

# POLITICO-ECONOMIC EVALUATION OF CURRENT ISSUES

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SELÇUK KOÇ  
AYHAN ORHAN  
SEMA YILMAZ GENÇ



# **Politico-Economic Evaluation of Current Issues**

## **Editors**

Selçuk KOÇ

Ayhan Orhan

Sema Yılmaz Genç

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## PREFACE

The decision makers throughout the world are still dealing with the issues such as income inequality, ongoing poverty, increasing environmental problems, proving that it is not enough to examine the economic events from a mere economic point of view. Increasing economic ties between countries also makes it difficult to solve problems and leads to new challenges. Global economy is increasingly more complicated, which requires new problems to be approached with alternative disciplinary perspectives. For this reason, economic methods and theories must be adjusted in such a way that they take insights from other disciplines into account. To look from a diversified perspective will provide a multi-faceted solution to the same problem.

Therefore, this book contains chapters which are examining economic issues from both theoretical and historical perspectives with an aim of offering new insights and solutions to today's problems. Without understanding theoretical debates, originating from world crisis term and their historical background, it is not possible to comprehend current economic issues which affect our daily lives.

Despite interconnectedness of the global economy, national economies and regional developments, especially developments in Africa- the poorest continent in the world merits consideration and special elaborations. Scientific study of economics cannot be thought without methodology and econometric to which this book pays attention. Most of the chapters in the book benefits econometric and mathematical models to enhance their study.

Within this framework, Haktan Sevinç, Sema Yılmaz Genç and Hamza Kadah, in the first chapter – present a comprehensive outlook to the critics of Neoclassical capital theory by reviewing the style of discussion of the Neoclassical school to analyze value and distribution problems and the Neo-Ricardian criticism. The topics to be discussed in the chapter of their research are place of capital and distribution problem in classical economic theory; François Quesnay's contributions for entering value and distribution problem in classical economics; opinions of Adam Smith, Thomas Robert Malthus and Jean-Baptiste Say; general framework of labor theory of value of Ricardo, innovations brought by the Neoclassical school to producer theory and accordingly, different approaches on distribution issue, opinions of Neo-Ricardian school Piero Sraffa who suggested a return to the classical method in relations of production and emerged as a criticism for Neoclassical school.

In the following chapter, Ümran Gümüş, Ayhan Orhan and Şevket Alper Koç employed the game theory method to analyze effect of fan support to the success of football teams by looking fan seeking competition between Kocaelispor and Nusaybin Demirspor- two local teams in Turkey. They concluded that the teams should spend a high level of expenditure in order to have the benefit of the advantage of early information of providing fan support.

Güller Şahin, Halil İbrahim Aydın and Hüseyin Yıldırım, in the third chapter studies an important issue- interrelationship between rule of law and economic development. They re-underline the interaction between economic development and rule of law which actualizes in a positive direction. According to them, the rule of law properly contributes to the developmental side of societies by providing progress between economic, social and cultural dimensions of the development and by implementation of legal and institutional reforms and protection of the social rights. However, they emphasize that the relationship between economic development and rule of law is a big problem in underdeveloped and/or developing countries.

Özlem Ülger is studying a similar issue with a specific attention to money laundering and tax fraud bitcoin. Despite the attention she is trying to attract to the fact that Bitcoin can be used not only for commercial purposes but also for illegal activities by many organizations in terrorist activities and to the inability of the money traffic to be monitored by the states; she proposes an appropriate method of the evaluation of the risks that such currencies would cause instead of directly opposing the crypto moneys and warning people against manipulations and speculation.

Şimal Çelikkol is choosing to look at totally different area- consumer behaviors and studies the importance of logo selection for companies as it would affect company image for years and necessity

of having successful logos for successful companies by evaluating use of typography, forms, shapes and logo design strategies, color and message content.

Importance of international agencies on national economies is undeniable in the today's globalized world. Seyfettin Erdoğan, Ayfer Gedikli and Sema Yılmaz Genç handle whether the evaluation and rating processes of international credit rating agencies are based on objective criteria in a political-economic perspective. They concluded that it is a well-known fact that CRAs can be affective on deteriorating macroeconomic performance by manipulative increase in exchange rates, and by triggering volatility as well as by downgrading ratings. In order to protect the national economies from these global financial attacks, they should perform wise strategies to make wages and price adjustments in national currency, to procure intermediate goods and investment goods from the local markets, to make collaborations and contracts to use national currency in bilateral and regional trades and to increase the share of high technological products in total export.

Agnieszka Wicha examines a similar issue – effect of European supervision on financial markets. By limiting its analysis to the differences of supervision on financial market of EU before and after 2008 crisis, she tries to measure efficiency of European System of Financial Supervision (ESFS) which is composed by European Systemic Risk Board (ESRB), European Banking Authority (EBA), European Security and Markets Authority (ESMA), European Insurance and Occupational Pensions Authority (EIOPA) and national supervision authorities and she concluded that establishment of these authorities in 2010 are compromised solution between a need to control the financial markets on European level and the need to respect entitlements of national supervision authorities.

Chapter 7 and Chapter 11 are two specific chapters which are dealing with the developments in Africa. In the former, Nuray Terzi looks at establishment of African Continental Free Trade Area and its effect on Turkey's economy. In the latter, Selçuk Koç and Hassan Faycal Adassoukhi examines macroeconomic performance of the Central African Economic and Monetary Community since 1994 and deals with the emergence of the group, its objectives and the regional efforts during its establishment.

Historical development of two goods- mobile communication technologies and Diyarbakır's Kadayıf are tackled in chapter 8 and 9. In the chapter 8, Ferhat Pehlivanoglu and Muhammet Rıdvan İnce looks at mobile communications market in Turkey by using market concentration analysis and concluded that mobile communication market in Turkey has a completely oligopoly structure between 1994 and 2017. In the following chapter, Osman Eroğlu and Murat Pıçak deal with the historical adventure of Kadayıf- a centennial traditional delicacy of the Diyarbakır and its registration by the Turkish Patent Institute as a local specialty in November 2017.

Developments at national levels are always important for economics. Two special chapter which pays attention to Brazil and Turkey take place as the last chapters in this book. Ana Paula Mussi Szabo Cherobim and Gutemberg Ribeiro, with their chapter on economic aspects of innovation in Brazil and Seyfettin Erdoğan, Ayfer Gedikli and Sema Yılmaz Genç with their chapter on Turkey's national energy policies contributed this chapter.

The awareness of the price transmission mechanism has raised in many countries due to the globalization and market reforms. The integration levels of countries to the World has special importance for economies. The inquiry of the integration has different dimensions. Thus, Burak Darıcı, Hasan Murat Ertugrul, Halis Kırıl and Fatih Ayhan examines the transmission of international cotton price increases in Turkey economy in the period between 2000 and 2014 with their analysis. They investigate the integration level of cotton market in Turkey with the global market. This book which was prepared by intense efforts of all author and editor will have a wider contribution in the field of historical and theoretical research of economics. There are several dimensions of economic to the extent that it is impossible to cover all them in a book. However, this book may serve as a starting point to elaborate economic issues with a multidisciplinary approach.

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### ***Editors Biography:***

Selçuk KOÇ is a Prof. at the Department of Economics, Faculty of Economics and Administrative Sciences at Kocaeli University, Kocaeli, Turkey. His teaching and research fields are econometrics and economics theory. His research interests include linear time series econometrics and non-linear time series econometrics. He published lots of articles and edited books.

Ayhan Orhan is an associate Prof. PhD at the Department of Economics, Faculty of Economics and Administrative Sciences at Kocaeli University, Kocaeli, Turkey. His teaching and research fields are monetary policy, Turkish economy and macroeconomics. His research interests include the economic crisis, environmental economy and urban economics.

Sema Yılmaz Genç was born in İstanbul in 1980. She is an associate prof. at the Kocaeli University. She completed her PhD in History economics from the Marmara University. She has been working at the Kocaeli Univeristy, Kocaeli Vocational School since 2009. Her research interests focus on economic history and thought.

# CAMBRIDGE CRITICS OF NEOCLASSICAL CAPITAL THEORY\*

Haktan SEVİNÇ\*\*

Sema YILMAZ GENÇ\*\*\*

Hamza KADAH\*\*\*\*

## Introduction

The question of how income will be divided among production factors is an old problem that emerged from adopting a sedentary life. In that sense, oldest written texts including sacred books touched this issue. This topic has become one of the most important research objects of economists along with discussing economic analysis by a scientific method. Thus, David Ricardo accepted the primary purpose of the economic analysis is understanding the distribution problem (Akyüz, 1980:3).

As is mentioned above, this study was conducted to review discussing the style of Neoclassical analysis for value and distribution problems and also review the Neo-Ricardian criticism that was directed to this discipline. The topics to be discussed in the chapter of this research are as follows; place of capital and distribution problem in classical economic theory; François Quesnay's contributions for entering value and distribution problem in classical economics; opinions of Adam Smith, Thomas Robert Malthus and Jean-Baptiste Say; general framework of labor theory of value of Ricardo who is accepted as the foremost representative after Smith for Classical school. And then innovations brought by the Neoclassical school to producer theory and accordingly, different approaches on distribution issue will be discussed. Opinions of Neo-Ricardian school and also the opinions of Piero Sraffa who suggested a return to the classical method in relations of production and emerged as a criticism for Neoclassical school will be expressed in the end of chapter. Moreover, we will touch upon the Cambridge Controversy that is among the representatives of Neo-Ricardian and Neoclassical School. In conclusion, after making a general evaluation of the Neoclassical and Neo-Ricardian approach, the success of Sraffa and his followers on cancellation Neoclassical theory or creating an alternative for the same theory will be expressed. Finally, it will be answered that whether all these arguments cause a change in economic theory.

## Labor-Capital Conflict: Distribution Problem

The first comprehensive and systematic analysis of distribution problem is seen in David Ricardo's book called "Principles of Political Economy and Taxation". However, the general framework of this problem consisted of Quesnay who was the important representative of Physiocrats that were also known as leaders of the classical political economy half a century ago.

The first systematic economic theory that can be an alternative by breaking down the mercantilist system in the 18th century was created by Dr. Quesnay and intelligentsia whose many of them were ethics philosophers. Quesnay and other Physiocrats who started off by the slogan called "Laissez-faire et laissez-passar" laid the groundwork for the liberal economy by defending the liberal economic system against mercantilism. Much as this movement made its presence felt for a moment, it has a historical importance by performing the primary task in which the classic political economy built on. However, below fundamental principles of Physiocrat discipline have continued their existence as are. It is possible to collect the moral natural laws system of Quesnay that combines Physiocracy that means

\* Special thanks to Professor Heinz Dieter Kurz and Professor Alessandro Roncaglia.

\*\* Iğdır University, Faculty of Economics and Administrative Sciences, haktan.sevinc@igdir.edu.tr

\*\*\* Kocaeli University, Kocaeli Vocational School, semayilmazgenc@kocaeli.edu.tr

\*\*\*\* Dicle University, Social Sciences Institute, hamzakadah@gmail.com



being managed the society by natural order rules with the economic theory under three titles (Kazgan, 1969:58);

- I. Rationalist individuals act so as to maximize their interests.
- II. Natural law provides maximization of social wealth when they are applied in an ideal judicial system.
- III. The general economic process works based on specific rules in a society where everyone obeys these two criteria.

Personal property, freedom of agreement and free trade that does not face any obstacle is the fundamental principles provide to work the natural law. The government has to constitute a judicial system that considers the ultimate principles of the natural laws.

Opinions of R. J. Turgot and Quesnay contributed to the improvement of classic economy politics through Adam Smith; this theory mentioned was the dominant economic theory until the end of 19th century when the Neoclassical marginal method emerged. Abstraction and modeling methods, especially “Tableau Economique” of Quesnay and capital theory of Turgot simplified the economic system; accordingly, it is enabled to the analysis of the economic system as a whole. This method has become the irrevocable component of all economic theories after themselves (Kazgan, 1969:68). With reference to three-class social structure, cultivators put agriculture in the center of economic analysis because of that they believed that agriculture is the only sector that can create value; they also defended the single tax system that is received from landowners. According to Physiocrats, taxing of other sectors, especially cultivators will cause an inequality in income distribution and half of the production Physiocrats constituted the basics of classical capital-distribution theory by the assumptions like the law of diminishing returns, three-class social structure, change and administration of estates by estates, taxing solely the sectors that take production surplus. However, the surplus good which Quesnay appropriated for cultivators was appropriated for the labor in Ricardo and Marx, namely in classics (Quesnay, 1759: 1; Kurz&Salvadori 2008:3).

Quesnay’s ideas also influenced Adam Smith who is accepted as the founder of the classical political economy. After Smith; political economy transformed into a holistic economy theory by different perspective and contributions of Malthus, Say, Ricardo and Mill and also by Marx’s critique. Ricardo and Marx put distribution problem at the center of their economic theory. Therefore, it is normal that they are the first names that spring to mind.

### **Classical Approach to Capital and Distribution Problem**

The issues on value and distribution have been started to be evaluated by classical economists such as Say and Malthus after Adam Smith’s book called “Wealth of Nations (1776)”. Especially, Ricardo and Marx accepted the distribution as the major issue. The importance that is given by Smith to the function of labor can be understood by following sentences; “The real value of a good for the person who wants to buy it is the torture and exertion of that good... The thing that is bought with money or good is actually bought by the labor...Labour is the money paid as the first and real purchase cost for everything; labor is the only unit of measure that the value of each kind of good can be compared; labor is the source of all wealth in the world” (Smith, 1776:32-39)

On the other hand, Adam Smith added the amount of purveyance that labor can obtain in the market and also he expresses in the next chapters of the book that the standard measure of value needs to be labor; the measure of labor needs to be purveyance (Ricardo, 1817:3004). Moreover, Adam Smith included the profit share of the entrepreneur in value-distribution equation. With reference to him, the entrepreneur whose assets increased employ by having new investments; however, the entrepreneur will not have an investment in a situation in which he knows he cannot receive a profit share proportional to capital (Smith, 1776:55). Smith neglected the fact that the capital accumulation will gradually concentrate on fewer people. This negligence will become one of the main subjects that Ricardo and Marx criticise. A. Smith also established a relationship between labor supply and salary with welfare level and changes in population:

“Each kind of species naturally increases in proportion to its means of support and none of the species cannot increase more than this ratio” (Smith, 1776:82).

“High pay encourages the marriage. Eating well and growing healthily of children in sensitive babyhood period largely regain care costs by increasing the value of their labor. Fertility impulse becomes like the impulses of adults because of high pay and low rent (Smith, 1776:549).”

However, the transformation of Smith’s approach into a consistent population theory by becoming an integral part of classical political economy actualized in Thomas R. Malthus’s book called “An Essay on The Principles of Population” (1798).

With reference to Malthus’s population theory that found oneself in the line of fire afterward, population growth rate is higher than the rate of increase of foodstuffs. Namely, when the population that increases by geometric progression is let alone, it doubles every 25 years. Since foodstuffs only increase by arithmetic progression, food reserves in the world will be exhausted sooner or later. Accordingly, a population growth that is not directly proportionate to food increase will end up in poverty (Marx, 1867:382-502; Malthus, 1798:34)

Malthus argues that the rich save the large part of their increasing income; this saving provides employment of skilled laborers by turning a part of these savings into investment. Thus, new goods can penetrate the market; however, since the demand increase actualizes too slowly because of either the fewness of the number of workers or not to change the consumption habits in a short time. Excess saving of the rich pushes the economy to the recession by causing a decrease in production (Malthus, 1820:361-371).

As regards to T. R. Malthus, he expresses that the real value of a good can be known by computing the ratios of amounts of capital and labor; each decrease in prices will reduce the wages and accordingly, these reducing will cause an increase the rent of landlord and also the rent of the farmer. With reference to Jean Baptiste Say who was agree with Malthus about each kind of charitable institution and state aids cause an increase on the ordinary process of the population this circumstance will cause a similar change in wage and distribution (Malthus, 1798: 26; Ricardo, 1817:300-314). On the other hand, Say opposes Malthus’s idea that situations in which excess supply emerges arising from low effective demand as the result of savings of the rich.

Besides, Mathus does not accept Say’s thesis that takes part in literature as the law of markets. Law of markets suggests that each supply creates its own demand; the reason for a surplus in the supply of a good is producing little other goods; even though there may occur an excess supply, the market can automatically find the balance (Kazgan, 1969:69). According to Say who was the first thinker discriminated between capitalist and entrepreneur, since the reason for being supplied a good to market by an entrepreneur is demanding other goods in return his supply. So, the prices of goods equal to the costs of the goods; the costs of the goods equal to the factor income. Since each of the goods produced is absolutely changed with other goods, an excess supply does not occur. Namely, everyone consumes as much as he produces. In another saying, everybody spends the whole of his or her income; this is the most criticized side of Say’s law.

Each of the goods supplied cannot create demand as much as its value. One of the reasons for this situation is that costs of the goods equal to the prices of the goods; costs equal to the factor revenues. However, total supply may equal the total demand; total costs may equal to the total revenues.

### **David Ricardo and Labor Theory of Value**

Much as Smith and others gave place to distribution issue in their production-price oriented analyses, this issue has come to the forefront and become formal by D. Ricardo. Ricardo’s Labour theory of value that means the concept of distribution as the dynamic determinant of capitalism is the leading theory that extensively discusses the distribution issue (Akyüz, 1980:6). So, Ricardo’s Labour theory of value is not only the value problem used in change but also built on the distribution problem. The first problem that needs to be solved is to determine the rates of change and values in a system in which the goods are produced by other goods and labor and also turned over. Because it is not possible to review

the problems such as capital accumulation and distribution without specifying the change values. These problems cannot be still resolved; the size of the problem shows the reason for this solutionlessness.

Adam Smith argued that gold and silver prices ride of fluctuations as the result of changing demand-supply conditions in the market. Accordingly, the value of the goods needs to be measured by the amount of purveyance or the labor that can buy the same amount of purveyance. However, Ricardo expressed that also the prices of purveyance and payments rendered to workers ride on supply-demand fluctuations like gold and silver prices. Therefore, prices of purveyance and payments rendered to workers cannot be used in determining the value. With reference to Ricardo, the value of a good is specified by the amount of labor spent to produce the relevant good. Muchness or fewness of the wage paid to the worker is not decisive in determining the prices of purveyance or the value of the good. Again, according to Ricardo, a good that is worse than useless or does not satisfy the individuals is destitute of exchange value without noticing the muchness of the amount of labor or no matter how scarce the good is (Ricardo, 1817:7-15). Namely, a scarce good also should provide a benefit (food, clothing, etc.) or satisfaction (gold, diamond, etc.) to its buyer at the same time. However, beneficialness cannot be the absolute measurement of the exchange value as well as being a criterion for the exchange activity just as in air or water example. Thus, the source of the real value of the goods is the capital sum that is called as relative labor with stored-up labor and also the production cost consisting of the profit (Ricardo, 1817:314). Exchange value is obtained when the criteria of beneficialness and scarcity are added to them.

Much as Ricardo accepts Malthus's and Say's theses argue that population increase reduces the wages, he objected to the thesis that argues a decrease in wages will cause an increase in Landlord's share that he receives from the distribution. Neither the share that the rent receives nor the real amount of total product changes when the wages decrease; however, distribution of this sum changes in favor of the profit. As the share of labor from the distribution decreases, farmer's share that he receives as the profit increases further or the situation will go against the grain. Since this distribution will occur between the farmer and labor, there will not happen any change in landowner's situation. Similarly, even if the rent of the landowner is zero, the laborer will not earn anything from it (Ricardo, 1817:300-301). As is seen above, a decrease in the share of other factors is transferred to the farmer in both situations. Possible increase in rent actualizes at the end of a much longer process; every increase in earning rate increases the accumulation; population growth follows this stage and increasing the rent becomes unavoidable.

Ricardo's model was established on the mutual affinity of accumulation and distribution. While the profit is the source of accumulation, accumulation specifies the profit because of being distributed. From this standpoint, it is possible to find the fundamental contradiction of capitalism that was suggested by Marx in Ricardo as well (Akyüz, 1980:1)

Ricardo was trying to find a way out for the problems like the invariant measurement of change and the difference between absolute value and relative value when he died at the age of 51, in 1823. His unfinished studies which consisting of rough manuscripts that are an inspiration to economists who called as Neo-Ricardians compiled and published as 11 volumes by Piero Sraffa ve Maurice H. Dobb between 1951 and 1973 (Savran, 1997:11; Kurz & Lager, 2010:14-16).

### **Karl Marx and Theory of Surplus Value**

The essential difference between Marx and Ricardo is not analytical method difference; it is in the characteristics of the abstraction and the conceptual framework reached, namely in the style of uses of the analytical method. Capitalism has seemed to Ricardo and all economists before Marx as a global and natural manufacturing type. As the result of this circumstance, conceptual framework and results of all models of Ricardo including labor theory of value in the book called "Principles of Political Economy and Taxing" (Akyüz, 1980:4). Marx was not in a struggle like that; he restricted his analysis with modern bourgeois production in "Das Kapital".

The center of Marx's economic ideas that emerged as a criticism against classical economic theory attracts attention to the issues of distribution and value. The main problem in this topic that Marx dealt

with is the solution of controversies on the surplus value that is created by labor. Marx who tried to explain distribution by using Ricardo's labor theory of value summarized the concept of surplus value as the value that is established on labor costs of worker and also the value that is extorted by capitalists (Marx, 1967:152-154). According to Marx who endeavored to clarify the price by the theory of cost of production, the goods are put on the market by an 'output price' that forms by adding a surplus in 'general earning rate' to factory costs. Since the sum surplus value is distributed based on the general earning rate, they ride on the values even if the price is different from the value (Selik, 1982:108-110). Thus, Marx interconnects the value theory of Capital I to the price theory of Kapital III; he tries to explain the value and price problem by an integrated approach.

With reference to Marx, capital is composed of two parts; one of them is the money spent for means of production ( $f$ =fixed capital); another one is the amount of money spent for the labor force ( $v$ =variable capital). Namely, in the beginning, there is an equation of  $S=s+d$ . The value of the good when the production is completed becomes  $s+d+a$ ; "a" represents the surplus value. The size of the amount is determined by the proportion of surplus value to the variable capital and expressed as  $a/d$ .

Let's give an example in which the variables are;  $s=200$ ,  $d=50$ , and  $a=50$

Total equity becomes  $S=200+50=250$ ; the value of the good becomes  $200+50+50=300$ .

Marx argued that a calculation such as  $a = a/s+d$ ;  $50/250 = 20\%$  is wrong. The real value is  $a=a/d$ ;  $50/50 = 100\%$ . His calculation gives the ratio of surplus labor/necessary labor; accordingly, the surplus value appears as a clear evidence of the degree of exploitation of workers at the same time. As the wage decreases, the earning rate increases; the profit of capitalist becomes maximum in cases of being wage zero (Marx, 1967: 211-217; Sraffa, 1960:162).

In Kapital III, Marx expresses the formula of the capitalist production as releasing a certain amount of money into circulation to obtain more at the end of the circulation process. He also expressed the process that actualized the formula as the movement of capital. Capitalist's concern is not the good produced, it is the surplus value obtained in addition to the capital. The only thing that he can reach this result is replacing capital ( $d$ ) with "live labor" and exploit it (Marx, 1894:43).

Marx who has come in for criticism because of ignoring demand in value theory equalizes the value of a material to effort and time spent in production and divides this amount of labor into two as the amount spent by capitalist and the amount that does not spend by capitalists. However, the cost of the commodity for the capitalist is composed of the labor materialized in the commodity that he commuted. Capitalist's profit (or surplus value) is composed of the surplus value on the price of the production cost of a commodity; namely, the amount that excesses the part commuted (Marx, 1894:44). By a Malthusian approach, Ricardo explains the theory of minimum wage as being increased the labor supply by a population that increases by the effect of the wealth as the result of increasing wages (Ricardo, 1817: 297-298). According to Marx, the theory of minimum wage is based on unemployment that occurs as the result of decreasing the labor demand because of accelerating technological developments after the wages increase. The ranks of the unemployed that is created by mechanization cause the supply of labor to be continuously greater than the demand for labor; accordingly, the wages remain at a minimum subsistence level.

Accumulation of capital actualizes at the end of a process in which the capitalist who is the owner of means of production exploits the workers who have nothing to sell without his labor. The employee who works under subsistence wage conditions can only produce the means of consumption required for living and reproducing as the return of his own labor power. For example, an employee is obliged to work for 12 hours to survive for 24 hours; he cannot make saving at the end of this process as a matter of course. The capitalist does not only take the amount that is enough to reproduce the capital he invested but also appropriates the whole of the surplus that is created by labor power under the name of 'profit' (Marx, 1967:193-195). We need hardly mention at the end of this definition that his capital increases at any time. Accumulation ends up with decreasing the profit that is the source of accumulation as the result of increasing of the organic composition of the capital by advancing of

technology (Kazgan, 1969:105). This assumption above is one of the most important factors of the theory of the end of capitalism with the assumption of the reserve army of the unemployed.

### **Neoclassical Approach to the Relationship between Capital and Distribution**

The neoclassical school that has started to shape by the studies of economists who have lived in different countries of Europe since the beginning of 1870 remains loyal to the fundamental principles of classical economic theory as well as adopts a different approach from classics about value theories and social harmony. Individual benefit-social benefit issues instead of the classical labor theory of value become prominent in neoclassical school. Within this framework, distribution fact is accepted as a problem of pricing factors in producer theory; price formation is explained in factor market within the scope of marginalist analysis; the share that each of the factors need to take from the net profit is tried to be determined under the title of price theory.

Much as Neoclassical economists' idea that coming up against public relief and state interventions is the best solution for the market mechanism, allocation of resources and income distribution emerged after Keynes, this theory has been the dominant micro-economic analysis that survives until today by contribution and arrangements

William S. Jevons in England in 1871, Carl Menger in Austria in 1871 and Leon Walras in Switzerland conducted studies that determine the fundamental principles of utility theory of value and marginalist theory. Although there are not many studies about this issue in the literature, the root of the concept of marginal benefit can be followed till H. H. Gossen (1847), E. J. Dupuit (1844), Augustin Cournot (1838), J. H. Von Thünen (1826) whose ideas were not completely understood because of mathematical expression they used. This same root can even be followed till the famous Italian mathematician D. Bernoulli (1730) who was the first person used the expression of 'marginal utility of income' (Jevons, 1871:29-40; Kazgan, 1969:114). In addition to this, Neoclassical theory grew to maturity by the contributions of following economists; Vilfredo Pareto from Lausanne School; Philip H. Wicksteed, Francis Y. Edgeworth, Alfred Marshall from the Austrian School; Eugen von Böhm Bawerk, Friedrich von Wieser, J. G. Knut Wicksell from the Swedish School; John Bates Clark and Irving Fisher from America School (Late 19th and early 20th centuries).

While the marginal method was the basis of general equilibrium and welfare economy in Lausanne Ecole, this same method was used as the associative principle of supply and demand theory in the analysis of market equilibrium in Marshall. In the Austrian school, value and capital theory become prominent rather than general equilibrium and welfare theory. American School that bears the traces of England School bears more resemblance to Austrian school in terms of prioritizing to production and distribution issues (Kazgan, 1969:116; Akyüz, 1980:88-91). All these new schools emerged include assumption and approach differences as well as succeed to make the Neoclassical economy a holistic theory includes the analysis of main economic problems.

As a result of individualistic approaches, a three-class structure consisting of the landlord, capitalist, and farmers that are in the center of the classical analysis of Neoclassic's theory fall into disuse. However, following items constitute the fundamental components of Neoclassical theory; marginal utility that diminishes in direct proportion to the price of good in perfect competition conditions; homogeneity, severability and substitutability principles of production factors; rational individuals to make production and consumption decisions to maximize the profit in company with mathematical language and a functioning price mechanism that they developed to bring a universal qualification to economic analysis (Yılmaz Genç & Kadam, 2018:424-426; Öztürk, 2010:75).

Moreover, dynamic structure that constantly repeating itself because of producing goods by goods is discarded in the Neoclassical model; a certain good-factor separation is preferred and a one-way statical production process from production factors to the goods emerges. Thus, the probability to use the sources that arise as the result of substitutability and severability characteristics of the factors in alternative areas. This circumstance causes occurring scarcity, competition and market dependence. So, the concepts of opportunity cost or alternative cost will be used instead of production cost; scarcity

price will be used instead of output price (Akyüz, 1980:94). In this way, Neoclassical economists refer to the source of the price of a good as its benefit or usage value, not the cost of the good (labor or relative labor in production). As is seen below, the price mechanism is accepted as a tool that actualizes both producer-consumer equilibrium and individual-social equilibrium at the same time by harmonizing the targets of maximizing the benefit and the profit.

Quantitative analysis is not independent of the price in the neoclassical model in opposition to classical approach because of its characteristics or assumptions explained above. The model solves the problem of optimal distribution of resources by offering both price and amount solution. The assumption that supply and demand equilibrium is provided in factor markets also means that the labor is in full employment. However, in this circumstance, there will be a new assumption that full employment can be provided when the wage that equalizes supply and demand of the labor even if only one employee works (since the rest of the employees do not want to work in equilibrium wage rate).

Consequently, much as synchronously analyzing price, demand and employment problems is a significant innovation in comparison with the classical model, factor distribution and property relations stay out of the analysis and accordingly, the solution of individual income distribution remains incapable (Walsch & Gram, 1980:205-208). The problem of distribution total income among the factors cannot be solved because of entering the number of factors in the model as data and also inability in determining the number of factors in static structure of the model. It can be said that the model is insufficient in terms of the factor incomes as well.

In conclusion, since the distribution problem in the Neoclassical model emerges as the problem of quoting the production factors, there cannot be talked about a distribution theory that is independent of the price theory. As is explained in previous chapters, while the amount of any factors of income is equal to the difference between the sum of total product and other income components solutions of Both Ricardo and Marx, none of the income factors depend on the value of the total product. Distribution or factor prices are synchronously derived from technological conditions of production because of the above assumptions of the Neoclassical theory. Moreover, each of the factor incomes become independent from the total product. Accordingly, total factor incomes need to be equal to total output to ascribe a distribution mechanism function on this kind of factor pricing system (Obrinsky, 1978:65-66). Otherwise, since some of the production factors will take more or less share from the total output in comparison with their marginal contributions, the claim that factor incomes are determined by marginal efficiency will become invalid (and also oneself of Marginal Revolution).

### **Critique of Neoclassical Capital-Distribution Theory: Piero Sraffa and Cambridge Controversies**

The golden age of marginalization in the 1900s, Russian economist Dimitriev (1904) tried to prove the validity of labor theory of value via direct and indirect labor formula against L. Walras who blamed Ricardo in establishing only one equation to solve a problem with two unknowns (price and profit). Dimitriev proved that founding the profit is possible due to the amount of the length of the production process and the length of the used labor units entered in the production of one unit wage good in the case of knowing the real wage. Accordingly, he also proved that determining the price of wage property to find the profit is possible but not necessarily (Kazgan, 1969:153-154). If any input creates a surplus value from the amount or other inputs at the end of the process, the rate of profit or surplus is certain. He showed that the profit emerges at the end of the production process is independent of the price; this profit can also be specified by the production conditions.

Thus, it was coming to an end of the theory of distribution; what is the thing that provides inputs to create a surplus, namely, more than used from them at the end of the process. The results that Dimitriev obtained is identical with the results that were found by Quesnay (1759) about two and a half centuries ago and also the results that were found by Leontief (1966) half a century later. A good is both an input and output; this assumption would be the source of inspiration for Sraffa who was one of the biggest reviewers of Neoclassical approach and modern commentator of the classical economy (Sraffa, 1960:95-102).

### **New-Ricardioniasim**

The concept of Neo-Ricardian is used to define Sraffa and many of Cambridge-based economists followed him because of adopting the approach of old classical economists, notably Ricardo. Pierangelo Garegnani who was the editor of Sraffa's books and one of the students of Sraffa asserted that Sraffa developed his theory to contribute to the Marxist political economy (Savran, 2018:39). In opposition to Neoclassics who accept that markets mobilize by technological advancements and sharing the output among the production factors is a technological fact, Neo-Ricardians share a great similarity with both classics and Marxists in terms of accepting the issue of distributing total product among three main classes as the main economic problem (Yeldan, 2011:171). There is a common point about the criticism directed to neoclassical theory. However, as is explained in next chapters, Sraffa's system was obliged to exclude Ricardo's labor theory of value that also underlie Marxist political economy by the solution offers for the problems cause congesting Ricardo's system. In this way, the results of Sraffa's theoretical framework do not accord with value theory that is in the center of the Marxist political economy.

### **Piero Sraffa: Life and Studies**

Piero Sraffa was born as the child of a wealthy Jewish family in Turin City of Italy in 1898. He participated in socialist actions as a strict Marxist in his youth and made a friendship with Antonio Gramsci who from the leading staff of Partito Comunista D'Italia. Sraffa wrote an article called "Sulle relazioni fra costo e quantità prodotta" (About the Relationships between Cost and Current Output) after graduated from Faculty of Economics, the University of Turin in 1925. He mentioned in this article that the current economic theory can also work under the assumption of constant returns to scale; otherwise, the assumption of perfect competition will become invalid. He laid the foundations of the imperfect market by these expressions. An enhanced form of this article that resounded more than expected was published under the title of "The Laws of Return under Competitive Conditions" in Economic Journal in England with Y. Edgeworth's support.

In opposition to A. Marshall who argued that consumers are unconcerned with the identity of salesmen, Sraffa mentioned that consumers make a selection between salesmen because of several reasons. Joan Robinson who followed Sraffa's lead analyzes these preferences as the reasons for imperfect competition; Chamberlin analyzes the same preferences as the reasons for the monopolistic competition. So, it was revealed that perfect competition conditions are invalid in the markets (Kazgan, 1969:203).

Sraffa moved to Britain after fascist government gained strength in Italy. He started to work as an academician in Cambridge University via John. M. Keynes in 1921-1922. Sraffa found a chance to work with great thinkers such as Ludwig Wittgenstein besides Keynes. He obtained an opportunity to spare time for academic studies when he was taken into librarian staff by Keynes because of the problems with lecturing (Savran, 2018:39-40). Royal Economic Society selected Sraffa to perform editorship for publishing collective works of Ricardo in 1931. However, even the first issue of the books could be published after Marxist economist Maurice H. Dobb participated in the process in 1951. The study was compiled under the title of 'The Works and Correspondence of David Ricardo' and its last issue was published in 1973 (Kurz & Lager, 2010:12). Sraffa was obliged to pause his theoretical research called 'Producing commodities by means of commodities' because of this intensive editorship activity that started in 1931 and continued in 1956. His this great research was published in 1960.

