 74 countries. The focus of selecting the sample countries was made according to the availability of data in a statistically consistent line of conduct with the intention of coverage for the longest period of time. Due to the restrictions caused by the methodological changes of the Global Competitiveness Index(GCI) to get identical data for a longer period of time, data of variables covering the period of 2007-2017 were employed. Notably, the sample countries were chosen based on the availability of data.

Global Competitiveness Report (GCR) was created with the goal of assisting decision-makers in comprehending the complexity and multifaceted nature of the development challenges to design better policies based on public-private collaboration and to restore faith in the possibility of continued economic growth (Schwab et al., 2017). It proposes that the growth rate is mainly determined by the productivity level, which is constituted by the competitiveness of the country, identified as the institutions, policies, and factors. To measure the structures, 114 indicators into 12 interrelated pillars are employed to investigate every aspect of competitiveness of the countries (Table 4.1).

BASIC REQUIREMENTS

1st pillar: Institutions

A. Public institutions

1. Property rights
- Property rights
- Intellectual property protection

2. Ethics and corruption
- Diversion of public funds
- Public trust in politicians
- Irregular payments and bribes

3. Undue influence
- Judicial independence
- Favoritism in decisions of government officials

4. Public-sector performance
- Wastefulness of government spending
- Burden of government regulation
- Efficiency of legal framework in settling disputes
- Efficiency of legal framework in challenging regulations
- Transparency of government policymaking

5. Security
- Business costs of terrorism
- Business costs of crime and violence Organized crime
- Reliability of police services

B. Private institutions

1. Corporate ethics
- Ethical behavior of firms

2. Accountability
- Strength of auditing and reporting standards
- Efficacy of corporate boards
- Protection of minority shareholders' interests
- Strength of investor protection

2nd pillar: Infrastructure

A. Transport infrastructure
- Quality of overall infrastructure
- Quality of roads
- Quality of railroad infrastructure
- Quality of port infrastructure
- Quality of air transport infrastructure
- Available airline seat kilometers

B. Electricity and telephony infrastructure
- Quality of electricity supply
- Mobile telephone subscriptions
- Fixed telephone lines

3rd pillar: Macroeconomic environment
- Government budget balance
- Gross national savings
- Inflation
- Government debt
- Country credit rating

4th pillar: Health and primary education

A. Health
- Business impact of malaria
- Malaria incidence
- Business impact of tuberculosis
- Tuberculosis incidence
- Business impact of HIV/AIDS
- HIV prevalence
- Infant mortality
- Life expectancy

B. Primary education
- Quality of primary education
- Primary education enrollment rate

EFFICIENCY ENHANCERS

5th pillar: Higher education and training

A. Quantity of education
- Secondary education enrollment rate
- Tertiary education enrollment rate

B. Quality of education
- Quality of the educational system
- Quality of math and science education
- Quality of management schools
- Internet access in schools

C. On-the-job training
- Local availability of specialized research and training services
- Extent of staff training

6th pillar: Goods market efficiency

A. Competition

1. Domestic competition
- Intensity of local competition
- Extent of market dominance
- Effectiveness of anti-monopoly policy
- Effect of taxation on incentives to invest
- Total tax rate
- Number of procedures required to start a business
- Time required to start a business
- Agricultural policy costs

2. Foreign competition
- Prevalence of trade barriers
- Trade tariffs
- Prevalence of foreign ownership
- Business impact of rules on FDI
- Burden of customs procedures
- Imports as a percentage of GDP

B. Quality of demand conditions
- Degree of customer orientation
- Buyer sophistication

7th pillar: Labor market efficiency

A. Flexibility
- Cooperation in labor-employer relations
- Flexibility of wage determination
- Hiring and firing practices
- Redundancy costs
- Effect of taxation on incentives to work

B. Efficient use of talent
- Pay and productivity
- Reliance on professional management
- Country capacity to retain talent
- Country capacity to attract talent
- Female participation in labor force

8th pillar: Financial market development

A. Efficiency
- Financial services meeting business needs
- Affordability of financial services
- Financing through local equity market
- Ease of access to loans
- Venture capital availability

B. Trustworthiness and confidence
- Soundness of banks
- Regulation of securities exchanges
- Legal rights index

9th pillar: Technological readiness

A. Technological adoption
- Availability of latest technologies
- Firm-level technology absorption
- FDI and technology transfer

B. ICT use
- Internet users
- Broadband Internet subscriptions
- Internet bandwidth
- Mobile broadband subscriptions
- Mobile telephone subscriptions
- Fixed telephone lines

10th pillar: Market size

A. Domestic market size
- Domestic market size index

B. Foreign market size
- Foreign market size index

INNOVATION AND SOPHISTICATION FACTORS

11th pillar: Business sophistication
- Local supplier quantity
- Local supplier quality
- State of cluster development
- Nature of competitive advantage
- Value chain breadth
- Control of international distribution
- Production process sophistication
- Extent of marketing
- Willingness to delegate authority
- Reliance on professional management

12th pillar: R&D Innovation
- Capacity for innovation
- Quality of scientific research institutions
- Company spending on R&D
- University-industry collaboration in R&D
- Government procurement of advanced technology products
- Availability of scientists and engineers
- PCT patent applications
- Intellectual property protection

Table 4.1: Structure of Global Competition Index

GCR differentiates the economies based on the development process by three: factor-driven, efficiency-driven, and innovation-driven. The factor-driven countries are primarily dependent on their unskilled labour and natural resources; consequently, the competitiveness of their economies is based on the efficiency of their public and private institutional environment to attract investments and distribute the costs and benefits of the development process to achieve sustainable development, the extent and efficiency of their infrastructure to ensure the effective functioning of their economies, and the stability of their macroeconomic environment to promote sustainable development. In the second stage, when the countries become more competitive, the effectiveness of the process of production becomes much more essential. Therefore, in order to maintain efficiency and increase competitiveness, the importance of quality higher education and training, an efficient goods market, well-functioning labour markets, developed financial markets, the capacity to capitalize on the benefits of existing technologies, and a large domestic or international market are. In the final stage of development, nations must employ the most advanced production techniques and innovations to maintain their competitiveness (Schwab et al., 2017).

Selected countries are classified as 23 factor-driven and transition stage to efficiency-driven countries, 37 efficiency-driven and transition to innovation-driven countries, and 14 innovation-driven countries. The list of variables, data sources and countries are given in table 1 and table 2, respectively.

Embodied variables in the study are selected to represent all aspects of economic systems and to comprehend the type of governance, whether systemic or not. The dependent variable lgdppercap is used for proxy variable for economic performance as Gross Domestic Product(GDP) measured as USD, independent

variables macroeconomic governance, corporate governance, international economic governance, government efficiency, financial market development, labour market efficiency, domestic competition, innovation and technological readiness are included (Table 4.2). All the variables are used in index form except GDP which is transformed into natural logarithms. Indexation of M3 money supply made according to the GCR 2007-2017 methodology and weighting of sub-variables of macroeconomic governance and classification of country groups are made compatible with the integrity of methodological direction of GCR.

Variable	Definition	Source
lgdppercap	Gross Domestic Product Per Capita	World Development Indicators (WDI)
cgshp	Corporate Governance	GCI
macrom3	Macroeconomic Environment	Global Competitiveness Index (GCI) and WDI
finmardev	Financial Market Development	GCI
intecon	International Economic Governance	WDI
goveff	Public Sector Performance	GCI
innov	R&D Innovation	GCI
techread	Technological Readiness	GCI
domcomp	Domestic Competition	GCI
labmareff	Labour Market Efficiency	GCI

Table 4.2: Variables, definitions and sources

Note: Annual data between 2007 and 2017 (T=11) for three country groups

Source: World Development Indicators; GCI (2017)

	Factor-Driven	Efficiency-Driven	Innovation-Driven
1	Azerbaijan	Albania	Australia
2	Bangladesh	Argentina	Czech Republic
3	Botswana	Armenia	Denmark
4	Cambodia	Brazil	Hong Kong SAR
5	Cameroon	Bulgaria	Iceland
6	Honduras	Chile	Israel
7	India	China	Japan
8	Kazakhstan	Colombia	Korea, Rep.
9	Kenya	Costa Rica	Norway
10	Kuwait	Croatia	Poland
11	Kyrgyz Republic	Dominican Republic	Singapore
12	Madagascar	Egypt	Sweden
13	Mali	El Salvador	United Kingdom
14	Mongolia	Georgia	United States
15	Mozambique	Guatemala	
16	Pakistan	Hungary	
17	Philippines	Indonesia	
18	Senegal	Jamaica	
19	Tanzania	Jordan	
20	Uganda	Malaysia	
21	Ukraine	Mauritius	
22	Viet Nam	Mexico	
23	Zambia	Montenegro	
24		Morocco	
25		Namibia	
26		Oman	
27		Peru	
28		Poland	
29		Romania	
30		Russian Federation	
31		Saudi Arabia	
32		Serbia	
33		South Africa	

34	Sri Lanka
35	Thailand
36	Turkey
37	Uruguay

Table 4.3: Country Groups

3.3 Methodology

To get deeper knowledge of wide cross-sectional and time-series observations in dynamic relationships (Baltagi, 2005) the panel data approach is used. It is more than probable to have heterogeneity in panel data due to the fact that the study's dataset deals with a reasonably large number of cross-sectional units (74 countries within three groups that no less than 14 countries) that have group-specific unique characteristics (Wooldridge, 2012). Therefore, the fixed-effect ordinary least squares approach and Dumitrescu-Hurlin (Dumitrescu & Hurlin, 2012) panel causality test were employed to investigate how the construction of relationships on the macroeconomic landscape affects economic development.

Fixed-effect model is an ordinary least square (OLS) based model that focuses on a certain set of firms, countries, states etc., which are likely to exhibit cross-sectional correlation (Baltagi, 2005), and allows intercept to vary across individuals to take into account for the unique properties of each individual, or cross-sectional unit(Gujarati & Porter, 2013). Although, in general, the choice between the various OLS approaches needs statistical deduction, when the unit-specific intercept is associated with one or more regressors, or there is a strong belief that the sample is not a random drawing from a bigger sample, the fixed-effect model can be used without statistical inference (Gujarati & Porter, 2013). Consequently, to achieve the intended objective by taking into

account of varying characteristics of different countries Fixed Effect model is employed.

There are three models developed to represent country groups mentioned in Table 2. that cover the years from 2007 to 2017. Algebraic forms models can be seen as follow:

$$lgdppercap_{it} = \alpha_0 + \alpha_1 macrom3_{it} + \alpha_2 cgshp_{it} + \alpha_3 finmardev_{it} + \alpha_4 intecon_{it} + \alpha_5 goveff_{it} + \alpha_6 innov_{it} + \alpha_7 techread_{it} + \alpha_8 domcomp_{it} + \alpha_9 labmareff_{it} + \varepsilon_{1,it}$$

$$lgdppercap_{it} = \beta_0 + \beta_1 macrom3_{it} + \beta_2 cgshp_{it} + \beta_3 finmardev_{it} + \beta_4 intecon_{it} + \beta_5 goveff_{it} + \beta_6 innov_{it} + \beta_7 techread_{it} + \beta_8 domcomp_{it} + \beta_9 labmareff_{it} + \varepsilon_{2,it}$$

$$lgdppercap_{it} = \gamma_0 + \gamma_1 macrom3_{it} + \gamma_2 cgshp_{it} + \gamma_3 finmardev_{it} + \gamma_4 intecon_{it} + \gamma_5 goveff_{it} + \gamma_6 innov_{it} + \gamma_7 techread_{it} + \gamma_8 domcomp_{it} + \gamma_9 labmareff_{it} + \varepsilon_{3,it}$$

Where i: 1,2,…. N; t= 1,2,…. T and $\varepsilon_{1,it}$, $\varepsilon_{2,it}$, and $\varepsilon_{3,it}$ are error terms, whereas the variables represented by the acronyms are defined in Table 1.