### **Opening Neoclassical Theory to Criticism**

The 1960s were the years when the inconsistencies in method and assumptions of neoclassicism were frequently put into words and also the years when Ricardian and Marxist political economy started to reactivate as an alternative to the traditional theory. Indeed, this period has its origins in the years when Sraffa performed editorship for Ricardo's books and correspondences. Although the framework of

Sraffa's theory started in the late 1920s, the same theory became definite and official by the book called 'Production of Commodities by Means of Commodities' that was published in 1960 after years of continuous interruptions because of editorship duty for Ricardo's manuscripts (Kurz & Jäger, 2018:12). Sraffa discussed the problems about capital-labor relationship and distribution in his book by the Ricardian approach, namely the classical method. Afterward 'Neo-Ricardian school' expression was started to be used to define Sraffa and economists followed him. The reason for using the concept of Neo-Ricardian is that Sraffa commented his own studies as a comeback to the perspectives of classical economists from Smith to Ricardo (Kurz & Salvadori, 2008:1). Since the commodities are both input and output in the analysis of a model in which commodities are produced by commodities, the distinction of production factor and goods is destroyed.

Piero Sraffa pointed out that Ricardo tried to use the labor as a common unit of measure to determine the value of the goods in a multi-product world in his book called "Principles of Political Economy and Taxation." With reference to Piero Sraffa, Ricardo hit the wall. About explaining the effect of the distribution on the values, the greatest challenge that Ricardo faced with the problem of "invariant measure of the value." He was trying to solve this problem in his article called "Absolute Value and Exchange Value." This article was found after his death and seems to have been written shortly before his death (Savran, 2012:368).

This problem that was tried to be solved by Ricardo was also tried to be solved by Sraffa by a merchandise composition that is named as standard goods in the book called "Production of Commodities by Means of Commodities". Standard goods is a merchandise composition that remains stable and is a value measured in an economy with no technological advancements. Sraffa accepts creating a standard good as the precondition of specifying the source of changes occurs in price by means of establishing a fixed value measure. Because it cannot be possible to find the reason for the change in price; does it stem from the properties of good functions as a measure? (Sraffa, 1960:75). Sraffa succeeded to define a compound good that combines with means of production. For this, while the technology is a data, he reviewed the effect of technology on the rate of profit and prices of goods. It is assumed in the first case that the surplus is completely composed of the wage; accordingly, the earning rate is zero. Labour theory of value is invalid in case of specifying the exchange value by the amount of direct or indirect labor within the context of the goods. However, the labor theory of value loses its validity in the second situation in which the surplus is shared between wage and the profit (see. Sraffa, a.g.e. discrimination I-discrimination III).

The foremost criticism of marginalist theory besides Cambridge capital debates in the 1960s and 1970s can be found in this book. Sraffa's Neoclassical theory criticism has two important characteristics. The first of them is that Neoclassics tried to show the assumption of perfect competition conflicts with the real living conditions. The second feature is that they attempted to reactivate the classical value and distribution theory that extends from Quesnay to Ricardo and Marx. In addition to all these, neither Sraffa nor his followers defended labor theory of value. Prominent representatives of Neo-Ricardian school evaluate labor theory of value is a theory that ridden with logical contradictions that do not allow to defend both the versions of Ricardo and Marx (Savran, 2018:43).

Distribution is expressed as determining the shares of classes from the income. According to this definition, Sraffa did not try to determine these shares; he analyzed the relationship between price and profit; profit and wage at different distribution levels. Income distribution is a date and relative prices are determined by technology in an economy in which both pay rate and the rate of profit are the same in every production branch. There can be found constant returns to scale and all the production factor in such an economy. Relative prices are confirmed by distribution if the technological conditions are data. Sraffa's approach can be accepted as a holistic distribution theory when the distribution is specified by the factors that are independent of the technological production conditions.

Sraffa's greatest contribution to criticism of Neoclassical theory arises at this point; it is not possible to explain distribution by technological specifications of production in a multi-product production system in which commodities are produced by commodities and labor. There is technological dependence



among production sections as well. It goes without saying that the target of Sraffa is in this thesis id the marginalist distribution theory (kazgan, 1969: 155; Akyüz, 1980:276). Marginal yield is found by the production function of neoclassical analysis; the shares that production factors receive from the distribution is determined by the marginal yield. Since there are not analysis instruments such as indifference curve analyses, the law of supply and demand, the law of economies of scale, different market types in Sraffa's system, it is not possible to make distribution via a method predicates the labor of las unit participate in production upon

Moreover, working the marginalist mechanism rides on changing at least one of the variables in equations. The marginal method has no function without such a change. For example, the marginal yield cannot be understood if the input is not increased by one unit; or, marginal cost cannot be understood without increasing the current output by one unit. Accordingly, it is not possible to talk about marginal productivity in an economy that repeats itself in every period without no change. Neoclassical theory is obliged to claim that there is not anything called value in this economy; there is not any distribution as well. However, as in every economy, there are laws that specify the value and actualize the distribution. In that case, there is a need for finding principles that are universal principles and are not dependent on changes in production scale to found value and distribution (Sraffa, 1960:51-52). Since the marginal theory is dependent on the changes explained above and also cannot explain an economic system in which any changes happen, it cannot be equal to a universal theory as well.

Besides, there is a problem that the marginalist approach explains the production process by a one-way system from production factors to the consumer good. This situation ends up with the assumption that a good that is produced by any factor or factor cannot transform into another good. On the other hand, classical thinkers from Quesnay's Tableau to the modern day have accepted the production process as cyclical, not unidirectional (Sraffa, 1960:161). Similarly, it was shown in the input-output schedule of Leontief'in (1966) that the same goods are both input and outputs. So indeed, any final product has always the potential to be used as an input in the production of other good or services.

Another criticism is about the assumption that Neoclassical price theory is independent of the production cost of the product price. Since Sraffa thinks that production of commodities is provided by commodities, the same good is accepted as both input and output (Sraffa, 1960:77-79). This means that the price of production factors of a good is based on the price of the good; the price of good mentioned is based on the price of the factors used in the production of the same good.

Indeed, some of the criticism of Sraffa for Neoclassical theory can also be seen in the Marxist critique of this theory in Dobb (1940) (Akyüz, 1980:277). Besides Marxist critiques have never found a place in dominant economic doctrine because of known ideological ignorance attitude, analytical and terminological quality of Marxist critiques caused this criticism to underwhelm. We can say that Sraffa could establish a dialog in his terminology, did not go beyond the boundaries of the general framework of settled theory and also his system has an analytical power; these items provided Sraffa's critique succeed.

### **Cambridge Controversies**

The criticism of economists in Cambridge in England was directed to the method of Neoclassical marginalist theory and assumption after being published 'Production of Commodities by Means of Commodities' by Sraffa when he was 62. Afterward, Massachusetts met with a reaction of Neoclassical economists in Cambridge. The critical writings that started by Sraffa and continues with Cambridge-based economists like Joan Robinson, Pierangelo Garegnani, Nicholas Kaldor, Luigi Pasinetti, John Eatwell, Alessandro Roncaglia, Krishna Baradwaj, Amit Bhaduri turned into long-termed discussions by the representatives of the Neoclassical school, notably Paul Samuelson and Franco Modigliani. These long-term arguments were recorded into literature as 'Cambridge Capital Controversies' (Savran, 2018: 44; Piketty, 2014:247).

The biggest dispute that started Cambridge controversies is the assumption that there was a total production function in which capital can be employed instead of labor in the Solow model and also the

workers do not practice economy. Determining the style of earning rate changes if it is gone out of the Neoclassical theory. Neo-Ricardian theory reveals that a labor-intensive technique can be used instead of capital-intensive technique when the rate of profit increases; capital-intensive technique will be the most profitable method in higher earning rates (Savran, 2012:369). The basic argument of the Neo-Ricardian growth model is that income distribution is the main mechanism among social classes to reach balanced growth.

Differently, from Neoclassics, Neo-Ricardians determine growth and distribution parameters by establishing a relationship with different saving levels based on income between earning rate and growth rate. The profit will be proportionally distributed with owned capital. Thus, the earning rate specifies the wage level with the production technique used. In the Neo-Ricardian analysis, the labor demand is determined by the level of economic activity and capital accumulation, not the neoclassical condition of  $w=MPL$ ; it determines the level of employment by the infinite elastic labor supply curve (Yeldan, 2011:171-180). Luigi L. Pasinetti's (1961) expression an inconsistency in the concept of Neoclassical profit is as follows;

"The authors neglected the fact that the person who saves money cannot be prevented from taking ownership of the savings, otherwise, they will never practice economy. Means of this sentence is that the current capital stock belongs to people (capitalists or employees) who saved money in the past. Model attributes all the profits to capitalists and refers that the savings of workers are always transferred to capitalists as a present. However, if the workers save money, they will also receive a part of the total net profit. Therefore, the total net profit needs to be divided into two was the share of capitalists and the share of workers."

As is seen, the factor that identifies how the profits are distributed between capitalist and worker in the long term is the saving ratio of capitalists and workers, not the marginal productivity of capital (Yeldan, 2011:176-179). Neo-Ricardians argued that capital is nothing short of the market value of the market goods; as the pay rate changes in the prices of these goods can change based on the production cost structures. Accordingly, there is not a guarantee that a lower pay rate will cause a higher employment rate in comparison with a given capital value (Foley & Michl, 2015:21-22).

There was a serious problem of Sraffa about the neoclassical value and distribution theory; capital ratios need to be measured in advance to estimate the earning rate. Capital that is composed of goods in different categories should participate in production so as to create production technology with minimum cost. Neoclassics found the following way to include capital in production function; they degraded it to buildings and machines as a physical unit by knowing the equilibrium price. In other words, since the problem on the capital cannot be expressed by a common measure, it cannot be liable to the optimization (Tsoulfidis, 2010, s. 195).

It is not possible to make a deduction from Cambridge controversies that took almost 20 years without understanding Production of Commodities by means of commodities of Sraffa. We can see how the critiques of Sraffa's followers are effective by reading the sentence of "Now, we are all Sraffarians". This sentence belongs to Paul Samuelson who can be accepted as the most important representative of Neoclassics (Savran, 2012:253). However, while Neoclassical theory continues to be the dominant economic doctrine in the education system of the capitalist world Sraffarian and New-Ricardianism have continued their existence by combining with the doctrine that denies Neo-classicism that is defined as post-Keynesianism today.

## **Conclusion**

Understanding economic history and the transform of economic thought better is a significant precondition to perceive the economic problems and develop the more effective solution for these problems. The purpose of this research was to explain the neoclassical capital and distribution theory with the criticism directed by Piero Sraffa and his followers (Neo-Ricardians). Besides, the validity and effects of this criticism determine how successful the critics are at the point that developing an alternative method to neoclassical theory. First of all, Adam Smith, Thomas Robert Malthus and Jean-

Baptiste's classical approaches about value, capital and distribution were analyzed starting with the capital-labor relationship with François Quesnay. Besides, David Ricardo's labor theory of value and Karl Marx's criticism that were the popular views of the 19th century were scrutinized; the thesis of these thinkers about capital-distribution was tried to be explained. Moreover, other issues that were expressed in this research as follows; the emergence of Neoclassical theory; concepts of rationality and Marginalism; the change arising from these concepts and finally, the context and results of "Cambridge Capital Controversy" that started by the criticism of Sraffa to this theory.

Approaches of different schools from physiocrats to Neo-Ricardians about value, capital, and distribution issues were reviewed in previous chapters. Therefore, since making a general evaluation of all of them will cause unnecessary repetitions, researching the final point of controversies will be in good taste.

Much as Sraffa's analysis took a lot of stick by Neoclassical economists, it is a fact that he directed answerable critiques to the Neoclassical theory. In addition to all these, Sraffa was free from establishing an alternative system for the Neoclassical theory. As is seen in Sraffa's expression in the preface of his own book, he aimed to be the person who started the process rather than achieving such a goal (Sraffa, 1960:52-53). However, Cambridge Controversies that started in the 1960s and took years within the frame of capital-distribution-growth theories show that Sraffa largely achieved the goal. The most remarkable difference between classical and neoclassical school is the concepts of cost and value; almost all these controversies are the result of the interpretation styles of these two concepts. The concept of value in classics turn into profit in neo classics; opportunity cost or alternative cost are used instead of the production cost. These differences cause economic analysis to reach disparate results. James Mill who is the important representative of classical Ecole defined the concept of production cost as follows; "Human cannot create the material but can change its shape or move it. The production also includes extinguishing; the real cost of a good is composed of the required goods and means of production, namely, the goods that are destroyed during production" (Kurz & Lager, 2010:18).

This concrete conception of classics is extremely different from the concept of the cost that is composed of abstract concepts such as opportunity cost, remission and abstaining from consumption.

Sraffa's theory has the following characteristics; production cycle in which commodities are produced by means of commodities; Ricardian value approach; invariable measure of value that Ricardo tried to find throughout his life; definition of standardized product made by Ricardo; being determined the solution conditions of Marx's transformation problem; being excluded demand in analysis as in Ricardo and Marx. However, in opposition to Ricardo and Marx, Sraffa's analysis comes to the forefront by the side that explains the profit-wage relationship rather than being a distribution theory (Kazgan, 1969: 155; Akyüz, 1980:276)

We explained Neo-Ricardian critiques such as there is a need for a change to make a determination; the marginal yield is determined by the production function; the shares of labor and capital from the national income are determined by the marginal yield. This criticism that can be proved on the mathematical ground is accepted by some of the neoclassical economists, notably Paul Samuelson. But yet the single-good production function is continued to be used (Savran, 2012:253-254). This circumstance is used as the evidence by people who claim that neoclassical won the competition and Cambridge controversies are forgotten.

Thomas Piketty (2014) asserted that Solow's neoclassical growth model won against both Harrod-Domar's model and Robinson-Kaldor-Pasinetti models in 1970-1980s. He also asserted that Kaldor and Pasinetti were afflicted with confusion; Cambridge controversies are at the level of US-UK conflict that was conducted by capricious economists (see. Piketty, 2014:246-248)

Even though Sraffa's system is successfully used in criticism of the theory, the Neoclassical approach still dominates in economic circles. Some of the reasons of this circumstance are as follows; Neo-Keynesians uses this system as a tool to critique neoclassical theory rather than developing and completing it; Sraffa's approach has not integrity to create an alternative for Neoclassical theory; the ideological point of view and prejudices (Kazgan, 1969:158-159).

With reference to Piketty (2014), Sraffa's criticism consists of poor arguments of Cambridge controversies that do not contribute to economic theory and do not cause any change. The wrongest determination in here is to repeat Piketty's claims. However, Sraffa's studies and Cambridge controversies provided to be created as a far-reaching literature that still improves (Kurz & Lager, 2018:29). In conclusion, much as there could not be created an extensive economic theory that can be an alternative for neoclassical theory, new approaches will always have a chance to establish a holistic economic theory when they are banded together as the parts of a whole.

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## ANALYSIS OF A GAME THEORY: FAN SUPPORT

Ümran GÜMÜŞ\*  
Ayhan ORHAN\*\*  
Şevket Alper KOÇ\*\*\*

### Introduction

Having a qualified team in a soccer team, giving the necessary attention to their matches and having a place in their supporters' hearts have important influences in winning the games. The team management must always pay attention to these factors. This will result in a team that achieves high achievements.

The expectations between the fans and the football team are bilateral. A soccer team wishes to have a high level of support from its fans, especially during home games. On the other hand, the fans want the team that they support to give the necessary attention to their teams and to transfer the qualified players. Also, the fans want team players to pay attention to their behavior in social and business life. The acquisition of matches and the achievement of a series of wins at a high level provide significant advantages in having a passionate supporters. In addition, the level of development of the city where the soccer team is located has a direct impact on the provision of fan support.

Fan support can be achieved in the long run, but it can be lost in the short run. It takes a long time for the supporters of a football team to achieve love, common sense, trust and loyalty. Especially in this respect, the winning streaks, league championships, UEFA Cup championships, Champions League championships and League cup championships, are all of great importance.

### Literature Review

Pinar et al. (2017) seeks to identify the importance of the factors that affect the brand value of the Turkey Super League with a questionnaire with fans. In the paper, they conclude that the league as a whole and the teams should compromise to be strong together. They also find that the performance of the factors affecting the brand value of Super League cannot meet the expectation of supporters.

Giray and Salman (2008) focus on the relationship between Fenerbahçe supporters' attitudes towards aggression and their psychological commitment to their teams. In the questionnaire survey, aggression is considered in two dimensions, physical and verbal. They conclude that there is a positive relationship between supporters' attitudes towards aggressiveness and psychological commitment.

İlke (2016), which aims to evaluate football with a multi-disciplinary approach, focuses on Beşiktaş Bazaar Group. He gives detailed information on the development process of the football industry is provided on the basis of Beşiktaş Bazaar Group. He focuses in detail on the concept of supporters and the formation of supporters.

### Analyzing Fan Support from Game Theoretic Perspective

The main aim of this study is modeling of the fan seeking competition between Kocaelispor and Nusaybin Demirspor. All football teams are seeking to increase their number of supporters. However, this is a costly process. In addition to that, maintaining fan support requires long-term success.

Kocaelispor and Nusaybin Demirspor are engaged in information search competition to maintain fan

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\*Kocaeli University, Social Sciences Institute, umrangumus47000@gmail.com

\*\* Kocaeli University, Faculty of Economics and Administrative Sciences, aorhan@kocaeli.edu.tr

\*\*\* Kocaeli University, Faculty of Economics and Administrative Sciences, alperkoc@kocaeli.edu.tr

support and spend up to  $z_j \geq 0, j = F, G$  for this purpose, where  $F, G$  represents Kocaelispor and Nusaybin Demirspor respectively. Since the teams do not care about the future in this competition, the discount rate is treated as zero. The information to maintain fan support will be reached at time  $t(z_j)$ . If there is an increase in a team's R&D expenditure, that team will have the information to maintain fan support earlier ( $t'(z_j) < 0$ ). The benefit provided by the fan support depends on the increased methods of providing fan support. In this context, the team who has the methods of providing fan support earlier get more benefit. The main reason for this is that the team has the ability to implement this method. The utility function of Kocaelispor is as follows:

$T$ : the level of benefit of maintaining fan support

$M$ : the level of benefit provided by the advantage of early ownership of information to provide fan support:

$$u_F = \begin{cases} T + M - z_F & \text{if } t(z_F) < t(z_j), j \neq F \\ T - z_F - M & \text{if } t(z_F) > t(z_j), j \neq F \end{cases}$$

Figure 1: Kocaelispor's Utility Function in the Patent Race

Kocaelispor will have the benefit of providing fan support whether it has the information to maintain fan support earlier or not. This is the amount  $T$  in the utility function. In addition, there is a cost associated with the information which is shown by  $z_G$  in the utility function. Also, if Kocaelispor reaches the information earlier, it will get an extra benefit level, which is shown by  $M$ . This utility is the level of benefit provided by the advantage of early ownership of information to provide fan support (Figure 1-line 1). However, if Kocaelispor reaches the information later than Nusaybin Demirspor, it will have a negative utility which is exactly same as the utility when it has in the case it reaches the information earlier. (Figure: 1-line 2).

$$u_G = \begin{cases} T + M - z_G & \text{if } t(z_G) < t(z_j), j \neq G \\ T - z_G - M & \text{if } t(z_G) > t(z_j), j \neq G \end{cases}$$

Figure 2: Nusaybin Demirspor's Utility Function in the Patent Race

Nusaybin Demirspor will have the benefit of providing fan support whether it has the information to maintain fan support earlier or not. This is the amount  $T$  in the utility function. In addition, there is a cost associated with the information which is shown by  $z_G$  in the utility function. Also, if Nusaybin Demirspor reaches the information earlier, it will get an extra benefit level, which is shown by  $M$ . This utility is the level of benefit provided by the advantage of early ownership of information to provide fan

support (Figure 2-line 1). However, if Nusaybin Demirspor reaches the information later than Kocaelispor, it will have a negative utility which is exactly same as the utility when it has in the case it reaches the information earlier. (Figure: 2-line 2).

There is no pure strategy Nash equilibrium in the game. The main reason for this is that the utility functions are discontinuous. If any team makes even a small change in R&D spending, there will be significant changes in the level of their equilibrium payoffs. For example, if Kocaelispor makes an expenditure in the region  $0 < z_F \leq 2M$ , Nusaybin Demirspor will respond by  $z_F + \varepsilon$ . However, if Kocaelispor makes an expenditure  $z_F > 2M$ , Nusaybin Demirspor will respond by 0.

There is a symmetric mixed strategy equilibrium in the game. Assume that the probability that Kocaelispor makes an expenditure less than or equal  $z$  is  $F_F(z)$ . Similarly, the probability that Nusaybin Demirspor makes an expenditure less than or equal  $z$  is  $F_G(z)$ . These two functions represent the teams' mixed strategies.

According to mixed strategy Nash equilibrium, players are indifferent among all strategies that they randomize in a mixed strategy. It is necessary that the expected payoffs from all strategies that Kocaelispor randomizes are equal to each other:

$$\begin{aligned} EU_F(z_F = 0) &= EU_F(0 < z_F \leq 2M) \\ (T + M - z_F)F_G(z_F) + (T - M - z_F)(1 - F_G(z_F)) &= T - M \\ (T + M - z_F)F_G(z_F) + (T - M - z_F)(1 - F_G(z_F)) &= T - M \\ TF_G(z_F) + MF_G(z_F) - z_F F_G(z_F) + T - TF_G(z_F) - z_F + z_F F_G(z_F) - M + MF_G(z_F) &= T - M \\ MF_G(z_F) - z_F + MF_G(z_F) &= 0 \\ z_F &= 2MF_G(z_F) \\ F_G(z_F) &= \frac{z_F}{2M} \end{aligned} \quad (1)$$

Equation (1) describes the equilibrium strategy of Nusaybin Demirspor.

Nusaybin Demirspor is also indifferent among all strategies that it randomizes in a mixed strategy. In the case of randomization in the  $[0, 2M]$  the expected utility from all the strategies that it randomizes must be equal to each other:

$$\begin{aligned} EU_G(z_G = 0) &= EU_G(0 < z_G \leq 2M) \\ (T + M - z_G)F_F(z_G) + (T - M - z_G)(1 - F_F(z_G)) &= T - M \\ (T + M - z_G)F_F(z_G) + (T - M - z_G)(1 - F_F(z_G)) &= T - M \\ TF_F(z_G) + MF_F(z_G) - z_G F_F(z_G) + T - TF_F(z_G) - z_G + z_G F_F(z_G) - M + MF_F(z_G) &= T - M \\ MF_F(z_G) - z_G + MF_F(z_G) &= 0 \\ z_G &= 2MF_F(z_G) \\ F_F(z_G) &= \frac{z_G}{2M} \end{aligned} \quad (2)$$

Equation (2) describes the equilibrium strategy of Kocaelispor.

In the mixed strategy Nash equilibrium teams spend a high level of expenditure in order to have the benefit of the early possession of knowledge.

## Conclusion

Providing fan support is one of the main goals of soccer teams. The main reason for this is that the supporters represent power in terms of football teams. In addition, having passionate fans is especially important in terms of winning in home games.

Competition of AR-GE spending that has been introduced by soccer teams in order to reach the



information of providing fans support leads to a high level of financial expenditure for the teams. The mixed strategy Nash Equilibrium, which emerged from the Patent Race analysis conducted in this direction, provided evidence that the teams should spend a high level of expenditure in order to have the benefit of the advantage of early information of providing fan support.

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## POTENTIAL IMPACTS OF RULE OF LAW ON ECONOMIC DEVELOPMENT

Güller ŞAHİN\*

Halil İbrahim AYDIN\*\*

Hüseyin YILDIRIM\*\*\*

### Introduction

Desires of countries to become self-sufficient and compete on a global scale for satisfying consumption needs that parallelly develop to the population growth in the world have made economic growth and development issues important day by day.

Economic growth simply means the increase in gross national product per capita and national products. Economic development includes improvements occur in life standards by the effect of structural changes in social and cultural fields beside the growth (Alataş, 2014: 5). Accordingly, economic development is a process that covers changes in society's behavior patterns, value judgements and standards such as income distribution, health, life quality, life expectancy, cultural level, rule of law, quality of education, literacy rate, infant mortality, number of doctors per person, schooling rate, number of hospital per person (Kelecioğlu, 2015: 5). However, the growing of the economy is the main condition for actualizing the economic development.

It is possible to say that the residual factor that plays the foremost role is the social capital to explain the economic development. Because the economic development process does not solely mean high savings, using these savings in physical capital investments and more human capital and also more developed technology. Economic development process also means increasing the quality of bureaucracy, providing the rule of law, decreasing the ratio of corruption. In short, it means providing and strengthening confidence between economic operators.

There is a broad consensus in the literature that good governance is both a significant input and output for economic development. However, the point about good governance is not frequently explicit. Much as the concept has potential meanings, the concept mentioned is commonly used for property rights and rule of law with democracy and political liberties (Dollar and Kraay, 2000: 1).

This research focused on the relationship between the rule of law and economic development as a subcomponent of governance; besides, the effects of the rule of law on the economic development were analyzed. It is accepted in parallel with research objective that countries value the rule of law as a direct input in terms of the life quality. The problem sentence of the research consisted of whether the rule of law encourages the economic development or material well-being. Next chapters of the research explained the theoretical framework of the concept of rule of law. The third chapter focused on the relationship between economic development and the rule of law. Afterward, the index of the rule of law was discussed. A literature review was performed in the fifth chapter. The research is completed by the parts of conclusion and policy recommendations.

### Theoretical Framework: Rule of Law

The meaning of rule of law in terms of terminology is to avoid the arbitrary management applications by guaranteeing fundamental rights and freedoms of an individual by restricting the authorities of government (Aliefendioğlu, 2001: 30). Accordingly, also the state is legally checked just as society and

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\* Batman University, Faculty of Economics and Administrative Sciences, sahin@dpu.edu.tr

\*\* Batman University, Faculty of Economics and Administrative Sciences, haydin12@gmail.com

\*\*\* Agriculture and Rural Development Support, hyildirim@tkdk.gov.tr.

individuals. Prohibitions and sanctions are also valid for the state as much as the individuals and society (Göksu, 2007: 66).

The rule of law necessitates to protect the rights of people minority and/or social risk group. It also necessitates a fair and legal environment that is evenhandedly conducted (Özgökçeler, 2014: 76). The rule of law contains the parameters that show adaptation and trust level of individuals for social rules. It contains perpetration frequency, efficiency and predictability of the judiciary with the practicability of contracts (Gökalp ve Baldemir, 2006: 219).

It is expressed with reference to the report of United Nations (UN) General Secretary that core principles of the rule of law require to be responsible for all the individuals and private/public corporations before the law that are compatible with accessible and international principles of law. It is also emphasized that the concept of rule of law covers eight principles including equality before the law, accountability to the law, fairness in the application of the law, separation of powers, participation in decision-making, legal certainty, avoidance of arbitrariness, procedural and legal transparency (Telli, 2014: 314-315).

According to the expression of the World Bank, the rule of law is the precondition of economic and social development; the mechanisms that strengthen the rule of law are the basis of the economic development. However, the rule of law provides a predictability for economic, social and political relationships; it also guarantees the civil liberties. UN accept the rule of law as the basic principle that underlies the actions relating to civil liberties. Within this scope, the rule of law guarantees the stable investment requirements and legal security by the consistent and transparent actions of the state (Karabacak, 2003: 63-71).

The rule of law constitutes the fundamental structure of the democracy. Democracy is one of the basic concepts for the economic development. Democratic factors like protecting the human rights, separation of powers and freedom of speech constitute the institutional framework where the economic development takes place in. Democracy provides to increase the rate of growth by creating contributions such as a stable investment environment, human capital accumulation and stimulating the resources in line with the economic development (Doğan, 2005: 16).

### **Relationship Between Economic Development and Rule of Law**

The relationship between economic development and rule of law is one of the most important agenda topics of the 21st century. It is seen that the interaction of the rule of law with economic development spreads into several fields. Haggard (2011) pointed out that these interactions can be discussed by four different theoretical aspects. The first theoretical connection is the basic law fact, namely 'individuals' security area'. It is the situation that to be rendered conditions of warfare continuous, falling short of the norms that can solve the problems due to peace or be dissenting from the norms. This circumstance results in increasing the costs.

The second theoretical aspect is about 'property rights and code of obligations'. Accordingly, solving the conflicts by peace is possible in existence of settled institutions. Economic development and growth do not actualize in societies in which the property and economic rights are not well-defined. Many institutional economists deal with this domain.

Another area is 'political effect' area and it is about restricting the influence area of the government. The micro basis of the rule of law is revealed as the way that overcoming disobedience threat of the government by normative transparency. Moreover, judicial independence is accepted as the precondition of restricting arbitrariness of the power.

The fourth area is about the 'relationship of corruption and the rule of law'. The issue in which the corruption is effective in economic development is the property rights. Hereby, it is accounted for initial conditions that are a known issue in economics. If the property rights are not well defined, namely, if the exercise of rights is in arbitrariness area of the government, corruption becomes one of the keys of the economic operators who show rent-seeking.

Economic development is provided a series of factors like protecting individual property rights, guaranteeing fair and reliable contract sanctions, specifying and applying labor laws, creating markets for the poor, making easier to reach the markets mentioned. Rendering the public services fairly and more effective redistribution possibility emerge with a growth mentality that accompanies the factors of the rule of law such as legal publicity, providing participation and representation, allocating and applying of substantive, economic and social rights (Berg and Desai, 2013: 9-10).

The predictability relating to commercial activities can be provided and the uncertainties can be decreased due to being played a part by the rule of law within economic development (Karabacak, 2003: 74). This predictable and reliable environment creates an area for economic operators in the market to make sound judgments and improve the economic activities. Accordingly, we can easily say that the circumstance mentioned contributing to the economic development. A similar situation is also valid for the global markets (Gözlügöl, 2013: 1445).

Practicing the rule of law principle is seen as the best way to guarantee the economic freedoms such as protecting the property rights and applicability of the contracts. The aim of increasing domestic and foreign investments and higher economic development is achieved due to the relevant economic freedoms (Demirtaş, 2009: 62). Rule of law principle needs to be adopted and applied for especially the foreign investors to be involved in commercial activities.

The ratio of corruption is in the tendency to decrease in states where the rule of law is at a high level (Yardımcıoğlu, 2013: 438). Reducing the corruption contributes to the improvement of society.

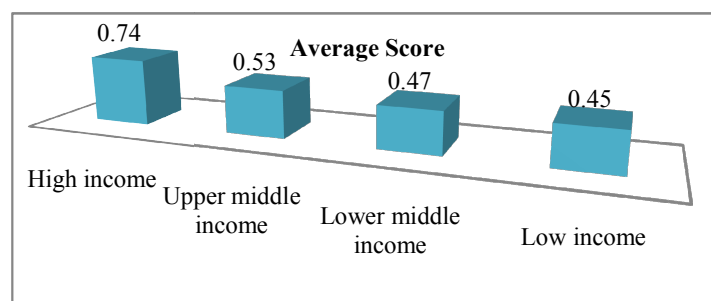
Economic development that incorporates growth, social, political, cultural transformations reach more effective and productive output levels by means of the rule of law. Individual freedoms, participation rate to social activities, independence of courts, circulation of newspapers, nongovernmental organizations and trade unions in social and political life are directly related to the rule of law. Positive changes in these factors mentioned have a significant place in designing developmental side of economic development.

### **Index of Rule of Law**

The rule of law is a composite index that is based on criteria like the quality of bureaucracy, political corruptions, possibility of government contracts being rejected, sustaining the risk of expropriation. Each of the components is used as a single independent variable in growth regressions (Butkiewicz and Yanikkaya, 2004: 6).

Rule of Law Index Report that has been published as annual series by the World Justice Project (WJP) as of 2012 submits factor and sub-factor points of countries within the index. This report mentioned also make comparisons between the scores of countries and other countries in the same regional and income groups. The factors that make up the index are constraints on government powers, absence of corruption, open government, fundamental rights, order & security, regulatory enforcement, civil justice and criminal justice. Scores vary between 0 and 1; 1 is the highest score, 0 is the lowest score. 1 as the point explains the strong commitment to the rule of law; 0 as a point explains the weak commitment to the rule of law (WJP, 2018: 2). The index was designed so as to be applied in countries have different economic, social and cultural systems (WJP, 2018: 5).

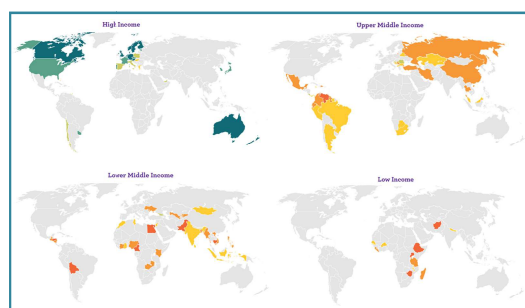
Graphic 1, Figure 1 and Graphic 2 show the distribution of index of the rule of law by the scores that were measured by the seventh report of Rule of Law Index 2017-2018 in 113 countries via eight factors. Graphic 1 that determines the rule of law by the income groups emphasizes that countries in high-income level are better by 1.6 times in rule of law principle in comparison with the countries in the low-income group. Moreover, 71 high-income countries have higher index scores than 42 countries in the low-income group.

**Graph 1: Rule of Law Around the World by Income**

Source: WJP, 2018: 22.

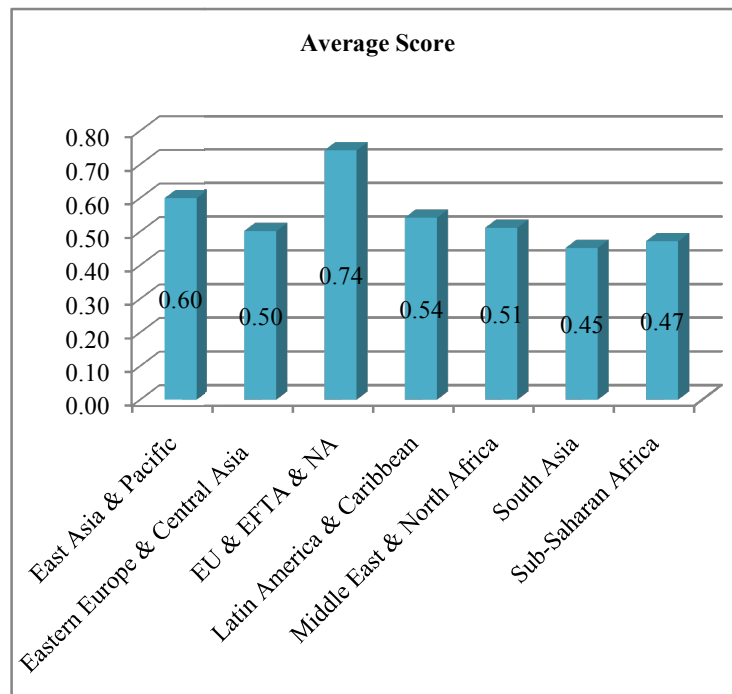
Score values of countries in the low-income group show that the necessary regulations are not performed or there are problems in materializing the regulations performed. Score values of countries in terms of the income groups provide a basis for the argument called 'rule of law moves in a similar direction with economic development'.

Figure 1 that explains the rule of law in the world specifies 11 countries whose score value is 0.81 and above; 11 countries whose score value is between 0.71-0.80; 16 countries whose score value is between 0.61-0.70; 32 countries whose score value is between 0.51-0.60; 32 countries whose score value is between 0.41-0.50 and finally 11 countries whose score value is 0.40 and below. The color scale that goes from dark green (0.81 and above) to orange (0.40 and below) respectively shows the countries powerfully remain loyal to a rule of law and also the countries that weakly remain loyal to a rule of law. It is attracted notice that Denmark, Norway, Finland, Sweden, Netherlands, Germany, New Zealand, Austria, Canada, Australia and the United Kingdom that are in the dark green area are the countries with high economic development ratios.

**Figure 1: Status of Rule of Law around the World**

Source: WJP, 2018: 22-25.

Graphic 2 that shows the rule of law by the region groups indicates that the average score value is highest in region European Union & European Free Trade Association & North America (EU & EFTA & NA); this same score is lowest in South Asia. Denmark is above the regional average of EU & EFTA & NA (entirely 24 countries) by 0.89, the highest score value. Venezuela is below the regional average of Latin America & Caribbean (entirely 30 countries) by 0.29, the lowest score value.



**Graph 2:** Rule of Law around the World by Region

Source: WJP, 2018: 18.

It is seen when Graphic 1, Figure 1 and Graphic 2 are evaluated together that the rule of law has different effects for the countries in different stages of development. Different stages of development of countries are an indicator for the relationship between economic development and rule of law.

### Related Literature

A significant part of legal arrangements has included the rules about the economy from the Hammurabi laws to the modern laws. Also, the judicial system has evolved just as being in the transition process from economic growth to the economic development. Accordingly, the literature on the economic development and rule of law has started to spread into larger areas.

Democracy and sustaining the rule of law that are two essential factors that will differently affect the economic growth in developing countries are intensely discussed in growth literature. With reference to the emphasizes of empirical conventional literature that comprises on economic growth, sustainability in the rule of law is essential for growth. Besides, democracy has a strong effect on the growth after the controlling other important growth determinants (Butkiewicz and Yanikkaya, 2004: 6). However, literature has limited information about the relationship between the rule of law that is a subcomponent of organizational structure and economic development.

Barro (1994) who was the first investigators researched organizational structure and growth issues analyzed the relationship between growth and democracy. Results confirmed the positive effect of the rule of law, free markets, low public expenditures and high human capital on the growth. Moreover, a nonlinear relationship in which more democracy increases the growth in low political liberties. This

democracy represses the growth in case of reaching an intermediate freedom level. In a similar manner, Knack and Keefer (1995) conducted a study relating to corporate structure. They pointed out that rule of law, democracy, and political violence precautions are better corporate quality measurements.

Rodrik and Subramanian (2003) mentioned that organizational structure has a remarkable effect on the income level; this remarkable effect can be provided by well-arranged legal order. In addition to these expressions, technological advancements and increases in investments will occur as the result of providing well organizational structure and property rights.

Butkiewicz and Yanikkaya (2004) researched the relationship between the rule of law, democracy, and economic growth. Results indicate that rule of law has a positive effect on economic development; democracy has no significant relationship and/or effect on the economic development. Results are valid for developing countries especially.

Gökalp and Baldemir (2006) performed a study and expressed that the variables such as freedom of speech and transparency, political stability, quality of regulations and rule of law negatively affect the economic growth specific to Turkey. They pointed out in addition to these findings that the variables like management effectiveness and preventing corruption positively affect the economic growth. The research analyzed the countries under four groups. As regards to the findings, the effects of institutional factors on the economic growth are different from the country groups.

Kovacı et al. (2009) explained the role of the social capital on the economic development. Findings refer that economic development is explicitly high in countries where the social capital and institutional effectiveness (protecting property rights, political stability, fighting against corruption, and the rule of law) are at a high level as well.

Haggard et al. (2008) emphasized the connections of economic development by reviewing several currents of theoretical and empirical research. The main deduction is that security of property rights and completeness of contracts underpin the investment and trade that accelerate the economic development and growth. However, it is explained that property rights and contracts belong to institutions whose interests are based on coalitions. As regards some of the arguments, public enterprises are important, but informal institutional arrangements also play a significant role especially in developing countries.

Haggard and Tiede (2011) researched the relationship between the rule of law and economic development. They pointed out that rule of law is in a strong relationship with growth in developed countries; rule of law is in a poor relationship with growth in developing countries.

Castiglione et al. (2015) analyzed the long-termed relationship and direction of causality between economic growth, corporate structure, and pollution. Findings indicate that there is a positive reverse causality relationship between the rule of law and income. A negative relationship can also be seen in the rule of law and pollution. It is determined in results that more powerful institutions increase the income level of their countries; rule of law is important for creating a win-win status in terms of economic development and environment.

Another literature that arises about economic development and rule of law is the good governance field. Good governance criteria that were specified by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) are as follows; participation, the rule of law, transparency, responsiveness, consensus-focality, equality and comprehensiveness, effectiveness and efficiency, accountability (Özgökçeler, 2014: 76). The literature anthology that includes the rule of law that is a subcomponent of economic development and good governance as follows.

Olson et al. (2000) analyzed the relationship between governance and economic development for developed and developing countries. The key finding is that the governance and economic development is a positive correlation in countries where the rule of law is valid, the corruption level is low and bureaucracy has high quality. Differences in governance quality are shown as the reason for this circumstance. Productiveness is higher in countries which are well managed.

Dollar and Kraay (2000) discussed three different topics in their study; governance, growth effects of policies, governance, and income of poor, financial support and governance. It is determined in

findings that rule of law has a strong effect on real income increase; however, democracy has not the same effect. The role of democracy is not creating a better environment for accumulation and growth; a participatory democracy is important as a tool for standing between income increase and other issues. Dollar and Kraay (2003) tested the effect of the rule of law on growth. With reference to the confirmation of findings, the rule of law creates a positive effect on the growth.

Yüksel (2006) mentioned that the governance that emerges as the result of the agreement on development, social and political priorities is protected within the borders of the triangle of participation, transparency, and accountability. As regards another expression of the investigator, effectiveness, and generality of governance mechanism economically contributes to the processes of providing rule of law, improving effectiveness and accountability in the public sector and fighting the corruption.

Yardımcıoğlu et al. (2013) researched the hypothesis called ‘the countries who have the highest good governance score have a higher real income in comparison with other countries. It is observed by the findings that the countries that have an optimum work environment and high governance score are the countries in the high-income group. Moreover, a strong, positive and significant relationship between good governance and income was obtained in countries whose good governance point average is high. This relationship obtained is higher in government’s effectiveness and rule of law that represent good governance.

Özgökçeler (2014) surveyed Bursa City Council that is relatively one of the successful city councils within the scope of the local governance. As regards the findings, Bursa City Council is accepted as sufficient and successful in all the criteria of good governance. It is mentioned that the City Council shows success in participation, transparency, equality and comprehensiveness fields.

The investigations that discuss on the rule of law in particular and also discuss on good governance in general in sustainable development literature have increased in recent years. Dietz and Neumayer (2007) conducted a research within this scope and tested the effect of corporate quality that is explained as the indicator of governance on the development. Findings indicate that sustainable development level that is represented with real genuine ratio will increase by the improvement in bureaucratic quality and rule of law and the decrease in the ratio of corruption as well.

Telli (2014) aimed to research the effect of sustainable development process under the umbrella of the UN on the development of the process of the rule of law. Sustainable development that has been one of the foremost agenda topics of UN members also discussed the relationship between civil liberties and rule of law. The variational progress that is monitored by three facts that have a direct proportion relationship between each other by the time was evaluated. According to the observation, the facts further close up incrementally.

Güney (2015) analyzed the effect of the good governance on the sustainable development. As is seen in prediction results, governance has a positive and highly important effect on the sustainable development. Reaching a governance level that focuses on the sustainable development matters in terms of the sustainability of development.

Güney (2016) conducted one more study to review the relationship between good governance and sustainable development. A positive and pretty significant relationship was observed from governance to sustainable development. He mentioned that the improvement in governance level will increase the sustainable development level at the same time.

Mutua (2016) emphasized the rule of law in providing sustainable development for a successful, fair and modern democracy. According to the same investigator, the concept of rule of law needs to be adapted to cultural, geographical and economic attributes of governments.

Malby (2017) analyzed the relationship between the rule of law and sustainable development. He accepted the rule of law as a tool of the sustainable development. In this direction, the researcher offered a model to measure and conceptualizes the rule of law. Thus, the broader relationship between the rule of law and other sustainable development goals were analyzed. The results brought a thematic approach to understand the relationships between legal frameworks and develop-men results better.



Afolabi (2018) performed a research and mentioned that there is a need for a reorientation towards remaining loyal to rule of law principle and good governance to actualize sustainable development in Nigeria.

### **Conclusion and Policy Recommendations**

This research reviewed potential impacts of rule of law on the economic development. Within this scope, there can be seen subtitles as a theoretical framework, the relationship between economic development and rule of law, index of the rule of law and relevant literature.

A large number of investigators express that the success factors in growth, economic development and sustainable development processes of countries are associated with the rule of law principle. For instance, they explain that corruption has a negative effect on the economic development; reliable property rights, the rule of law, democracy and political liberties positively contribute to the development.

Just as in literature, the interaction between economic development and rule of law actualize in a positive direction; these factors affect each other. The rule of law that is properly defined contributes to the developmental side of societies by providing progress between economic, social and cultural dimensions of the development. This contribution is generally realized by means of legal and institutional reforms, protecting the social rights, accessing to legal order and legal authorization strategies. However, the characteristics, legal structures and different stages of development of countries need to be considered. It draws attention that the relationship between economic development and rule of law is a big problem in undeveloped and/or developing countries. One of the foremost characteristics that define the developed economies is protecting the rule of law in those countries.

Legal institutions, international business contracts, property right arrangements in countries that consider the rule of law accelerate the economic development by increasing foreign trade volume, financial improvement, and investment potential. New work environments are created under favor of the market mechanism that does not allow for monopolization to achieve this potential. Moreover, providing the rule of law protects private economic operators in the market from extreme state interventions.

Policymakers determine the application and result of government policies by reflecting the capacity to manage economic development policies. Thus, understanding the connection between economic development and rule of law is significant in terms of specifying best-fit policies for economic development. Inflexibility to the rule of law principle means a more powerful economic development process.

As is highlighted by Perritt and Clarke (1998), acceptable legal rules for commercial interests necessitate transparency and stability rationality. Regulations, rules, and statutes should be determined and applied to create a practicable environment for economic development. Legal and managerial strategies should support the rule of law principle in relation to globalizing the trade, investments and financial improvements. It is important that economic development and the rule of law principle complement each other for the welfare level of counties and distributing this welfare to the society fairly.

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## THE IMPORTANCE OF LOGOS AND STRATEGIES FOR LOGO DESIGN

Şimal ÇELİKKOL\*

### Introduction

The fact that we live in a consumer society causes us to face more brands. It is precisely at this point that more brands, more visual data and as a consequence more logos get imprinted into our minds. Considering Neuromarketing, those visual elements leave their marks on our brains through communicating with them. People, taking their personality traits and interests into consideration, adopt the objects they see or ignore and just imbed them into their subconscious mind. The goal of a company is to be imprinted into the mind of customers and create loyal customers attached to the company. Companies wishing to build customer loyalty take advantage of symbols expressing their own corporate image and identity. Therefore, companies make use of logos telling who they are and expressing their image.

A logo can be defined as a symbol, graphic mark or colour and an important Neuromarketing and awareness tool revealing the character of a company. It appears that logo is an element, which is regarded important and creates “awareness” in the concept of competition. It would also be correct to explain logo as a mental projection because the visual input transferred from eyes to brain is recalled and imprinted into our minds where it is interpreted and perceived. The main issue important here is to answer the question: “What is the process of selecting the right logo?” Every company has its own character, marketing image, products and customer portfolio. It is therefore necessary for a logo to meet those differences. When the logo is considered as the visual face of a brand, it is the first sign customers see before they get acquainted with company’s products/services.

When we go through existent literature, logo is related to a variety of concepts ranging from creation of corporate identity and raising awareness to impact on brand attitude and changing buying behaviour of customers in different age groups. Although it is not possible to assert that logo is the only factor affecting all those concepts, much research conducted revealed its significant impact on them. The logo speeds up the decision-making process and helps customers to make quicker decisions especially when they feel undecided and have brand loyalty. It is necessary to acknowledge that the symbol which is expected to represent the brand image maybe for centuries should be selected after a right decision making process.

A logo is not only a shape but also a symbol, which represents the image of a company, a place where customers and companies come together and make a difference in competition. In brief, this study aims to highlight the importance of logo selection for companies as it would affect company image for years and it is therefore necessary for successful companies to have successful logos.

### Logo Concept

The word logos means mental comprehension in Greek language. It is derived from the root ‘leg’ and is used in place of the word ‘pathos’ which means emotional comprehension. As the word is related to mentality, it also means system, knowledge and science. ([http://www.felsefe.gen.tr/felsefe\\_sozlugu/1/logos\\_nedir\\_ne\\_demektir.asp](http://www.felsefe.gen.tr/felsefe_sozlugu/1/logos_nedir_ne_demektir.asp)).

There is a variety of definitions for logo in related literature. It is loosely defined as a brand component which triggers memory connection of a target brand through graphic and image. Peters (1999) emphasized the importance of the visual power of a logo (Walsh et al., 2010:76). On the other hand some scholars (Bottomly and Doyle, 2006; Henderson and Cote, 1998; Janiszewski and Meyvis; 2001)

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\* Beykent University, [simalcelikkol@beykent.edu.tr](mailto:simalcelikkol@beykent.edu.tr)

asserted that logos were prominent features of various direct or indirect communication mediums ranging from packing, promotional materials and advertisements to business cards and letterheads (Walsh et al., 2010:77). In addition, Snyder (1993) discusses the logo as a material bearing company's own signature in literature on corporate identity (Henderson and Cote, 1998:14).

Visual records can get imprinted into mind much better since nerve lines between the eyes and brain are 20-25 times stronger than the lines between the ears and brain (Sekman, 1998: 59). As a consequence the things we see leave their marks on our brains and shape our behaviour. That's to say, customers could be prejudiced against a product or service even if they have not experienced before and develop positive or negative prejudiced attitudes towards it. Due to aforementioned reasons, companies usually spend their time and money on creating an unforgettable logo which would represent them well and remind customers of their presence in the market (Kinsky and Bichard, 2010:145).

The question still remains whether brand logos could change encoding of reward values in the brain for accidental decisions or not. In addition, brand logos on a subconscious level are stated to cause prejudiced evaluations and choices even if they do not depend on the symbol itself. For instance, Apple logo is said to create a strong consumer-brand relationship. The logo shaped consumer behaviour and demonstrated mobilization potential (Murawski et al., 2012:1).

### Types of Logos

Logos involve the use of typography as well as forms and shapes in order to introduce products and services provided by companies. It is therefore essential to use visuals representing the brand and design the logo in a way that it is able to evoke connotations of the product and brand. When designing a logo, one could use classic fonts or design new fonts. Due to reasons mentioned here one could utilize a variety of logo types.

Handwritten logotypes and symbols are among the most frequently used logo types. On the other hand when other logo types are examined, existing literature includes 'Sans Serif Logos' giving the feeling that popular, yet modern, form of typefaces, another modern and typography letter 'Single Letter Logos', 'Multiple Letter Logos' including more than one typography letter, and 'Unconventional Logos' blending past and present through using extraordinary letters (Parlak, 2006:128-131).

Logotypes can be defined as customizable types created by brands through symbolizing fonts without use of any symbols. The process can also be explained as designing the brand name by playing with the letters, to be more clear, deforming the name. Some well-known successful examples of logotypes are shown in Figure 1.



Figure 1. Logotype Examples

Research conducted in literature on logo design points out the use of both typographical elements and symbols. However here the important issue to take into consideration is that a logo has to have the ability to represent both the company and the brand. To illustrate the subject, while the use of letters in the word Nike is a logotype, the use of wings is an emblem as shown in Figure 2 and we can call the use of both as a logo. That symbol designed by a graphic design student and still in use today represents the wing in the famous statue of the Greek Goddess of victory, Nike. Besides the 'swoosh' symbol of Nike whose Roman equivalent was Victoria represents victory and exemplifies a successful logo design dating back to the foundation of the company in 1971.



Figure 2. Examples of Nike Logo and Logotype

Another logo example belongs to Turkish Airlines. The logo both involves the letters in the company name as shown Figure 3 and the key symbol depicting a wild goose in Figure 4 which can fly thousands of kilometres long. Despite slight changes since it was first designed in 1959, it illustrates another successful example as it is still able to represent the brand and convey the message of the company without losing its originality.



Figure 3. TK Logo Text



Figure 4. TK Logo

### **The importance of Logos for Companies**

The logo is one of the essential elements of corporate or brand identity. It is the visual representation of a company. It has a more powerful impact on people than the words alone since it triggers people's past experience and memories about other applications of the company logo.

The logo refers to the intended message encoded by the brand and graphic links showing the connection to be developed between the company brand and customers. As a consequence it has become one of the most powerful tools to create and strengthen the brand image and to protect its reputational value. In addition, it plays a significant role for brands in building customer trust and loyalty.

Brand messaging depends on an effective brand logo. According to existing literature a logo is an important component of a brand because the consumer is the part of the brand messaging and bear the brand in mind. Dickinson and Svenson (2000) mentioned a discussion of whether logo design was really important in the world of graphic design (Biricik, 2006:27-28).

Symbols, more specifically logos, are more effective management tools for companies to organize their features intended to be expressed for stakeholders. Spending considerable time and money, companies create many new logos due to mergers and takeovers. According to Dubberly (1995), logo development is a commonplace occurrence and every business, from coffee shops to tourist destinations, adopts logos. This means the creation of many more logos every year.

According to some scholars, mergers, takeovers, selling companies in the global market and mobility

caused logo selection (Siegel, 1989; Spaeth, 1994; Wathen, 1986) Morgenson (1992) stated that introduction of a new product or a brand could require the creation of a new logo as it is required for some packaging changes once every three or five years. Spaeth (1994) emphasized the necessity of new logos (e.g. name changes such as Federal Express, International Harvester, Navistar, American Can and Primerica for FedEx) especially due to efforts to change corporation image and major administrative and strategy changes (e.g. United Airlines). In addition to these, most companies periodically update their logos in order to keep up with the times because a logo is the symbolic face of company which makes it visible in the market (Henderson and Cote, 1998:15).

On the other hand, a logo is an identity showing the quality and increasing reputation of a company. Grohmann et al. (2013) and Watkins & Gonzenbach (2013) argued that although the brand logo played an important role in the creation of brand identity, marketing literature contained limited research on logos (Ridgway and Myers, 2014:50).

According to Peter (1989) logos worked to help companies or brands accelerate their recognition. Edell and Staelin (1983) explained the logic behind it with the fact that visuals had a quicker effect than words. This is important because most companies have a limited of time to communicate with their customers (Van Riel and Van den Ban, 2001:429).

Right logo selection is critical, as it is one of the essential vehicles for image transmission. Logos arrange visual and textual information to make consumers focused on the product and accelerate product and brand recognition (Henderson and Cote, 1998:18). In addition, despite the importance and widespread use of logos, most of them face with negative evaluation and did not gain recognition. This situation could damage corporate identity (Henderson and Cote, 1998:18).

### **Logo Design Strategies to Be Followed by Companies**

Dubberly (1995) talked about the difficulty of a logo selection process for a company since it is a great challenge to distinguish one logo from another in terms of recognition, affection or familiarity on the first exposure. In addition, he asserted that companies would not reach the expected outcomes in case they selected a logo whose design was difficult to memorize, unsympathetic or evoked no meaning (Van Riel and Van den Ban, 2001:429). Therefore it is important to note that logo selection process is a strategy which has to be developed taking many dynamics into consideration.

The logo adds value to the recognizable logos of stakeholders however, in order to be effective, it has to serve as the identity of the company represented within shape, design and colour. The most recognizable logos usually have unique shapes (Nike, Apple, Chanel, Microsoft, etc.). Some brands try to create a strong connection with specific colours (Coca Cola-red, Chanel-black, McDonalds-red and golden yellow) (Hynes, 2009:545).

Use of colour in logo design is of utmost importance due to its impact on recognition and facilitating remembering. Colour is significant as it provides information, develops a permanent identity and imaging and suggests symbolic value.

Dowling (1994) claimed that colour selection process was usually carried out by designers and company executives and they often made decisions without taking psychologic and strategic uses of logos into consideration. Although the importance of logo colour has drawn little interest in marketing literature, there have been a considerable number of studies in other fields of research indicating the impact of colour on recognition and facilitating remembering, and more importantly the use of colour to reveal various emotional responses (Hynes, 2009:546).

One more strategy other than the colour selection is the application of various graphs and texts in the text logos according to Bennett (1995) and Giberson and Hulland (1994). On the other hand, it is stated that companies could make use of their name or product in the graphic design to identify the name or product as well. According to Zakia and Nadin (1987), scholars in the field of semiotic considered the logo to be a component of the sign system through which companies tried introduce themselves to inner or outer directed consumers (Henderson and Cote, 1998:14).

Valkenburg and Buijzen (2005) carried out a study to investigate the development of young children's brand awareness. They presented two- to eight-year-old children with 12 brand logos. After exposure to these logos, they asked children to mention the brand name (brand recall), and to choose the right brand from a number of available visual options (brand recognition). Two- to three-year-olds recalled only 1 out of 12 brands, whereas they recognized 8 out of 12 brands. Eight years old could recall five and recognize all the brands. Authors concluded that mechanisms for consumer evaluation of brands consolidated at age 3-5. (Kinsky and Bichard, 2011:146). The research demonstrated that even if consumers at young ages did not experience company products or services, logos had an impact on brand identity. It is obvious that companies could make use of logos for brand recognition, recall and transformation into today's customers. Companies should follow necessary logo design strategies to develop for brand identity and decide on colour, symbol and content for accurate message transmission.

Within this context, Patterson (1999) noted that companies used product brands to help consumers develop subjective perceptions in purchase decision-making process. Simmons (2007), defined branding as customer's satisfactory experience and brand attributes. Underwood et al. (2001) emphasized the importance of having a strong brand especially for the companies in service sector as it lacked concrete products to build a connection between consumers and brands. Wallace, Wilson and Miloch (2011) suggested that a strong brand involved "identical, permanent and meaningful" components for consumers. Ali-Choudhury, Bennett and Savani (2009) summarized those components as follows: (1) collecting the words related to the advantages of the brand use, (2) reality of the true nature of the brand and (3) symbolic elements. Symbolic elements included the brand and the logo (Watkins and Gonzenbach, 2013:16). Companies have to engage in careful logo design planning if it affects consumers' brand loyalty accompanied with purchase decision because logos affect consumers' subjective perceptions and have symbolic values.

In addition to those studies, the research conducted by Watkins and Gonzenbach (2013) focused on the detailed examination of dimensions of brand identity. The research aimed to demonstrate which logos had higher scores within dimensions of brand identity revealed important findings. Especially logos evoking admiration and sensation in consumers had positive impacts on mobilizing consumers. It is therefore important again companies had to focus on logos which would evoke admiration in determining logo selection strategies (Watkins and Gonzenbach, 2013:28).

## **Conclusion**

As studies in existent literature and modern practical applications demonstrate that a logo is not only a symbolic image but also an element to provide a company with corporate image, brand recognition and competitive advantage. Therefore a logo has to be selected with great care considering all dimensions from its colour to message content and that content has to be created by logo design professionals. Symbols used in logos probably make the most visible contribution in creating customer loyalty. As companies' most important goal is to get loyal customers, a right strategy is to bring success. When selecting a logo, various dimensions have to be taken into consideration. The logo has to contain an image related to the company's product or service, it has to have a story and the colours selected have to be connected with characteristics of the product.

Today there are many professional companies designing logos. Companies should receive support from design companies for logo images as well as from brand strategists for abstract messages. Each company could have its own story of vision and mission to transfer to next generations and naturally they could insist on some specific symbols. However, considering the fact that logo is a symbolic image, they have to take opinions and suggestions of professionals such as psychologists, sociologists, graphic artists and brand communication professionals into consideration. In fact, selecting a wrong image would not create desired results and it can even negatively impact company image. Companies must not forget the fact that a logo is one of the elements of corporate identity. A company expresses itself with its logo. Companies need logos to have desired effects on the target group and if it changes



over time, they have to design new logos. In brief, companies should renew and update their logo designs considering their corporate message and identity.

In addition, it is important for a successful logo to be striking but at the same time it has to represent the brand clearly and simply. Therefore a logo design is to explain a maximum number of concepts with a minimum number of images. The use of a complex logo damages both brand awareness and recognition.

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## THE ROLE OF MONEY LAUNDERING AND TAX FRAUD BITCOIN AS A VIRTUAL CURRENCY

Özlem ÜLGER\*

### Introduction

Bitcoin is an internet based crypto currency introduced in the world with the article "Bitcoin: Peer-to-Peer Electronic Payment System" published by a person or group using the name of Satoshi-Nakamoto in 2008 and released as open source in 2009. In this system, the authorities and guarantors such as the state and the central bank are not concerned with the supervision of this system. Bitcoin technology works through a network that allows people to easily pay for a person anywhere in the world. Therefore, it can be said that there is no possibility that the seller will charge unexpected costs or fees as it is in other payment methods. The most important thing that distinguishes Bitcoin from real money is that it allows people to make monetary transactions without disclosing their identities. The fact that identity information is confidential and not under the control of an authority makes the system attractive for all kinds of illegal financial transfers. In this study, after describing Bitcoin's definition and historical development, we will conduct an analysis of the current state of money laundering, the functioning of tax evasion, and how Bitcoin is used for money laundering and tax evasion.

Commodity in clearing method used in the exchange of goods and services has traveled via firstly to the money then to the gold and silver to the gold coins from there and finally to the nominal money based on trust and to the digital money and virtual money. The Internet, which has become indispensable in recent times, has become an important place in commercial life with its increasing usage. This new form of trade, called e-commerce and the rapid use of information technology, has quickly become adopted and widespread.

The fact that Bitcoin emerged as a new currency was originally foreseen many years ago. In 1999, Nobel Prize laureate economist Milton Friedman said that the invention of electronic money is inevitable because of the widespread use of the internet and the development of technology, which is independent of state control and facilitates trade between anonymous parties. After from this prediction about 10 years, Satoshi Nakamoto introduced Bitcoin to the world in 2008 and gained popularity beyond what was predicted (Koçoğlu vd., 2016:78).

Besides these Bitcoin constantly reveals the illegal events such as money laundering, tax evasion, drugs, money transfer etc that the identity of those who deal with illegal events and the incomes from transactions can not be determined. After the income is removed from the system, it is converted into real money and transferred to bank accounts. However, since these bank accounts can not be tracked and information about the source of income can not be obtained, it is not possible to ascertain the income increase and calculate the taxation.

In this work will focus on Bitcoin's role in money laundering and tax evasion. In this context, firstly the definition of Bitcoin and the historical process will be dealt with. Secondly, the functioning of money laundering and tax evasion will be examined. Finally, the impact of Bitcoin on money laundering and tax evasion will be addressed.

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\* Batman University, Faculty of Economics and Administrative Sciences, ozlem.ulger@batman.edu.tr

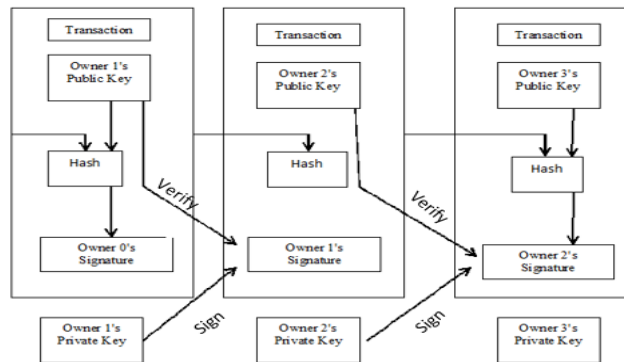
### **Description of The Bitcoin and Development of the Historical Process**

In the world economy, the money that has been produced as software in computers seems recently to be widespread. In this process, especially Bit Money (Bitcoin-BTC-XBT) has come forward and gradually became a currency that started to increase in its use in trade (Sönmez, 2014:1). The key of digital money transfer system that does not depend on a central authority and trust is cryptographic mechanisms. Although the concept of digital money was proposed by David Chaum for the first time in 1982 to be centrally managed when it was built using cryptographic building blocks in the following years peer-to-peer (P2P), that is, by the collaborative work of the participants implementing the process, has been tried to model with systems that do not have a centralized structure. Bitcoin, the first model to achieve this, was proposed by Satoshi Nakamoto as an innovative payment system in 2008 (Khalilov, Gündebahar ve Kurtulmuşlar, s:2). Bitcoin is a crypto money and also the first real application of Wei Dai called B-Money (Albuquerque and Callado, 2015: 8). Nakamoto's decentralized currency; to financial crisis, to the government's reaction and to mediate financial transactions of other intermediary institutions is an answer. Bitcoin is not the first example of decentralized digital money, but it is the most noticeable thing in the process so far (Bal, 2015: 267).

Bitcoin has an appearance that resembles religious movement. Similar meetings to church meetings, Bitcoin praising communities in social media forums like Reddit and Twitter, and names such as Barry Silbert, Nicolas Cary, Andreas Antonopoulos, Charlie Shrem and Bitcoin Jesus nicknamed Roger Ver are among these movements. On top of all of them is the myth Satoshi Nakamoto, who inspires his beliefs as the ancestor of Bitcoin (Vigna and Casey, 2017: 24).

A person or group named Satoshi Nakamoto published an article called "Bitcoin: Peer-To-Peer Electronic Payment System" for Bitcoin in November 2008. In this article, Nakamoto was introducing and explaining Bitcoin that is an electronic money system. Accordingly, Nakamoto has drawn in this article the main lines that the concept lying behind the entirely new money that can be carried anonymously across borders without any state institutions (Turpin, J.B. 2014: 337). At the same time Nakamoto has tried that no one can to experiment and has achieved a great success (Mazer, 2015: 5). It is also said that Satoshi Nakamoto, who is the founder of Bitcoin, is related to big technology companies and that Samsung, Samsung, Toshi, Nakamushi and Moto are Motorola (Sönmez, 2014: 2). The sudden increase in value of Bitcoin, a cryptographic currency that is not the government or the National Bank, caused public attention in 2013. What is noteworthy is that the increase in Bitcoin's value is to coincide with the same as when the Cyprus economy collapsed. People who lose confidence to financial institutions are seen that beginning to rely more heavily on independent peer-to-peer payment systems. Between August and December of 2013, the use of bitcoin has increased by more than 75%, and Bitcoin's market value has also risen by ten times. It is estimated that from about 1 billion US dollars to 12 billion US dollars (Bal, 2015: 268).

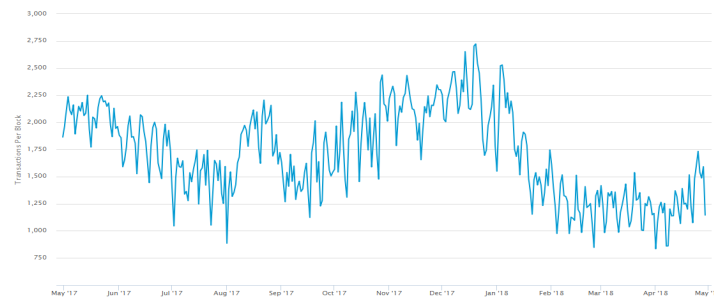
The main structure of Bitcoin consists of a chain called as blockchain. Each Bitcoin operation is stored in this block chain. The block chain is a common public book that manages Bitcoin and does not have a single entity. These communication nodes are managed and updated by the network. These nodes can verify operations and send an updated version of the block chain to other nodes. Every 10 minutes, a block average is being tried to be caught. This block is then added to the block chain. Blocks are made by miners and the block take the fastest working miner 25 Bitcoin award and at the same time the transaction fees for all transactions in this block. As the equipment of the miners progresses technologically, the fragmentation difficulty of a block is automatically increased to provide an arbitrary 10-minute interval between each block. (Mazer, 2015: 5). One block chain is the most important element of Bitcoin. Because all the previous operations have been stored here since the beginning of Bitcoin use. It is therefore possible to quantify the amount of bitcoins accumulated in the wallet in chronological order (Cabrera, 2015: 18).



**Figure 1: Bitcoin Processing Process**

**Source:** Nakamoto, S. 2008. Bitcoin: A Peer-To-Peer Electronic Cash System. Online, <https://bitcoin.org/bitcoin.pdf>, Date of Access: 13.04.2014.

Figure 1 shows the processing cycle of Bitcoin. Accordingly, Bitcoin electronic signatures chain occur in the form of a money generating system. Therefore, each transfer processing requires the approval and signature of the previous and next users.



**Figure 2: Bitcoin's Number of Operations Per Block**

**Source:** Blockchain, online, <https://blockchain.info>, Date of Access: 24.04.2018

Figure 2 shows Bitcoin's the number of operations per block. The number of transactions per block has been taken place 2,723 at December 2017 and 1,391 at April 4. Bitcoin, suffering from transaction fees, is not showing much positive development in this regard. It seems to be that transaction fees and waiting times are getting worse. It is thought that Bitcoin, which emerged as a bank reaction that forced people with high transaction fees and waiting times, is now far from showing this reaction and is no longer considered a "currency".

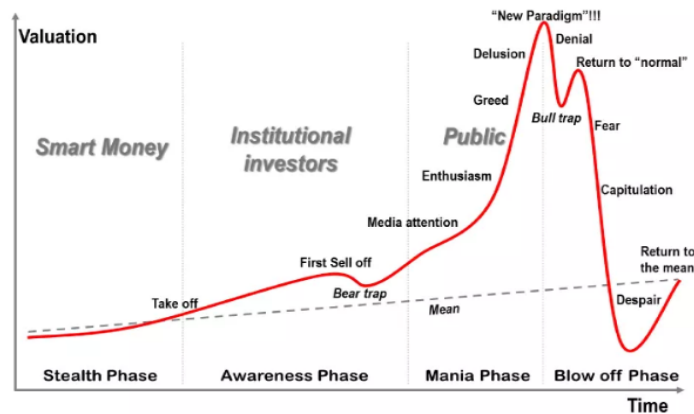
Bitcoin is supported by a distributed user network. It is also based on advanced encryption techniques to ensure its stability and reliability. A Bitcoin is a chain of digital signatures that is saved in a "wallet" file. This signature chain contains the history of a particular Bitcoin and thus can verify the system legitimacy. Bitcoins containing a user's wallet consist of a public key and a private key. The public key is the address of the Bitcoins sent by someone else and the private key is the place where the purse owner owns his Bitcoins. If you want to make an analogy, your public key is your street address, and the private key is the key to your front door. Namely; everyone can only send you something with your

address information, but no one can use your goods without your permission (Turpin, 2014: 337-338).

In order to pay with Bitcoin, you first need to create a Bitcoin virtual wallet. The original Bitcoin receiver is an open source code application and when you run the application for the first time, it is tried to connect and download the blocks in a few minutes. In this process is required 8 GB space on the hard disk of the computer. When the virtual wallet is created, the first address is automatically displayed. Encrypting the wallet is very important because when it is not encrypted, it can be stay as an open wallet for theft. It is possible to take and send Bitcoin after this step. After the virtual wallet is created, by buying Bitcoin from Bitcoin provider internet sites, placing it in the virtual wallet and desired place can pay at any time. When such a payment is made, it cannot be tracked to whom, when, and how much is paid (Egilmez, 2013).