The Dumitrescu-Hurlin (Dumitrescu & Hurlin, 2012)panel causality test is a modified version of the Granger non-causality test for constant-coefficient for non-homogeneous panel data models, which requires the stationarity of variables and balanced panel, and also performs very well even in small samples of N or T. Algebraic representation of the test can be seen from the following equation:

$$y_{it} = \alpha_1 + \sum_{k=1}^{L} y_i^k \, y_{it\text{-}k} + \sum_{k=1}^{L} \beta_i^k \, x_{it\text{-}k} + \varepsilon_{1,it} \,, \qquad i= 1,2,….,N: t= 1,2, …., T$$

Where x and y are two stationary variables observed for N individuals in T periods, where α_1 represents individual effects, y_i^k and β_i^k denotes for the lag and slope parameters, respectively. While

the model assumes constant individual effects, varying slope coefficients and lag parameters across units, the null and alternative hypotheses are expressed as follows:

$$H_0: \beta_{i1} = \cdots = \beta_{iK} = 0 \quad \forall_i = 1, \ldots, N$$

$$H_1 = \beta_{i1} = \cdots = \beta_{iK} = 0 \quad \forall_i = 1, \ldots, N$$

$$\beta_{i1} \neq 0 \ or \ \beta_{iK} \neq 0 \quad \forall_i = N_1 1, \ldots, N$$

The Null hypothesis expresses no granger causality linkage for all units, whereas the alternative hypothesis asserts at least one causality between cross-section units.

To evaluate the results of the Dumitrescu-Hurlin panel causality test hypotheses, employed test statistics are expressed as follows:

$$W_{N,T}^{HNC} = {}^{1}\!/_{N} \sum_{i=1}^{N} W_{i,T}$$

Where, $W_{i,T}$ represents the test statistics of each cross-sectional unit. However, as in our study, when N>T the Z_N^{HNC} statistics should be employed as test statistics by using $W_{N,T}^{HNC}$ result, which can be seen below:

$$Z_N^{HNC} = \frac{\sqrt{N}(W_{N,T}^{HNC} - N^{-1} \sum_{i=1}^{N} E(W_{i,T})}{\sqrt{N^{-1} \sum_{i=1}^{N} Var(W_{i,T})}} \quad N \to \infty, N(0,1)$$

Where $E(W_{i,T})$ and $Var(W_{i,T})$ denotes the mean and the variance of $W_{i,T}$ respectively.

In this context, steps will consist of four, (i) calculation of variance inflation factor in order to eliminate multi-collinearity problem among explanatory variables, (ii) application of diagnostics to determine appropriate model, (iii) model estimation, (iv) application of panel causality test.

3.4 Empirical results

3.4.1 Variance Inflation Factors

First, the multi-collinearity test was applied by using the Variance Inflation Factor (VIF), which would cause, inter alia, unreliable and unstable estimates of cointegration coefficients. According to (Gujarati & Porter, 2015), if the VIF statistic exceeds 10, then there should be suspicious about the multi-collinearity problem among explanatory variables. However, it is found that the VIF for variables of all models are all below the mentioned threshold considering the maximum VIF is 9.03.

Variance Inflation Factor	Factor-Driven	Efficiency-Driven	Innovation-Driven
cgshp	3,63	5,01	6,24
goveff	2,9	4,94	9,03
innov	1,81	1,76	1,73
finmardev	1,8	2,69	3,43
techread	1,72	1,54	2,94
domcomp	1,67	3,19	4,1
macrom3	1,45	1,23	1,83
labmareff	1,22	1,39	4,24
intecon	1,17	1,06	1,71
Mean VIF	1,93	2,54	3,92

Table 4.4: VIF Results

3.4.2 Diagnostic Tests

In the presence of cross-sectional dependency or heteroskedasticity, estimates might be significant, but they are biased and ineffective (Baltagi, 2005). In the case of heteroskedasticity, the standard error for coefficients and representing t-values are most likely to provide miss-leading outcomes, and for the cross-sectional dependency, the outcomes will be biased due to the contemporaneous correlation. Therefore, to

determine the best suited fixed effect estimation method, this study checked heteroskedasticity by employing a modified wald test, and cross-sectional dependence (Pesaran, 2004) test has adopted to avoid inconsistent estimates. Another factor for the selection of Pesaran CD test is the ability to perform on small T and large N samples (Baltagi, 2005), which correspond to the characteristics of our data. Test results can be seen in the table below;

	Stage 1-2	Stage 3-4	Stage 5
Wald Test For Heteroskedasticity	1191.53***	1050.41***	77.13***
Cross Sectional Independence			
(Pesaran abs)	6.664***	15.629***	3.324***

Table 4.5: Heteroskedasticity and Cross-Sectional Independence Results

*, **, and *** denote statistical significance at 10, 5, and 1% levels, respectively.

3.4.3   Driscoll-Kraay Model Results

The aforementioned diagnostic tests show that even though FE estimations exhibit no multi-collinearity, there is the presence of cross-sectional dependency and heteroscedasticity. The presence of even modest spatial dependence can large bias to OLS standard errors when N is large. Therefore to deal with the problem of the presence of cross-sectional dependency and heteroscedasticity (Driscoll & Kraay, 1998) fixed effect estimator has been employed since the method is "robust to heteroskedasticity and the very general forms of cross-sectional and temporal dependence". The results can be seen in the Table 4.4. Although the R^2 values are seems moderately low (0.3435, 0.42. and 0.2999 respectively) the diversity of the data in cross-sectional analysis is moderately high it is expected to have a relatively low R^2 values to certain extent (Gujarati & Porter, 2013).

Variable	Factor Driven	Efficiency-Driven	Innovation-Driven
macrom3	0.071***	0.063***	0.029**
	(4.83)	(7.15)	(2.66)
chshp	-0.072*	-.101***	-.058*
	(-2.07)	(-8.63)	(-1.89)
finmardev	-0,022	0.058**	0.045**
	(-1.00)	(3.12)	(2.46)
intecon	0,02	0,02	0,015
	(1.41)	(1.57)	(1.42)
goveff	0,027	0.071***	-.036*
	(0.93)	(5.36)	(-1.98)
innov	-0,042	0.063*	0.073***
	(-0.59)	(1.91)	(3.77)
techread	0.106**	0.061***	0,025
	(2.55)	(3.29)	(0.99)
domcomp	0,09	-.0128	0,026
	(1.67)	(-0.51)	(0.63)
labmareff	-0,005	-.102***	-.049**
	(-0.30)	(-6.86)	(-2.63)
_cons	2.586***	3.462***	4.283***
	(16.19)	(20.66)	(24.31)
F Test	95.96	1029.16	609.43
R2	0.3435	0.4270	0.2999
N	23	37	14

Table 4.6: Driscoll-Kraay Model Results

The results of the first model demonstrate that the only factors significant for the development of factor-driven countries are Macroeconomic governance, Corporate governance, and technology, in which corporate governance has a negative influence. The results are compatible with the GCR in terms of the effects of macroeconomic governance to promote competitiveness and economic growth and validate the literature (Ahmad & Hall, 2017;

Nawaz, 2015; Young & Sheehan, 2014) by providing evidence of better growth performance caused by enabling institutional environment. Although the positive effect of technology is unanticipated in terms of literature, the outcome suggests the economic theories by providing evidence that factor-driven countries benefit from the technology (K. Lee & Kim, 2009; Sultanuzzaman et al., 2019). However, the lack of effectiveness of government efficiency and negative effect on corporate governance on growth shows the institutional fragmentation in the governance of macroeconomic constituents and the lack of ability to implement actions. Moreover, it is found that Financial Market governance, international economic governance, innovation, domestic competition and labour market efficiency exert no statistical effect on macroeconomic development in factor-driven countries as anticipated.

Graph 4.1: Regression Results of Factor-Driven Countries

The results of the second model show that Macroeconomic governance, financial market governance, government efficiency,
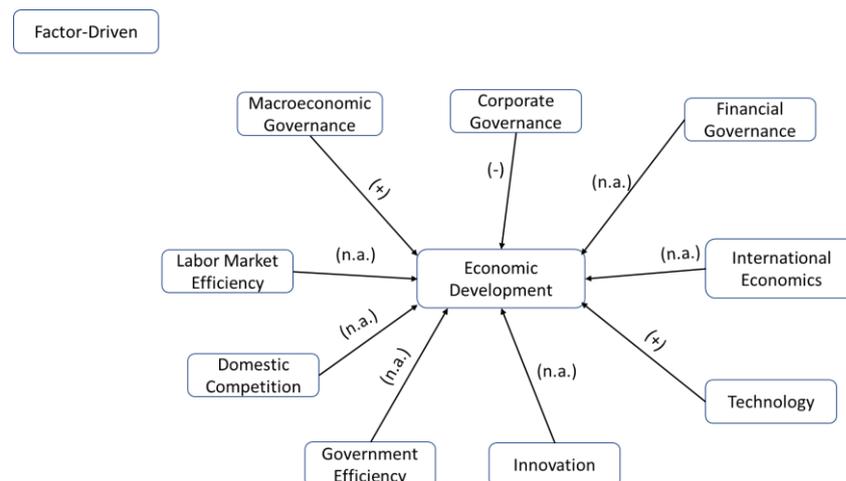
innovation, and technological readiness contribute to economic development, whereas corporate governance, domestic competition and labour market efficiency possess harmful effects. In addition, it

is found that international economic governance and domestic competition are statistically insignificant for efficiency-driven countries. The result also supports (Acikgoz & Mert, 2014; Aghion et al., 2005; Ahmad & Hall, 2017; Cavallaro & Mulino, 2009; Feki & Mnif, 2016; Hayat, 2019; Molinari et al., 2013; Sabir et al., 2019; Stel et al., 2005; Sultanuzzaman et al., 2019b) by providing additional positive impacts of evidence of enabling institutional environment, and positive impacts of financial development, innovation and technology on growth at developing countries. However, negative effect of labour market and statistically insignificant goods market, positive effects from innovation and technology contradicts the propositions of GCR, which in turn shows the fragmentated governance of efficiency-driven countries in terms of constituting systemic governance by providing appropriate market institutions in order to positively converge majority important factors for country characteristics.

Graph 4.2: Regression Results of Efficiency-Driven Countries

The results of the third model show that Macroeconomic

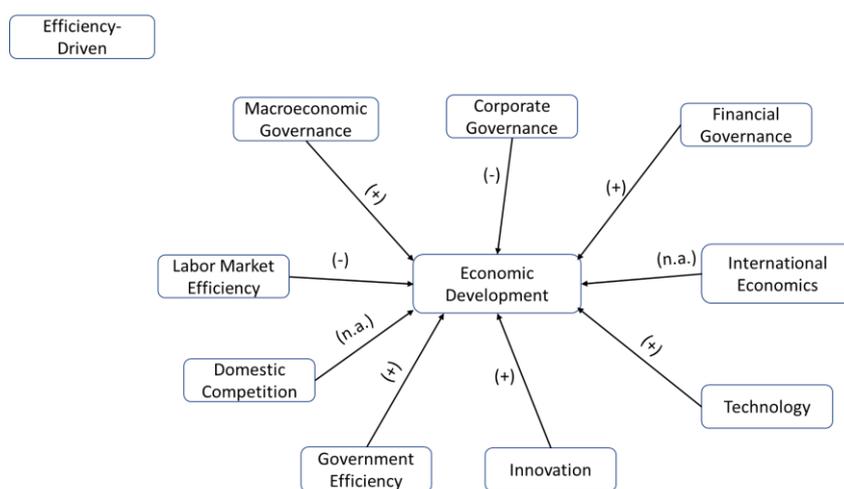governance, Financial Market governance, and innovation enhance growth while Corporate governance, Government efficiency, and labour market efficiency are troublesome. Also, it has been

demonstrated that international economic governance, technology, and domestic competition have no impact on economic development in efficiency-driven countries. The results provide additional confirmation for (Aghion et al., 2005; Alomari et al., 2019; Nawaz, 2015; Pece et al., 2015; Rioja & Valev, 2004; Slesman et al., 2019; Tiwari, 2010; Young & Sheehan, 2014; J. S. Yu et al., 2012) for the amplifying role of the institutional environment, financial market governance, and innovation on growth at developed countries. However, the ineffectiveness of technology contradicts the propositions of GCR especially when innovation has a stimulating effect on growth. However it can be explained by the effects of 2008-2009 crisis(Palley, 2012) which also shows evicence about the general durability of the governance system and fragmentation on the inspected period.

Graph 4.3: Regression Results of Innovation-Driven Countries
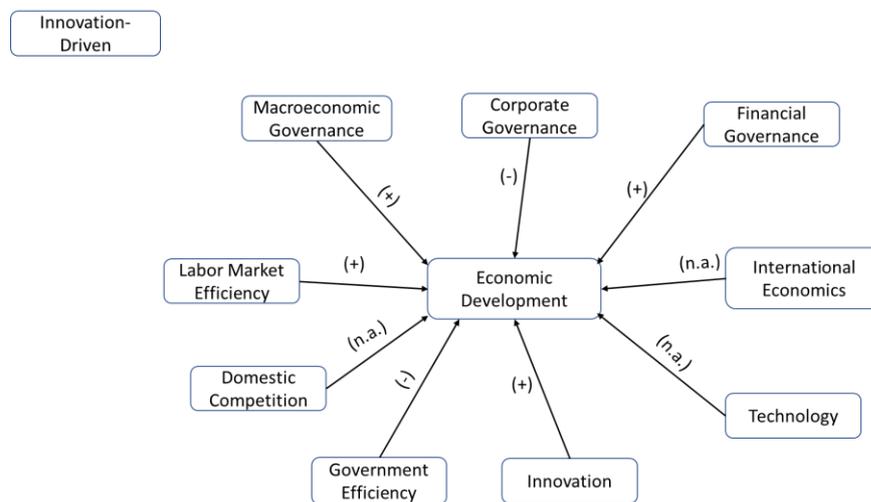
3.4.4   CIPS Unit Root Test Results

Since Dumitrescu-Hurlin causality tests require stationarity of all variables, after implementation FE model, to analyze the causal

relationship between variables of macroeconomic governance, unit root tests have been applied. In compliance with the findings of the cross-sectional dependence tests, second-generation Cross sectionally-augmented Im, Pesaran, and Shin (CIPS, 2003) panel unit root tests were conducted instead of first-generation unit root tests such as IPS and LLC because the latter ones fail to take into account the issue of cross-sectional dependence. The findings are shown in Table 4.7

The test results indicate that all of the variables contain unit root at their levels; however, except goveff for the first model, cgshp and finmardev for the second model, and goveff for the third model, all variables become stationary on their first differences. Therefore, with the selection of appropriate lags, the Dumitrescu-Hurlin causality test is applied to evaluate the complementarity relation between variables.

	Factor-Driven			Efficiency-Driven			Innovation-Driven		
	Level	First Dif.	Second Dif.	Level	First Dif.	Second Dif.	Level	First Dif.	Second Dif.
lgdppercapusd	-1,431	-3,263***	-3,694***	-1,494	-2,446***	-3,702***	-0,849	-2,497**	-2,929***
macrom3	-1,603	-3,192***	-3,931***	-1,732	-2,949***	-3,550***	-2,036	-3,101***	-4,368***
cgshp	-1,701	-2,530***	-3,578***	-1,965	-1,973	-2,175*	-2,324**	-2,943***	-3,354***
finmardev	-1,900	-2,393**	-3,743***	-1,646	-1,919	-3,008***	-1,329	-2,883***	-3,462***
intecon	-2,263**	-3,108***	-3,880***	-2,141**	-3,528***	-4,470***	-3,843***	-5,238***	-5,272***
goveff	-1,555	-2,014	-3,090***	-1,812	-2,248***	-2,762***	-1,680	-2,136	-2,994***
innov	-2,026	-2,706***	-2,807***	-2,147**	-2,275***	-2,687***	-1,820	-2,636**	-4,104***
domcomp	-2,033	-2,706***	-3,386***	-1,962	-2,434***	-2,792***	-1,924	-2,783***	-3,175***
labmareff	-1,780	-2,395**	-3,417***	-1,915	-2,518***	-3,303***	-2,064	-2,795***	-3,560***
techread	-1,897	-3,013***	-3,295***	-1,555	-2,517***	-3,256***	-2,225*	-3,466***	-4,402***

*, **, and *** denote statistical significance at 10, 5, and 1% levels, respectively.

Table 4.7: CIPS Unit Root Test Results

3.4.5 Dumitrescu-Hurlin Causality Test Results

The results of the Dumitrescu-Durlin panel causality are filtered based on the significance, and the results are represented below into three categories that are divided according to the country groups.

Factor-Driven	W-Stat.	Zbar-Stat.	Prob.
macrom3 > domcomp	3,35	2,65	0,01
cg > lgdppercap	2,69	1,70	0,09
cg > finmardev	2,91	2,02	0,04
cg > domcomp	3,21	2,44	0,01
finmardev > techread	2,95	2,07	0,04
intecon > techread	3,51	2,88	0,00
innov > cg	2,67	1,67	0,09
domcomp > cg	2,76	1,80	0,07
labmareff > cg	5,90	6,29	0,00
labmareff > finmardev	4,85	4,79	0,00
labmareff > goveff	3,78	2,15	0,03

Table 4.8: D-H causality results of Factor-Driven Countries

Efficiency-Driven	W-Stat.	Zbar-Stat.	Prob.
lgdppercap > macrom3	2,45	1,72	0,09
lgdppercap > intecon	2,78	2,31	0,02
macrom3 > domcomp	2,62	2,03	0,04
finmardev > intecon	3,65	2,56	0,01
intecon > lgdppercap	0,51	- 1,79	0,07
intecon > labmareff	2,47	1,75	0,08
goveff > lgdppercap	2,72	2,22	0,03
goveff > labmareff	2,79	2,35	0,02
techread > domcomp	2,77	2,30	0,02
domcomp > cg	3,52	2,40	0,02
domcomp > intecon	0,50	- 1,81	0,07

Table 4.9: D-H causality results of Efficiency-Driven Countries

Innovation-Driven	W-Stat.	Zbar-Stat.	Prob.
lgdppercap > macrom3	11,93	11,64	0,00
macrom3 > techread	5,31	4,25	0,00
cg > lgdppercap	4,13	2,93	0,00
cg > macrom3	4,52	3,37	0,00
cg > finmardev	7,48	6,67	0,00
cg > goveff	4,61	2,33	0,02
cg > domcomp	4,88	3,77	0,00
cg > labmareff	3,48	2,21	0,03
finmardev > techread	3,64	2,38	0,02
finmardev > domcomp	3,01	1,69	0,09
techread > macrom3	3,57	2,31	0,02
techread > cg	3,00	2,14	0,03
techread > intecon	3,09	2,26	0,02
techread > domcomp	3,33	2,04	0,04

Table 4.10: D-H causality results of Innovation-Driven Countries

Results of the Dumitrescu Dumitrescu-Hurlin tests shows a unidirectional causality from macroeconomic governance to domestic competition, corporate governance to gdp per capita and financial market governance, financial market governance to technology, innovation to corporate governance, labor market efficiency to corporate governance, financial market governance and government efficiency, and bidirectional causality between corporate governance and domestic competition in factor driven countries.

For the efficiency-driven countries, there is a unidirectional relationship from gdp per capita to macroeconomic governance, macroeconomic governance to domestic competition, financial market governance to international economic governance, international economic governance to labor market efficiency, government efficiency to gdp per capita and labor market efficiency, technology to domestic competition, domestic competition to corporate governance and international economic governance.

Furthermore, the results also reveals a bidirectional causality between gdp per capita and international economic governance.

Lastly, for efficiency-driven countries, there is a unidirectional causality from gdp per capita to macroeconomic governance, corporate governance to gdp per capita, macroeconomic governance, financial market governance, government efficiency, domestic competition and labor market efficiency, financial market governance to technology and domestic competition, technology to corporate governance, international economic governance and domestic competition. Moreover, results also shows a bidirectional causal relationship between macroeconomic governance and technology on efficiency-driven countries

The results support the extant literature by validating the unidirectional causal relationship between international economic governance to economic growth(Ben Jebli et al., 2019; Borensztein et al., 1998; Kónya, 2006; Omri et al., 2014, 2015) for efficiency driven countries, and the lack of the relationship between trade and growth (Ben Jebli et al., 2019) on factor-driven and innovation-driven countries.