In principle, this money can be used both in physical environment and on the internet, wherever Bitcoin is considered a valid currency (restaurants, cafes, private doctors, hairdressers, hotels, virtual currency exchanges, etc.). In Berlin (Germany), which is still the capital of Bitcoin is known that at least 30-40 commercial companies, including hairdressers, bars and private doctors, some real estate agents in Silicon Valley, some of businesses in London and Toronto, and using law firms in Israel Bitcoin as their currency. But the first name that comes to mind when it is still called Bitcoin is Bitcoin Stock Exchange ,located on the internet, known as Mt Gox. Mt.Gox, which as Tokyo based established in 2010 and the world's largest Bitcoin stock exchange, enable both Bitcoins to be traded in traditional currencies such as dollars and euros, and Bitcoin to be bought in exchange for currencies such as dollars and euros (Ege, 2013: 23).

When we look at the historical process of financial markets, it is possible to observe centuries of excesses and subsequent collapses. This situation is called as "economic balloon". According to Rodrigue (2011); Economic bubbles can be handled in four phase. The first of these is the stealth phase. In this phase, speculative purposes process at the prices is not paid attention by investors. According to this; "Smart money" usually invests in the asset quietly and discreetly. The second stage is the awareness phase. According to this; many investors are aware of the resulting profits and are raising prices even further. Smart money uses this opportunity to strengthen its current position. The third phase is the mania phase. According to this; everyone is aware that prices are rising and people are trying to get this lifelong investment opportunity. This phase is where the interest of the media increases and almost everyone who spreads the information and senses starts to do processing. But this phase is not about logic but about psychology. Finally, the fourth phase is the blow off phase. In this phase; confidence with the popularity of investments gradually disappears and prices return to normal. At this point, the public regards this sector as the "worst possible investment" and it is time that smart money begins to acquire assets at low prices (Rodrigue, 2011).



**Figure 3:** Stages of Economic Bubbles

**Source:** Rodrigue, J.P. (2011). "Stages in a Bubble", Çevrimiçi, [https://transportgeography.org/?page\\_id=9035](https://transportgeography.org/?page_id=9035) (Erişim: 10.04.2018).

Figure 3 shows the phase of economic balloons. Accordingly, it is likely that Bitcoin, was placed the first transaction in 2009 and was been worth US \$ 1.3 in the international market, will pass through the phases shown. Bitcoin has been reached a market size of approximately \$ 100 million between 2009 and 2011. This rapid change in the prices of Bitcoin is important for the formation of speculation. In this sense, it is possible to say that for Bitcoin, between 2009 and 2011, he completed the stealth phase and went into the awareness phase. When we look at the prices of 2018, Bitcoin, which exceeded 20 thousand dollars in the last days of 2017, has fallen below 8 thousand dollars. With the recent price movements, it seems that Bitcoin's mania phase has been completed and has come to an blow off phase. Experts say that in Asian economies Bitcoin is concerned about government intervention and regulatory concerns, as well as the risk of depreciation in security, cyber attack and stealing in cryptographic currencies.

There are no official any regulations on Bitcoin in Turkey. According to a press release issued by the Banking Regulation and Supervision Agency (BRSA) in November 2013, Bitcoin Payment and Securities Reconciliation Systems are not considered "electronic money" under the Law on Payment Services and Electronic Money Organizations. In the press release, the public is warned that Bitcoin or similar virtual money transactions are being used for illegal activities and therefore can not be detected. At the same time, it is stated that due to the variabilities in market value, Bitcoin or similar virtual money may be at risk, stolen from a digital wallet, lost or used illegally without the knowledge of its owners and may be subject to operational malfunctions caused by irreversible operations or violations by malicious vendors. Some financial experts being in Turkey, in terms of Bitcoin features and the development model are likened to Tulip Maia in the Netherlands, to Mississippi bubble in France or to the Enron or mortgage bubble in the United States. Because, it is in question that is change value far from the use value of Bitcoin. However, the recently increase in the use of Bitcoin is observed in Turkey. Although under the name of BTCTürk inTurkey is said the Bitcoin's exchange with the Turkish Lira, there are ATMs for Bitcoins in Istanbul Ataturk Airport. BTCTürk, which was put on the market in July 2013, In Turkey BTCTürk carries the first company feature in the form of Turkish lira-Bitcoin or Bitcoin-Turkish Lira (The Law Library of Congress, 2014).



**Figure 4:** Price movement of Bitcoin (USD, Monthly, May 2017-May 2018)

**Source:** Blockchain, online, <https://blockchain.info>, Data of Access: 17.04.2018.

Figure 4 shows the one-year Bitcoin Market Price (BTC \ USD). While cryptographic currencies exceed 10 thousand of stock market, Bitcoin, which is the determinant of the market with the influence of regulation and sanction news on the market, down 7.30 per cent in the last 24 hours, falling back below \$ 7 thousand to \$ 6,854 (<http://bigpara.hurriyet.com.tr>). Bitcoin, which is the world's largest digital money by market value, According to Bloomberg prices in Asia accounts morning on March 1, 2018, it has fallen below the level of \$ 7,000 for the first time since February. While Bitcoin's losses in 2018 are over 50 percent, the situation is even worse for other crypto-currencies like Ripple and Litecoin. While the pressure on the crypto money market of regulatory agencies on the global scale has increased, big social media platforms also keep themselves away from the industry. While the market volume of 1597 crypto units traded on the market is 257.6 billion dollars, the 24-hour transaction volume of the market was calculated as 13.3 billion dollars (<http://bigpara.hurriyet.com.tr>).

### Functioning of Money Laundering and Tax Fraud

In 1986, the money laundering prevention law, approved by Washington law in the United States, and the cash transactions of over \$ 10,000 should be reported. In the literature, the term "money laundering" was introduced by The Guardian 30 years ago during the Watergate era. Accordingly, money laundering can be defined as a method of transforming unfair and illegally obtained proceeds to ensure that it appears legal. At the same time, money laundering can be expressed as an activity for the collection of unlawful or illegally obtained proceeds from legal remedies (Cindori, 2007: 62).

One of the things they need to do to show legal sources of money laundering, they have to buy a legal company and mix up the illegal gains they have got with the gains they have made from their legal-looking companies. Laundries are tailor-made for money laundering and is a business property where money is constantly returning (Steel, 2012). The term money laundering is said to originate from the Laundromat ownership of the Mafia in the United States. Gangsters were earning a lot of money from extortion, prostitution, gambling and drink and they had to show a legal source for that income. One of ways to do this is to buy outside legal firms and is to confuse their illegal profits with the legal benefits they receive from them. The process to legitimating Laundromat incomes with the process to money laundering provide similarity. Namely; illegal (dirty) money is passed through a transaction cycle (washed) and comes from the other side as legal (clean) Money. Crimes that require money laundering mechanisms to bring illegal money in legal ways are usually divided into five categories (Crime and Misconduct Commission, 2005):

1. Drug trafficking
2. Other blue-collar crimes
3. White-collar crimes
4. Bribery and corruption
5. Terrorism.



Traditional methods of money laundering have focused on the use of cash-based businesses and this continues to be an important area. However, criminals will continue to look for innovative ways to exploit weaknesses in financial systems and try to stand in front of researchers. The use of credit cards issued by offshore banks has increased and criminals can be expected to discover the security vulnerabilities of new technology-based products such as electronic money, internet-based trading and gambling. Criminals earn significant revenues by committing crimes such as drug trafficking, human trafficking, theft, investment fraud, extortion, corruption, embezzlement and tax fraud. Money laundering is a serious threat to the legal economy and affects the integrity of financial institutions. At the same time they can change the economic strength in certain sectors. If left unchecked, it can corrupt society as a whole. To fight money laundering is to serve a few reasons. These can be listed as follows (OECD, 2009):

1. Social importance: Crime gives tangible and intangible damages to third parties, individuals and the collective as a whole.
2. Defining tax offenses: Unusual transactions may be a demonstration of tax offenses in the past and may lead to the identification of interested persons.
3. Define other crimes and criminals: Giving criminals' revenues based solely on tax rules will not lead to the potential identification of money laundering. This situation can not be unavoidable from being a crime or being profitable. Detection of unusual actions can be help identify criminals and illegal activities.
4. Finding and enacting criminal elements: Identification of unusual transactions helps to provide information about money flow and assets such as property, vehicle, yacht, and bank accounts where committed criminals will go.

The first concerns about money laundering has begun with the connection to drug trafficking. The aim of drug traffickers is usually to convert of small currencies into legal bank accounts, financial instruments or other assets. Today, unfair revenues include also political corruption, illegal arms sales, and illegal activities related to human trafficking and human trafficking. As independent of crime, money launders resort to placement, stratification and integration in the process of making illegal income apparently legal money or goods (Schott, 2006: 7).

The United Nations Convention against illegal trafficking in drugs and psychotropic substances, which was adopted in Vienna on December 20, 1988, is the first international convention to focus on money laundering. This contract mainly focuses on generally drug trafficking, including drugs and money laundering. The purpose of this contract is to promote international cooperation between the parties. It is envisaged that in the 3 of paragraph of Article 10 of this contract, offenses arising in accordance with this contract shall not be evaluate as tax offenses in order to reject cooperations. Approximately two years later, the European Council, aware of the fact that money laundering has developed far beyond the drug trafficking offense, has adopted the 1990 Convention about Laundering, Search, Seizure and Confiscation of Crime Income in Strasbourg. The definition of money laundering was defined as income from any major criminal activity, associated with drug trafficking in 1988. However, article 18 of this contract provides for the refusal of co-operation if the offense is a tax offense. In this context, the additional protocols of the two European conventions should be paid to special attention. The first foresees that the Second Additional Protocol of The European Convention on Extradition in 13 December 1957, signed by the Member States in 1978, will not be refused on account of the fact that the crime includes tax evasion from some other forms of economic fraud. Secondly, the Additional Protocol to the European Charity Convention on Combating Crime of April 20, 1959, signed by the Member States in 1978, provides that international mutual assistance in collecting of evidence for use in criminal matters should not be rejected on the ground that the request concerns an offence which the requested party concerns a tax offence (Spreutels and Grijseels, 2000: 2-3).

Tax evasion term is often used by the public or the academic environment, but it is difficult to find a general definition. Faltova (2015) had determined that the common element of tax evasion is illegality.

Ales (2000) states that tax evasion is a failure of tax liability. The concept of tax evasion can be understood as a situation that is not determined in accordance with the tax law. That is, It is the difference between the amount of tax payable and the amount of tax paid. The amount of tax paid by the taxpayer is lower than the amount prescribed by law. Lenartova (2000), on the other hand, defines tax evasion as a consequence of the targeted, legal or illegal economic behavior of the taxpayer; which leads to the reduction of tax liability, the elimination of tax liability, or other economic benefits arising from taxation (Saxunova, 2017: 635).

The clear definition of the concept of tax evasion is based on the 1970s and and this concept result from economists. Tax evasion refers to the types of transactions that result in a change in the rate of taxation, in contradiction to the purpose and policy of the relevant income provisions. As a result, tax evasion is more related to what the legislative body applies especially through taxation. It includes cases where the legislative plan and policy are low and not apparent actions to be taken into account and can not be reached. Tax avoidance has been described by reference to certain observable criteria and functional characteristics, which include (Ann, 2015):

- ✓ The extent to which the transaction was influenced or actuated by the prescribed taxation purpose,
- ✓ Whether the transaction was artificial or contrived,
- ✓ Whether the transaction sought to exploit statutory loopholes or weaknesses,
- ✓ Whether the transaction lacks economic reality.

Estimated losses caused by tax evasion reach large numbers. According to the International Taxation Survey, corporation tax in the country only account for 8 percent of total tax revenues. It can be argued that this percentage has become increasingly "disproportionate". When compared to resource use, this number seems relatively low. In situations related to tax evasion practices, the government is often very fragile. The authority to determine or amend the tax law is the government; it is the government that has also the authority to supervise any company. But a government cannot force other governments to reach an agreement (Hall, 2015).

The tax evasion phenomenon is influenced by various factors that are a consequence of globalization. Ciupek (2015) mentions the causes of tax evasions and tax avoidance in six areas:

1. Economic factors – financial and economic situation of a taxable entity, general business conditions, the amount of tax burden, the probability of the detection of tax evasion, the amount of sanctions, business stagnation,
2. Legal factors – distrust in the state and in public institutions, freedom to influence the actual status of economic events, burdensome nature of recording responsibilities, complexity and inconsistency of tax regulations,
3. Social factors – exchange-related justice connected with tax payments and tax benefits, community, horizontal, vertical and procedural justice,
4. Demographic factors – age, gender, education, marital status,
5. Mental – attitude to legal standards, sense of nationality, place of tax residence,
6. Moral factors – attitude to civil obligations, attitude to taxation, ethics, religion, habit

Tax evasion is defined as the illegal act of absconding taxes by hiding the gains from legal or illegal ways as determined by the tax authorities. Tax evasion differs from avoidance of taxation which is the use of legal methods to change the financial situation of a person or a company, and reduces the amount of income tax. This is generally accomplished by claiming the permissible deductions and credits and through sound financial planning techniques, such as phasing the sale of assets over a period long enough to effect maximum exemption from capital gains tax (Loannides and Tymowski, 2017).

### **The Effect of Money Laundering And Tax Fraud Bitcoin as a Virtual Currency**

This structure and currency, which have an decentralization structure where banks and governments do not have a say on the system, have now been started to be question by the states. Countries have led to

take measures against the crypto money, as Bitcoin can be used not only for commercial purposes but also for illegal activities. In particular, the use effectively of the crypto currency transmission system by many organizations in terrorist activities and the inability of the money traffic to be monitored by the states are forcing the crypto money to go beyond the existing financial system. The outbreak of events in Russia and China regarding the sale of weapons and drugs via Bitcoin is an indicative of Bitcoin being used in money laundering. This is why many countries have introduced restrictions on the use Bitcoin also found that China and Russia. This situation, explains the reason for the decline in Bitcoin's value (Cheung *vd.*, 2015).

The best example of the interest of states to Bitcoin has been the facilitation of illegal drug trade, known as the Silk Road which has been lifted from the current practice. Silk Road is an online marketplace where you can buy 340 different illegal drugs from individual sellers. When you make the purchase processing, the seller will send to your door immediately no matter where in the world. The element behind the existence of the Silk Road is that it is anonymous. This anonymity is realized through the use of two technologies. One of them is the online network known as TOR and the second is Bitcoin (Turpin, 2014: 357).

Money that enables a money laundering process to occur as a rule is cash paradise. It is not possible that electronic money is a criminal income. Because the money obtained from criminal activities is mostly cash Money. Modern information communication price, however, will generate new areas of illegal value that can be compensated by anonymous electronic value units (Sarikatipoğlu *vd.* 2015: 98).

It is not possible to make arrangements for Bitcoin due to peer-to-peer network where there is no government intervention. Also, using nicknames makes it impossible to determine who performed what process. That's why Bitcoin has been become a popular shopping tool for illegal activity. These features of Bitcoin have opened the front of the "Silk Road" used for illegal transactions and more than \$1.2 million of illegal transactions were committed by the FBI until it closed on October 1, 2013. Bitcoin had been continued to be used for money laundering because it carried the anonymous feature after the Silk Road was closed. For these reasons Bitcoin has banned in Iceland, in Bolivia and in Ecuador. In countries such as China and Russia, the use of bitcoin has become controversial (Mazer, 2015: 10).

Bitcoin is mostly used in areas such as child pornography with the introduction of prohibited hormone-type drugs for the sale and sale of drugs. Illegal shopping such as drugs, weapons smuggling, money laundering via WEB sites and social media accounts, is now completely made over "Bitcoin". Because Bitcoin does not both leave traces and cannot be followed. According to the report prepared by Nikkei Asia, it shows that in Japan, the money laundering cases made with crypto money constitute only 0.16% of the total. In 2017, suspected of the possibility of money laundering in the crypto money market in Japan 669 cases were been identified. It was determined that the total number of money laundering cases in 2017 was just over 400 thousand. That is, only 0.16 percent of money laundering operations are done with crypto money (<https://uzmancoin.com>).

The income tax is applied to the persons who get taxable income for the relevant tax period. Regardless of the income of a person who produces or trades bitcoin, taxable income depends on the income definition of a particular country (Bal, 2015). Potential areas of use of the block chain, our financial systems go beyond what is supported today. In the block chain could be innovation with the real-time processing of the tax that everyone, including governments, taxpayers and their advisers, could have live access to. This situation would allow governments to collect the tax immediately and will ultimately help eliminate the compliance and audit problems faced that all parties face. The taxation of Bitcoin should be considered with the following points in mind (Schwanke, 2017):

- ✓ Identity and location information needs to be digitized.
- ✓ Real-time tax reconciliation must be achieved.
- ✓ Indirect, transactional and withholding taxes and private capital taxes must be calculated in such a way as to carry 14,000 transactions per second.

Some scholars argue that currencies, which have the property of an imperial center, have the traditional characteristics of tax havens. Namely; the gains are not subject to taxation and the anonymity of

taxpayers is protected. At the same time, scientists assume that tax evaders who use bank accounts in tax haven regions have chosen traditional tax havens as an important region for crypt money. Traditional anti-tax incentive mechanisms have not been used successfully in Bitcoin-based tax evasion since Bitcoin is not bound by the existence of a ruling jurisdiction that can provide information. When the increasing popularity of decentralized currencies is taken into account, tax evasion of these will become more common in the future (Bal, 2015). Bitcoin, therefore, has an important potential to increase tax deficit and is considered a potential "super tax haven" (Emery, 2016: 23).

The majority of Bitcoin wallet owners use these wallets as an investment account. These accounts are used to get Bitcoin, not to send Bitcoin. Unless the proceeds from these wallets are declared, they are closed to access of tax authorities. At the same time, researchers have discovered that many Bitcoin users are using the cut, split and combine to method. Large amounts of Bitcoins are split into multiple small accounts, apparently owned by the same user, or large amounts are bought in small batches using multiple wallets. Tax evaders and money launders often try to hide funding sources and their destination with these methods. In the case of overseas tax evasion; governments can try to reach Bitcoin account holder with the help of complex statistical analysis. Together with starting to be used as a means of tax evasion and money laundering of Bitcoin, it is necessary to reveal innovative policies in the struggle phase. There are three approaches to avoiding tax evasion (Marian, O: 2016):

- ✓ German government has suggested that Bitcoin be taxed as a capital gain. Namely, taxpayers would have to declare their income while removing Bitcoins in the same way they declare income on the disposition of stock, bonds, and other financial instruments held for investment.

- ✓ Legislators may suppress requests for the use of Bitcoin by not allowing Bitcoin payments. Even if they do not go directly to the tax evasion, they can harm Bitcoin's cash conversion and value, so they can be ineffective at the point of tax evasion.

- ✓ Also, given that the number of Bitcoins is finite and that current market capitalization is low, governments could theoretically eliminate Bitcoin by owning it all. For example, central banks could purchase Bitcoins, and governments could employ sizable computing powers to mine Bitcoins and, by doing so, take Bitcoin out of circulation.

## **Conclusion**

Since Bitcoin's legal direction is not clear, taxation leads to serious debates in international literature. In this stage, it is thought that it is more correct approach to regulate both the restriction to the individual and the higher contribution of the countries to the incomes in the light of the technological developments which existed rather than prohibiting or limiting the use of Bitcoin. Making transparent the exchange of information between countries and found a solution the question to the source of income increase in tax systems will contribute.

Governments around the world deal with the problems to maximize the benefits of globalization and at the same time minimize the possibility of abuse by criminals of financial liberalization and technological advances that promote globalization. New technologies have increased the opportunities for tax evasion and money laundering by removing foreign currency controls and increasing access to foreign financial institutions. If this liberalization becomes a means to facilitate criminal activities, given support for the increase of fiscal liberalization can be weakened. For this reason, excellent national and international initiatives have been taken to minimize these risks. However, the same endeavors must continue. Instead of directly opposing the crypto moneys and warning people against manipulations and speculation, it is more appropriate to go to the evaluation of the risks that such currencies would cause.

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## A POLITICO-ECONOMIC EVALUATION ON INTERNATIONAL CREDIT RATING AGENCIES

Seyfettin ERDOĞAN\*

Ayfer GEDİKLİ\*\*

Sema YILMAZ GENÇ\*\*\*

### Introduction

“There are two superpowers in the world today in my opinion. There’s the United States and there’s Moody’s Bond Rating Service. The United States can destroy you by dropping bombs, and Moody’s can destroy you by downgrading your bonds. And believe me, it’s not clear sometimes who’s more powerful.”

(Friedman, 1996).

The aim of this study is to analyze the subject of whether the evaluation and rating processes of international credit rating agencies are based on objective criteria in a political-economic perspective. When ratings of those rating agencies are examined, it is figured out that the structures of these agencies were neither transparent enough, nor they were auditable. Furthermore, the criteria for credit ratings were not standardized and changing from one company to another. Recent history has witnessed numerous instances of evaluation by different credit rating agencies of the same country/company differently. The possibility of being away from supervision and using non-objective criteria impair the reliability of rating agencies and giving the impression that rating processes are based on political concern. The focus will primarily be on the most well-known credit institutions: The Big Three: Moody's, Standard & Poor's and Fitch Ratings. The institutional structures, the working principles, methodologies for ratings and rating process will be examined for the sample agencies. With their crucial credit information and distribution of this information with market participants, Credit Rating Agencies (CRAs) have enormous effect on the global financial system. CRAs provide required creditworthy information to financial institutions. Credit rating sector has been dominated by global actors which can be counted on the fingers of one hand such as Moody's, Standard & Poors (S&P), and Fitch (Alsakka and Gwlyim, 2010:2615).

Although they have a critical position in the financial markets, CRAs have been criticized in many ways such as having biased rating assessments, misusing their reputation etc. It is a fact that those agencies could not maintain their good reputations of their reliable credit ratings. According to some commentators, maybe because of their increasing financial and political power, they became “regulatory license sellers”. So, inspite of their profit, exceeding power and great network all over the world, CRAs could not provide trustworthy information so qualified as previous years (Partnoy, 1999:714). To support this observation, in most of the researches it was concluded that many issuers obtain ratings from at least two or more agencies. The reason behind this is that probably they cannot be sure of the ratings CRAs provide for them to take action. Having information from different CRAs may bring more alternatives in order to take correct position. The more data from different CRAs, the more accurate position they can have. So, issuers want to see updated information to reflect all relevant

\* Istanbul Medeniyet University, Faculty of Political Sciences,  
seyfettin.erdoganmedeniyet.edu.tr

\*\* Istanbul Medeniyet University Faculty of Political Sciences, ayfergedikli@yahoo.com

\*\*\* Kocaeli University, Kocaeli Vocational School  
semayilmazgenc@kocaeli.edu.tr



changes even if the changes will be reversed in the near future (Ellis, 1998).

The CRAs have been blamed of not only being “regulatory licence sellers” but also their contribution to financial market efficiency became suspicious. They were mostly accused of failing their role of “watchdog”. Besides, some other commentators criticized them for their reliability. Because of the lack of regulation mechanisms, those organizations have transparency and accountability problems. Furthermore, legal and institutional mechanisms that monitor the transactions of rating agencies should be reviewed. Indeed, when the relevant literature and applications of those rating agencies are examined, it is figured out that the structures of these agencies are neither transparent enough, nor they were auditable. Furthermore, the criteria for credit ratings are not standardized and changing from country to country. The possibility of being away from supervision and using non-objective criteria impair the reliability of rating agencies and giving the impression that rating processes are based on political concern. While it is a well-known criteria that the credit rating of a country is lowered because of increase in inflation rate, increase in current account deficit and deterioration of fiscal discipline in the local economy. Contrary, although there are specific countries with problematic macroeconomic conditions, they are not graded with lower ratings by the credit rating agencies.

The recent lowering of credit ratings despite outstanding economic performance of Turkey is a stunning example of how political concerns preceded the evaluations of credit rating agencies. On the other hand, when considered holistically, there are powerful countries that rule the system in the global financial system, and there are others which have to follow the rules. In that unfair global financial architecture, the countries which have weaker macroeconomic conditions are expected to follow the rules of those powerful countries. Besides, the main actors of the global financial system do not want other countries to exceed a certain economic threshold. One of the instruments of those countries to deter the weaker countries is the policy of credit rating agencies. In this context, Turkey showed an outstanding macroeconomic performance with its sustainable development and employment policies particularly after the second half of 2000s. With this performance, Turkey became a model country for its counterparts. Despite its successful macroeconomic performance, the country has been graded lower by the global rating agencies. This unfair policy has been applied frequently in the recent years. As a result of downgrading, the foreign direct investments and capital inflows towards Turkey declined dramatically. After all these financial attacks and increasing exchange rates, Turkish economy has been experiencing a turmoil and a great volatility in TL/\$ parities. To overcome those biased evaluations of global rating agencies, policy makers have been working on how to eliminate the false gradings of credit rating agencies. The idea of “establishing national/regional rating agencies” has been thought as an alternative solution.

As expressed above with Turkey case, increasing uncontrollable power and importance of CRAs in financial system, brought some questions into mind. The crucial question is their existence in the system: “Why do CRAs exist in the financial system and how could they become that important?”, “Why are there a few CRAs in the system?”, “Since there are a few number of CRAs, can we consider them as competitive and isn’t it against open market activities?”, “If these agencies are ‘chosen’ what is the criteria to be ‘chosen’ and who decides these criteria?”, “How can be sure that these agencies are unbiased?”, “If there are differences in ratings of the same securities of an issuer with the same credit rating signals, what kind of financial/systematic problems can it cause on the issuer/system?” and “What is the regulatory use of ratings?” (Levich, Majnoni and Reinhart, 2002:2).

In this vein, in the following part of the study, theoretical and historical background of CRAs will be analyzed. Then methodologies of the Big Three CRAs (Moody’s, S&P and Fitch) will be explained. At the end of the study, some policy suggestions to decrease the side effects of biased gradings of credit rating agencies will be put forth.

### **Historical Background of CRAs**

Credit ratings were first introduced by John Moody as the founder of Moody’s Investor Services in 1909. In this first rating, the agency provided its client with information about the quality of corporate

bonds. In the early years of rating industry, agencies made profit by providing ratings to investors who seek reliable information about the bonds. In 1920s, CRAs were relatively small and they had modest profits. However, although they were not that powerful in those years, their ratings were still respected in Great Depression period (Levich, Majnoni and Reinhart, 2002:5). Parallel to increasing their significance, number of CRAs increased and two more agencies added to the sector. Today, Moody's Investor Services, Standard and Poor's (S&P) and Fitch are three major agencies the so-called "Big Three" issue the great proportion of the ratings in the sector. These agencies were named as Nationally Recognized Statistical Rating Organizations (NRSRO). Meanwhile, federal regulations also brought these organizations a very prestigious position as brokers-dealers could get incentives to hold debt that has received investment-grade rating from at least two NRSROs. Besides some regulated investors were limited to invest just investment-grade rated securities which could be rates just by NRSROs (Alsakka and Gwilym, 2010:2615). Below, in Table-1, brief history of the Big Three is explained.

With the expansion of capital markets, as financial system became deeper and more complex, CRAs' role in the system became more important. They became the major players of the financial system because of their critical role in rectifying information asymmetries between issuers and investors particularly since 1970s. Because of their increasing creditworthiness, these organizations were accepted as authoritative. However, despite increasing critical role of them in the financial system, they remained unregulated private institutions which were open to make speculations (Rousseau, 2006:620). It is a fact that the increasing application of Basel II brought an increasing role of CRAs in financial markets. In 1988, the Bank for International Settlements (BIS) established the risk-based capital adequacy levels. These levels revised in 1999 that increased the critical roles of credit rating agencies both in a bank's risk capital (Levich, Majnoni and Reinhart, 2002:2) and in international politics.

Table 1: Brief History of the Big Three

<b>Moody's Investor Service</b>	John Moody founded John Moody and Company in 1900 to give service to the needs of the investment community. The company went bankrupt in 1909. Then John Moody entered to business by analyzing the stock and bonds of American railroads by publishing Moody's Analysis of Railroad Investments. Although letter symbols were first used in 1800s, he also adopted letter symbols for gradings which quickly found a place among investors.
<b>Standard &amp; Poors</b>	After Henry Varnum Poor published History of the Railroads and Canals of the US in 1860, he founded Poor and Co. As an insurance and brokerage firm. In 1906 Luther Lee Blake created the Standard Statistics Bureau. The company was merged with Moody's and created Poor Publishing in 1919 and began rating services on corporate bonds and municipal services in 1923. The company broke this partnership and merged with Poor's Publishing and created the Standard & Poor's Corporation in 1941
<b>Fitch Ratings</b>	Fitch Ratings was found by John Knowles Fitch on 24 December 1913 as the Fitch Publishing Company. As understood from the company's name, Fitch started its business life with publishing financial statistics. Fitch released its first ratings in 1924.

**Source:** Mattarocci (2014:33)

By the privileges, the role of rating agencies became deeper more affective. The Big Three dominated the industry for a long time. In 1980s, financial systems became more sophisticated. Rating agencies started to sell their services by relying on their reputation and credibility to debt issuers. In the proceeding years, CRAs rate different type of issuers all over the world. CRAs rate not only traditional fixed income securities like bonds but also new structural financial instruments like asset-backed securities. Gradually, the opinions of CRAs became more important for market players. Market regulations take the reference of CRAs, giving them a private and precious role in the system. As time passed by, market participants trusted CRAs just because they thought the agencies were right and CRAs were thought as an authoritative source of judgement (Rousseau, 2006:622).

Although in 1975, NRSROs had to be registered and regulated by Securities and Exchange Commission (SEC), in 1990's the SEC became inactive. Particularly in 2003 SEC revealed that market players and observers were against the regulatory mechanism. SEC was accused of interfering with the credit rating agency's rating process or rating judgements (Mulligan, 2009:1277-1279, 1284). When the Global Crisis started because of supprime residential mortgage-backed securities, CRAs were accused of being failed the marketplace. President's Working Group on Financial Markets concluded that the complacency of investors about investing high risky instruments are mostly because of relying on credit ratings of these agencies. Contrary, it was soon understood that credit ratings produced by the CRAs were not reliable. After they finished their report, President's Working Group strongly recommended to improve the integrity and transparency of the CRAs' processes and practices in order to protect the global financial system from financial risks and manage risk more effectively. Accordingly, President's Working Group recommended that CRAs should declare the details of qualitative reviews, disclose their rating methodologies, provide the rating performance statistics available and more effectively monitor and update ratings (Mulligan, 2009:1290). In April 2009, formal regulation for credit rating industry has been introduced in order to increase accountability, transparency and competitiveness (Alsakka and Gwilym, 2010:2615). However, it should be noted that despite setting these regulations, credit rating industry could not be regulated enough. There are many scholars insisting that the poor performance of CRAs is correlated with lack of governmental regulations and self-regulations. In eurozone, there has been some precautions taken to solve this problem. In May 2012, European Commission established technical standards developed by ESMA (European Securities Markets Authority). According to the standards, CRAs have to submit the expected information in the specific period of time intervals. Those standards were expected to ensure a certain level of transparency, protection of investors and a safe ground for the competition. Regulations which were launched by Securities and Exchange Commission (SEC) improved slower in USA. Although Credit Rating Agency Reform Act was signed in 2006 which gave SEC a greater power on CRAs to register, keep record and have financial reports, SEC could not be effective enough on CRAs sector. In 2011 SEC announced the final regulations eliminating most of the information they expected from CRAs. These process brought loss of trust to credit rating agencies (Verschoor, 2013:17). Since then CRAs became the informational intermediaries specializing on the creditworthiness of corporations/market participants.

Table-2 represents the market shares of some of credit rating agencies which are registered in ESMA (European Securities and Market Authority). For the calculation of ranking, the revenues from the credit ratings and the other services reported by the CRAs in 2015 were taken. Accordingly, Moody's, S&P and Fitch dominate the sector. Big Three occupies total of 92.85% of EU rating sector.

In the proceeding years, CRAs' ratings became critical in almost all financial decisions. Both CRAs ratings of new public bond issues and rating changes are considered as very critical in all financial markets. However, despite their importance, according to many authors, they cause a paradox in financial markets. Although with their great reputations CRAs provide investors with critical information for their investment preferences about purchasing or selling bonds, the value of credit ratings of these agencies have been getting less reliable. This unpleasant manner can be associated with

the challenges of globalization, technologically innovative markets and competition between the information providers for accurate information (Partnoy, 1999:621-622). Besides, asymmetric information and adverse selection problem has been told outloud recently. The reasons behind these problems are probably related to lack of transparency and lack of accountability.

Table 2: Market Share of Some Selected Credit Rating Agencies in the EU (2015)

Credit Rating Agency	Market Share
<b>Standard &amp; Poor's Group</b>	<b>45%</b>
<b>Moody's Group</b>	<b>31.29%</b>
<b>Fitch Group</b>	<b>16.56%</b>
AM Best Europe Rating Services LTD (AMBERS)	0.93%
ARC Rating, S.A.	0.03%
ASSEKURATA Assekruranz Rating-Agentur GmbH	0.21%
Axedor S.A.	0.05%
BCRA-Credit Rating Agency AD	0.02%
Capital Intelligence (Cyprus) LTD	0.14%
CERVED Group S.p.A.	0.88%
Crediform Rating AG	0.50%
DBRS Rating Limited	1.89%
The Economist Intelligence Unit LTD	0.80%
Acope Rating AG	0.39%
Euler Hermes Rating GmbH	0.21%
Feri EuroRating Services AG	0.40%

**Source:** ESMA (2016:6).

Today, the basic role of CRAs in the global financial system is to lower inefficiency in transaction costs, decrease information asymmetries and adverse selection problem between issuers and investors. In other words, CRAs' fuction is mediating between capital supply and demand (Kruck, 2011:27).

### Theoretical Background and Conceptual Framework of CRAs

As a brief definition, a credit rating agency is an institution/organization that provides issuers, investors and other market players with credit ratings for a fee by applying quantitative and qualitative methods (Mulligan, 2009:1278-1279).

In an other definition, CRAs are described as private companies which rate and predict the creditworthiness of issuers both as private and public borrowers and a group of financial products such as bonds and loans. Here, rating public and private borrowers are called as issuer rating, and rating bonds and loans are called issue rating. According to the definition the credit risk indicators can be described as ordinal measurement of risk but not the cardinal measurement since measurements of relative. Credit ratings are the expression of credit risks which are explained in letter grades. (Table-1). Rating agencies measure the expected payment requirements which are handled from the issuance of bonds (Kruck, 2011:20).

It should be noted that although ratings have been applied more than 100 years, business community, legislators, academics and regulators have some extra expectations from them.