Results also reveals the existence of complementarity relationship between economic constituents. Although there is no indication can be seen about the impact of the relations on the causality test, it can be argued about the existence of systemic governance of the negative complementarities based on the two reason. First one is the diminishing economic performance of the countries(Table 4.4) and the second is the relations from constituents of economic system to economic growth. Furthermore, A fragmented governance is anticipated as the country's economies are dragged into the instability and global economic stagnation caused by the economic crisis on the 2008-2009 years (Palley, 2012). Therefore, results shows a systemic governance of the country groups based on the negative complementarity caused by the economic crisis which in turn bring out countries to perform low economic performance than their inherent characteristics.
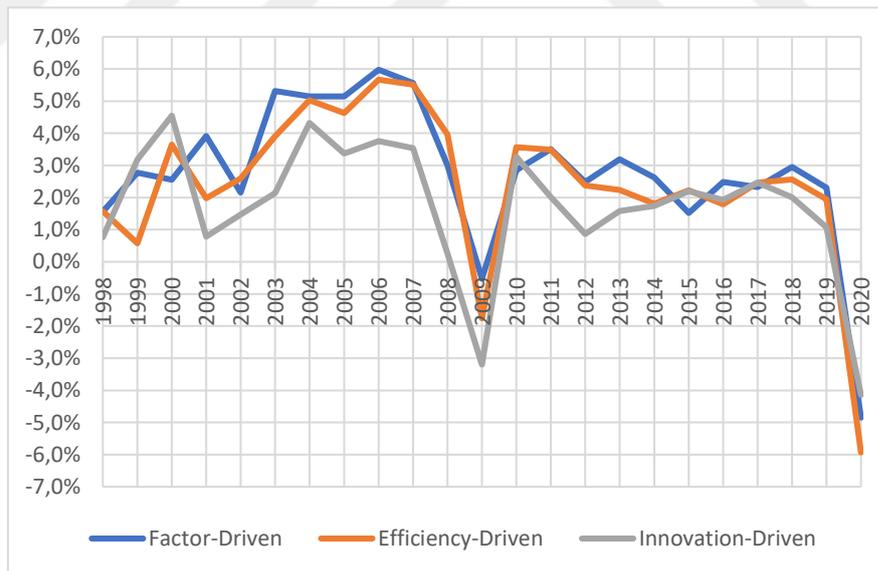
Graph 4.4: Average Growth Rate of The Country Groups

Source: World Bank

CONCLUSION

Given that governance of institutional construct plays a crucial role in economic development, especially, understanding the inter-relations of macroeconomic factors and influence in terms of economic development in a comprehensive manner for different country groups is vital for the outcomes. Foremost, the systematic understanding of the links between macroeconomic factors and development is made possible by introducing all of the significant macroeconomic elements into economic systems. It is also possible to formulate system-wide policies in a systematic way, which demonstrates what to do to stimulate the economy in the first place and how best to prioritize the various policy options that are available. Consequently, this approach enables the formulation of variable-specific policy options. Finally, the systematization and structuring of theoretical and empirical analysis inferences that are underpinned by institutional complementarities as the analytical tools provide a roadmap to evaluate the effects of the variables in a comprehensive manner.

The main findings shed more light on the importance of governance of economic structure by employing an institutional approach to determine the factors that drive and shatter macroeconomic development for different country groups. In terms of regression results, macroeconomic governance enhances economic development for all country groups. On the other hand, corporate governance is detrimental to the growth of all country groups. Financial market governance and innovation are found to be a non-effective factor for factor-driven countries, whereas they enhance economic development for the rest of the country groups. Government efficiency stimulates growth in efficiency-driven countries, whereas the effect turns in an adverse direction in innovation-driven countries. Innovation is an important factor that

promotes growth in factor-driven countries, and technology is found to be a positive and significant factor for development except in innovation-driven countries. Furthermore, labour market governance exerts negative effects on economic development in efficiency-driven and innovation-driven countries. Therefore, negative influence caused by the interactions of the firms with the system on all country groups, lack of ability of the governments to construct appropriate policies for factor-driven and innovation-driven countries, inefficient labour markets for efficiency-driven and innovation-driven countries mainly identified as the reasons of fragmentation of governance

The Dumitrescu-Hurlin test results shows unidirectional causality from GDP per capita to macroeconomic governance on efficiency-driven and innovation driven countries, macroeconomic governance to domestic competition on factor-driven and efficiency driven countries, corporate governance to GDP per capita on factor-driven and innovation driven countries, corporate governance to macroeconomic governance on innovation-driven countries, corporate governance to financial market governance on factor-driven and innovation-driven countries, corporate governance to government efficiency, government efficiency to GDP per capita and labor market efficiency on efficiency-driven countries, domestic competition and labor market efficiency on efficiency-driven countries, financial market governance to international economic governance on efficiency-driven countries, financial market governance to domestic competition on innovation-driven countries, financial market governance to technology on factor-driven and innovation driven countries, international economic governance to labor market efficiency on efficiency-driven countries, technology to domestic competition on efficiency-driven and innovation-driven countries, technology to corporate governance and international

economic governance on innovation-driven countries, innovation to corporate governance on factor driven countries, labor market efficiency to corporate governance on factor driven countries, domestic competition to corporate governance and international economic governance on efficiency-driven countries, labor market efficiency to financial market governance, labor market efficiency to government efficiency on factor driven countries, and bidirectional causality between corporate governance and domestic competition on factor driven countries. Furthermore, there is a bidirectional causality between GDP per capita and international economic governance on efficiency-driven countries and macroeconomic governance and technology on innovation-driven countries.

Results of the causality test demonstrates systemic governance at the investigated countries on the analyzed period. Furthermore, anticipated type of systemic governance can be interpreted as under the dominance of negative institutional complementarities since the growth rates of the countries has diminished especially after the 2008 crisis. Therefore, it is suggested for the economic policymakers to prioritize the actions that relevant to their country groups with the focus of creating a positive institutional environment to optimize the development process. For the limitations of the study, complementarity relations needs to be addressed with more in-depth analysis for longer periods of time to get better understanding about characteristics of the countries to stimulate economic growth.

BIBLIOGRAPHY

Acemoglu, D., Johnson, S., & Robinson, J. A. : 2001a	The Colonial Origins of Comparative Development : An Empirical Investigation. American Economic Association, 91(5), 1369–1401.
Acemoglu, D., Johnson, S., Robinson, J., Thaicharoen, Y. :2003	Institutional causes, macroeconomic symptoms: Volatility, crises and growth. Journal of Monetary Economics, 50(1), 49–123. https://doi.org/10.1016/S0304-3932(02)00208-8
Acemoglu, D.,Robinson,J. : 2012	Why Nations Fail The Origins of Power, Prosperity, and Powverty. In Crown Publishers.
Acikgoz, S., Mert, M. : 2014a	Sources of Growth Revisited : The Importance of the Nature of Technological Progress. Journal of Applied Economics, 17(1), 31–62. https://doi.org/10.1016/S1514-0326(14)60002-7
Addink, H. :2019	Good Governance Concept and Context by Henk Addink. 353.
Agbloyor, E. K., Abor, J. Y., Adjasi, C. K. D., Yawson, A. :2014	Private capital flows and economic growth in Africa: The role of domestic financial markets. Journal of International Financial Markets, Institutions and Money, 30(1), 137–152. https://doi.org/10.1016/j.intfin.2014.02.003
Aghion, P., Howitt, P., Mayer-Foulkes, D. :2005	The effect of financial development on convergence: Theory and evidence. The Quarterly Journal of Economics, 120(1), 173–222. https://doi.org/10.1162/0033553053327515
Ahmad, M., Hall, S. G. :2017	Economic growth and convergence: Do institutional proximity and spillovers matter? Journal of Policy Modeling, 39(6), 1065–1085. https://doi.org/10.1016/j.jpolmod.2017.07.001
Aizenman, J., Jinjarak, Y., Park, D. :2013	Capital Flows and Economic Growth in the Era of Financial Integration and Crisis, 1990-2010. Open Economies Review, 24(3), 371–396. https://doi.org/10.1007/s11079-012-9247-3
Akan, T. :2016	Institutional system analysis in political economy: Neoliberalism, social democracy and Islam. In Institutional System Analysis in Political Economy: Neoliberalism, Social Democracy and Islam (pp. 1–276). https://doi.org/10.4324/9781315588865
Akan, T. :2018	The Complementary Roots of Growth and Development - Comparative Analysis of the United States, South Korea, and Turkey. In palgrave. https://doi.org/10.1080/00094056.1973.10728133
Albulescu, C. T. :2015	Do Foreign Direct and Portfolio Investments Affect Long-term Economic Growth in Central and Eastern Europe? Procedia Economics and Finance, 23(October 2014), 507–512. https://doi.org/10.1016/s2212-5671(15)00539-0
Alexiou, C., Vogiazas, S., Solovev, N. :2020	Economic growth and quality of institutions in 27 postsocialist economies. Journal of Economic Studies, 47(4), 769–787. https://doi.org/10.1108/JES-02-2019-0069

Alomari, M. W., Marashdeh, Z., Bashayreh, A. G. : 2019	Contribution of financial market development in competitiveness growth. Cogent Economics and Finance, 7(1). https://doi.org/10.1080/23322039.2019.1622483
Amable, B. :2003	The Diversity of Modern Capitalism.
Aoki, M. :2007	Endogenizing institutions and institutional changes. Journal of Institutional Economics, 3(1), 1–31. https://doi.org/10.1017/s1744137406000531
Arya, V., Banerjee, R., Cavoli, T. :2019	Capital flows to Asia and Latin America: Does institutional quality matter? World Economy, 42(7), 2039–2069. https://doi.org/10.1111/twec.12783
Avila-Lopez, L. A., Lyu, C., Lopez-Leyva, S. :2019	Innovation and growth: Evidence from Latin American countries. Journal of Applied Economics, 22(1), 287–303. https://doi.org/10.1080/02102412.2019.1610624
Baltagi, B. H. :2005	Econometric Analysis of Panel Data.
Bardi, W., Hfaiedh, M. A. :2021	International trade and economic growth: evidence from a panel ARDL-PMG approach. International Economics and Economic Policy, 18(4), 847–868. https://doi.org/10.1007/s10368-021-00507-4
Ben Jebli, M., Ben Youssef, S., Apergis, N. :2019	The dynamic linkage between renewable energy, tourism, CO 2 emissions, economic growth, foreign direct investment, and trade. Latin American Economic Review, 28(2), 1–19. https://doi.org/10.1186/s40503-019-0063-7
Bergman, U. M., Hutchison, M. M., Jensen, S. E. H. :2016	Promoting sustainable public finances in the European Union: The role of fiscal rules and government efficiency. European Journal of Political Economy, 44(July 2015), 1–19. https://doi.org/10.1016/j.ejpoleco.2016.04.005
Bevir, M. :2010	Democratic Governance. In Princeton University Press.
Borensztein, E, De Gregorio, J., & Lee, J.-W. :1998	How does foreign direct investment affect economic growth? Journal of International Economics, 45(2), 115–135.
Bucci, A., Marsiglio, S., Prettner, C. :2018	On the (nonmonotonic) relation between economic growth and finance. Macroeconomic Dynamics, 24(1), 1–20. https://doi.org/10.1017/S1365100518000305
Buchele, R., Christiansen, J. :1992	Industrial relations and productivity growth: a comparative perspective. International Contributions to Labour Studies, 2(1), 77–97.
Buchele, R., Christiansen, J. :1999	Labor relations and productivity growth in advanced capitalist economies. Review of Radical Political Economics, 31(1), 87–110. https://doi.org/10.1177/048661349903100105
Candace Jones, Hesterly, W. S., Borgatti, S. P. :1997	A General Theory of Network Governance Exchange Conditions and Social Mechanisms. http://dx.doi.org/10.1016/j.jaci.2012.05.050