#### 1. Functions of Credit Rating Agencies

Below, basic functions of CRAs in the global financial system are explained (Schoereder, 2015:13-17) :

- a. Evaluation of Creditworthiness: As specialized institutions, rating companies rate the creditworthiness of corporations and governments (government entity can be sovereign, national or municipality level). The basic ways for assessing creditworthiness are credit scoring, traditional (statistical) approach and modern (market base) approach. Although credit rating agencies apply different rating methods, they use common methodologies.
- b. Discrimination Between Investment Grades with Non-Investment Grades: Investment grade instruments have lower default risk. Discrimination is critical for institutional investors like banks, pension funds, and mutual funds those are required to have investment grade securities in their portfolio.
- c. Preventing Asymmetric Information: Trustworthy information about securities will provide a safer and less risky environment for the investors. In the absence of CRAs, asymmetric information can be more which may negatively affect the purchasing preferences of investors.
- d. Sharing Information: The credit rating agencies share their ratings with the public in order to assist issuers to increase the pool of potential investors.
- e. Ratings can be Used for Regulatory Purposes: Particularly Basel II and Basel III brought guidelines in order to weight securities according to their level of riskiness.
- f. Provide Liquidity: Ratings promote liquidity for financial markets since they decrease information asymmetry and reduce the risk and so reduce the uncertainty of investors. The more the confidence, the more investment issuers have.
- g. Increasing Market Efficiency: Rating changes affect the bond prices and interest rates. If the changes are in favor of the market, this is a good function. However if those changes are harmful for the market, this property can be considered as a malfunction of credit ratings
- h. Providing the Efficiency in Allocation of Investments (Private and Public): Correct information allows fund providers to invest their funds to proper and profitable investments. On the other side, the producers can receive the best funds for them to allocate their resources.
- i. Calculation the Cost of Capital: Rating information allows to analyse the real degree of risk. This will assist the lenders to calculate the cost of capital accurately.
- j. Analyzing the Overall Capacity of Country's Economy: Ratings for sovereign debt are directly related to the overall economy and give implication of soundness of so called economy.

Below, major properties of ratings are explained (Langohr and Langohr, 2008:78):

- ✓ Ratings are not probabilities but they address benchmark measures of probability of default.
- ✓ Ratings follow a time perspective on credit risk for a period of time which covers the maturity of the instrument.
- ✓ Ratings are descriptive but they cannot predict the future of a debt situation
- ✓ Ratings grade credit risk but not price the risk.
- ✓ Ratings are for credits but not equities.

## 2. Classification of Credit Ratings

Credit ratings can be classified as long-term credit ratings and short term credit ratings; confidential and nonconfidential ratings; as well as solicited and unsolicited ratings.

### a. Long Term Credit Ratings

Long term ratings are the ratings that measure the ratings for more than a year (Kruck, 2011:21). Long term credit ratings provide information about the credit risk on a risk index between the range AAA to C. Here, AAA represents securities with lowest risks and C represents securities with the highest risk. So, the level BB shows a higher risk to default than A ratings. Besides, BBB shows the quality of investment. The instruments rated BB and below represent the speculative gradings (Langohr and Langohr, 2008:44).

b. Short Term Credit Ratings

Short term ratings are the ratings which measure the ratings of bonds for the duration of less than one year (Kruck, 2011:21). Short term ratings were first introduced in 1970 as a solution to market problems that was created by the collapse of a major railroad, Penn Central which was an important issuer of commercial securities. It was in 1960s that the trade of commercial papers on the capital markets increased so fast that markets could not realise the risk of these new instruments. After the collapse of Penn Central, the introduction of short term credit ratings provided critical and current information to allow investors to make their risk management. Short term credit ratings provide information about the ability of an issuer to make payments in time on short-term financial commitments by focusing on liquidity of the issuer. Short-term instruments may have up to 390 days period. For speculative grade issuers, ratings focus on the expected liquidity level for the next 13 months. Contrary, this term becomes 3 to 5 years for long term investment ratings. Short term ratings are generally provided to the issuers. However, short term ratings can also be used for specific programs to sell instruments. Particularly if there is an improve in ratings there may be request for issuance programs. Unlike long term instrument ratings, short term instrument ratings do not have loss-given-default in their evaluations since generally short term instrument are investment grade and default risk is critical for the investors of these investments. And also as credit risk for a given issuer is lower in the short term, short term rating scale is shorter than the long term rating scale (Langohr and Langohr, 2008:50-51).

c. Confidential and Nonconfidential Credit Ratings

Credit ratings can also be classified as confidential ratings and published credit ratings. While confidential ratings are kept confidential between the issuer and the rating agency, non-confidentials credit ratings are declared by the credit agencies on their web sites and all data are provided for all the parties for free.

d. Solicited and Unsolicited Credit Ratings

According to solicited classification, rating calculations are done if the client wants to do so. 80-95% of CRAs' revenue comes from rating measurement fees paid by the issuers of bonds for solicited ratings. Less commonly, CRAs measure unsolicited ratings by using only publicly available data on the borrower or the financial product. Generally, solicited ratings are higher than unsolicited ratings as unsolicited ratings are mostly based on publicly available data of the borrower or the financial product (Kruck, 2011:21). Below in Figure-1, solicited credit rating process is illustrated.

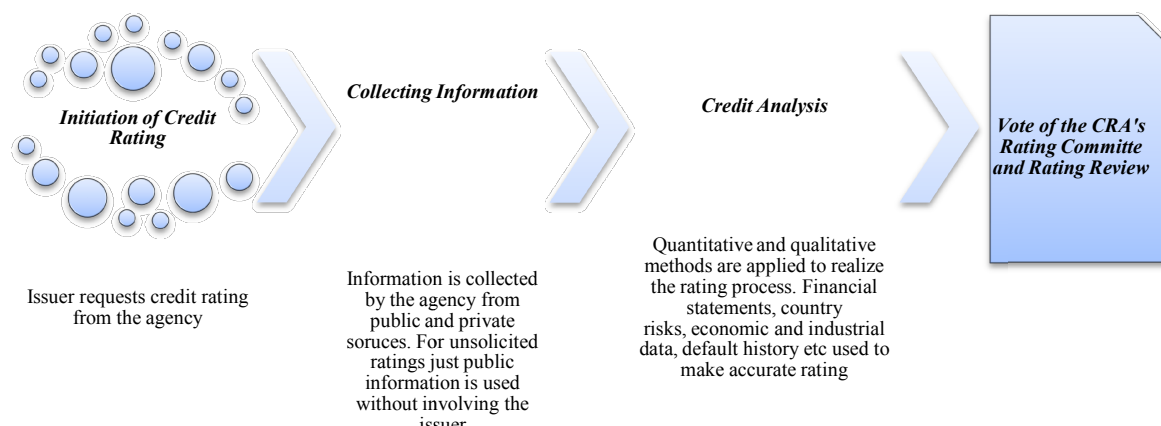


Figure 1: The Credit Rating Process for Solicited Ratings

**Source:** Kruck (2011:26)

Credit rating process starts with the request of issuers for solicited ratings. Although it is not solicited, sometimes countries and borrowers are rated by the CRAs. For solicited ratings, issuer provides all necessary information for rating to CRA. For unsolicited ratings CRA uses information released by media or institutions such as IMF, World Bank etc. With public and nonpublic information, CRA makes the grading by using qualitative and quantitative methods. In the last part of credit rating process, senior analysts evaluate the information. At the stage, issuer is notified about the rating; he has opportunity to comment on the rating and he has right to present extra material. After the review of additional information and the second vote of the rating committee, rating results are published and shared with media. In case of the confidential ratings, the results are just shared with the issuer but not shared with public or media (Kruck, 2011:26).

### 3. Rating Categories and Rating Symbols of the Big Three

There are basic indicators used for corporate ratings and rating sovereign creditworthiness. As an example Moody's use more than 50 indicators in the process of assigning and monitoring sovereign creditworthiness. All of the rating agencies basically analyse the general economic structure, fiscal policy, debt burden, institutional strength, credibility of government, debt of financial system and financial openness when they rate the countries. Data are provided from the local governments, from IMF, OECD, UN, BIS, World Bank and development banks (Schroeder, 2015:81-84). In assessing sovereign risk, CRAs search many risk parameters such as economic, political, fiscal and monetary flexibility, the debt burden etc. Economic risk provides information about the ability to repay its obligations on time. Political risk shows the governments' willingness of repayment of debt. Actually, economic risk and political risk are interrelated since a government which is unwilling to pay the debt back is followed by weakening economic performance which brings the country in the risk of default. To have a healthy rating, there are a small number of variables that explain the situation basically (Elkhoury, 2008:4, 6).

Basic Indicators Used for Rating Sovereign Creditworthiness are as follows (Moody's, 2016; Host, Cvecic, and Zaninovic (2012:645)):

- ✓ Macroeconomic structure and performance: Indicators of economic structure and current performance of economy policies such as nominal and real GDP, GDP growth rate, GDP per capita, stability, inflation rates, unemployment rates, economic openness.
- ✓ Government Finance: Indicators of public finance such as ratio of income and expenditure of government revenue to GDP, total government debt, the capability of interest payments, non-gold foreign exchange reserves/Imports
- ✓ External Debt and Payments: The level of total external debt, nominal and real exchange rates, change in relative prices, current account balance/GDP
- ✓ Monetary Indicators: Indicators of monetary policy, liquidity such as movement of M2, change in domestic credits, liquidity ratio, the level of dollarization etc
- ✓ External Vulnerability
- ✓ Liquidity Indicators
- ✓ Default history

In Table-2, Table-3 and Table-4, the indicators which are used by S&P, Moody's and Fitch are illustrated.

Table 3: The Indicators Used by Standard & Poors's for Sovereign Ratings

Security Risk and Effectiveness of Government and Institutions	<ul style="list-style-type: none"> <li>-Sustainability of Public Finance</li> <li>-Economic growth performance</li> <li>-The strength to economic and political turmoils</li> <li>-Reliability of data</li> <li>-Transparency and quality of data</li> <li>-Geopolitic risk comes from the neighbour countries</li> </ul>
Economic Performance, Growth and Economic Structure	<ul style="list-style-type: none"> <li>-GDP/capita (income level of the government)</li> <li>-Economic diversity and sector performance</li> <li>-Volatility</li> <li>-Sectors of Industry</li> <li>-Exposure to natural elements</li> </ul>
External liquidity and Foreign Investments	<ul style="list-style-type: none"> <li>-Strength of local currency in international transactions</li> <li>-Country's external liquidity level (Current account deficit/surplus, office reserves)</li> <li>-External Debt (Net external debt/Current Account Deficit or Surplus)</li> <li>-Residents' assets and liabilities to Rest of world</li> </ul>
Fiscal Policy and Flexibility	<ul style="list-style-type: none"> <li>Sustainability of sovereign debt deficit and debt burden (debt/GDP, level of liquidity assets, level of cutting expenditure, performance of raising revenue,</li> <li>-Fiscal flexibility, interest costs, level of debt</li> <li>-Long term fiscal performance and vulnerabilities</li> <li>-Maturity of debts and funding ability</li> <li>-Potential risks from contingent liabilities</li> </ul>
Monetary Policy	<ul style="list-style-type: none"> <li>-Ability of monetary policy makers and credibility of them to perform monetary policy</li> <li>-Dominant currency used in transactions (local currency or foreign currency)</li> <li>-Monetary base, monetary supply and domestic liquidity conditions</li> </ul>



	<ul style="list-style-type: none"> <li>-Efficiency of monetary policy</li> <li>-Effectiveness of monetary policy</li> <li>-inflation rate (CPI)</li> <li>-The dept of local financial system</li> </ul>
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Source: Schroeder (2015:82)

Table 4: The Indicators Used by Moody's for Sovereign Ratings

Economic Performance	<ul style="list-style-type: none"> <li>-Economic growth</li> <li>-Average GDP growth, volatility of GDP growth</li> <li>-Nominal GDP</li> <li>-GDP/capita</li> <li>-Diversification of sectors and level credit usage</li> </ul>
Institutional Performance	<ul style="list-style-type: none"> <li>-Institutional and governmental effectiveness</li> <li>-Corruption level</li> <li>-Policy credibility and effectiveness</li> <li>-Inflation level and volatility</li> <li>-Default history</li> </ul>
Fiscal Performance	<ul style="list-style-type: none"> <li>-Debt burden</li> <li>-Government Debt/GDP</li> <li>-Government Debt/Revenues</li> <li>-Debt trends</li> <li>-Foreign Currency Debt/Total Debt</li> <li>-Public Sector Financial Assets/GDP</li> <li>-Sovereign Wealth Funds/GDP</li> </ul>
Other Sensetive Indicators	<ul style="list-style-type: none"> <li>-Politic Risk</li> <li>-Domestic and Geopolitic Improvements/Risks</li> <li>-Government Liquidity risk</li> <li>-Risk calculated by fundamental indicators</li> <li>-Market funding stress</li> <li>-Banking sector risk</li> <li>-Size of Banking sector</li> <li>-Strenght of Banking sector</li> <li>-Funding vulnerabilities of Banking sector</li> <li>-External risk</li> <li>-Net International Investment Position/GDP</li> <li>-(Current Account Balance + FDI)/GDP</li> </ul>

Source: Schroeder (2015:83)

Table 5: The Indicators Used by Fitch for Sovereign Ratings

Structural Performance and Political Risk	<ul style="list-style-type: none"> <li>-Strength to turmoils</li> <li>-The level of openness to international capital flows and international trade</li> <li>-Ability to reallocate resources</li> <li>-Political power to affect level of tax revenue and level of expenditures</li> <li>-Quality of human capital and development of it</li> <li>-Business environment</li> <li>-Governance Performance</li> <li>-Credibility of Political regime</li> <li>-The level of corruption</li> <li>-The level of social and political tensions</li> <li>-The level of accountability</li> <li>-Rule of law</li> <li>-The banking performance (strength, deepness)</li> <li>-GDP/capita</li> <li>-GDP share in the world</li> <li>-default history</li> <li>-money supply</li> </ul>
Public Finance and Government Activities	<ul style="list-style-type: none"> <li>-Quality of management</li> <li>-Debt sustainability (level of debt)</li> <li>-Composition of sovereign debt (currency, maturity of debt and cost of interest)</li> <li>-Volatility of tax revenue</li> <li>-Vulnerability to turmoils</li> <li>-Assessment of government solvency</li> <li>-Depth of financial system</li> <li>-Net foreign asset level (general government gross debt, budget balance, interest payments, foreign currency debt of government)</li> </ul>
External Finance	<ul style="list-style-type: none"> <li>-The position of balance of payment</li> <li>-Foreign liabilities and assets</li> <li>-International trade flow</li> <li>-International financial flow</li> <li>-Ability to create foreign exchange</li> <li>-Ability to borrow in local currency</li> <li>-reserve currency flexibility, commodity dependence, external interest services, the level of current account balance + net foreign direct investment</li> </ul>
Macroeconomic Performance, Economy Policies and Expectations	<ul style="list-style-type: none"> <li>-Success in Macroeconomic performance</li> <li>-Credibility of policies</li> <li>-Inflation level and inflation history</li> <li>-The level of savings and investments</li> <li>-Exchange rate regime and monetary policy performance</li> <li>-Real GDP growth volatility, inflation rate (CPI), real GDP growth</li> </ul>

**Source:** Schroeder (2015:84)

As shown in Table-2, Table-3 and Table-4, the Big Three has common indicators and similar categories to analyse the sovereign ratings. Using common variables brings the unity/similarity in ratings which is good for investors. Below in Table-5, S&P's, Moody's' and Fitch's (The Big Three) rating letters are illustrated.

Table 6: Ratings of Big Three

S&P	Moody's	Fitch	Grading			
Long Term Rating	Short Term	Long Term Rating	Short Term	Long Term Rating	Short Term	
<b>Investment Ratings</b>						
AAA	A1+	Aaa		AAA	F1+	Highest Rating:Extremely strong capacity for both short term and long term financial commitments
AA+	A1	Aa1	P1	AA+	F1	High Rating: strong capacity for both short term and long term financial commitments
AA		Aa2		AA		
AA-		Aa3		AA-		
A+	A2	A1	P2	A+	F2	Satisfactory Capability of Debt Repayment
A		A2		A		
A-		A3		A-		
BBB+	A3	Baa1	P3	BBB+	F3	Sufficient Capability of Debt Repayment
BBB		Baa2		BBB		
BBB-		Baa3		BBB-		
<b>Speculative Rating</b>						
BB+	B	Ba1		BB+	B	Speculative, Credit Risk Increasing: Minimal capacity for timely payment of short-term and long term commitments. Signals of vulnerability to near future changes in financial conditions
BB		Ba2		BB		
BB-		Ba3		BB-		

B+		B1	Second- Class	B+		Highly Speculative, Low Protection
B		B2		B		
B-		B3		B-		
CCC+				CCC,		High Risk of Default: Capacity of meeting financial commitment are highly dependent on favorable business and economic conditions, vulnerable to nonpayment
CCC				CC		
CCC-				C		
CC, C	C	Caa, Ca			C	
D	D	C		RD/D	RD/D	Payment default on financial commitments; payments are not made on the due date; bankruptcy petition if payments on an obligation is jeopardized

Source: Host, Cvecic, and Zaninovic (2012:644); Langohr and Langohr (2008:51)

Depending on these categories, CRAs rate the companies and countries on a scale ranging from the highest rating AAA to the lowest as junk bonds. The symbols may vary from agency to agency. The scale for the assessment of long-term bonds ranges from AAA (S&P and Fitch)-Aaa (Moody's) which symbolize the best grading to C (Moody's) and D (S&P) which represent the highest probability of credit loss and the poorest investment value. Credit ratings are categorized as investment and speculative gradings. Baa3 (BBB-) (higher obtain investment grade) and Ba1 (BB+) (Lower obtain speculative grade:junk bonds) (Kruck, 2011:23).

#### 4. Advantages and Disadvantages of CRAs

CRAs contribute the efficiency of capital markets by rectifying the investment information asymmetries in the debt market between investors and issuers who have superior information about the creditworthiness of their bonds. So, issuers can rate their credit quality higher than their actual value in order to get higher price for their securities by using information asymmetry that leaves the investor in the difficulty of distinguishing between the qualified and nonqualified securities. In other words, CRAs ratings have a great and direct impact on financial transactions since investors are convinced that these agencies' ratings are accurate for the creditworthiness of the product/company or country. In the absence of CRAs investors need to get information about creditworthiness of securities by themselves. Most of the institutions find it too expensive and time consuming to do their own research of the credit quality of issuers. So, to get the accurate information in a short time, they prefer to apply CRAs. CRAs research and review information from different sources. Since they have a great number of activities and credit assessments, they can get more accurate information with a lower price comparing the individual investors'. In other words, their information analysis researches are cost-effective.

Furthermore, CRAs can announce information faster to the financial markets that allow the market players can adjust the prices. However, it should be noted that these ratings are just opinions and comments of given data. At this point, three properties of CRAs are highlighted (Rousseau, 2006:622-624; Mulligan, 2009:1278-1279):

- ✓ First, CRA must have reputational capital;
- ✓ Second, the value of reputation of CRA must be higher than the gains to be made from false evaluation,
- ✓ Third, it must be costly for an issuer to get the services of the certifying agency to eliminate information asymmetry.

Getting accurate information is critical for both parties since asymmetric information between issuers and investors may lead adverse selection problem. Adverse selection may cause problems for the debt of issuers with good credit quality to be undervalued, or low quality credits as overvalued. (Rousseau, 2006:622-624; Mulligan, 2009:1278-1279). If there is an adverse selection in the lending relationship, investors need more credit spreads to compensate the default risk on the issuer part. At this point it is hard for investors to discriminate the risky and safe issues. Market will price the issues as general without discriminating if the issues are safe or risky. Since the price of issues are average, safe issues will decrease the riskiness of problematic issues. The market frictions that cause adverse selection can be controlled by credit rating agencies as they provide correct information between issuers and investors (Langohr and Langohr, 2008:111).

In many cases, it can be observed that CRAs rate the sample company/country with similar rating letters. This similarity represents that risk level of that company/country is almost accurate. The more accurate calculation of riskiness, the higher security for the investors. On the other hand, some commentators warn that identical ratings embody the risk of copying the other agency's rating evaluations. In other words, if Moody's graded a country with a certain rating, the other two prefer to follow the same path and rate similarly instead of grading with a different score. The reason behind this is that, after the first rating, the other rating agencies may prefer to reduce the operational costs and make the basic calculations. Furthermore, grading differently may get a reaction from the financial markets and CRAs are questioned the reason of different scoring. Besides, it is crucial for CRAs to protect their reputation in the market. It is clear that none of the CRAs would like to take the risk of losing their reputation. So, in order to maintain accurate credit ratings, and protect their reputation, most of the credit rating agencies provided ratings after-the-fact corrections instead of predictive ratings (Partnoy, 1999:621-622). Nevertheless, after-the-fact ratings do not satisfy the investors as these ratings cannot decrease the risk. Actually it is critical for investors to get accurate information of any change in credit risk that may affect their invested funds. At this point, a CRA's credibility is enhanced by its accurate and quick rating as well as rating leadership which directly affect the issuer's creditworthiness (Alsakka and Gwilym, 2010:2614).

As credit rating industry is not competitive and there are few market players in this sector, there is always risk of oligopolistic trends. Furthermore, the political relations of CRAs with governments and interactions with great players of different sectors, may bring immoral relations and false ratings. As an example, in his speech at the US Senate, Committee of Governmental Affairs, Chairman of Committee Joseph I. Lieberman (2002), expressed that Moody's, S&P and Fitch have significant power over markets, corporate America and entire economy. He emphasized that this power came from their government conferred relations. Related to Enron scandal, he pointed that although the other agencies put Enron on a credit watch, the S&P graded energy giant Enron positively and revealed that the company will be excellent in the long-term. Parallel to S&P's case, Enron declared its bankruptcy just four days after Moody's and Fitch downgraded its position. Lieberman also said although CRAs had more instruments and ability to obtain information about the firm faster than other analysts, none of the three CRAs did not warn the investors and maintained investment ratings. In other words,

watchdogs did not bark in time (Lieberman, 2002:1-4). Accordingly, the company received “investment grade” from the S&P until five days to its bankruptcy. Following this false grading and collapse of Enron, the CRAs tried to defend themselves as their ratings were not more than expression of their opinions. This scandal brought out their biased ratings. Academia and political environments started questioning their reputations and trustworthiness of their ratings. Congress, market players, investors and the public became upset with the rating agencies’ slow motion reactions and late downgrading Enron’s credit rating although there were strong signals of problems of the company. After the Enron scandal, the next year the SEC and private Sector Watchdogs recommended a deeper oversight for the rating agencies (Mulligan, 2009:1284). In Table-6, advantages and disadvantages of CRAs are explained briefly.

Table 7: Advantages and Disadvantages of Credit Ratings

<p>Advantages</p> <ul style="list-style-type: none"> <li>✓ Diversification of funding sources: Investors may have a higher ability to access a deeper investor base</li> <li>✓ Opportunity to extend maturity position</li> <li>✓ Higher financial and strategic flexibility in market timing and amortization</li> <li>✓ Less duration-adjusted cost of borrowing</li> <li>✓ Higher transparency and credit standing in international capital markets</li> <li>✓ Higher bargaining power with the other market participants such as banks, suppliers</li> <li>✓ Rebalance asymmetric information: An imbalance in information occurs when one party is not fully informed about the risks which arise from the financial transactions</li> <li>✓ Dissamination of reliable information</li> <li>✓ Ratings can be used for regulatory purposes: Basel II and Basel III provide guide lines for weighing securities according to their riskiness</li> <li>✓ Ratings can be used to have liquidity for financial markets by reducing asymmetric information which provides confidence for investors by reducing uncertainty</li> </ul>
<p>Disadvantages</p> <ul style="list-style-type: none"> <li>✓ Sometimes conflicts of interest between the CRAs that cause different ratings: Rating agency staff may have dilemma between external pressure and actual rating process. Since the regulatory system does not work effective enough, the competition between the agencies may urge them to make favorable ratings for their client in order not to lose their customers.</li> <li>✓ Increasing transaction costs because of initial and surveillance fees</li> <li>✓ Differences between solicited and unsolicited ratings: There are sometimes complains about credit rating agencies about using their market power to urge conversion of unsolicites ratings to solicited ratings for raising rating and lowering the cost of capital</li> <li>✓ Lack of transparency in calculations and open dialogue problems: Lack of transparency results in increasing asymmetric information, hence there will be increasing default risk and higher risky securities will be issued in the markets.</li> <li>✓ Problems in rating methods</li> <li>✓ Initial and ongoing rating expectations of the agency becomes critical for issuers. So, agency may missuse this position</li> <li>✓ Poor Rating Processes: particularly in checking financial products there may be poor diligence problems. This may lead to adverse selection problem.</li> </ul>

Langohr and Langohr (2008:98); Schroeder (2015:18-21)

## General Assessment of CRAs in The Global Financial System

### 1. Market Failures of CRAs

It is a fact that CRAs have been criticized and their rating performance have been debated in recent years. One of the underlined critics about CRAs is that they do not rate objectively. Because of their high reputation in financial markets, their ratings are considered as reliable and actually this brings a high social responsibility. As an example, any sovereign rating that is lower than it deserves conveys the country fall into a deep financial trouble as fund providers will hesitate to invest in that country. This situation is even worse for the emerging countries with current account deficits since they have to meet the current account deficit with those external funds.

Furthermore, there are many studies highlighted that there is a linkage between financial crises and rating changes in developing countries. Even the developed countries which had no problem with degrading ratings have experiences currency and banking crises. With their more fragile economic structures, banking and currency crises in emerging countries were experienced parallel to the sovereign defaults in 1990s. It can be concluded that at least to some extent, downgrading in sovereign credit ratings may contribute to financial crisis (Levich, Majnoni and Reinhart, 2002:10).

Pricing of securities and performance prediction are hard to judge in an economy since market price can be arranged by negotiations which can be away from the list prices stated by the CRAs. Besides since most of the CRAs are a part of greater corporations, it is hard to evaluate the performance of the credit rating activities. For example, between 1995-2000, Moody's showed its power on pricing and parallel to that power, the agency declared that after-tax income was almost 44% of total assets (Levich, Majnoni and Reinhart, 2002:4).

The reasons of market failures of CRAs can be summarized as follows (Rousseau, 2006:627-643):

#### a. Imperfect Competition and Entry Barriers for the Other Credit Rating Companies

Although credit rating agencies have been active in the financial markets for at least one century, the number of credit rating agencies are so few due to the entry barriers in the market. Lack of fair competition brings market dominance of a few agencies. The problem is basically related to the scale economies in the market. It is a fact that issuing of a new rating for an existing customer is much lower than the cost of a new customer. Savings are correlated to the information gathering process. Price expected for an issuing service should be low enough for increasing the number of customer and customer satisfaction. In this circumstance, a new comer cannot compete with the existing ones in providing lower price with the same quality service. Because of the hard competition, the company will have no possibility to improve its market share. Furthermore, the existing companies already increased their number of their branches. With this great network, older ones take the advantage of the economies of scale. Besides, reputation is an important factor as an entry barrier. Naturally, a new company does not have the reputation to compete with the existing agencies and it takes a long time to be recognized by the market as trustworthy. One may think that price competition may be beneficial for the market. Unfortunately because of the high relevance of fixed costs in the evaluation process, the new comers cannot survive in the market. An unplanned discount on service prices can be end up with a negative impact on profit margins and threaten the existence of the company (Mattarocci, 2014:34-35). And also competitive prices with the prestigious old companies' may have another negative impact: Clients may associate low prices with the lower quality service.

#### b. Rating Shoppings of CRAs

Another problem is that CRAs give consultation services to companies. CRAs easily defend themselves

by putting forth that they share their experience and knowledge to issuer companies who need their support. Nevertheless sharing experience and knowledge brings close relations and collusions between CRA and the debtor company.

In the literature, there are many researches prove that. Accordingly, issuer companies choose one of the CRAs that they have good relations and this particular one provide a more favorable rating for their securities. Credit rating agency may offer a more favorable credit risk assessment with “a reasonable price” which causes moral hazard because of the financing model the agency. Credit rating agency may also threaten the borrower by lowering the unsolicited rating comparing a fee-based (requested) rating. Even CRAs themselves accept that they make “rating shoppings” particularly for structured finance products. As an example, while Moody’s revenue from structured finance rating was \$ 50 million in 1995, it reached to \$850 million in 2006 (Croce, Lugo and Faff, 2010:2; Kruck, 2011:22).

c. Reliability of Ratings

It is common that there are differences in issuers and investors assessment of CRAs. Majority of the investors apply one rating evaluation before they buy corporate bonds whereas issuers get at least two or three ratings. Issuers get ratings from different CRAs and combine the results (Baker and Mansi, 2003). The discrepancy between the ratings may lead asymmetric information and reverser selection problem.

d. The Timeliness and Consistency of Ratings

Rating agencies have been criticized for their poor performance in monitoring the credit rating changes. They get more critics of being late, especially for downgrading corporate ratings. As an example, CRAs rated energy giant Enron above investment grade until the three days to its bankruptcy. Furthermore CRAs are also blamed with the lack of information efficiency. More specifically, they are accused of spending insufficient effort on monitoring ratings once they are assigned. So, ratings become lag behind the market for calculation of creditworthiness of issues. It is a fact that when a rating change is declared by credit rating agencies, it has actually already been accounted for the information in the market (Rousseau, 2006:632).

e. Conflicts of Interests Between CRAs

Credit rating agencies have been criticized because of unduly favorable ratings of securities to have more profit which indicates a lower probability of default risk than the actually exists. Almost 90% of CRAs’ revenue comes from issuers’ security ratings. In other words, CRAs are reluctant to rate the securities with a poor grade for fear of losing business. The CRAs partially accept that there is conflict of interest because of the operation of the system, but refuse the severe impact of false grading. They claim that CRAs’ success is directly dependent on their reputation in the financial markets for issuing credit ratings. Protecting their reputation brings an adequate accuracy in calculating ratings. However, this argument is criticized since markets do not have enough information and data to evaluate how accurate the rating calculations of CRAs are or what is the degree of variation between the calculated rating and actual rating. So reputation damage is not an apparent risk for CRAs if they make false ratings (Tennant and Tracey, 2016:39-40).

f. Misuse of Reputation of CRAs

It should be noted that these agencies are private companies which try to maximize their profit. However, with their high reputation and their high quality expertise bring credit agencies in the hearth of the business world. Some scholars believe that although they are private companies, they also have supervisory role in the financial system. On the other hand many scholars agree that main asset of



credit rating agencies is their reputation which provides them to make reliable measurements of risks. Since their reputation is their major asset, they would never attempt to endanger their reputation by false assessments such as more lenient grades than they deserve. However, what happens if one of the major clients of the rating agency put pressure on the agency to grade the securities higher than would be appropriate? (Kruck, 2011:22, 27). In their study Croce, Lugo and Faff (2010) searched the conflict of interest incentives and CRAs' reputation concern for the Global Crisis period. They showed while the prices of securities were getting higher, ratings were affected from this tendency and there was "shopping" by issuers whereas in the economic slowdown period, CRAs were more concerned about their long-term reputation. Accordingly, they found a clear reduction in ratings alignment. They also figured out that although S&P had higher ratings before the crisis, S&P showed harsh downgrades after the crisis boom. All of the CRAs tried to reduce the gap. The authors concluded that CRAs tried to reverse the gap to decrease the harmful effect on their reputation.

g. Lack of Transparency

One of the greater complaints about CRAs is that there is a lack of transparency over CRAs rating calculation methodologies, procedures and processes. Lack of transparency force investors to trust heavily on the expert opinions in the ratings. It is a fact that many international investors in developed countries are convinced to hold securities with the ones which get high ratings from CRAs. When a sovereign debt rating is downgraded, no matter what the reason is, particularly if it is downgraded from the threshold value to the speculative grade, there will be a high risk of increasing cost of borrowing for national governments (Tennant and Tracey, 2016:2; Elkhoury, 2008:14).

h. Lack of Accountability of CRAs

Lack accountability is one of the major problems of CRA industry. Even though there has been many regulations launched by many authorities, CRAs have still accountability problem. Unfortunately, there is no punishment or control mechanism to protect investors from the rating calculation mistakes made by CRAs or their abuse of power on the financial markets (Elkhoury, 2008:15).

2. Sovereign Debt Rating Failures

The Big Three also have been criticized for false rating of sovereign debts. Accordingly, they are accused of not alarming adequately in time, or oppositely worsening the crises by excessively downgrading the ratings of crisis-hit sovereigns and being late/failing to upgrading enough the ratings after the crises. For example, in the late 1990s, in East Asian crisis, Korea was the only country downgraded in October/November in 1997, and Indonesia and Malaysia in December. Because of these late ratings, the Big Three had been accused for not predicting the East Asia crisis. There are also some contrary situation. CRAs were blamed of worsen in the crisis by excessively downgrading the sovereigns. This false rating increases the cost of borrowing for the infected country and lead to a sudden decline in inflow of international capital which is a lifeline loan for that country. In Eurozone crisis, the CRAs were accused of both being late for forecasting and being excessively downgrading Eurozone countries' creditworthiness that their false ratings caused the crises became more severe. An other problematic issue is that there is a extraordinary similarity between the sovereign credit ratings of CRAs. And also they have similar rating failures across the three agencies. As an example, it was recorded that S&P and Moody's had 17 rating failures and interstingly 14 failures were common. These failures are destructive if failure of one rating company induces failure of another rating company since the reflection of these systematic failures are perceived that there is a dramatic risk of a sovereign. The result will be excessive loss of sample country's ratings (Tennant and Tracey, 2016:43-44) .

3. Impact of Sovereign Debt Rating Failures on Emerging Countries

Both developed and emerging countries need to borrow for fulfilling their local and international policies. Particularly to finance the technological investments, emerging countries need to apply external resources to finance the projects since local resources cannot afford to make these projects. It should be noted that sovereign debt is different from private debt as there is no well defined procedure for enforcing sovereign debt contracts. So, although low and moderate level of sovereign debt can be a good source for financing governmental project and economic growth, high level of debt can lead the economic conditions more fragile and even sovereign debt defaults. It is a fact that financial globalization resulted in a great increase in sovereign debt of emerging countries which made them open to the financial turmoil and crisis. It should be noted that CRAs do not include the failures of repayment debt to other governments or official creditors such as IMF and World Bank. CRAs also ignore the possibility of default by local governments, state-owned enterprises and private enterprises. In rating calculations, sovereign debt ratings are evaluated according to the central government's capacity and willingness to repay its debt to private creditors. Even though the sovereign debt issue is defined in a very basic and limited explanation, there are still distinctions among Big Three. For example S&P defines the default risk in terms of default probability that means ratings represent the probability of occurrence of default. In this definition, S&P does not attempt to express the magnitude or severity of default risk or the term the government is expected to be in default, or what kind of precautions should be included into the system to avoid the default. Moody's, on the other hand, partially involve the expected loss which is a function of probability of default and the expected recovery rate following the default. On this issue, Fitch applies a hybrid rating which involves rating the default probability and assigning instruments on an expected loss. Despite there are slight differences all of these three CRAs have almost same ratings (Tennant and Tracey, 2016:3-5, 17). Particularly poorer countries have great difficulty in repaying debt. At this point there is a critical problem comes to light: Increasing sovereign debt countries have a higher probability to have macroeconomic problems in the near future. Debt repayment capacity is an important parameter for ratings. As sovereign debt increases, government debt payments on time becomes more difficult. This situation is crucial point in creditworthiness of the countries. As repayment difficulty increases, CRAs downgrade their ratings. As ratings are downgraded, borrowing from the international markets becomes more difficult as the international creditors perceive the local market as more risky. At this point the country has two alternatives: Either to be ready to pay a higher interest rate burden and try to continue borrowing or having an increasing default risk. This problem is more severe for the countries which have difficulty in applying their own resources.