Cavallaro, E., Mulino, M. :2009	Technological catching up, competitiveness and growth. Journal of International Trade and Economic Development, 18(4), 505–525. https://doi.org/10.1080/09638190903217370
Cecchetti, S. G., Kharroubi, E. :2012	Reassessing the impact of finance on growth. BIS Working Paper, July, 1–21.
Choong, C.-K., Yusop, Z., Law, S. H. :2010	Private capital flows to developing countries: The role of the domestic financial sector. Journal of the Asia Pacific Economy, 15(4), 509–529. https://doi.org/10.1080/13547860.2010.516173
Choong, C. K. :2012	Does domestic financial development enhance the linkages between foreign direct investment and economic growth? Empirical Economics, 42(3), 819–834. https://doi.org/10.1007/s00181-011-0455-2
Choong, C. K., Baharumshah, A. Z., Yusop, Z., Habibullah, M. S. :2010	Private capital flows, stock market and economic growth in developed and developing countries: A comparative analysis. Japan and the World Economy, 22(2), 107–117. https://doi.org/10.1016/j.japwor.2009.07.001
Crouch, C. :2006	Models of capitalism. Key Debates in New Political Economy, December 2012, 11–31. https://doi.org/10.4324/9780203965450
Cypher, J. M. :2008	The process of economic development, Fourth edition. In The Process of Economic Development, Fourth Edition. https://doi.org/10.4324/9780203080580
De Nicolò, G., Laeven, L., Ueda, K. :2008	Corporate governance quality: Trends and real effects. Journal of Financial Intermediation, 17(2), 198–228. https://doi.org/10.1016/j.jfi.2007.10.002
Deeg, R. :2007	Complementarity and institutional change in capitalist systems. Journal of European Public Policy, 14(4), 611–630. https://doi.org/10.1080/13501760701314433
Domar, E. D. :1946	Capital Expansion, Rate of Growth, and Employment. Econometrica, 14(2), 137. https://doi.org/10.2307/1905364
Driscoll, J. C.,Kraay, A. C. :1998	Consistent covariance matrix estimation with spatially dependent panel data. Review of Economics and Statistics, 80(4), 549–559. https://doi.org/10.1162/003465398557825
Dumitrescu, E. I., Hurlin, C. :2012	Testing for Granger non-causality in heterogeneous panels. Economic Modelling, 29(4), 1450–1460. https://doi.org/10.1016/j.econmod.2012.02.014
Easterly, W., Ritzen, J., Woolcock, M. :2006	Social Cohesion, Institutions, and Growth 1 William Easterly 2. Economics & Politics, 18(2). www.cgdev.org
Efendic, A., Pugh, G. :2015	Institutional effects on economic performance in post-socialist transition: A dynamic panel analysis. Acta Oeconomica, 65(4), 503–523. https://doi.org/10.1556/032.65.2015.4.1

Eggoh, J., Bangake, C., Semedo, G. :2019	Do remittances spur economic growth? Evidence from developing countries. Journal of International Trade and Economic Development, 28(4), 391–418. https://doi.org/10.1080/09638199.2019.1568522
Falk, M. :2007	R & D spending in the high-tech sector and economic growth. Research in Economics, 61, 140–147. https://doi.org/10.1016/j.rie.2007.05.002
Feki, C., Mnif, S. :2016a	Entrepreneurship, Technological Innovation, and Economic Growth: Empirical Analysis of Panel Data. Journal of the Knowledge Economy, 7(4), 984–999. https://doi.org/10.1007/s13132-016-0413-5
Ferreira, M. A., Laux, P. A. :2009	Portfolio flows, volatility and growth. Journal of International Money and Finance, 28(2), 271–292. https://doi.org/10.1016/j.jimonfin.2008.08.010
Fukuyama, F. :2013	What is governance? Governance, 26(3), 347–368. https://doi.org/10.1111/gove.12035
Gries, T., Redlin, M. :2020	Trade and economic development: global causality and development- and openness-related heterogeneity. International Economics and Economic Policy, 17(4), 923–944. https://doi.org/10.1007/s10368-020-00467-1
Gujarati, D. N., Porter, D. C. :2013	Basic Econometrics. In Introductory Econometrics: A Practical Approach.
Gujarati, D. N., Porter, D. C. :2015	Essentials of Econometrics (Vol. 37, Issue March).
Hall, P. A., Gingerich, D. W. :2009	Varieties of capitalism and institutional complementarities in the political economy: An empirical analysis. In British Journal of Political Science (Vol. 39, Issue 3). https://doi.org/10.1017/S0007123409000672
Hall, P. A., Soskice, D. :2001	Varieties of Capitalism: The Institutional Foundations of Comparative Advantage. https://doi.org/10.5465/amr.2003.10196861
Harrod, R. F. :1949	Towards a Dynamic Economics: Some Recent Developments of Economic Theory and their Application to Policy. https://doi.org/10.2307/3019077
Hauner, D., & Kyobe, A. :2008	Determinants of government efficiency. IMF Working Paper, WP/08/228, 1–25.
Hayat, A. :2019	Foreign direct investments, institutional quality, and economic growth. Journal of International Trade and Economic Development, 28(5), 561–579. https://doi.org/10.1080/09638199.2018.1564064
Herzer, D. :(2013	Cross-Country Heterogeneity and the Trade-Income Relationship. World Development, 44(Subsection c), 194–211. https://doi.org/10.1016/j.worlddev.2012.09.014
Heylen, F., Hoebeeck, A., Buyse, T. :2013	Government efficiency, institutions, and the effects of fiscal consolidation on public debt. European Journal of Political Economy, 31, 40–59. https://doi.org/10.1016/j.ejpoleco.2013.03.001

Hirschman, E. C. :1984	Experience seeking: A subjectivist perspective of consumption. Journal of Business Research, 12(1), 115–136. https://doi.org/10.1016/0148-2963(84)90042-0
Jespersen, J. :2009	Macroeconomic methodology: A post-Keynesian perspective. Macroeconomic Methodology: A Post-Keynesian Perspective, 1–256. https://doi.org/10.4337/9781849802123
Jessop, B. :1998	The rise of governance and the risks of failure: The case of economic development. International Social Science Journal, 50(155), 29–45. https://doi.org/10.1111/1468-2451.00107
Joanna, W. D. :2014	The impact of domestic and foreign competition on sectoral growth: A cross-country analysis. Bulletin of Economic Research, 66(S1), S110–S131. https://doi.org/10.1111/boer.12022
Kalai, M., Zghidi, N. :2017	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. https://doi.org/10.1007/s13132-017-0460-6
Kaufmann, D., Kraay, A., Mastruzzi, M. :2011	The worldwide governance indicators: Methodology and analytical issues. Hague Journal on the Rule of Law, 3(2), 220–246. https://doi.org/10.1017/S1876404511200046
Kawa, P., Wajda-Lichy, M., Fijorek, K., Denkowska, S. :2020	Do Finance and Trade Foster Economic Growth in the New EU Member States: Granger Panel Bootstrap Causality Approach. Eastern European Economics, 58(6), 458–477. https://doi.org/10.1080/00128775.2020.1762497
Kim, D.-H. :2011	Trade, growth and income. Journal of International Trade and Economic Development, 20(5), 677–709. https://doi.org/10.1080/09638199.2011.538966
Kim, D.-H., Lin, S.-C., Suen, Y. B. :2012	The simultaneous evolution of economic growth, financial development, and trade openness. Journal of International Trade and Economic Development, 21(4), 513–537. https://doi.org/10.1080/09638199.2010.497933
Kim, D. H., Lin, S. C., Suen, Y. B. :2011	Nonlinearity between Trade Openness and Economic Development. Review of Development Economics, 15(2), 279–292. https://doi.org/10.1111/j.1467-9361.2011.00608.x
Knack, S., & Keefer, P. :1995	Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures. Economics & Politics, 7(3), 207–227. https://doi.org/10.1111/j.1468-0343.1995.tb00111.x
Kónya, L. :2006	Exports and growth: Granger causality analysis on OECD countries with a panel data approach. Economic Modelling, 23(6), 978–992. https://doi.org/10.1016/j.econmod.2006.04.008

Kooiman, J. :2003	Governing as Governance. SAGE Publications Ltd. https://doi.org/https://dx.doi.org/10.4135/9781446215012
Lee, C. C., Chang, C. P. :2009	FDI, financial development, and economic growth: international evidence. Journal of Applied Economics, 12(2), 249–271. https://doi.org/10.1016/S1514-0326(09)60015-5
Lee, J. W. :2013	The contribution of foreign direct investment to clean energy use, carbon emissions and economic growth. Energy Policy, 55, 483–489. https://doi.org/10.1016/j.enpol.2012.12.039
Lee, K., & Kim, B. Y. :2009	Both Institutions and Policies Matter but Differently for Different Income Groups of Countries: Determinants of Long-Run Economic Growth Revisited. World Development, 37(3), 533–549. https://doi.org/10.1016/j.worlddev.2008.07.004
Lucas, R. E. :1988	On the mechanics of economic development. Journal of Monetary Economics, 22(1), 3–42. https://doi.org/10.1016/0304-3932(88)90168-7
Madacumura, G. M., Morçöl, G. :2014	Challenges to Democratic Governance in Developing Countries. In Challenges to Democratic Governance in Developing Countries. https://doi.org/10.1007/978-3-319-03143-9
Maradana, R. P., Pradhan, R. P., Dash, S., Gaurav, K., Jayakumar, M., Chatterjee, D. :2017	Does innovation promote economic growth ? Evidence from European countries. Journal of Innovation and Entrepreneurship, 6(1), 1–23. https://doi.org/10.1186/s13731-016-0061-9
Mark Bevir. :2013	A Theory of Governance. In University of California Press (Vol. 15, Issue 4).
Masten, A. B., Coricelli, F., Masten, I. :2008	Non-linear growth effects of financial development: Does financial integration matter? Journal of International Money and Finance, 27(2), 295–313. https://doi.org/10.1016/j.jimonfin.2007.12.009
Molinari, B., Rodríguez, J., & Torres, J. L. :2013a	Growth and technological progress in Pacific countries. Japan and the World Economy, 28, 60–71. https://doi.org/10.1016/j.japwor.2013.08.005
Molinari, B., Torres, J. L. :2018	Technological sources of economic growth in Europe and the U.S. Technological and Economic Development of Economy, 24(3), 1178–1199. https://doi.org/10.3846/20294913.2017.1280557
Moosa, I. A. :2018	Does financialization retard growth? Time series and cross-sectional evidence. Applied Economics, 50(31), 3405–3415. https://doi.org/10.1080/00036846.2017.1420899
Nawaz, S. :2015	Growth effects of institutions: A disaggregated analysis. Economic Modelling, 45, 118–126. https://doi.org/10.1016/j.econmod.2014.11.017
Nurkse, R. :1953	Problems of Capital Formation in Underdeveloped Countries. Oxford Univ. Press, Oxford.

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. https://doi.org/10.1016/j.eneco.2015.01.008
Omri, A., Nguyen, D. K., Rault, C. :2014	Causal interactions between CO2 emissions, FDI, and economic growth: Evidence from dynamic simultaneous-equation models. Economic Modelling, 42, 382–389. https://doi.org/10.1016/j.econmod.2014.07.026
Palley, T. :2012	From Financial Crisis To Stagnation: The Destruction of Shared Prosperity and the Role of Economics. Cambridge University Press.
Pece, A. M., Simona, O. E. O., Salisteanu, F. :2015	Innovation and Economic Growth: An Empirical Analysis for CEE Countries. Procedia Economics and Finance, 26(15), 461–467. https://doi.org/10.1016/s2212-5671(15)00874-6
Pesaran, H. :2004	General Diagnostic Tests for Cross Section Dependence in Panels. IZA Discussion Paper. http://www.emeraldinsight.com/loi/afr
Powell, W. W. :1990	Neither Market Nor Hierarchy: Network Forms of Organization. In Research in Organizational Behavior (Vol. 12, pp. 295–336). https://doi.org/10.1590/s1415-65552003000200016
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(October 2017), 130–142. https://doi.org/10.1016/j.techfore.2018.01.024
Pradhan, R. P., Arvin, M. B., Hall, J. H., Nair, M. :2016a	Innovation, financial development and economic growth in Eurozone countries. Applied Economics Letters, 23(16), 1141–1144. https://doi.org/10.1080/13504851.2016.1139668
Pradhan, R. P., Arvin, M. B., Hall, J. H., Nair, M. :2016b	Trade openness, foreign direct investment, and finance-growth nexus in the Eurozone countries. Journal of International Trade and Economic Development, 26(3), 336–360. https://doi.org/10.1080/09638199.2016.1249392
Radukic, S., Mastilo, Z., Kostic, Z., Vladusic, L. :2019	Measuring of the goods and labor markets efficiency: Comparative study of western balkan countries. Montenegrin Journal of Economics, 15(2), 95–109. https://doi.org/10.14254/1800-5845/2019.15-2.8
Ring, P. S., Ven, A. H. Van De. :1992	Structuring Cooperative Relationships Between organizations. Strategic Management Journal, 13, 483–498.
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. https://doi.org/10.1016/j.jdeveco.2003.06.006
Rode, M., Coll, S. :2012	Economic freedom and growth. Which policies matter the most? Constitutional Political Economy, 23(2), 95–133. https://doi.org/10.1007/s10602-011-9116-x

Rodrik, D., Subramanian, A., Trebbi, F. :2002	INSTITUTIONS RULE: THE PRIMACY OF INSTITUTIONS OVER GEOGRAPHY AND INTEGRATION IN ECONOMIC DEVELOPMENT. NBER WORKING PAPER SERIES, 9305(1), 47–81. http://www.nber.org/papers/w9305%0ANATIONAL
Romer, P. M. :1986	Increasing Returns and Long-Run Growth. Journal of Political Economy, 94(5), 1002–1037. https://doi.org/10.1086/261420
Romer, P. M. :1990	Endogenous technological change. Journal of Political Economy, 98(5), S71–S102. https://doi.org/10.3386/w3210
Rosenstein-Rodan, P. N. :1943	Problems of Industrialisation of Eastern and South-Eastern Europe. The Economic Journal.
Rostow, W. W. :1959	The Stages of Economic Growth.
Sabir, S., Latif, R., Qayyum, U., Abass, K. :2019	Financial development, technology and economic development: The role of institutions in developing countries. Annals of Financial Economics, 14(3), 1–25. https://doi.org/10.1142/S201049521950012X
Sahoo, P. K., Tripati Rao, D., Rath, B. N. :2019	Does Financial Integration Reduce Output Volatility? New Evidence from Cross-Country Data. In Economic Papers (Vol. 38, Issue 1, pp. 41–55). https://doi.org/10.1111/1759-3441.12235
Saidi, K., Mbarek, M. Ben, Amamri, M. :2015	Causal Dynamics between Energy Consumption, ICT, FDI, and Economic Growth: Case Study of 13 MENA Countries. Journal of the Knowledge Economy, 9(1), 228–238. https://doi.org/10.1007/s13132-015-0337-5
Sassi, S., Goaied, M. :2013	Financial development, ICT diffusion and economic growth: Lessons from MENA region. Telecommunications Policy, 37(4–5), 252–261. https://doi.org/10.1016/j.telpol.2012.12.004
Slesman, L., Baharumshah, A. Z., Azman-Saini, W. N. W. :2019	Political institutions and finance-growth nexus in emerging markets and developing countries: A tale of one threshold. Quarterly Review of Economics and Finance, 72, 80–100. https://doi.org/10.1016/j.qref.2019.01.017
Slesman, L., Baharumshah, A. Z., Wohar, M. E. :2015	Capital Inflows and Economic Growth: Does the Role of Institutions Matter? International Journal of Finance and Economics, 20(3), 253–275. https://doi.org/10.1002/ijfe.1514
Smith, A. :1776	An Inquiry into the Nature and Causes of the Wealth of Nations.
Solow, R. M. :1956	A Contribution to the Theory of Economic Growth Author (s): Robert M . Solow Source. The Quartely Journal of Economics, 70(1), 65–94. http://www.jstor.org/stable/1884513
Song, C. Q., Chang, C. P., Gong, Q. :2021	Economic growth, corruption, and financial development: Global evidence. Economic Modelling, 94, 822–830. https://doi.org/10.1016/j.econmod.2020.02.022

Sørensen, E., Torfing, J. : 2007	Theories of democratic network governance. Theories of Democratic Network Governance. https://doi.org/10.1057/9780230625006
Stel, A. Van, Carree, M., Thurik, R. :2005	The Effect of Entrepreneurial Activity on National Economic Growth. Small Business Economics, 24, 311–321. https://doi.org/10.1007/s11187-005-1996-6
Stokey, N. L. :1991	Human Capital , Product Quality , and Growth. The Quartely Journal of Economics, 106(2), 587–616.
Sultanuzzaman, M. R., Fan, H., Mohamued, E. A., Hossain, M. I., & Islam, M. A. :2019b	Effects of export and technology on economic growth: Selected emerging Asian economies. Economic Research-Ekonomska Istrazivanja , 32(1), 2515–2531. https://doi.org/10.1080/1331677X.2019.1650656
Teng, J. T., Lou, K. R., Wang, L. :2014	Optimal trade credit and lot size policies in economic production quantity models with learning curve production costs. International Journal of Production Economics, 155, 318–323. https://doi.org/10.1016/j.ijpe.2013.10.012
Tiwari, A. K. :2010	Corporate governance and economic growth. Economics Bulletin, 30(4), 2825–2841.
Torfing, J., Peters, B. G., Pierre, J., Sørensen, E. :2012	Interactive Governance: Advancing the Paradigm. In Interactive Governance: Advancing the Paradigm (pp. 1–288). https://doi.org/10.1093/acprof:oso/9780199596751.001.0001
Wooldridge, J. M. :2012	Introductory Econometrics A Modern Approach. https://doi.org/10.1201/9781315215402-43
Young, A. T., Sheehan, K. M. :2014	Foreign aid, institutional quality, and growth. European Journal of Political Economy, 36, 195–208. https://doi.org/10.1016/j.ejpoleco.2014.08.003
Yu, J.-S., Hassan, M. K.,Sanchez, B. :2012	A re-examination of financial development, stock markets development and economic growth. Applied Economics, 44(27), 3479–3489. https://doi.org/10.1080/00036846.2011.577019
Zachariadis, M. :2004	R&D-induced growth in the OECD? Review of Development Economics, 8(3), 423–439. https://doi.org/10.1111/j.1467-9361.2004.00243.x
Ziolo, M., Fidanoski, F., Simeonovski, K., Filipovski, V., Jovanovska, K. :2017	Sustainable finance role in creating conditions for sustainable economic growth and development. World Sustainability Series, 187–211. https://doi.org/10.1007/978-3-319-45081-0_11

APPENDIX

No	Author	Country & Period	Variables	Method	Results
1	(Alexiou et al., 2020)	27 postsocialist economies (1996-2016)	Worldwide Governance Indicators(WGI) variables, large&small scale privatization, governance and enterprise restructuing, price liberalization, trade and foreign exchange system, competition policy, government expenditure as GDP, gross capital formation as GDP, consumer price index, sum of exports and imports as GDP, school enrolment, aggregate real GDP, log of GDP	Panel cointegration & causality	There is a short and long rung relationship between institutions and economic growth

No	Author	Country & Period	Variables	Method	Results
2	(Hayat, 2019)	104 countries (1996-2015)	GDP growth rate per capita, FDI to GDP, initial GDP per capita, population growth, inflation, domestic investment to GDP, trade to GDP, government spending to GDP, schooling, m2 to GDP, institutional quality, government efficiency, control of corruption, the rule of law, regulatory quality	GMM	institutional quality enhances economic growth in the host country, especially on low income countries compared to middle income. Especially attracting foreign direct investment

No	Author	Country & Period	Variables	Method	Results
3	(Slesman et al., 2015)	80 countries (1975-2005)	real GDP per capita, log of initial income, population growth, investment ratio, schooling, government expenditure, FDI/GDP, total portfolio equity/GDP, portfolio debt/GDP	Threshold regression model	portfolio equity (including foreign direct investment) and debt inflows have positive effects on growth only in countries with high-quality institutions. Countries that fall below the threshold level of institutional quality record either insignificant or negative effects.

No	Author	Country & Period	Variables	Method	Results
4	(Arya et al., 2019)	28 Asia and Latin American countries (1990-2013)	GDP per capita, total factor productivity, capital stock, institutional quality, capital flows	GMM	higher institutional quality leads to higher economic growth on accompanied by emerging countries (Latin America and Asian economies)
5	(Rodrik et al., 2002)	140 countries (1995)	log of GDP per capita, the rule of law, log openness, distance from equator in degrees, log European settler mortality, log constructed openness, fraction of population speaking other European language, fraction of population speaking English	OLS, Two stage OLS	quality of institutions are the most important factor in terms of determinants of income level
6	(Sabir et al., 2019)	38 low & lower income countries (1996-2015)	GDP per capita, financial development, institutions, technology, gross fixed capital formation, trade openness, human capital, GDP deflator, property rights, financial freedom	System GMM	Institutions exert very influencial effects on the growth of developing countries

No	Author	Country & Period	Variables	Method	Results
7	(Nawaz, 2015)	56 developing and developed countries (1981-2010)	government stability, investment profile, control over corruption, law and order, democratic accountability, bureaucracy quality	System GMM	Positive relationship between institutions and economic growth, especially in high income countries
8	(Ahmad & Hall, 2017)	58 developing countries (1984-2007)	real GDP per capita, population growth, exogenous technological change plus depreciation rate, investment share of real per capita GDP, human capital, security of property rights, political institutions	Spatial durbin model	Institutions matter for economic growth in developing countries. Institutional spillovers leads to growth improvement both in-country and neighbor countries with the spillover effect

| 9 | (Young & Sheehan, 2014) | 116 countries (1970-2010) | democratic ranking, economic freedom, number of checks and balances, official development assistance to GDP ratio, index of political rights, index of civil liberties, size of government, legal structure & property rights, access to sound money, freedom to trade internationally, regulations of credit labor and business, oil production as a share of GDP, mean value of positive terms of trade growth rates, mean value of negative terms of trade growth rates, agricultural share of GDP expressed as a percentage, life expectancy at birth, real per capita GDP, linguistic fractionalization, ethnic fractionalization, gross capital formation as a share of GDP, population growth rate, urban population share expressed as a percentage, primary and secondary school enrollment rate | OLS | Economic institutions are positively associated with growth |

No	Author	Country & Period	Variables	Method	Results
10	(Acemoglu et al., 2001a)	75 countries (range varies based on variables)	log GDP per capita, log output per fworker in 1988, average protection against expropriation risk, contrainst on the executive in 1990, constraint on the executive in 1900, constraint of the executive in the first year of independence, democracy in 1900, European settlements in 1900, log European settler mortality	OLS	improving institutions results substantial economic gains

No	Author	Country & Period	Variables	Method	Results
11	(Efendic & Pugh, 2015)	29 Countries (1992-2007)	GDP per capita, institutions, inflation, budget deficit, FDI inflow, domestic investment, initial GDP PPP 1989, year dummies	SGMM	GDP per capita is determined by the entire history of institutional reform that, conditional on this history, per capita GDP adjust in addition to recent or medium-term institutional changes institutions exert large and positive influence on output levels and GDP per capita