Particularly for borrowing developing countries, a rating downgrade has destructive negative effects in its financial markets since the country will have difficulty to access credit. Besides the cost of credit will make borrowing even more difficult. Although there is not standard macroeconomic precautions, the better way could be applying the orthodox policies focusing on the reduction of inflation and government budget deficit. At this point, in order to avoid rating downgrades, countries has to prefer short term policies which attract portfolio investors in stead of long term development policies (Elkhoury, 2008:11).

Below in Table-7, sovereign ratings of different countries are illustrated. Every column represents ratings of different countries calculated by one of the Big Three. According to Table 8, USA and Germany took the highest ratings from Moody's, S&P and Fitch. UK and France also got good ratings. Surprisingly, although the macroeconomic condition of Israel is not so good as France and UK, that country is rated pretty close to these countries by S&P. Contrary, despite the fact that Turkey's macroeconomic conditions are far better than Greece, that country is rated by Fitch with the same letter grade as Turkey.

Table 8: Sovereign Rating List (2017)

Country	Moody's Ratings	S&P Ratings	Fitch Ratings
USA	Aaa	AA+	AAA
UK	Aa2	AA	AA
Germany	Aaa	AAA	AAA
France	Aa2	AA	AA
Japan	A1	A+	A
Spain	Baa1	A-	A-
Italy	Baa2	BBB	BBB
Greece	B3	B+	BB-
Mexico	A3	BBB+	BBB+
Malaysia	A3	A-	A-
Philippines	Baa2	BBB	BBB
Pakistan	B3	B	B
Russia	Ba1	BBB-	BBB-
Turkey	Ba2	BB-	BB
Argentina	B2	B+	B
Brazil	Ba2	BB-	BB-
Egypt	B3	B	B
South Africa	Baa3	BB	BB+
Israel	A1	AA-	A+
India	Baa2	BBB-	BBB-
China	A1	A+	A+

Source: <https://countryeconomy.com/ratings>

CRA's provide ratings for each country depending on the certain macroeconomic indicators and some other indicators related to market performance. According to Table-8, government debt/GDP is 178.6 for Greece and 28.3 for Turkey. If the GDP growth rates compared, it is concluded that GDP growth rate of Greece is 2.3% whereas this indicator is 7.4% for Turkey. Similarly, while unemployment rate is 19.5% in Greece, it is 9.7% in Turkey. Although Turkey showed far better macroeconomic performance comparing to Greece, Fitch rated Greece with BB- and Turkey with BB in 2017.

Table 9: Macroeconomic Conditions of Different Countries

Country	Government Debt to GDP 2017	Government Budget	GDP Growth Rate (%)	GDP per Capita \$	Inflation Rate	Unemployment Rate
Japan	253	-4.5	1	48,556.93	0.9	2.4
Greece	178.6	0.8	2.3	23,027.41	0.9	19.5
Italy	131.8	-2.30	1.1	34,877.83	1.5	10.9
Portugal	125.7	-3	2.3	23,116.58	1.6	6.7
USA	105.4	-3.5	2.8	53,128.54	2.9	3.9
Egypt	101.2	-9.5	5.4	2785.37	13.5	9.9
Spain	98.3	-3.10	2.7	32,405.75	2.2	15.3
UK	85.3	-2.30	1.3	42,514.49	2.5	4
Brazil	74.4	-7.80	1.2	10,888.98	4.48	12.4
Pakistan	67.2	-5.80	5.79	1222.52	5.83	5.9
Israel	60.9	-2.15	4	34,877.83	1.4	3.9
Malaysia	50.9	-3	4.5	11,521.45	0.9	3.4
Mexico	46.4	-2.90	2.6	9946.16	4.81	3.4
Turkey	28.3	-1.50	7.4	14,933.27	15.85	9.7
Venezuela	23	-20	-13.2	13,709.04	82766	7.3
Russia	12.6	-1.5	1.8	11,441.00	2.5	47
China	47.6	-3.5	6.7	7329.09	2.1	3.8
India	68.7	-3.53	7.7	1963.55	4.17	3.52
Germany	64.1	1.3	2	46,747.19	2.0	3.4
France	97	-2.60	1.7	42,567.74	2.3	9.1

Source: Trading Economics, <https://tradingeconomics.com/country-list/gdp-annual-growth-rate>

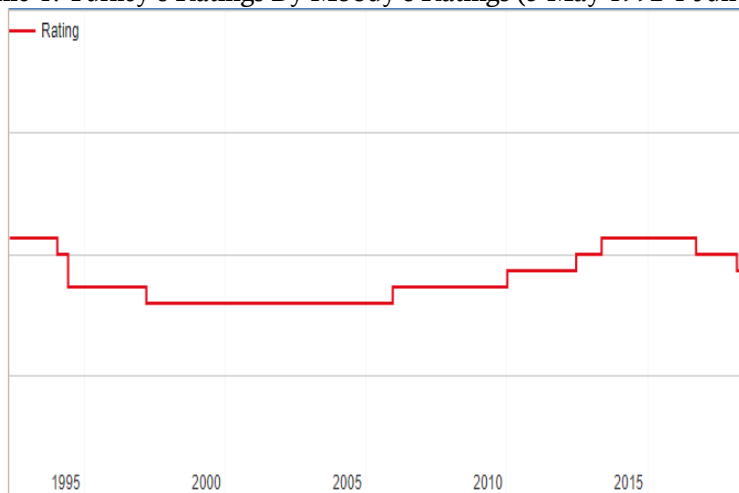
In Table 10 and in Graph-1, Moody's ratings for Turkey is shown for 2010-2018 period. It is a fact that, although Turkey showed a remarkable macroeconomic performance with very high growth rates, the country did not get the ratings it really deserved.

Table 10: Moody's Ratings for Turkey (2010-2018)

Moody's Ratings For Turkey	
Long-Term Ratings	
Date	Rating
01.06.2018	Ba2 (Under Review)
07.03.2018	Ba2 (Stable)
17.03.2017	Ba1 (Negative)
23.09.2016	Ba1 (Stable)
18.07.2016	Baa3 (Under Review)
04.12.2015	Baa3 (Negative)
11.04.2014	Baa3 (Negative)
16.05.2013	Baa3 (Stable)
20.06.2012	Ba1
05.10.2010	Positive
08.01.2010	Ba2 (Stable)

Source: <https://countryeconomy.com/ratings/turkey>

Graphic-1: Turkey's Ratings By Moody's Ratings (5 May 1992-1 June 2018)



Source: countryeconomy.com, <https://countryeconomy.com/ratings/turkey>

According to Graphic-1, and Table 10, Turkey's rating was Baa3 in 5 May 1992. In 2 June 1994, there is a decline and the rating became Ba3. In 13 March 1997, ratings made a deep and decreased to B1. This rating continued until 15 November 2003. Stable B1 position turned to positive on 13 December 2005. After this date, ratings started to improve gradually. On 08 January 2010 it turned to Ba2 stable. Soon after that, on 20 June 2012, Turkey's rating increased to Ba1. Almost one year later on 16 March

2013, Moody's increased Turkey's ratings to Baa3. This rating continued to 16 September 2016. On this date, Moody's downgraded Turkey's rating and it became Ba1 stable. Since then all rating agencies have been downgrading Turkey's rating. On 6 March 2018, it turned to Ba1 negative. It became Ba2 stable on 7 March 2018, Ba2 under review on 1 June 2018 and finally on 26 August 2018 it is still Ba2 under review grading.

4. Policy Suggestions for CRAs

In this part of the study, some policy suggestions will be put forth in order to improve the rating performance of CRAs.

a. Improve transparency of CRAs

Most of the market players have been complaining about the lack of transparency of CRAs' rating methodologies, practices and processes. To overcome this problem, The International Organization of Securities Commissions (IOSCO) Code emphasized on the following factors (Elkhoury, 2008:14):

- ✓ CRAs have to declare how each provision of the Code Fundamentals is shown in its own Code of Conduct
- ✓ If there is any deviation, CRA should explain the reason of deviation

Increasing regulations and institutional monitoring will provide more transparent transactions.

b. The Regulation of Credit Rating Agencies

By proper regulations, credit rating agencies can be qualified information providers for the financial markets. By reducing information asymmetries between issuers and investors, CRAs can contribute to improve capital markets. Regulations for CRAs should target to have market efficiency and investor protection. Besides, they should be fair to all countries of sovereign debt. Market efficiency requires not only reducing asymmetric information but also reducing transaction costs low enough to ensure the continued use of capital markets. For CRAs side, market efficiency requires the regulations to prevent the market failures. Also, regulations need to improve the accuracy, credibility of credit ratings and information efficiency (Rousseau, 2006:644).

c. Providing a more competitive rating industry

According to many scholars, promoting a highly competitive market for credit rating agencies may bring higher quality of ratings. However, there are obstacles in front of providing competitive market such as barriers to entry and regulations. Those obstacles make the industry an oligopoly. Yet there are some rating agencies in the industry and they all have the same regulatory purposes like Big Three, they have failed to gain market share because of reputation disadvantage. Since the regulators have a limited power to encourage new entries, the industry have been an oligopol for years. On the other hand, there is a criticism on increasing number of agencies in the sector. The supporters of oligopoly claim that increasing competition may bring lack of quality and lower quality of ratings. The more money issuers pay, the higher rating they will get. They also think that a limited number of global rating agencies provide consistency and uniformity in rating evaluations which make easier to compare the ratings of debt securities issued in different countries (Katz, Salinas and Stephanou, 2009:6).

d. CRAs must be kept in rating field. They should not be interfered with the political issues.

In many occasions, it was observed that CRAs are important actors of global financial system and they are a great supporter of great players of global financial system. Especially USA applies sovereign ratings to threaten the other countries. Just like Turkey case, if there are political conflicts between

USA and an other country, USA immediately uses rating downgrading threat against the opponent country. It is a fact that political interference of CRAs negatively affect their reputation. There has to be very tough regulations which forbid the CRAs from making political evaluations.

e. Less Regulatory Franchise

Credit rating agencies have authority of financial risk assessment. Currently, regulatory framework is dependent on ratings. Their power field should be limited in this area. However, they can also grade the companies and countries and they can give “regulatory license” which cause a high dependence of all markets participants. To break this dependence, the suitable solution would be to reduce the market actors’ reliance on them. This reform need to be designed wisely. It should avoid unintended costs and reduce access to capital markets (Katz, Salinas and Stephanou, 2009:6).

f. Global Standardization in Calculations

Since the global financial system has been rated by the Big Three, at least there has to standard in their rating methods. In this context (Verschoor, 2013:18):

- i. Standardizing credit rating terminology in order to have identical results for identical situations
- ii. Standardizing credit rating terminology for asset classes to make standard ratings
- iii. Standardizing the market stress conditions in order to eliminate false ratings for different countries. Just like in Turkey case, although there are similar conditions for different countries, the ratings may be far different from each other which directly influence the decisions of investors.
- iv. There should be standard quantitative correspondence between credit ratings and the range of default probabilities.
- g. Thinking Investor-Pay Model

Most of the commentators believe that reputation of credit rating agencies protect them from undue pressures. However, issuer-pay model urges the system to make a negotiation between the credit rating agency and the issuer to make a win-win rating. In investor-pay model, rating agency can earn money for the service provided for the investor. Although traditionally, payments are made by the issuer, payment by user will provide a fairer rating environment which is not influenced by the issuers. Despite there are some few rating agencies operate on the investor-pay model, by becoming widespread application of investor-payment model, rating industry can become more trustworthy. There are still some critics related to investor-pay model as the commentators claim that there will be interest conflicts again. According to them, the only difference will be that conflicts will be shifted from issuer side to investor side. As a third alternative, “hybrid solution” has been mentioned in which an issuer pays an existing rating agency for rating but he is expected to seek a second rating from a “subscriber fee” rating agency or a hybrid rating agency (Katz, Salinas and Stephanou, 2009:6).

**Conclusion**

CRAs are global companies which provide ratings for both companies and countries by relying on different quantitative methods. Although they seem as if they are just advising companies, because of their global reputation and their oligopolistic industry, their ratings may have severe effects on issuers and investors. Particularly when they downgrade a sovereign debtor country, it may cause even default for the sample country.

So, it is a necessity for all emerging countries to establish credit rating agencies which have global reputation. By eliminating being the spokesman of global market players, these rating agencies can make negotiations and collaborations with the regional institutions in order to provide creditworthy ratings. These agencies have to be transparent and objective. Besides, market participants should be certain that they are not under political pressure. The higher creditworthiness of the rating agencies, the higher

probability they will be affective on the investors' decisions.

It is a well-known fact that CRAs can be affective on deteriorating macroeconomic performance by manipulative increase in exchange rates, and by triggering volatility as well as by downgrading ratings. In order to protect the national economies from these global financial attacks, it may be wise strategies to make wages and price adjustments in national currency, to procure intermediate goods and investment goods from the local markets, to make collaborations and contracts to use national currency in bilateral and regional trades, and to increase the share of high technological products in total export.

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# AFRICAN CONTINENTAL FREE TRADE AREA AND ITS IMPACTS ON TURKEY'S MARKET

Nuray TERZİ\*

## Introduction

Trade has been the motor of economic integration of African countries and they have made many initiatives in recent decades. One of the most significant initiatives is African Continental Free Trade Area (AfCFTA) and African leaders signed an agreement to create Free Trade Area in 2018. It is expected that AfCFTA will become one of the world's largest free trade area and provide major opportunities and challenges to boost intra-African trade and other trading partners. Political and economic relations with African countries have not been on the agenda for a long time in Turkey, however, trade relations have started to increase in the end of the 1990's. With global financial crisis, African countries have become alternative destinations and trade centers for Turkey's market. In this perspective, African Continental Free Trade Area can present both benefits and risks for Turkey's economy. Therefore, this paper aims to analyze African continental free trade area and its impacts on Turkey's Market.

Africa is rapidly increasing its strategic importance to developed countries and developing countries with its rich natural resources and young population. In recent decades, Africa has shown tremendous efforts to overcome problems in the recent political, economic and social spheres. In this respect, the African region is of great importance for the economic stability and growth of the world.

Last decade has witnessed in significance changes in trade in global world by presenting both benefits and risks for African economies. African economies need to adapt to these changes and integrate the continent. The 2063 Agenda have presented to Africa with a strong vision and action to combine the African region (Ismail, 2016). According to estimates, the CFTA will create a largest market for products in Africa, including a GDP of over USD 3 trillion and over a billion people.

Political and economic relations with African countries have not been on the agenda for a long time in Turkey. The relationship with Africa has been a serious transformation since the late 90s. After the 2007-08 global financial crisis, trade relations between Turkey and African countries has gained a momentum and Africa region has begun to appear as a new alternative to Turkey's export markets shrinking the EU market.

Free trade areas can create both opportunities and challenges for all members and other countries. Therefore, this paper aims to analyze African Continental Free Trade Area and Its impact on Turkey's Market. In order to achieve this aim, following section will focus a brief history of CFTA. Third section will give benefits and costs of CFTA for all members. Forth section will give effect of CFTA for Turkey's Market. Last section will present a conclusion.

## A Brief History of CFTA

Since independence, integration has been a strategic fact of African countries' development policies. The development agenda of Africa is based on creation of an African Economic Community (AEC) and regional integration. This has been introduced in the Abuja Treaty in 1991, and the 1980 Lagos Plan of Action for the economic development of Africa. The roadmap of regional integration plans the Regional Economic Communities (RECs). This is constituted of six phases over 34 years, as outlined below.

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\* Marmara University, Department of Economics, nurayterzi@marmara.edu.tr

Table 1. Continental Integration Agenda of The African Union

<b>Phase 1 (5 years)</b>	Enhance existing RECs and create new RECs in regions
<b>Phase 2 (8 years)</b>	Provide consolidation within each REC, with a focus on tariff liberalization
<b>Phase 3 (10 years)</b>	Make in each REC customs union and a FTA
<b>Phase 4 (2 years)</b>	Coordinate tariff systems among the RECs
<b>Phase 5 (4 years)</b>	Create an African Common Market
<b>Phase 6 (5 years)</b>	Set up AEC including Pan-African Parliament and Monetary Union

Source: Ilmari Soininen, The Continental Free Trade Area: Current State of Play, SAANA Institute, September 2014

According to the World Trade Organization (WTO) the level of intra-African trade in 2012 was 12.8% which is very low compared to other regions in the world. The share of Africa's total exports in global trade flows is 3.5% which is also extremely low compared to other regions. An African exporter faces an average non-agriculture applied tariff protection rate of 7.8% which is higher than what the same exporter would face when exporting to Europe and the United States (African Union, 2014).

Therefore, the 18th Ordinary Session of the African Union was held in Addis Ababa, Ethiopia in 2012. African Union took a decision to establish a Continental Free Trade Area (CFTA) by an indicative date of 2017. At that time, a small part of Africa's trade (about 10-12 percent) took place with other African economies. This led to motive efforts to increase intra-African trade, the creating of regional value chains (AU/ECA, 2012). In January 2015, the African Union declared its own 50-year vision. This action plan was named "Agenda 2063" (Ismail, 2016). Firstly, the Tri-Partite FTA between COMESA, SADC and EAC was signed in on June 2015 in Egypt. TFTA represented the most of the 26 member countries, including GDP of US\$1 trillion dollars and a population of over 600 million people. Secondly, the AU launched the negotiations about a CFTA in Johannesburg on 15 June 2015. They conducted that the negotiations of CFTA should make in parallel with the TFTA negotiations (Luke and Mabuza, 2016). African Union point out that the CFTA will constitute of fifty-four African countries with a more than one billion people and such a market creates opportunities for scale production for producers in the continent (African Union, 2014) Following Table 2 presents the stated objectives with CFTA.

Table 2. Stated Objectives with CFTA

✓	Constitute a single continental market for products with liberalization and establish the Continental Customs Union.
✓	Enhance intra-African trade coordination of trade liberalization, better harmonization and regimes
✓	Solve the challenges of memberships
✓	Increase competitiveness at the market

Source: RegionRefocus, "The Continental Free Trade Area: Process and Political Significance", April 2016, <http://www.twinafrica.org>

Recently, March 21, 2018 44 countries signed an agreement to constitute the African Continental Free Trade Area. If ratified by each country, it will become one of the world's biggest blocs in the world.

According to UN, intra-African trade can increase by 52 % by 2022 when considered to 2010 trade levels, if this agreement works.

### Benefits and Cost of CFTA for All Members

The cost and benefits of CFTA are directly related to the export of the African region. Table 3 gives an indicative picture with respect to the sources of intra-African exports. Major exporters to other African economies are being South Africa and Nigeria. Intra-African trade is low and not really changing. A large percentage of this trade is concentrated in mineral fuels and South Africa is the main destination for this trade. Similarly, South Africa is even more dominant as the main source of the trade. South Africa accounts for more than two-thirds of African trade. Intra-African trade owes its current modesty to a lack of diversification and competitiveness (Murewervi, 2016).

Table 3. Source of Intra-African Exports

	2011	2012	2013	2014	2015
South Africa	28%	28%	28%	31%	59%
Nigeria	14%	14%	11%	14%	8%
Zimbabwe	3%	3%	3%	3%	6%
Zambia	2%	3%	3%	2%	4%
Angola	3%	5%	4%	2%	3%
Swaziland	1%	1%	2%	2%	3%
Congo	2%	1%	2%	1%	2%
Mauritius	0%	0%	0%	0%	2%
Mozambique	1%	1%	1%	1%	2%
Namibia	3%	2%	4%	3%	2%
Ethiopia	1%	1%	1%	1%	1%
Botswana	1%	1%	1%	2%	1%
Kenya	3%	2%	2%	3%	1%
Egypt	5%	5%	5%	4%	1%
Rest of Africa	33%	32%	32%	29%	4%

Source: International Trade Center

The creation of a single continental market for goods and services, with free movement of business people and investments, would help bring closer the continental customs union and African common market and turn the 54 single African economies into a more coherent large market. The larger, more viable economic space will allow African markets to function better and promote competition, as well as resolve the challenge of multiple and overlapping RECs, helping to boost inter-REC trade (UNECA, 2012).

The United Nations calculates that the CFTA could increase intra-African trade by \$35 billion, or 52% by 2022. Imports from outside of the continent would decrease by \$10 billion per year, and agricultural and industrial exports would increase by \$4 billion (7%) and \$21 billion (5%) respectively. If trade facilitation measures to increase the speed and decrease the cost of customs procedures, Africa's export volumes to the rest of the world would increase by 6% with the CFTA (Soininen, 2014).

A tariff reduction of an FTA has a wide variety of economic impacts to the member countries of the agreement, as well as the rest of the world. The effects encompass those on welfare, production, exports and imports in both real and nominal terms. Hence, the establishment of the CFTA will culminate in improved welfare in many African economies, at varying degrees. The continental initiative will result in more jobs, investment and competitiveness. However, many African countries will experience revenue losses from hundred percent tariff liberalization on intra-African trade. There is therefore a need to come up with innovative alternative sources of income ahead of the launch of the CFTA (Murewervi, 2016). Deregulation in services and tariff liberalization will create a larger market and

scale of economies that will attract the foreign direct investments, create jobs, stimulate growth, and thereby grow to Africa region (Regions Refocus, 2016).

Effective regional integration can support Africa's industrialization. Free movement of goods across borders will increase both the competitive pressure on incumbent firms in the region, and create new possibilities for task-based production focused on extra-regional markets. The CFTA presents an opportunity to spring intra-Africa's trade beyond the current 13% levels. (Murewervi, 2016).

Increased trade between African countries holds promise for shared growth and development in the continent. However, liberalization of tariffs and deregulation in services cannot create markets, especially in African countries where strategic markets do not exist. If they address the constraints in infrastructure and production that resist African producers, the CFTA will aggravate current problems, and disrupt the production capacity of Africa (Regions Refocus, 2016).

Additionally, advantages from liberalization in trade can constitute unequal benefits and risks depending on resource, production capacity and development of a country. For example, tariff liberalization between smallest economy and largest economy will benefit Africa's largest economy more than smaller economy (Regions Refocus, 2016).

African women are another issue. They contribute to between 60% and 80% of labor force of production in food. In addition, agriculture is dominated by the informal sector and the majority of informal sector is women. Trade agreements affect female workers, negatively and in turn inequalities restrict productivity. Trade policies that decrease domestic agricultural goods' prices will negatively impact income and farmers' live (Regions Refocus, 2016).

### **Turkey: Opportunities and Challenges of CFTA**

Political and economic relations with African countries have not been on the agenda for a long time in Turkey. The relationship with Africa has been a serious transformation since the late 90s. In this context, prepared in 1998, "Opening to Africa Action Plan" was a turning point for Turkey-Africa relations are counted. Later, Undersecretariat for Foreign Trade started to implement the "Strategy for the Development of Economic Relations with African Countries" in 2003. Under the strategy, a free trade agreement was signed with several African countries and trade consultancy was opened in some African countries.

Efforts to develop relations with Africa continued in the following years, and 2005 was declared "Africa Year" in this framework. After the Turkey-Africa Cooperation Summit was held in 2008, "Africa Strategy Document" has been published in 2010 and this accelerated efforts to develop the relationships with Africa countries (Mansfield, 2009)

The share of African countries in Turkey's total exports gained momentum in the recent period. The 2007-08 global financial crisis has a significant share in this development. Exporters in Turkey have tried to fill the lost market in the EU with the Middle East and African countries and as a result of this, the share in Turkey's total exports of African countries increased.

In 2017, Turkey's export to Africa is about \$ 12 billion. USD 7.5 billion of this export is realized with North African countries. It is observed that there has not been any significant improvement in exports to Africa since 2012. Exports in the last 6 years have been realized as 14 billion dollars in 2013 and this figure has not been reached in the following years (Table4).

Table 4. Exports by Country Group, Billion Dollar

	2012	2013	2014	2015	2016	2017
<b>North African Countries</b>	9,4	10	9,7	8,5	7,7	7,5
<b>Other African Countries</b>	3,9	4,1	3,9	3,9	3,6	4,1

Source: Turkish Statistical Institute

The share of exports with North African countries from 2012 to 2017 also declined. While the share of trade with North African countries in 2012 was 6.2% in total trade, this rate decreased to 4.8% in 2017. The share of exports to other African countries remained the same in this period (Table 5).

Table 5. Exports by Country Group, share in total %

	2012	2013	2014	2015	2016	2017
<b>North African Countries</b>	6,2	6,6	6,2	5,9	5,4	4,8
<b>Other African Countries</b>	2,6	2,7	2,5	2,7	2,6	2,6

Source: Turkish Statistical Institute

The top five exporting countries in 2017 are Egypt, Algeria, Morocco, Tunisia and Libya respectively (Table 6). Geographical proximity and historical-cultural ties are influential in the emergence of these countries in commercial relations. In addition, Turkey's imports of oil and derivatives from North Africa plays an important role in this relation.

From the point of the product, Turkey has generally exported to Africa with low and medium technology products. A significant portion of total exports to African countries constitutes of textile-apparel, mineral fuels and oils, iron-steel and grain exports. The low level of per capita income in Africa Region explains the reason for export in low level technology product export.

Table 6. Exports by Country and year, 2017

	Ülke	Thousand dollar
1	Egypt	2 360 852
2	Algeria	1 712 977
3	Morocco	1 657 740
4	Tunisia	912 626
5	Libya	880 737
6	South Africa	485 091
7	Sudan	395 213
8	Ethiopia	338 558
9	Nigeria	335 421
10	Senegal	243 625

Source: Turkish Statistical Institute

In imports, North African countries seem to have a predominant share. Imports with North African countries rose from \$ 3.3 billion in 2012 to \$ 4.1 billion in 2017. Imports with other African countries increased from \$ 2.6 billion to \$ 3.0 billion in the same period (Table 7).

Table 7. Imports by Country Group, Billion Dollar

	2012	2013	2014	2015	2016	2017
<b>North African Countries</b>	3,3	3,5	3,4	3,0	3,2	4,1
<b>Other African Countries</b>	2,6	2,5	2,5	2	2,1	3,0

Source: Turkish Statistical Institute

The share of imports from African countries is quite very low in total imports. This rate is 3.1% in 2017. The share of imports from African countries was 2.5% of total imports in 2017. Since then, there has been a slight increase in the share of imports from Africa (Table 8).

Table 8. Imports by Country Group, share in total %

	2012	2013	2014	2015	2016	2017
<b>North African Countries</b>	1,4	1,4	1,4	1,5	1,6	1,8
<b>Other African Countries</b>	1,1	1,0	1,0	1,0	1,1	1,3

Source: Turkish Statistical Institute

The top five importing countries in 2017 are Egypt, South Africa, Morocco, Algeria and Cote d'Ivoire, respectively. These countries are also among Africa's most developed economies. The most important import items of Turkey's imports from Africa are a variety of natural resources and raw materials, especially oil and its derivatives.

Table 9. Imports by Country and Year

Ülke	Thousand dollar
1 Egypt	1 997 503
2 South Africa	1 744 438
3 Morocco	924 062
4 Algeria	766 804
5 Cote d'Ivoire	300 760
6 Libya	247 965
7 Tunisia	206 466
8 Nigeria	156 286
9 Mozambique	136 779
10 Ghana	128 019

Source: Turkish Statistical Institute

Trade balance with the African countries has been realized in favor of Turkey. Recently, the share of Turkey's total exports in trade with African countries exceeds the total imports and serves more than in many product groups. However, it appears that foreign trade is concentrated mainly in certain countries - in the countries of North Africa - and a few specific groups of goods. Trade volume with sub-Saharan countries, which attracted attention with its high growth performances in the recent period, is rather limited.

### Conclusions and Recommendations

The Continental Free Trade Agreement and the larger market created, which promotes the development of economies of scale and scope, could trigger a trade-investment nexus that supports Africa's structural transformation. In addition to traditional extractive industries, attracting greater domestic and international investment into industrial and services sectors will help create a diversified productive structure and stimulate structural economic transformation.

Moreover, the CFTA is an important opportunity to shape regional integration processes on the continent in a more development friendly way. It has the potential to harmonize rules across African countries, so as to facilitate trade flows and deepen emerging regional production networks. It can also provide an important policy anchor and help to lock in policy reforms; thus helping to ensure that

governments work in a more concerted and systematic way to tackle trade barriers at the intra-regional level.

However, during a transition period, adjustment costs in the form of falling tariff revenues, temporarily rising unemployment and decreasing economic activities in some sub-sectors are likely to occur due to a reallocation of resources. Adjustment costs and the duration of the transition period can vary between countries. Furthermore, the benefits of the free trade area may not be shared equally if the financial and institutional capacity of countries is insufficient in dealing with adverse effects on labour force and small enterprises. In particular, a lack of labour mobility between sectors is a key challenge for many developing countries (Saygılı, Peters and Cnebel, 2018).

In some countries certain categories of workers – especially those engaged in agricultural activities – see their real wages decline with the reforms due to employment contractions as domestic production in agriculture is hurt by the excess of imports over exports.

Trade relations between Turkey and African countries, especially in the aftermath of the 2007-08 global financial crisis has gained momentum as a new alternative to Turkey's export markets shrinking the EU market. While Turkey's exports to Africa realized 9.2 billion dollars in 2009, rose to 12 billion dollars in 2017. Turkey's imports from African countries was 3.9 billion dollars in 2009, rose to 7 billion dollars in 2017. Both exports and imports have increased and trade balance has been realized in favor of Turkey. Turkey exported to Africa low and medium-tech products and imports from Africa natural resources and raw materials. On the other hand the current foreign trade seems to be concentrated in North African countries to a great extent.

The African continent is a geography where the diversity of goods and services as a whole is limited. A large number of African economies are based largely on natural resource exports. This situation is a major constraint on the foreign trade to be done with the region. However, with free trade agreement, region economies can increase intra-trade among themselves.

In order to reach an annual level of \$ 500 billion of Turkey for the year 2023, Turkey needs to add new markets next to the traditional export markets. It is important to increase the trade volume with Africa region of Turkey as well as other countries. In this respect, Turkey's economy can benefit African continental free trade agreement. An increase in intra-trade among African Countries will create positive externality and this will lead to an increase in trade volume with other countries thereby also with Turkey. Therefore, Turkey should export the products that are necessary for African countries. In a competitive area, these products should be high added value products.

Similarly, Turkey's industry and foreign trade infrastructure has a complementary for African economies. Turkey should take advantage of this complementarity. In this framework, Africa is the target market for Turkish companies, especially for small and medium sized enterprises. Moreover, Africa region is not only a market for Turkey' exporters, but also provide cheap raw materials for the Turkish industry. In the context of increasing resource diversity in energy imports, Turkey meets the energy demand largely through imports. It would be useful to increase cooperation with African countries in energy trade.

In addition, China will be one of the most important competitors of Turkey in African region. Because China have already begun to invest in many sector in Africa such as transport, energy and logistics. Therefore if Turkey wants to have significant market in African region, Turkey should make more effort about entrepreneurship opportunities.

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## EUROPEAN SUPERVISION ON FINANCIAL MARKETS AFTER GLOBAL FINANCIAL CRISIS (2008)

AGNIESZKA WICHA\*

### Introduction

The European Union (EU) is a unique integration organisation. The EU sets trends and standards for other international integration organisations. As a fundamental goal of the EU member states have established the creation of internal market and economic development. According to the Article 3 of The Treaty on European Union, one of the main goals of the EU is to establish internal market which will mainly guarantee sustainable development, stabilisation of prices and high competitiveness of European economy. Internal market is an area without borders with the guarantee of free movement of goods, persons, services and capital (Article 26, The Treaty on the Functioning of The European Union). The financial markets are parts of European internal market. Effectiveness of financial markets determines development of European economy. Financial markets are responsible for capital mobilisation and effectiveness of allocation of capital. Condition of financial markets is like barometer of total economic situation. Financial markets are also called the lifeblood of the whole economy. This important role of financial markets has an impact on European economy and the economy of member states (Mroczkowski, 2011, 24-25). The financial crisis by its scale and dimensions was a big surprise for political decision-makers (on European and member states level as well) (Szambelańczyk, 2011, 47-49). Activities which were a part of a process of liberalisation of movement of capital and creation of a single financial market have made a web of strong connections between countries' financial markets and institutions. This connection was enhanced by a monetary union. Moreover, private financial institutions have been supporting the development of web close financial connections by creating international corporations.

Because all of that the financial crisis which rose in 2008 in EU spilled affectively for several EU member states - especially Greece, Spain, Italy (Krasiuk, 2013, 125-126). The impact of financial crisis and the scale of financial losses was bigger than anyone could have predicted. "The spillover effect" (the process of crisis infection from one country to another one) has launched the discussion among the political decision-makers (Wyciślak, 2012, 243-245). After the discussions they decided to strengthen supervision on financial markets on European level and strengthen cooperation and coordination between states' supervisions institutions (Gostyńska, Tokarski, 2011, 2532-2533). In 2010 The European System of Financial Supervision (ESFS) was established. New architecture of financial supervision system in the EU was the new chapter in history of European institutional structure. Strengthening of supervision system was a natural reaction to the experience of financial crisis and disclosure of overuses on financial markets. Generally, European supervision on financial markets before financial crisis was only cooperation between countries' supervisions authorities and implementation of European directives.

### The Definition of Financial Market

A financial market is a place where transactions of buying and selling of varied form money capital take place. Financial market is a part of financial system. Other parts of financial system are participants and infrastructure of market. Generally the main subject of transactions on financial markets are financial instruments. A financial instrument is a form of contract where for the one part of contract an

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\* Cardinal Stefan Wyszyński University in Warsaw, agnieszka.wicha@onet.pl

obligation arises and for the other parts assets appear. Those contracts are usually on-time (e.g. swaps, future, forward, derivatives). Financial markets are diverse because there are many types of financial instruments. There are different types of financial markets, mainly we set apart money market, capital market, foreign exchange market, derivatives market and deposit-credit market. Three segments of financial market as far as the types of activities are concerned: banking, insurance and capital market. Because of different types of financial market generally a plural form of financial markets is used.

The catalogue of participants on the financial market is diversified. Generally speaking, one needs to state that the participants are, on one hand, those who need capital and, on the other hand, those who have surplus of capital at their disposal. The main participants of the financial markets are: credit institutions, insurance institutions, investment companies, central banks, international financial institutions (e.g. International Monetary Fund -IMF, Bank for International Settlements - BIS). Domestic institutions of supervision, local governments, municipality are participants of financial markets as well. The state is an actor which plays a double role on the financial market. On one hand, the state is an acquiring participant and the one which sells financial instruments (e.g. in the form of conducting monetary policy) and on the other hand – the state may regulate the rules of turnover on the market which settles rules, legal norms and conducts the supervision over the subjects operating on the financial markets (Piórkarz, 2013, 15-22).

The financial market is created by private institutions, e.g. investors, brokers and financial corporations. The participants on the market create the market, influence demand and supply and create new forms of financial instruments, new forms of exchange, allocation and multiplication of capital.

The important role of financial markets for global economy is implied by the scale of the money turnover exceeding the states' budgets or gross domestic products of several states. According to McKinsey Global Institute (McKGI), the total value of global financial markets in 2010 amounted to 198 bln USD and it is still increasing. McKGI predicts it will amount to 371 bln USD in 2020 (Stanisławski, 2013, 15-16).

### **European Financial Markets Before The Financial Crisis**

The EU financial markets are a part of the EU internal market. The first steps for establishing single financial markets were made by incorporating them as one of goals for European integration. It was made in 1957 in The Treaty establishing the European Economic Community. In this document it was recalled for the first time about the need to guarantee freedom of capital movement inside the EU internal market (Mikita, 2010, 31).

The activities conducted by the EU institutions concentrated on passing directives with the basic rules for financial market (especially for credit institutions, capital requirement and giving licences for credit institutions). The directives in the area of financial markets set general goals and give space for member states to establish particular instruments and solutions for domestic markets. However, there was a need to unify working standards and practice of domestic supervision authorities. Among the most important legislative initiatives in the first period of creating single financial markets there was the First Banking Directive (1977), the Second Banking Directive (1989), The Directive on the monitoring and control of large exposures of credit institutions (1992), The Directive on the supervision of credit institutions on a consolidated basis (1992), The Directive on the capital adequacy of investment firms and credit institutions (1993).

This first period of creating single financial markets wasn't as effective as the EU legislators wanted. One of the most important activities in the process of creating internal, single financial market in UE was to establish the Financial Services Action Plan in 1999 (Pilecka, 2005, 25). This was a document prepared by the European Commission. The main goal of the FSAP was building integrated and effective European financial markets. There were 3 strategic goals in FSAP which were divided into 42 particular tasks. Mainly the tasks had legislative character. The strategic goals were: to create single wholesale market financial services, to create open and safe retail market financial services, to prepare adequate supervision regulation and supervision system. Set tasks were focused on establishing effective

legal framework in every single area of financial markets (securities, investment funds, taxes, insurance, banking, financial conglomerates, corporate governance, infrastructure of financial markets, pensions, retail financial services). Initially, it was denoted that the realisation of the FSAP would finish in 2004 (Pilecka, 2015, 25-27).

Simultaneously, with the reforms in the EU, there were several international initiatives for creating modern and safe global financial system (e.g. activities IMF, BIS, G-20 Group, World Trade Organisation).

### **The Supervision on Financial Market of EU After Financial Crisis**

FSAP lead to the creation of legal framework for unified financial market in the EU and the creation of the link of cooperation among particular domestic supervisory institutions and common standards and rules of turnover on financial markets. In 2005 there was the announcement of “White Paper of financial services policy for 2005-2010” (White Paper - Financial Services Policy 2005-2010 {SEC(2005) 1574}). According to the document, the EU institutions and member-states should continue the direction of the reforms. Nonetheless, the activities were stopped by the global financial crisis in 2008 (Bande, 6-8).

The crisis has touched private institutions, investors, states and citizens as well. The EU institutions were focused on minimalising the effects of financial crisis and to prevent a recession (Szambelańczyk, 2011, 47). Moreover, European decision-makers noticed the need to strengthen supervision on financial markets at European level. A new conception of supervision on financial markets was created by Jacques de Larosiere, published in 2009 (Report of the de Larosière group). The Report was a diagnosis of a contemporary status and the forecast for future solutions.

### **The European System of Financial Supervision (ESFS)**

European System of Financial Supervision was established in 2010. ESFS is composed by European Systemic Risk Board (ESRB), European Banking Authority (EBA), European Security and Markets Authority (ESMA), European Insurance and Occupational Pensions Authority (EIOPA) and national supervision authorities (European Central Bank- Banking Supervision Website). It was made under art. 114 of The Treaty of the Functioning of the European Union. Four abovementioned institutions should be complementary – it was a multi-layered system of microprudential and macroprudential levels. The establishment of the ESFS opened a new chapter for European financial markets and their regulations. Every institutions of ESFS were created by Regulations: 1092/2010 –ESRB, 1093/2010 – EBA, 1094/2010 – EIOPA, 1095/2010 – ESMA. Each institution started working on 1st January, 2011.

ESMA, EBA, EIOPA (European Supervision Authorities- ESA) are agencies of the EU and have legal entity. EBA supervises payment institutions, financial conglomerates, investment firms and credit institutions. EIOPA is concerned with insurance, intermediaries and reinsurance undertakings, financial conglomerates and institutions for occupational retirement provision. ESMA is concerned with the securities markets and their participants.

These three authorities have the same structure, goals and tasks. This structure is complemented by domestic supervision authorities (European Parliament Website).

### **The tasks and power of European Supervision Authorities**

All of the tasks of ESA concentrated on analytical activities, risk mitigating, coordination cooperation between national supervision authorities by giving guidelines and recommendation. It needs to be underlined that ESA have also responsibilities towards consumer protection – according to the art. 9 (Regulations 1093/2010, 1094/2010, 1095/2010). European Authorities are focused on unifying standards and methods of implementing European law concerning financial markets into national legal systems.

According to the art. 16 (regulations 1093/2010, 1094/2010, 1095/2010) ESMA, EBA and EIOPA have power to give guidelines and recommendations addressed to competent authorities or financial

institutions. Moreover, according to the art. 10 and 15 (regulations 1093/2010, 1094/2010, 1095/2010) ESA could develop regulatory technical standards and implementing technical standards. Those proposal of technical standards are given to the European Commission and they could be implemented in implementing acts pursuant to Article 291 TFEU or delegated acts pursuant to Article 290 TFEU. This is a big power to set universal, unified standards for all EU countries.

### **Other powers of ESA**

Since 2010, several acts on European level which concern financial markets have been passed e.g. Regulation no 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012 (MIFIR), Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014 (BMR). According to the art. 40 MIFIR ESMA could take intervention decisions and temporarily prohibit or restrict distribution of particular financial instruments. Moreover, since July 2011, ESMA has been responsible for registering credit rating agencies and has had exclusive supervisory powers in relation to such agencies according of Regulation (EU) No 513/2011 of the European Parliament and of the Council of 11 May 2011 amending Regulation (EC) No 1060/2009 on credit rating agencies.

National supervision authorities and financial institution underline the important role of Questions & Answers and supervisory handbooks as very useful tools for explaining doubts during implementation and execution of EU law. However, some of them feel that those tools are using to extensively (Feedback statement on the public consultation on the operations of the European Supervisory Authorities having taken place from 21 March to 16 May 2017).

The activity of ESA is very high, for example only ESMA (or ESMA joint with other ESA) from the beginning has given over 50 guidelines on different topics (ESMA Guidelines list).

The increasing role of ESA needs to be observed and analysed because it could has a large impact on EU law and financial markets' shape and structure.

### **Conclusion**

The single financial European market is important for the competitiveness of EU economy and development. Strengthening of supervision and closer cooperation between national supervision authorities was a natural reaction for the financial crisis, process of globalisation and internationalisation of global financial markets.

Three new Authorities established in 2010 are compromised solution between a need to control the financial markets on European level and the need to respect entitlements of national supervision authorities.

One can observe increasing role of those three ESA, by giving them new empowerment according to e.g. MIFIR, BMR. It can be seen that the activity of ESA by giving different recommendations and guidelines on different topics rises. Moreover, it is of utmost importance that ESA give answers for questions asked by national supervision authorities and financial institutions.

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## CONCENTRATION AND COMPETITIVE ANALYSIS OF GSM MARKET IN TURKEY

FERHAT PEHLIVANOĞLU\*  
MUHAMMET RIDVAN İNCE\*\*

### Introduction

The mobile communication, which first started to be used in the 80's, has shown a remarkable improvement. The technologies used in this area have different characteristics; voice transmission in first generation technologies, capacity and penetration in second generation (2G), and high data speed in third generation. Nowadays, fourth generation technologies have been used and infrastructure for 5th generation technologies has begun to be established. The rapid change in technology has also led to changes in mobile communications. Besides mobile voice communication, mobile data communication has also become important.

Turkey met with mobile communication in 1990. The mobile communication that entered our everyday life together with 2G, which is the technology at that time, passed through very important stages within the period from now on. Mobile communication has great importance not only for the individual but also for society and the economy. Therefore, it is important that working efficiently of companies that offer mobile communication and mobile technology services. Competitive environment is one of the most important conditions for effective operation of companies. In this study, starting from the market share of mobile operator in Turkey, it has tried to draw a conclusion about competition in the market.

The subscriber numbers of the operators are used as data for measuring the market shares of the companies. The data covers between 1994 and 2017. As a measurement method, the indices used in the concentration analyzes were used. As a result, it was understood that between 1994 and 2017 oligopolistic structure dominated the market. Another conclusion is that Turkcell, the leader company, has seen its market share decrease from 80% to 40. This is an indication of an effective competitive environment among the companies in the market.

### Mobile Network Services in Turkey

The word "mobile" is of French origin and means mobile and portable. In this context, it would not be wrong to define mobile communication as communication that can be done via a mobile device while in motion. On the other hand, mobile communication is defined as two-way communication between the mobile transmitter-receiver unit and the mobile transmitter-receiver unit or units. What we mean by "mobile device" is nothing other than mobile phones (or pocket phones with public expression) that are part of our daily life. In order for the mobile communication to be able to take place, there is a need for a certain frequency band other than the mobile device and a radio network formed by sufficient number of base stations within this frequency band (Şahinol, 2006: 4).

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\* Kocaeli University, Faculty of Economics and Administrative Sciences, fpehlivanoglu@gmail.com

\*\* Kocaeli University, Faculty of Economics and Administrative Sciences, muhammetridvanince@gmail.com

Table 1: The History of Mobile Communication in Turkey

YEAR	DEVELOPMENTS IN THE SECTOR
1840	Establishment of the first postal organization named Posta Nezareti (Ministry) and Postahane-i Amire
1855	Establishment of Telegraph Directorate
1871	Establishment of Post and Telegraph Ministry
1909	Making the first phone call
1926	Establishment of the first automatic telephone central with 2000 line capacity
1929	First intercity telephone call (Istanbul - Ankara)
1976	Multichannel international communication between Antalya and Catania
1979	Communication with 13 countries has been provided via INTEL SAT
1982	Coin box telephone system
1984	The first digital telephone central went into service in Ankara Kavaklıdere
1985	The first fiber optic cable was laid between Ulus - Gölbaşı satellite center.
1986	Mobile phones started to be used for the first time
1987	The first video conference was held in Europe with Turkey
1988	The first cable TV service was provided in Ankara - Çankaya.
1989	Packet Switched Data Network – TURPAK - established
1994	GSM technology has begun to be used for the first time.
1995	Türk Telecommunication Inc.
1996	TURNET (Turkey National Internet Infrastructure Network) was established.

Source: [www.turktelekom.com.tr/hakimizda/sayfalar/kilometre-taslari.aspx](http://www.turktelekom.com.tr/hakimizda/sayfalar/kilometre-taslari.aspx)

The first mobile communication companies were established in Turkey in the 1990s. After Turkcell (28 February 1994) and Telsim (19 May 1994) Aycell were founded as Turk Telekom's GSM company in 1988. On the same date, usage rights of the frequencies used for mobile communication were transferred to Turkcell and Telsim for 25 years. Mobile communications services in Turkey have become widespread after this date. The penetration of Turkcell and Telsim in the market is one of the most important steps towards the development of the telecommunication market. Parallel to the evolving and changing technology, telecommunication services have undergone many changes (Tepetam, 2014: 11).

Current service types in the telecommunications market and the number of authorized firms in Turkey are shown as follows:



Table 2: Telecommunication Services in Turkey

Table 2: Telecommunication Services in Turkey										
Authorization Type			Number of Authorized Firms							
			2010	2011	2012	2013	2014	2015	2016	2017
Various Telecommunication Services			1	1	1	1	1	1	1	1
GSM (Concession Agreement)			3	3	3	3	3	3	3	3
Virtual Mobile Network Service (Notification Scope)			28	37	32	38	57	49	36	34
Virtual Mobile Network Service (Usage Scope)			1	6	9	14	30	36	28	31

Source: Information and Communication Technologies in Turkey, 2018: 20

The services provided in the telecommunication market are complementary, and in many places they are each other's substitutes (Albon, 2006: 1). For example, in the early 2000s, fixed telephones in almost every home were left to mobile phones over time, which meant that fixed telephones were replaced by mobile devices. Historical data confirm this knowledge. For example, the fixed telephone subscription, which was 19 million in 2004, declined to 13 million by 2017. However, the number of mobile subscribers increased from 34 million in 2004 to 78 million by 2017 (ICTA, 2017: 48). Considering the increase in the total population during the same period, it can be said that many people prefer mobile phones rather than fixed telephones.

### Mobile Operators in Turkey

As of 2018, Mobile operators number that are operating under concession contracts (GSM company) is three. These are Turkcell, Vodafone and Türk Telekom (Avea). Telsim, Aycell and Aria, however, are companies that have been active in the market for certain periods and are separated from the market by reason of merger or termination of the activity.

### Mobile Operators Currently Active

Turkcell, founded in 1994, is the first mobile operator in Turkey. Mobile communications in Turkey has started with the penetration of Turkcell in the market in 1994. However, on this date, Turkcell entered the market with a revenue sharing partnership with Türk Telekom. That is, it did not have its own frequency range (Selek, 2010). Four years after this date, on April 24 1998, a 25-year GSM contract was signed between Turkcell and the Ministry of Transport. As of 1998, Türkcell continued its development by diversifying its services based on mobile voice and data communication, which has been presented to customers in the market for years. Turkcell's shares began trading on Stock Exchange Istanbul (BİST) and New York Stock Exchange (NYSE) on 11 July 2000. Turkcell continues to be the only Turkish company listed on the NYSE ([www.turkcell.com.tr/tr/hakimizda/genel-bakis](http://www.turkcell.com.tr/tr/hakimizda/genel-bakis), access date: 15.03.2018). Turkcell's activities are not limited only by Turkey. Established KKTCell in Cyprus in 1999 and continues its activities with revenue sharing with the Turkish Republic of Northern Cyprus Telecommunication Office. Lifesell, which also owns 100% ownership, has been active in Ukraine in 2005. In Belarus, 80% of BeST's shares were acquired in 2008. Turkcell continues to co-operate with Deutsche Telekom In Germany. ([www.turkcell.com.tr](http://www.turkcell.com.tr), access date: 15.03.2018).

When Turkcell started its operations in 1994, the number of subscribers was around 65 thousand, while the number of subscribers reached 35 million by the first quarter of 2018. Türkcell has not left the dominance of the market in terms of number of subscribers in this period since its establishment. However, the penetration of new firms into the market has reduced Turkcell's market share over time. Market share, which was 70% in the 2000s, has now declined to 45%. Nevertheless, it still continues to be a dominant firm of the market (ICTA Market Data, 2017/3: 52). In addition to the R & D activities that have done for the development of technology, their employment providing is the most important contribution in terms of many individuals and for the economy. As of December 2016, Turkcell provides employment opportunities to 16,649 employees (-[www.turkcell.com.tr](http://www.turkcell.com.tr)). Since the day Turkcell was founded, many investments have been made in this direction to develop both existing technology and to catch up with developing technology. A large percentage of the investments are focused on data transfer.

Avea, which was formed as a result of the merger of Aycell and Aria companies in 2004, had been operated in the mobile communication market for 12 years until its all shares purchased by Türk Telekom A.Ş. Avea, the youngest and most dynamic company in the mobile communication market at the beginning of the activity, has become an alternative operator for consumers and has played an important role in the development of competitive environment in the market ([www.avea.com.tr](http://www.avea.com.tr)).

Avea had an international roaming network with more than 680 operators in 205 countries around the world before merging with Turk Telekom, which was a top group, on 26 January 2016. At the same time, Avea is using the GSM 1800 (Mhz) frequency. Firm has also virtual operators in own structure. There were agreements that contain only name-right with sports clubs such as Bursasporcell, Fenercell, GSMobile. There was also a revenue sharing partnership with virtual operators such as Bimcell, PTT cell and Pocell. Avea has been turned a single-share capital structure through the acquisition of all of its shares on 4 August 2015 by Türk Telekom.

Vodafone is a telecommunication company founded in 1991 based in the UK. Company has started its activities in Turkey after Telsim put up for sale by the Savings Deposit Insurance Fund. Vodafone currently operates across the world as mobile operators in more than thirty countries. Vodafone Turkey is just one of them. Company provides telecommunication and IT services to many customers all over the world. In Turkey, alongside 2G and 3G services began to give 4.5 g as of 2016. The company is the second-largest mobile operator in Turkey and as of first quarter 2018 has approximately 25 million subscribers.

The Vodafone Group is one of the largest telecommunications companies in the world. The Vodafone Group has mobile operations in 25 countries, and in addition, it cooperates with mobile networks in 25 countries. It also provides fixed broadband service in 18 different regions. The Group has served 535.8 million mobile subscribers and 19.7 million fixed broadband subscribers as of March 31, 2018 ([www.vodafone.com](http://www.vodafone.com), access date: 18.05.2018).

Vodafone is the second largest operator in Turkey in term of Subscriber number. Besides, also in international direct investment to Turkey it has the distinction of being one of the largest. Vodafone's investments in Turkey reached 20 billion. Vodafone's another direct contribution to the Turkey's economy is providing employment more than 3.300 people.

Besides, Vodafone serves subscribers with more than 1200 retail stores throughout Turkey and 43,000 sellers in the ecosystem ([www.vodafone.com](http://www.vodafone.com)).

### **Mobile Operators Currently Inactive**

Telsim, the second mobile communications operators providing services in the GSM 900

MHz frequency debuted on the market in Turkey May 19, 1994. All assets and license rights were acquired by the British telecommunications company Vodafone in 2005. The company has entered the market with the name Teknotel. Telsim name which became a name afterwards form with "tel" that came from telecommunication and "sim" that came from sim card. In 1995, the first year of the activity, Vodafone reached 16 thousand subscriptions

On April 27, 1998, with concession agreement signed with Ministry of Transport, Telsim had a license for 25 years. Telsim is one of the companies that put MMS, WAP, Mobile TV, GPRS and Push to talk services into service for the first time in the world. Almost all of the regions with a population of over 10,000 were within the penetration area of Telsim in the 2000s. Based on the 2004 data base, Telsim served approximately 5,000 base stations at that time.

As a result of Uzan Group's bankruptcy, the company was distrained by the SDIF (Savings Deposits Insurance Fund) on 13 February 2004 and put up for sale on 13 December 2005. Seven firms participated in the sale made by the tender and sold to Vodafone for \$ 4.55 billion. As a result of the Ministry of Transport's tender, GSM 1800 license was allocated to Türk Telecommunication Inc. on 16 March 2000. Having gained the right to use the license, Türk Telekom established Aycell Communication and Marketing Services as a separate capital company on January 8, 2001 and started its commercial activities in August 2001. It merged with Aria in 2004 and became Avea and continued its activities under the roof of Avea until the purchase by Türk Telekom in 2016.

Aria has taken the first step on the mobile communications market by purchasing the GSM 1800 frequency, which was introduced after GSM 900, on 20 September 2000. Türkiye İş Bankası and Telecom Italia Mobile consortium won the tender to 2 billion 525 million dollars. After the tender, İş-TIM telecommunication services Inc. Signed the GSM 1800 license agreement with the Ministry of Transport in 2000. Later, on September 28, 2000, the company started his commercial activity under the name of Aria. After 4 years of activity, it merged with Aycell in 2004 and continued its activities under the name of Avea until 2016 and it was acquired by Türk Telekom on this date.

### **The Methods Used in Concentration Analysis and Concentration Analysis of Turkey Mobile Communication Market**

With the industrial revolution, the economic structure has undergone a major change. In the pre-industrial era, mostly small and medium sized producers left their places to large international firms after the industrial revolution. This new economic structure soon attracted the attention of economists and was examined by many researchers. Because very large firms have two important effects on the economy (Davut, 2002: 220). The first is that large volume firms have to control large amounts of productive capacity, labor and available funds within the economy. Secondly, large volume and small number of firms have to keep country's business life in large hands. Because of these two reasons and their importance on the economic structure, many studies have been carried out in order to determine the dominance of large firms on the economy (Yıldırım et al., 2005: 38).

Concentration and competition are linked to product markets and geographical areas in both theory and empirical analysis (Bikker and Haaf, 2002: 2). Market concentration is a variable that effects industry performance which measured by firm behavior, output, profitability, or other indicators. Such an approach provides theoretical grounds for anti-trust arrangements aimed at controlling mergers and acquisitions to limit the market share of the largest or dominant companies. According to another approach the positive relationship between concentration and profitability is not a consequence of many firms' collusion; On the contrary, big firms are getting higher profit by performing efficiently. In such a case, the result is that the state intervention to the market will not be appropriate. Because such an intervention can

result in unfair punishment for firms that are efficient and productive, they can infiltrate the proper functioning of the market mechanism (Krivka, 2016: 3).

Market concentration measures generally show the numbers and relative size distributions of buyers and sellers on the market. Markets with many firms controlling nearly equal market shares are less concentrated than those with few firms controlling the disproportionately large share of total industry or market output (Allardince and Erdeving, 1966: 2). However, the determination of these concentration rates is especially important for decision-makers. In this dedication, the number of indices that measure concentration ratios over time has also increased.

As a data for market concentration analysis, the number of subscribers between 1994 and 2017 were used. These data have been analyzed annually and compiled from the "market data" reports that have been published quarterly by the Information Technologies and Communications Authority, which serves as the Telecommunication Authority until 2008.

In the next section, concentration indices will be explained in detail. After each index expression, concentration figures for the mobile market in Turkey will be calculated and graphical representation will be made. In the last section, the results will be evaluated.

Table 3: Number of Subscribers for Mobile Communications Market in Turkey (.000 Person)

	<b>TURKCELL</b>	<b>TELSİM</b>	<b>VODAFONE</b>	<b>ARİA</b>	<b>AYCELL</b>	<b>AVEA</b>	<b>TOTAL</b>
1994	65	16	-	-	-	-	81
1995	22	97	-	-	-	-	322
1996	550	136	-	-	-	-	686
1997	1.137	345	-	-	-	-	1.482
1998	2.337	1.050	-	-	-	-	3.387
1999	5.500	2.510	-	-	-	-	8.010
2000	8.700	3.500	-	-	-	-	12.200
2001	11.000	4.000	-	250	190	-	15.440
2002	15.700	6.000	-	1.100	270	-	23.070
2003	19.000	6.700	-	1.750	2.000	-	29.450
2004	23.400	7.000	-	-	-	3.300	33.700
2005	27.900	9.700	-	-	-	5.100	42.700
2006	31.800	-	10.930	-	-	7.500.	50.230
2007	35.400	-	13.900	-	-	11.500	60.800
2008	37.000	-	16.935	-	-	12.200	66.135
2009	35.370	-	15.481	-	-	11.830	62.681
2010	33.470	-	16.680	-	-	11.620	61.770
2011	34.530	-	18.030	-	-	12.760	65.320
2012	35.120	-	19.070	-	-	13.490	67.680
2013	35.200	-	19.930	-	-	14.530	69.660
2014	34.630	-	20.920	-	-	16.330	71.880
2015	34.010	-	22.370	-	-	17.260	73.640
2016	33.040	-	23.460	-	-	18.560	75.060
2017	33.980	-	24.220	-	-	19.590	77.790

#### Herfindahl – Hirschman Index

One of the most known of these indices and used in empirical studies is the Herfindahl - Hirschman Index. It is a statistical method of measuring market concentration. Especially in the US, it is frequently used by state bodies such as the Federal Reserve and the Ministry of

Justice to examine the effects of the mergers on competition. This index was first developed by Hirschman in 1945. Herfindahl then independently formulated (Yıldırım et al., 2005: 41). The HHI calculates the number and concentration of firms in a market, including the relative size (ie market share) of all firms in a market. The index is calculated as the sum of squares of market shares of all firms in the market (Rhoades, 1993: 2). The calculation method is as follows;

$$HHI = \sum_{i=1}^N (MS_i)^2$$

Here,  $MS_i$  indicates the market share of the firm  $i$  in the market. If the market is monopoly, the index reaches the highest value of 1 (or 10000). The value of the index decreases with increases in the number of firms and increases as the number of firms decreases. An important feature that distinguishes the index from others is that in calculation it includes all firms in the market (Yıldırım et al., 2005:)

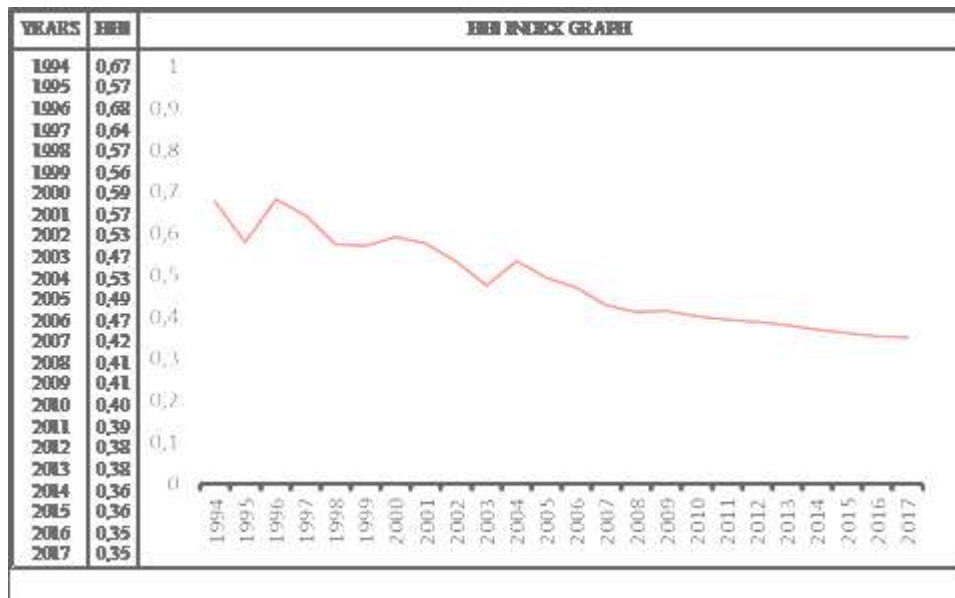


Figure 1: HHI Index

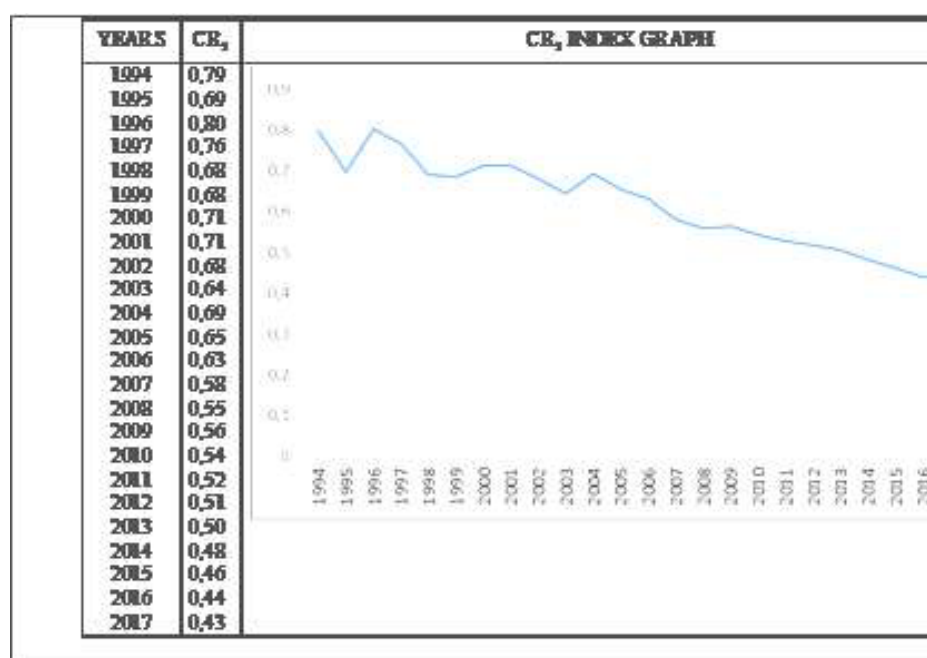
### Alternative Concentration Indices

Another index that is frequently used in analyzes is the CR index. The reason for preference in the analysis is that it is simple to calculate. Concentration rate is calculated as the sum of the market share percentages of a number of the largest business on the market. The calculation is as follows (Pavic, Galetic and Piplica, 2016: 3).

$$CR_n = \sum_{i=1}^N S_i$$

In the equation  $CR_n$  represents the market share of the top  $n$  companies in the market. Concentration rates range from 0% to 100%. If there are many companies with small market share and homogeneous product in the market, the concentration ratio of the top four companies will be close to zero or very low. For such a result, it is interpreted that the market is close to perfect competition (Pehlivanoglu and Tiftikçigil, 2013: 159). Many companies are active in the market, but if there are product differentiation at the same time, there is a certain

market power in the market and it is said that such markets are monopolistic competition. On the other hand, if there is increasing product differentiation in the market with decreasing number of firms, concentration and market power characteristic of oligopoly and monopoly are mentioned (Pavic, et all, 2016: 3). The criticized side of the index is the subjective nature of certain parts of the calculation. For example, there are no objective bases for how many companies can use the data, and the number of firms can change according to the researcher's interpretation. However, CR<sub>4</sub>, CR<sub>8</sub>, CR<sub>16</sub> and CR<sub>24</sub> concentration indices are generally used. In this context, CR<sub>4</sub> (including the analysis of 4 firms) concentration index shows monopolistic market if the value of CR<sub>4</sub> > 80%, strong oligopoly market with 50% < CR<sub>4</sub> < 80%, weak oligopoly with 25% < CR<sub>4</sub> < 50% and strong competition with CR<sub>4</sub> < 25% (Banovac, 2005: 254)

Figure 2: CR<sub>1</sub> Index

Another concentration index accepted by economists is entropy index. In this index, the logarithm of the inverse of company shares in the market is used as a criterion. The calculation method is as follows (Yıldırım et al., 2005: 42).

$$E_t = \sum_{i=1}^M P_{it} \ln \left( \frac{1}{P_{it}} \right)$$

As the end result of the entropy index decreases, the condensation rate increases. The comparison with other indices is therefore difficult. However, it is also possible to compare the index with other indices. The index can be converted to other indices comparable to the following calculation method (Banovac, 2005: 254).

$$H_t = \frac{1}{\text{antilog}(E_t)} \quad \text{ve} \quad H_t = \prod_{i=1}^m P_{it}^{p_{it}}$$

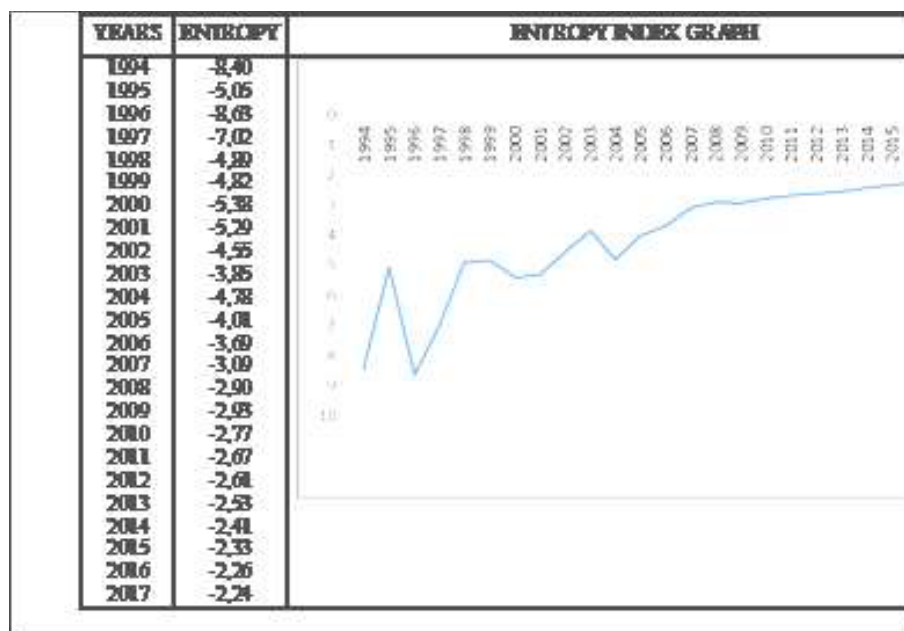


Figure 3: Entropy Index

The above methods of concentration calculations are static because they give market concentration rates in a certain period. Indices have been criticized from time to time and dynamic calculation methods have been developed. As a result, despite the concentration in the market, the continuous change of the leader company shows the existence of a competitive environment. The method of calculating the Linda index, which is one of the dynamic concentration indices, is as follows;

$$Li = \frac{\sum_{j=1}^{N-1} \frac{EO_j}{N}}{N-1}$$

$N$  indicates the number of firms surveyed, provided that it is not less than two.  $EO_j$  is the ratio of the average market share of the largest "j" company to the market share of the other  $n-1$  firms in the equation (Piesch and Schmidt, 1983: 33). In this index, Companies whose share is less than 1% of the total industry are excluded from the calculation. The index is calculated for all the companies in the market in turn and falls to a certain number of firms. However, the index has a turning point, and this turning point shows that companies with oligopolistic features on the market are finished. The biggest disadvantage of the index is the requirement that the market shares of the largest firms included in the calculation be at least 2/3 (Bukvic et al., 2014: 161). This necessity arises from the development of the index to explain the oligopolistic market structure in the relevant market (Davut, 2002: 228, Linda, 1976).

The H-T index is formulated as follows.

$$H - T = 1 / [(2 \sum_{j=1}^N jS_j) - 1]$$

Here;

$N$ : Number of firms

$j$ : The position of the firm in the order of the greatest to the smallest,

$S_j$ : represents the market share of the "j" th company.

The upper limit of the index is 1 and the lower limit is  $1/N$ . When the index is equal to 1, the market structure becomes monopoly. The problem arising from the importance of the relative

size of firms in the HHI index has been removed by including the absolute size of firms in the H-T index. In the index absolute numbers must be taken into consideration. Because, the number of firms entering and exiting the market is important. The size distribution of firms is taken into account in the calculation of concentration (Yıldırım et al., 2005: 43).