No	Author	Country & Period	Variables	Method	Results
12	(Hall & Gingerich, 2009)	20 developed countries (1971-1997)	the growth rate of real GDP per capita, log GDP per capita in 1971, the average rate of growth weighted by a country's trade openness, growth rate of inflation, exports as a capacity to import, dependency ratio, the plurality of voting, average district magnitude in the lower chamber, left party cabinet portfolios, trade union denstiy, bargaining coverage and level, employment protection, benefit entitlements, social spending/GDP, part-time employment, average hours worked, income inequality, average job tenure, job compensation, stock market capitalization, debt/equity ratio, real earnings, unit labour costs, total employment	OLS	increasing competition in markets for corporate governance exerts positive effect on growth only where labour markets are highly fluid

No	Author	Country & Period	Variables	Method	Results
13	(De Nicolò et al., 2008)	41 developed and developing countries (1994-2003)	GDP growth, total factor productivity growth, investment to GDP, corporate governance quality index, earnings smoothing, price syncronicity, accounting standarts	GMM	improvement of quality of corporate governance results higher GDP and productivity growth
14	(Tiwari, 2010)	104 countries (2004 and 2008)	economic growth, corporate governance, total trade, labour force with primary education as percentage of total, labour force with secondary education as percentage of total, gross fixed capital formation, fetility rate, general government final comsumption expenditure, life expectancy at birth	OLS	performance of corporate governance is persistenly and negatively effects economic growth

No	Author	Country & Period	Variables	Method	Results
15	(Rioja & Valev, 2004)	74 countries (1961-1995)	GDP growth, inital income per capita, average years of secondary schooling, private credit, commercial-central bank, lqiuid liabilities, government size, openness to trade, inflation rate, black market premium	GMM	Positive effect on middle and high regions and neglicable effects on low region

No	Author	Country & Period	Variables	Method	Results
16	(J.-S. Yu et al., 2012)	172 countries (1980-2009)	economic growth, financial development, stock market development, real sector	VAR, VEC, FEVD, IRF, Granger causality	there is mixed causality between financial development and growth for low income countries, financial development is crucial for economic growth in high income countries, government final consumption expenditure and trade granger cause GDP growth for some of the low income countries,

| 17 | (Aghion et al., 2005) | 71 countries (1960-1995) | mortality, antiquity of state, average life expectancy, social capability, social infrastructure, average under 5 mortality rate, percentage of population withing 10 km of ice-free coast, percentage of population in heographical tropics, composite index of six dimensions of governance, malaria ecology, efficiency of the bureaucracy, expropriation risk, distance from the equator, property rights, state owned enterprises, measure of corruption, number of assassinations per 100 inhabitants, revolutions and coups, ethnic fractionalization, measure of the law and order tradition, business regulation, index of civil liberties, dummy variables legal origins, private credit, bank assets, liquid liabilities, commercial-central bank, black market premium, average years of secondary schooling in the population, average years of | Schumpeterian model | any country with more than some critical level of financial development will converge to the growth rate of the world technology forntier, and that all other countries will have a strictly lower long-run growth rate. Financial development is an important determinant of a country's short-run growth rate, almost all of which is predicated on the assumpotion of |

No	Author	Country & Period	Variables	Method	Results
			schooling, inflation rate, openness to trade, government expenditure, difference between log per capita real GDP, average annual growth rate of schooling, human capital to output ratio, annual growth rate of human capital to output ratio, the log of productivity		long-run convergence in growth rates

No	Author	Country & Period	Variables	Method	Results
18	(Alomari et al., 2019)	21 high income countries (2009-2017)	competitiveness growth rate, the growth rate of financial market development, the growth rate of labor market efficiency, growth rate of market size, growth rate of technological readiness, growth rate of trade openness, growth rate of goods market efficiency, growth rate of higher education and training	GLS	Financial market development positively effects competitiveness
19	(Pradhan et al., 2018)	49 European Countries (1961-2014)	real per capita economic growth, innovation, financial development	VECM	There is a long run cointegration between innovation, financial development and growth. Furthermore, financial development and innovation are both causative factors of economic growth in the long run

No	Author	Country & Period	Variables	Method	Results
20	(Bucci et al., 2018)	44 developed and developing countries (1995-2011)	GDP, physical capital stock, labor input, financial depth	Panel Error Corretion Model	at the low level of financial depth, it has positive effect on GDP. However, when depth increases, it loses its positive effect and eventually shows inverse effects

No	Author	Country & Period	Variables	Method	Results
21	(Cecchetti & Kharroubi, 2012)	50 countries (1980-2009)	real GDP per worker, working population, the ratio of imports and exports to GDP, the ratio of government consumption to GDP and cpi, the ratio of private credit to GDP, the ratio of private credit by banks to GDP, financial system assets to GDP and banking system assets to GDP, financial sector's share in total employment	OLS	at the low level of financial developent, it has a positive effect on GDP. However, when development increases at a certain threshold, it causes lower growth. Faster growth of finance is bad for aggregate real growth. over development of financial markets has u-shape pattern on economic growth
22	(Sassi & Goaied, 2013)	17 MENA countries (1960-2009)	initial GDP per capita, credit to the private sector, internet, telephone, mobile, ICT import, government consumption, inflation rate, trade openness	GMM	there is a negative direct impact of finance on growth.

No	Author	Country & Period	Variables	Method	Results
23	(Moosa, 2018)	111 countries (2001-2014)	GDP, the ratio of credit to GDP	FMOLS	in general financialization has a negative impact on growth
24	(Kawa et al., 2020)	11 new member EU countries (1995-2014)	economic growth, financial development, trade openness	granger causality	in general, finance granger cause growth, and for the majority of the countries, trade enhances growth
25	(Song et al., 2021)	142 developed and developing countries (2002-2016)	financial depth, economic growth, corrpution	FMOLS	there is a cointegration between corruption financial depth, and economic growth. Furthermore, GDP positively effects financial development

No	Author	Country & Period	Variables	Method	Results
26	(C. C. Lee & Chang, 2009)	37 countries (1970-2002)	FDI, financial development, real output	Panel Error Corretion Model	bi directional causality between financial development and growth
27	(Masten et al., 2008)	30 countries (1996-2003)	GDP, inflation, financial development, external finance dependence at the industry-level, dependence on trade credit, growth of industry output	GMM	domestic financial market development and integration positively effects growth non-linearly. Positive effect of financial development is higher in less developed countries.
28	(Zachariadis, 2004)	10 OECD Countries (1971-1995)	R&D, GDP	SUR Estimation	Aggregate R&D intensity positively impacts the growth rate of output

No	Author	Country & Period	Variables	Method	Results
29	(Falk, 2007)	OECD Countries (1970-2004)	GDP per capita, Investment ratio, average years of education, Business sector r&D expenditres % of GDP, share of BERD in the high-tech sector in total manufacturing BERD (%)	GMM	Incerasing the share of R&D in the high-tech sector positively impacts GDP
30	(Pradhan et al., 2018)	G20 countries (1970-2016)	financial development, FDI, economic growth	VECM	financial development matters in the determination of long-run economic growth
31	(Stel et al., 2005)	36 countries (1999-2003)	total entrepreneurial activity, growth of GDP, per capita income, growth competitiveness index	OLS	impact of entrepreneurial activity on economic growth is higher in developed countries than in developing countries.

No	Author	Country & Period	Variables	Method	Results
32	(Maradana et al., 2017)	19 EU Countries (1989-2014)	GDP, patents filed by residents, patents filed by non-residents, research and development expenditure, researchers in research and development activities, high-technology exports, scientific and technical journal articles	Granger causality	varying results of causality between innovation and per capita economic growth
33	(Avila-Lopez et al., 2019)	12 Latin American Counties (1996-2015)	GDP, patents filed by residents, patents filed by non-residents, research and development expenditure, research and development activities, research and development expenditure, high-technology exports, scientific and technical journal articles	Granger causality	Although results of causality between innovation and per capita economic growth varies, all of the innovation indicators found to be linked to per capita GDP

No	Author	Country & Period	Variables	Method	Results
34	(Sultanuzzaman et al., 2019)	16 Emerging Asian Countries (2000-2016)	real GDP, real exports of goods and services, fixed telephone subscriptions, gross fixed capital formation, total number of students enrolled in secondary education, FDI inflows, official exchange rate, consumer price index, trade openness	GMM	technology positively effects economic growth
35	(Molinari et al., 2013)	Australia, Japan, South Korea, US (1980-2006)	output, Labor productivity, worked hours, capital, human capital improvement, investment-specific technical change	Traditional growth accounting	the technological process is an important factor in explaining output growth
36	(Feki & Mnif, 2016)	35 developing countries (2004-2011)	new businesses density, number of patents filed by residents and non-residents, GDP per capita, capital sotck, the share of government consumption in real GDP per capita, population, level of consumer prices, economic openness	Fixed effects model, GMM	while technological innovation is negative in the short run, in the long run it enhances growth

No	Author	Country & Period	Variables	Method	Results
37	(Acikgoz & Mert, 2014)	Hong-Kong (1960-2007), Republic of Korea(1953-2007), Singapore(1960-2007), Taiwan (1951-2007)	real GDP per labour, ratio of physical capital stock to the gross domestic product	ARDL	the fundamental source of economic growth is technological progress in the short run

| 38 | (K. Lee & Kim, 2009) | 32 countries (1965-2002) | GDP per capita in 1965, GDP per capita in 2002, growth of population, executive constraints in 1965, average of executive constraints from 1965 to 2002, share of population living in temperate zone in 1995, average enrollment rate of secondary education from 1965 to 2002, average enrollment rate of tertiary education from 1965 to 202 average number of patents per million from 1965 to 2002, average of R&D expenditure of GDP from 1965 to 2002, average of the ratio of trade to GDP from 1965 to 2002 | Fixed effect, GMM | technology matter as the determinant of long run economic growth. Furthermore, the policies facilitating technology development and higher education seem to be more effective in generating growth for upper middle- and high-income countries than for lower-income countries.

technology and higher education appears to be effective in generating growth for the upper |

No	Author	Country & Period	Variables	Method	Results
					middle- and high-income countries but not for the lower middle and low-income countries
39	(Joanna, 2014)	18 OECD countries (1990-2006)	value added of sector in country, employment in sector in country, capital stock in sector in country, value added of frontiet country, labour productivity, technological frontier	ARDL	tougher domestic competition is always associated with higher sectoral productivity.

No	Author	Country & Period	Variables	Method	Results
40	(Hauner & Kyobe, 2008)	114 countries (1980-2006)	education spending, health spending, income per capita, commodity exporter, inflation, trade liberalization, openness, accountability, corruption control, durable regime, democracy, social infrastructure, schooling, population >65, population <14, population density, fractionalization, malaria, climate	Data Envelopment Analysis	efficiency declines with the level of spending, the benefits of improving institutions extend from economic growth and financial development to government efficiency
41	(Bergman et al., 2016)	27 EU countries (1990-2012)	cyclically adjusted primary balance, numerical national fiscal rule strengh index, numerical degree of government efficiency index	GMM	stronger national fiscal rules are associated with more sustainable fiscal policies

| 42 | (Heylen et al., 2013) | 21 OECD countries (1981-2008) | gross public debt in GDP, gross public debt in GDP in the year before, gross public debt in GDP in the two years before, underlying cyclically adjusted primary balance, cyclically adjusted primary balance in the year before, cyclically adjusted primary balance in the two years before, one-off budgetary measures, underlying current receipts, underlying non-interest expenditures, cyclically adjusted direct taxes on bisness, sum of cyclically adjusted direct taxes on households, government final wage consumption expenditures, government fixed capital formation, subsidies, social security benefits paid by general government, underlying other net revenue, number of years of the fiscal episode, official nominal devaluation in % in the year before the start of fiscal episode, international nominal short | OLS | consolidation policies of labour and product market institutions poses positive effects on productivity and growth. Efficient government appratus is more effective bringing down debt |

No	Author	Country & Period	Variables	Method	Results
			term interest rate, international nominal GDP growth rate, dummy variables for 2006,2007,2008,1991,1992, overall strictness of employment protection, trade union density, degree of wage bargaining coordination, product market regulation, government efficiency in administration, education, infrastructure, stabilization, burden		

No	Author	Country & Period	Variables	Method	Results
43	(Buchele & Christiansen, 1992)	G7 Countries (1960-1988)	annual rate of growth of labour productivity, co-operation, unemployment, unemployment co-operation, rights, rights co-operation, capital lalour ratio	OLS	Labour market institutions have an important effect on productivity growth
44	(Buchele & Christiansen, 1999)	15 developed countries (1979-1994)	Change in output per hour, change in capital per worker, job tenure, ratio of superviosry to production workers, ratio of 90th to 10th percentile earnings, collective bargaining coverage, notification plus severance, obstacles to dismissals, unemployment insurance replacement rate, social protection	OLS	stronger worker rights and cooperative labor relations promote productivty growth
45	(Radukic et al., 2019)	Four Balkan countries (2018)	efficiency of the goods market, domestic competition, foreign competition, demand conditions, labor market efficiency, average monthly gross wages, employment rate, activity rate, labor productivity, unit labor cost	ols	country that has the best efficienct goods market also has the most efficient labor market

No	Author	Country & Period	Variables	Method	Results
46	(Ziolo et al., 2017)	34 OECD Countries (2008-2013)	real GDP per capita, ease of acces to loans, soundness of banks, misery index, quality of educational system, energy intensity, BGR, year dummies for 2010,2011,2012,2013	Fixed effect	Soundness of banks have positive impact on nominal GDP per capita and ease of access to loans negatively effect nominal GDP
47	(Gries & Redlin, 2020)	167 countries (1970-2011)	GDP per capita, trade share in GDP	Granger causality, dynamic OLS, GMM	trade positively effects growth on high-income countries and countries with a relatively high degree of trade openness

No	Author	Country & Period	Variables	Method	Results
48	(Herzer, 2013)	91 developed and developing countries (1960-2008)	gdp per worker, real openness, nominal openness, population, secondary enrolment rate, primary exports, business friendly regulations, restrictive labor regulations, institutional quality, GDP per capita, trade GDP rati	DOLS	trade enhances growth on developed countries, however, it has detrimental effects on developing countries
49	(Pradhan et al., 2016b)	19 Eurozone countries (1988-2013)	per capita economic growth, financial development, foreign direct investment, trade openness for imports, trade openness for exports, trade opennes for total trade	VECM, granger causality	increasing FDI inflows on short run have propelled economic growth which in turn has strenghened the role of financial development and international trade to sustain economic growth

No	Author	Country & Period	Variables	Method	Results
50	(Ben Jebli et al., 2019)	22 central and south American countries (1995-2010)	co2 emissions, real GDP, renewable energy consumption, international tourism, trade openness, FDI	FMOLS, DOLS	no causal relationship between growth and trade, however FDI and growth has bidirectional causal relationship
51	(Kalai & Zghidi, 2017)	15 MENA countries (1999-2012)	economic growth, FDI, trade, labor, capital stock	ARDL, granger causality	trade openness and FDI enhances economic growth, furthermore there is a unidirectional relationship from FDI to growth(developing countries)

No	Author	Country & Period	Variables	Method	Results
52	(D.-H. Kim, 2011)	61 countries (1960-200)	economic growth, real GDP per capita, investment as a share of GDP, total factor productivity growth, trade openness, average years of schooling, government expenditure to GDP, inlfation, financial development, revolutions and coups, political assassinations, ethnic diversity	Instrumental variable threshold regression	trade openness enhances growth on developed countries whereas it has opposite effect on developing countries
53	(D.-H. Kim et al., 2012)	63 countries (1960-2007)	economic growth, trade, credit by financial intermediaries, total shares traded on the stock market, black exchange rate market premium minus one, real GDP per capita, inflation, average years of secondary schooling, population, the growth rate of terms of trade, gross fixed capital formation, real interest rate	Simultaneous equations model	trade promotes economic growth in high-income countries; however, it has detrimental effects on low income countries

No	Author	Country & Period	Variables	Method	Results
54	(Kónya, 2006)	24 OECD countries (1960-1997)	GDP, exports, openness	granger causality	causality between trade and growth varies based on the country characteristics
55	(Omri et al., 2015)	12 MENA countries (1990-2011)	per capita GDP, co2 emissions, financial development, trade openness, per capita capital stock, enc, urbanization, inflation, FDI	GMM, granger causality	bidirectional causality between economic growth and trade openness, and unidirectional causality from financial development to economic growth.
56	(Bardi & Hfaiedh, 2021)	8 Mediterranean Countries (1 developed, 7 developing) (1975-2016)	the growth rate of real GDP per capita, openness rate, investmet to GDP, public expenditure on education as GDP, FDI, financial development, loans granter to private sectors by banks, official exchange rate	ARDL-PMG, granger causality	trade openness and FDI favor economic growth

No	Author	Country & Period	Variables	Method	Results
57	(Albulescu, 2015)	13 CEE countries(developing) (2005-2012)	GDP, eight variables to capture characteristics of FDI, interest rate, inflation, unemployment, money in circulation, exchange rate, primary energy consumption, level of education	GMM	cross border equity investments(FDI equity and liabilities) stimulate economic growth
58	(C.-K. Choong et al., 2010)	65 Developing countries for the FDI model, 34 countries for the portfolio investment model (1983-2006)	real GDP per capita, openness ratio, investment as a percentage of GDP, inflation, FDI, portfolio investment, liquid assets to GDP, deposit money bank assets to GDP, private credit by deposit money bank to GDP,	GMM	FDI and portfolio investments promotes growth with the help of well-developed financial sector which are crucial for economic growth

No	Author	Country & Period	Variables	Method	Results
59	(C. K. Choong et al., 2010)	51 countries (1988-2002)	real GDP per capita growth rate, capital stock, labour force, savings as GDP, inflation, FDI, portfolio investment, foreign debt, the market capitalization of listed companies, total stock value traded to GDP	GMM	for both developing and developed countries, while FDI positively impacts growth, debt and portfolio investment have opposite effects. Capital flows exert a positive impact only when the financial market reaches a certain level of development.

No	Author	Country & Period	Variables	Method	Results
60	(Aizenman et al., 2013)	100 countries (1990-2010)	the growth rate of GDP per capita, private credit-GDP ratio, education, exchange stability, monetary independence, FDI inflow, FDI lutflow, portfolio investment, equity investment, short-term debt, consumption, investment, government spending, exports, imports	OLS	FDI is more beneficial for growth than other types of inflows, and the portfolio has no effect on growth
61	(Sahoo et al., 2019)	60 Countries (1971-2015)	financial integration, output volatility, domestic financial development, inflation, government consumption expenditure, terms of trade, trade openness	GMM	FDI are benefitial for reducing output volatility in developed and developing countries furthermore, portfolio investment is benefitial for developed countries to reduce output volatility

No	Author	Country & Period	Variables	Method	Results
62	(Ferreira & Laux, 2009)	50 countries (1988-2001)	GDP growth, sales by local residents to US residents, purchases, net sales, portfolio flows, the conditional variance of the country in month m, portfolio flows of country in month m	OLS, GARCH	volatility and openness to portfolio flows are statistically conducive to growth for both developed and developing countries the outflow of local funds is associated with subsequent growth, especially in less-developed countries
63	(Agbloyor et al., 2014)	Sub Saharan Africa Countries (1996-2011)	GDP per capita, first lag of GDP per capita, FDI, institutions, institutional quality, population growth, trade, savings, hdi, financial development, natural resources	SGMM	institutions exert a positive effect on economic growth when financial markets are underdeveloped(low income countries)

No	Author	Country & Period	Variables	Method	Results
64	(Agbloyor et al., 2014)	14 African countries (1970-2007)	real GDP, FDI, FDI in debt securities, debt, market capitalization, stock market turnover, bank credit, private credit, m2, population, savings, capital flows, financial market development, financial openness, institutional quality	GMM, 2SLS	FDI, foreign equity portflio investment, and private debt have negative impact on economic growth. However strong financial markets can transform the negative impact into positive one. Private capital flows promote economic growth (Africa, low income)

No	Author	Country & Period	Variables	Method	Results
65	(Pradhan et al., 2016a)	18 EU countries (1961-2013)	real per capita economic growth, 5 indicators for innovation, 8 indicators for financial development	Panel VAR	increasing inflows of foreign direct investment in the short run have propelled economic growth
66	(Eggoh et al., 2019)	49 developing countries (2001-2013)	GDP growth, initial GDP, remittances, aid, FDI, gov expenditure, trade, investment, private investment, final consumption, domestic credit provided by banking sector, domestic credit to private sector, liquid liabilities as a percent of GDP, inflation, secondary school enrollment	Panel Smooth Transition Regression (PSTR), GMM	FDI has an insignificant impact on growth

No	Author	Country & Period	Variables	Method	Results
67	(C. K. Choong, 2012)	95 developed and developing countries (1983-2006)	real GDP per capita, government consumption, inflation, openness, central bank domestic assets, investment, FDI, ratio of credits provided by financial intermediaries to the private sector to GDP, liquid liabilities,	GMM	FDI and growth has positive relationship only on high income countries domestif financial system is significant prerequisite for FDI to have a positive effect on growth for all country groups
68	(Omri et al., 2014)	54 countries (1990-2011)	co2 emissions, FDI inflows, economic growth	Granger Causality	there is a bidirectional causality between FDI and economic growth for all income levels

No	Author	Country & Period	Variables	Method	Results
69	(Saidi et al., 2015)	13 MENA Countries (1990-2012)	economic growth, oil consumption, foreign direct investment, information technology and communication, capital stock, labor force	granger causality	there is unidirectional causality from economic growth to FDI there is a bidirectional relationship between ICT to economic growth
70	(J. W. Lee, 2013)	19 G20 Countries (1971-2009)	real GDP, co2, energy, clean energy, FDI	Fixed effect OLS	FDI has important role on economic growth

No	Author	Country & Period	Variables	Method	Results
71	(Borensztein et al., 1998)	69 Developing Countries (1970-1989)	GDP, average years of male secondary schooling, government consumption, black market premium, FDI, fdi*schooling, regional dummies, wards, political rights, financial depth, inflation, institutions, education threshold	SUR, Granger causality	FDI contributes to economic growth only when a sufficient absorptive capability of the advanced technologies is available in the host country. There is unidirectional causality from FDI to GDP