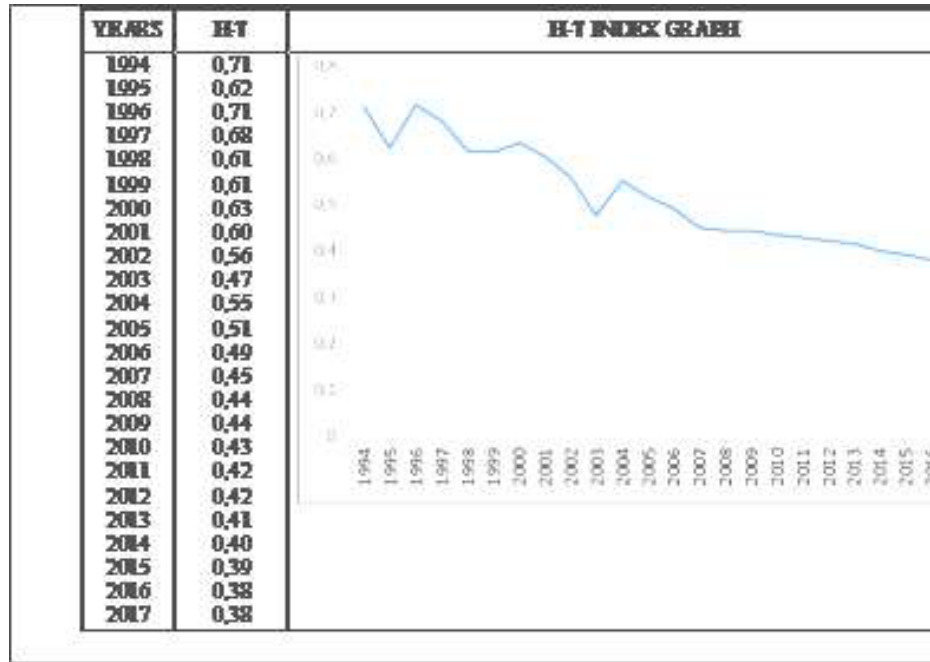


Figure 4: Hail – Tiedman Index



### Conclusion

In order to determine the market structure of the mobile communications market in Turkey, five different concentration indexes have been utilized in the literature. Subscriber numbers were used to determine the market shares of the companies. The analysis covers the beginning of the market between 1994 and 2017.

The market has a duopoly structure in which Turkcell and Telsim firms operate between 1994 and 2001. In 2001, Aria and Aycell entered the market and became a 4-company oligopoly market. The market has continued this way for about 3 years and in 2004, a merger of Aria and Aycell firms resulted triopoly market structure again. With Vodafone taking over Telsim in 2005, the triopoly structure of Turkcell, Vodafone and Avea continued. When analyzed according to the number of firms between 1994 and 2017, it is obvious that an oligopolistic structure is dominant, and the change in the market shares of firms is important as a sign of in-market competition.

The fact that the market value of the HHI index is above 0.25 for all years shows that the market has a concentrated oligopoly structure, but the value of the index, which was 0.67 in 1994, decreased to 0.35 in 2017, indicating that the market intensity gradually decreased and shifted towards a competitive oligopoly structure. The most important reason why the market moves from concentrated oligopoly to competitive oligopoly stems from Turkcell's market share declining over the years. While Turkcell's total subscriber was 65,000 and market share was 80% in 1994, the total number of subscribers increased to 34 million but its market share decreased to 43% in 2017. As of 2017, Vodafone and Avea, the two other companies operating on the market, have a total market share of 53%.

As can be seen in Figure 1, the HHI value has never been below 0.25 since 1994. This led to a concentrated oligopoly being dominated by the market. Another important point is the number of firms in the market. As of 2017, there are three companies on the market, and even if each of these companies has the same market share, the HHI index will reach a minimum of 0.32. Thus, in order to reach the market level of 0.25, which is the competitive level of the market, at least one firm should enter the market while the number of existing firms is the data. In fact, it is not enough for this new company to enter the market and all companies should have equal market share in the new construction with 4 companies. As a matter of fact, the average HHI value for these three years is around 0.53, although there are four firms in the market during 2001-2003 period. This corresponds to a more concentrated market structure than the existing three-firm structure.

When other index values are examined, it is observed that the concentration ratios in the market have declined over the years. However, the common result for each index is that the market has a concentrated oligopolistic structure. Although competition in the market has resulted in a decrease in the index values stemming from approaching the market shares of firms, the competitive border has not been reached any index. As already mentioned, it is necessary for new companies to enter the market in order to pass the competitive border and at the same time the market shares of these companies should not be underestimated.

Oligopoly markets are generally known as the markets where the producer surplus is high and the consumer is exploited. Because in this type of market, each firm has the ability to adjust one of the price or quantity variables to maximize their profits. Therefore, the companies in the market are getting excess profits. In this regard, within the framework of traditional oligopoly models, it is concluded that the mobile communication market in Turkey should also be observed in the same situation. Because the market has a completely oligopoly structure between 1994 and 2017.

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# THE HISTORICAL ADVENTURE OF DİYARBAKIR'S KADAYIF: A LOOK BY THE PERSPECTIVE OF BUSINESS HISTORY<sup>1</sup>

OSMAN EROĞLU\*

MURAT PIÇAK\*\*

## Introduction

The historical adventure of Kadayıf a delicious dessert that can be made into different shapes, a centennial traditional delicacy of the Diyarbakır, which was recently registered by the Turkish Patent Institute as a local specialty in November 2017, is examined in this study. Oral history is the basic method of working in this study. It can be said that oral history study is a more appropriate research method in this study that designed to investigate the historical adventure of Kadayıf with the change of business traditions, the development of the field and the growth processes in Diyarbakır. Oral history study; in other words, "living memory of the past" (Counce, 2001) or "hidden from the history" (Perks and Thompson, 1994) was used in this research because of the lack of empirical and theoretical researches on the subject investigated. "Critical case sampling", which is one of the sampling methods, was used and it was thought that the most suitable sample group for the purpose of the research would be the leading owners of Kadayıf enterprises of Diyarbakır and the persons who have knowledge about the historical adventure of the Diyarbakır's Kadayıf. Within the scope of the study, the leading owners of Kadayıf enterprises of Diyarbakır and the persons who have knowledge about the historical adventure of the Diyarbakır's Kadayıf were interviewed between August 2017 and January 2018. Each interview lasted for an average of 45 minutes and a semi-structured interview form, which is consisting of open-ended questions designed with support from the literature in the interviews, was used.

The results of the study were evaluated using the content analysis (Luborsky, 1994). In this direction, the data obtained in the research; the preparation of the data for analysis, the coding of the data and the interpretation of the findings are performed in three basic stages. There is no comprehensive study on the historical adventure of Diyarbakır's Kadayıf in the literature; therefore, this study is the first in this field. In this study, the historical adventure of Diyarbakır's Kadayıf and Kadayıf enterprises whose origins are exceeded 100 years, are being investigated. From this point of view, Diyarbakır' Kadayıf, which lives more than 100 years, is a very important laboratory for business management, discipline principles, theory and forecasting. In order to better understand the historical adventure of the Kadayıf of Diyarbakır, it is necessary to have information about the business history.

## Business History

Cities exist with their history and cultural values. Enterprises that transcend the boundaries of cities may be one of carriers of their civilization. In addition to their services in the field of business, the enterprises have become important cultural assets with their assets which are based on long years and gradually become a factor of cultural diversity (Kara, 2006). The academic field that overlooks the history of sectors and businesses is called business history.

To comprehend Kadayıf's historical adventure in Diyarbakır, we must first ascertain the business history. Norman Gras, who was an economic historian before setting the foundations of the business history and long determinant of the literature on how to deal with it, defines the business history as the biography of big, small

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\* Mardin Artuklu University, Faculty of Economics and Business Administrative Sciences, osmaneroglu@artuklu.edu.tr

\*\* Dicle University, Faculty of Economics and Business Administrative Sciences, mpicak@dicle.edu.tr

past, or present-day businesses (Gras, 2009). The emergence of a business history whose debate has long been debated as an academic field of study and whose origin dates back to German and British research in the nineteenth century began in the mid-1920s at the Harvard Business School in the United States (Amatori & Jones, 2007:107). In an era when economists underestimated the operating history, Gras published his first general synthesis of business history titled "An Introduction to Business History" in his book *Business and Capitalism* (1939) and started to produce information at an extraordinary speed. In the 1960s and 1970s the business history became a productive discipline. (Amatori & Jones, 2007:25-27). After Gras, the greatest contribution to this discipline was Alfred Chandler, who did not completely reject Gras's values but changed the identity of the business history and made it much more common and vibrant than it was in the time of Gras. Chandler consults Gras about how to write the business history, and when Gras says that it is the only way and that this is his way, Chandler decides to be a business historian (Amatori & Jones, 2007:106).

Chandler has developed business history in a more advanced institutional framework with sociological theory that combines business history with economic theory, and for thirty years this hegemony has been accepted and become a dominant paradigm in the field (Amatori & Jones, 2007: 28,110). So that if his students did not mention Chandler's name in the first or second paragraph of their articles, their work was warned that the field would not be published in the best academic journal called *Business History Review* in the US. As a result, Chandler's work has been cited in all articles published by *Business History Review* in the fall of 1989 according to Galambos it was "ceremonial "to refer to Chandler's work in the *Business History Review* (Amatori & Jones, 2007: 29,125). Chandler worked hard to encourage the exploration of business history in the United States and other countries, and regularly compared the United States and Britain (Amatori & Jones, 2007: 29,135).

Britain has lagged in the emergence of business history as a separate discipline as the US. The first college staff dedicated to business history was created at the University of Glasgow when it came to the 1970's and some research centers began to be established at British universities in the late 1970's (Amatori & Jones, 2007:134). In Scandinavian countries, today's business history is regarded as an important branch of history of economics, and unlike the United States and Britain, business history has not yet achieved its independence (Amatori & Jones, 2007:169). In Sweden, business history dates back to the 1950s, with a strong foundation as a scientific research area, while the development of research on business history in Denmark began with Christopher Glaman in 1960 (Amatori & Jones, 2007:172,73).

In the 1990s, there was a significant change in the business history in Germany, reputable and well-known historian Lothar Gall, the head of Germany's history association, had contributed to the development of business history (Amatori & Jones, 2007:194). The influence of the French in the field of business history is rather limited (Amatori & Jones, 2007:240).

In Italy, the Business History and Review Association, which was established in 1983, played a major role in the field of business history and opened a doctoral program in the field of business history at the University of Milan at the beginning of the 2000s (Amatori & Jones, 2007:243-258). In Spain, as lately developed area business history has shown significant changes over the past few years (Amatori & Jones, 2007:261). In Greece, the development of the business history takes place towards the end of the 1980s (Amatori & Jones, 2007:286).

In Japan, Hidemasa Morikawa became a pioneer in the development of business history. Business History Association founded in 1964, by 2000 there were more than 850 members, has been publishing an English book called the *Japanese Yearbook on Business History* every year since 1984 (Amatori & Jones, 2007: 308,311). Japan is also an important country in terms of business history. The Buddhist Temples Construction (Kongo Gumi), known as the world's oldest enterprise that was established 578 years ago and closed after 1428 years in 2006 (5. Aile İşletmeleri Kongresi, 2012: 43). China is far behind this area comparing to Japan and there is no institutional or state support focused on business history (Amatori & Jones, 2007: 308,311). In Latin America, there has been positive developments in terms of business history over the past two decades, and research and publications on business history have increased (Amatori & Jones, 2007: 369,370).

Business history is not a well-studied area in Turkey and as a sub discipline, its presence is based on the first quarter of the 20th century. Unfortunately, the fact that the historical and cultural riches in Turkey are not

considered and forgotten for many years extensive research has not been done about the enterprises that were established more than 100 years ago and still survive. However, it is difficult to reach the official organization records of these long-lived enterprises and there is no comprehensive researches on this field. According to Family Business and Entrepreneurship Application and Research Center (AGMER), the oldest establishment of Turkey is Hacıbekir Confectionery Company founded in 1777 and most of long lived enterprises in food and service sector (5. Aile İşletmeleri Kongresi, 2012: 39). The following table shows long lived enterprises that established before 1900 and still alive. established before 1900 and Turkey's long-lasting business are shown he lives today.

Table 1 Turkey's Long Lived Enterprises

Name Of Enterprise	Foundation Year	Name Of Enterprise	Foundation Year
Hacıbekir Şekerleme	1777	Sabuncakis	1874
Şekerci Cafer Erol	1807	Tanınmış Helvacı	1875
Gökçen Grup	1858	Hamamcioğlu	1880
Kebapçı İskender	1858	Saffet Abdullah Gülleçları	1881
Erbak Uludağ Meşrubat	1860	Cemilzade	1883
Karaköy Güllüoğlu	1871	İmam Çağdaş	1887
Kurukahveci Mehmet Efendi	1871	Tarihi Meşhur Kanlıca Yoğurdu	1893

Source: [https://www.iku.edu.tr/userfiles/AIK%205%20\(1\).pdf](https://www.iku.edu.tr/userfiles/AIK%205%20(1).pdf)

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The enterprises we see on table 1 are those that have survived for more than a century. With these enterprises, the traditional taste of century-old Diyarbakır Kadayıf and its long-standing enterprises are considerable for Turkey's business history.

### Diyarbakır's Kadayıf and Kadayıf Enterprises

There is no comprehensive study on the historical adventure of Diyarbakır's Kadayıf in the literature search, and this study is the first in this field. In this study, the historical adventure of Diyarbakır's Kadayıf and Kadayıf enterprises whose origins are based on the end of the 1800s and exceeded 100 years, are being investigated. From this point of view, Diyarbakır's Kadayıf, which lives more than 100 years, is a very important laboratory for business management, discipline principles, theory and forecasting. As a result of the interviews, it is claimed that Diyarbakır' Kadayıf was made by an Armenian master named Agop for the first time in the late 1800s and by Hacı Mustafa Serdar Efendi, who came from Syria at the beginning of 1900s.

It is not surprising that Kadayıf was built by a first Armenian master. Diyarbakır maintained the characteristic of being a cosmopolitan city where various ethnic and religious communities coexisted in almost every period of history.

According to Benjamin Schneider, who visited the city in 1850, the population of the city was 50 thousand, mostly Muslim; the population of Christians in total was between 10 thousand 12.5 thousand, from 9 to 10 thousand Armenian, 2 thousand Syriac, and 1 thousand Chaldean (Papers of the American Board of Commissioners for Foreign Missions, 1850). According to the Armenian Patriarchate, 150 thousand Armenians lived in Diyarbakır Province in 1878-1879 (Kevorkian, 2013:57).

According to the Salname of 1312, the years of 1894-1895, the total population of the province in the Diyarbakır in was given as 398.785 and in this total population, there are 46,237 Orthodox Armenians, 6,437 Catholic Armenians and 4,522 Protestants (Ertaş, 2015). According to the Salname of 1319, the years of 1901-

1902, the total population of the province in the Diyarbakır was given as 470.760 and in this total population, there are 47,225 Orthodox Armenians, 11,165 Catholic Armenians and 5,554 Protestants (Ertaş, 2015). According to the Armenian Patriarchate, there were 106,867 Armenians in Diyarbakır province between 1913 and 1915 (Ertaş, 2015:59). According to the report of Talat Pasha, in 1914, there were 56.166 Armenians in Diyarbakır Province (Sarafian, 2011).

Contradictories of Armenian population in the city of Diyarbakır also flatulates business enterprise. However, obvious influence of Armenian entrepreneurs on the cities economical impact fades away after 1915. Especially, Diyarbakır is being the main path of silk road. In the pre-republic period, Diyarbakır Province with the Silk Road was a city with an advanced economy (Yılmazçelik, 1995). According to Ottoman Şerriye Registers and European Travelers at that time, it was stated that Diyarbakır province was an important industrial and commercial center and non-Muslim elements such as Armenians living in Diyarbakır province had economic dominance and decisive position (Bozan, 2012:158-62). Most of the Armenians living in the center of Diyarbakır were living with handicraftsman and merchants, and the great majority of the market traders were Armenians. So that, according to a doctor who came to Diyarbakır in 1890, “all areas of the economy except of farming were belong to Christians” (Gaunt, 2001:311).

Adnan Çelik and Namık Kemal Dinç, who support this expression in their study: “As far as I know, throughout history Armenians and Kurds lived together and they were in relationship of agha and assistant. The aghas had extensive lands, and for this reason the Kurds lived in rural areas more often. They were dealing with agriculture in broad areas. The Kurds were into livestock and agriculture. The Armenians lived in cities, towns, and town centers, and engaged in trade. They were living together with a kind of work sharing. They were mutually respectful of each other. Until 1914-1915, this respect and division of labor continued” (Çelik and Dinç, 2015:69).

The 19th century was regarded as a Renaissance period for Armenians; Armenians were in a good position in areas such as technology, craft, education and economy (Etöz, 2013:262). Many Armenians in the region had worked in textile industry. In 1860, the annual silk consumption of the workshops in Diyarbakır reached 15 thousand kilograms and the consumption of cotton yarn reached 340 bales, and 300 thousand fabrics were produced annually, some of them were exported abroad (Polatel, 2013:409). Most of technical work was done by the Armenians and it is clearly understood that the Diyarbakır's Armenians are prominent in trade and money, they have a strong position in the city, and thus they were in an effective position in the production areas and in the control of the local economy (Etöz, 2013 :165). In the field of textile in 1864, Diyarbakır province had 180 fabric and linen seller, 15 felt masters, 40 masters of silk, 6 silk extractors, 7 pattern organizers, 50 tailors, 10 painters, 14 cotton cleaners and there were 26 silk merchants and 320 weavers (Quataert,1994: 67-70). The leading Armenian families of the Diyarbakır province were Tırpancıyanlar and Dikrananyan (Polatel, 2013:409).

After the Ottoman government initiated the deportation policy against the Armenians population in 1915, the Armenian artificers left the city and the economic life in Diyarbakır had worsened, especially textile and leather production, to a great extent (Kaiser, 2015:265). In Diyarbakır, the production of wine in the region has come to bankruptcy by completely disappearance of the Christian population, especially Armenians (Polatel, 2013: 412). The production of puşi, which is produced with red cotton fabric, had stopped and the production of copper had almost stopped (Polatel, 2013: 412). As the economy had worsened, daily life has been greatly influenced; for example, “Mustafa's father, when he was only ten years old and he was a shoemaker had lost all of his family in the village of Fûm in Lice in 1915, was rescued by a Lice Lord saying, “if you kill him, who will make our shoes” (Çelik and Dinç, 2015:276-77).

Diyarbakır economy and social life were affected quite badly from this process. According to Der Matossian, all Anatolian were affected by the forced emigration of Armenians especially silk, tile making, carpentry, weaving, dyeing, copper work, jewelry, stone workmanship, drapery, peanuts and tobacco were the most affected business sectors (2011). Armenian property was confiscated in Diyarbakır province and distributed to Muslim entrepreneurs. For example, the silk factory belonging to the Tırpancıyanlar who is one of the leading Armenian families in Diyarbakır was confiscated by Muftuzade Hüseyin who is from the Muftuzade Seref Uluğ family who made a boycott call to the Armenian goods in the previous periods (Dokucu, 2003:49).

After the unfortunate events, there was almost no traces of Armenians in city of Diyarbakır. All the professions that the Armenians had practiced in Diyarbakır were carried out by others. One of those professions was also master of Kadayıf. An important part of the people who we interviewed stressed that the known history of Kadayıf, which has essential position and very famous in the Diyarbakır culture, began towards the end of the 1800s and Armenian Agop master opened a small Kadayıf shop in Tahtakale district in Diyarbakır. Agop master first started the production of Kadayıf alone in this shop and sold Kadayıf to the customers who brought their own trays.

The sales of the Kadayıf was very good especially in winter and therefore there was need for employee. At that time, most of the laboring in the service sector and in various jobs during the winter months was from Bingöl which is close to Diyarbakır; therefore, the first apprentices of Agop master are mostly in Lotan (Gürpınar) the village of Bingöl. It is claimed that Hacı Mustafa Serdar Efendi was the other person who served the development of Diyarbakır Kadayıf with the Agop master. It is alleged that Hacı Mustafa Serdar Efendi who had come from Syria in the early 1900's, made Kadayıf in the Sur district of Diyarbakır. Murat Altunhan (the owner enterprise of Hacı Levent Kadayıf) claimed that his great grandfather Muhammed learned this profession from Hacı Mustafa Serdar Efendi and it was transferred to other generations.

Ahmet Tevfik Bey, Rıza Bey, Salih Bey (his children Ahmet and Halit) and Muhammed Bey (his son Topal Hasan) who came from Bingöl were the first to start working together with Agop Master and Hacı Mustafa Serdar Efendi. Later in the process, the majority of the people from Lotan village of Bingöl learned how to make Kadayıf and started to sale it and Kadayıf started to spreading. Then Diyarbakır's Kadayıf businesses and its sales started increase in whole Turkey. Some of these businesses are still in service.

### Conclusion

Eventhough, there is a lack empirical and theoretical researches on the case study and the certainty of origin, Turkish Patent Institue has officially claimed that Kadayıf as a centennial traditional delicacy of the Diyarbakır. Contrary of arguments made by locals in the city of Bingöl, claiming the origin of Kadayıf being Bingöl, Further arguments shows the earliest entrepreneur being an Armenian master named Agop. Interviews that has been carried out, stressed Master Agop opening first Kadayıf shop in Diyarbakır towards late 1800s. Considering Diyarbakır being an important bussiness center in the heart of silk road, echoes more emphasis on the importance of Armenian entrepreneurs and their impact on the development of the city.

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## AN ANALYSIS ON THE RELATIONSHIP BETWEEN FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH: CASE OF CEMAC

SELCUK KOC\*

HASSAN FAYCAL ADASSOUKHI \*\*

### Introduction

This study examines the macroeconomic performance of the Central African Economic and Monetary Community since 1994, deals with the emergence of the group, its objectives and the regional efforts during its establishment. This study identifies its organizational structure and the policies set by the Community to achieve the integration process, as well as the institutional performance and sectoral integration of the group. The group gives priority to the agriculture sector. It focuses also on the energy and mining sectors through the exportation of raw materials, as well as the needs of the group in the transportation and communications infrastructure.

This study examines the performance of the economic group and focuses on its national economy. The analysis includes: inflation, gross national product, unemployment rate within the CEMAC countries, and studies the classical and neoclassical school theories that illustrate the relationship between foreign investment and Economic growth. This work studies also the foreign investments flow in the region and the different reasons that limits its amounts.

Our empirical analysis was performed on 6 CEMAC countries' economies over the period from 1992 to 2016. This analysis' goal is to validate these assumptions: is FDI one of the main reasons for the strong economic growth of CEMAC markets during these last decades; Does FDI have more impact on the economic growth of CEMAC markets than other macroeconomic data ? ;H0 Is there a long-term relationship between the dependent and independent variables ? ; H1 Does the FDI impact the economic growth in the short and long-term ?

According to the results, we can say that there is a long run causal relationship between foreign direct investments and GDP growth in the CEMAC's economy.

The geographical position of the CEMAC is surrounded by: Libya, Zaire, Sudan, Niger and Nigeria, all countries are coastal except Chad and Central Africa. The population is about 42 million, and the area is about 3.02 million kilometers square; and with its GDP is estimated as \$ 85.136 million \$, from the total GDP of Africa of 3.3 trillion\$, The main economy of CEMAC is focused on natural resources as of, cotton, gold, oil, coffee, banana, diamond, manganese, uranium, wood, natron, fishing, timber, cocoa, cassava, livestock and others. The FDI in CEMAC is 3,482\$ million \$ from total FDI of Africa \$59 billion it is about 4, 8 %.

The establishment a Central African Community began in 1910, when France assembled its colonies into an entity through which it could manage political affairs and develop economic policies. It established the Tropical African Community (AEF), which included the Republic of Chad, Central Africa, Congo Brazzaville and Gabon.

Moreover, it established the French colonies in Africa (CFA) in 1945, making it a unified legal currency and mediator for the exchange of goods and services, with the aim of protecting the economies of these countries from the impact of devaluation of the French franc after the Second World War The heads of states and governments signed the convention establishment of the Economic and Monetary Community of Central

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\* Kocaeli University, Faculty of Economics and Administrative Sciences, selcukkoc@kocaeli.edu.tr

\*\* Kocaeli University, Economic Development and International Economic  
adassoukhifaissal@gmail.com

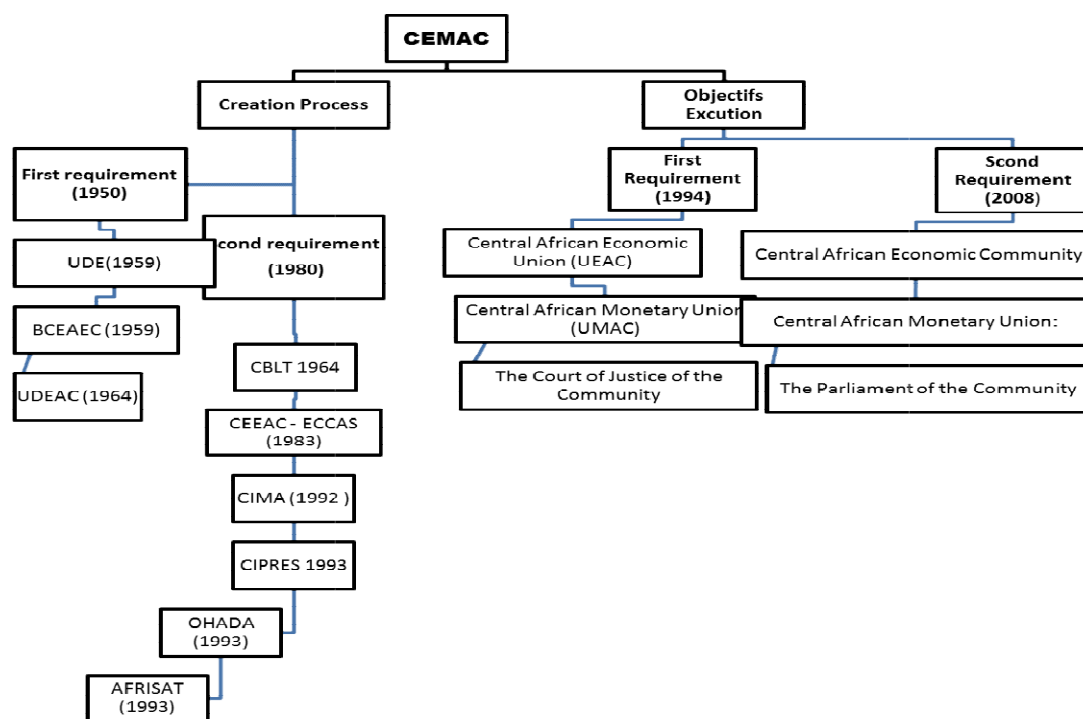
Africa (CEMAC) in March 1994, the work began officially in Jun 1998, The Community consist six countries are Cameroon, Gabon, Congo-Brazzaville, Equatorial Guinea, Chad and the Central African Republic.

The aims of the communities to achieve economic development of its member states through the coordination of cooperation between the two unions economic and monetary of Central Africa, and completing the economic and monetary integration process in the community, by identified three stages to achieve it during the period of 1999 - 2014, And set policies for key sectors within the community, however, the institutional framework faced some obstacles that have had an impact on the performance of community.

CEMAC's main objectives are the promotion of trade, the institution of a genuine common market, and greater solidarity among peoples and towards under-privileged countries and regions. Develop physical, economic and monetary integration, develop a culture of human integration, and establish an autonomous financing mechanism for ECCAS.

In 1994, it succeeded in introducing quota restrictions and reductions in the range and number of tariffs. Currently, CEMAC countries share a common financial, regulatory, and legal structure, and maintain a common external tariff on imports from non-CEMAC countries. to develop capacities to maintain peace, security and stability - as essential prerequisites for economic and social development. In theory, tariffs have been eliminated on trade within CEMAC, but full implementation of this has been delayed. Movement of capital within CEMAC is free.

1. The organigram of the CEMAC countries creation steps



2. Regional efforts to establish the Central African Economic and Monetary Community

In 1910, Central Africa began its first attempt to create this community, when France broke up its colonies; it established the French Ecuadorian African (AEF) to manage the development of this politics and economic policies through which it was built. Its membership includes both Chad Republic, Central African Republic, Congo-Brazzaville and Gabon (Zafar2003).

CEMAC development and process as follows:

**The Tropical Customs Union (UDE):**

The beginning of regional integration processes in the region dates back to 1959, when the colonies established the UDE. It is the first regional institution to expand domestic markets in these countries by removing customs restrictions on intra-trade; coordinating financial policies; adopting fair distribution procedures for industrial projects; and coordinating development programs for different sectors of production.

**Central African Customs and Economic Union (UDEAC): -**

The five member countries of the Customs Union of the Central African Union (UDEAC) agreed in December 1964 to develop the regional integration process in the region. The Union seeks to achieve the progressive establishment of the common market among Member States; the removal of barriers to the development of intra-OIC region trade, in order to promote the expansion of domestic markets and improve the standard of living.

**The Central Bank of Equatorial Africa and Cameroon (BCEAEC): -**

The Central Bank of Equatorial Guinea and Cameroon agreed to establish the Central Bank of Equatorial Africa and Cameroon (BCEAEC) in 1959 to coordinate the fiscal policy in the region, under which the Bank is managed according to French standards. France becomes guarantor of the currency conversion issued by the Central Bank of France While keeping the foreign exchange reserves of the member countries of the bank in the French treasury.

**Lake Chad Basin Commission (CBLT):**

Which was established on May 22, 1964. Its members include Chad, Cameroon, Niger and Nigeria. They were joined by Central Africa, Libya and Sudan, aiming at the sustainable and equitable management of lake and other shared water resources, conservation of the lake's ecosystems, Integration and maintenance of border security and integrity. ([www.cblt.org/fr](http://www.cblt.org/fr))

**Economic Community of Central African States (CEEAC - ECCAS),**

Which was established on October 18, 1983, by member states of the Central African Customs and Economic Union, the Great Lakes Economic Community, The aim of the group is to, achieve collective autonomy; Raise the living standard within the region; Maintain economic stability through co-ordination of cooperation within the region to achieve the goal of establishing a common market among countries Members.

**African Conference of Insurance Markets (CIMA):**

Which was established in 1992 in the Cameroonian capital Yaounde. It includes the countries of the Central and West African regions of the Comoros and the Francophone countries. The treaty was ratified in 1994 and aims at: taking all necessary measures to enhance cooperation in the field of insurance to be suitable for African realities; Appropriate measures to enable local investments to benefit from insurance and reinsurance operations subject to technical risk, safety, liquidity and profitability requirements.

**African Countries Conference on Social Security (CIPRES):**

Which was established on 21 September 1993 in Abidjan, the capital of Côte d'Ivoire by the Ministers of Finance and Social Affairs. Its main objectives are to harmonize laws relating to social security among member states in addition to other social objectives.

**Organization for the Coordination of Business Law in Africa (OHADA):**

Which was established on 17 October 1993 by member states of the Central and West African regions, Comoros and the Democratic Republic of the Congo, based in the Cameroonian capital Yaounde, which were established to address the legal and judicial insecurity of the Member States due to the statute of limitations of the existing laws, Therefore, many laws have been put in place that help regional integration and allow member states to participate in international trade ([www.ohada.org](http://www.ohada.org)).

**Economic and Statistical Observatory for Sub-Saharan Africa (AFRISTAT):**

An international organization established on September 21, 1993, which aims to establish a comprehensive system of economic and social information in order to contribute to the development of economic and social statistics And to enhance their skills in these areas through specialized national statistical institutes for each country.

**Central African Economic Union (UEAC):**

The Economic Union of Central Africa Agreement was signed on 5 July 1996 with the aim of achieving economic and social development for the Community in an open market and an appropriate legal environment for the region.

**Central African Monetary Union (UMAC):**

The Heads of State and Government signed the Central African Monetary Union Agreement on 5 July 1996 in Libreville the capital of Gabon, which is an extension of the Convention of 22 and 23 November 1972 between country members of the Central African Bank and France. The monetary and economic union is involved in achieving economic and social development within the framework of an open market and an appropriate legal environment within the region.

**The Court of Justice of the Community**

The Agreement on the Establishment of the Community Court of Justice was signed on July 5, 1996 by the member states of the Community. The Court is an independent institution of the member states and bodies and institutions of the Community in making its decisions on behalf of the Community and in the public interest. The members of the Court exercise their functions in complete independence through two chambers The Judicial Chamber and the Accounts Room, where the Tribunal is responsible for the judicial review of the activities of the Community and the implementation of the budget of its institutions.

**Central African Economic Community:**

The preamble of the Union addressed the reasons that led to the revision of the conventions, which we deal with as follows:

1. The realization by Member States that the integration process in the region requires the partial renunciation of national sovereignty.
2. The need to change the strategies of the Economic Union to accelerate the process of economic integration in Central Africa, including ensuring: improved joint management of Community institutions; increased capacity and coordinated activities of the Community; accelerating integration on the basis of a common vision through the Regional Economic Program (PER); To provide funding to the Community; to match the specialized institutions with the vision and priorities of the Community.

**Central African Monetary Union:**

The Monetary Union revised the 1996 agreement to improve its performance and increase the coordination of its activities. The treaty came to emphasize the objectives and principles of the Union but added some tasks to increase the coordination and monitoring of the monetary and financial systems of the Union, Establishment of payment systems within the Union, the rules governing the activities of institutions Microfinance, Rules on Combating Money Laundering and the Financing of Terrorism, Rules on bank deposit guarantee mechanisms.

**The Parliament of the Community:**

The formation of the parliament of the group is due to the establishment of a temporary parliamentary committee that will carry out the parliamentary work of the group until the formation of the parliament of the group. The committee consists of five members of each state chosen from the legislative authority. They may question the heads of the community's private institutions.<sup>2</sup>

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<sup>2</sup> Article (60) to (62) of the revised Treaty of the group 2008

## Economic and Social Structure of CEMAC Countries

Table:1 of the main economic and Social Structure data of CEMAC countries

	Chad	Cameroon	Gabon	Equatorial Guinea	Congo	Central Africa Republic	CEMAC	Africa
<b>Population (2016)</b>	14.03	23.34	17.25	14.00	4.62	4.90	49.27	1.264
<b>In %</b>	28.48%	47.37%	3.50%	2.84%	9.37%	9.9%	3.89%	16.64%
<b>Area (in Km2)</b>	1 284 000	475 442	267 677	28 051	342 000	623 000	3 020 170	30,065,000
<b>In %</b>	43%	16%	9%	1%	11%	21%	4.10%	3.20%

Source: www.cemac.int

Africa is the second largest continent in terms of area and population, with a population of 1.2 billion people representing 16.46% of the world population. The total population of the CEMAC countries is estimated to be 3.89% of the total African population. Cameroon is the most populous country with 47% of the population, while Equatorial Guinea is the least populated. Thus, the estimated population of the republic of Turkey is twice as much as the total population of the CEMAC countries.

In terms of area, Africa is the second largest continent after Asia, with an estimated area of representing 20.3% of the total world area; it is about 30,060,000 square kilometers. The total area of the CEMAC countries is estimated to represent 10.4% of the continent's (Africa) area, and it's about 3,020,170 square kilometers. Within the economical group, Chad is the largest country and the smallest one is Equatorial Guinea with an area representing only 1% of the total CEMAC superfcy.

The CEMAC countries have significant differences in terms of population. Nearly 80% of the total population lives only in two countries (Chad and Cameroon), with the remaining population living in the other four.

The populations of the CEMAC countries is considered to be between the youngest in the world, the average age ranges between 17 years old and 20 years old. At the same time all the countries share a low life expectancy, it goes from 43 years in Central Africa to 64 years of Equatorial Guinea.

Those numbers give us an idea about the health situation in the CEMAC countries. They are facing major health problems according the IHO (International Health Organization). Generally, they are in lack of basic health facilities and have a low number of doctors. In addition, the existing facilities are not well distributed and concentrated only in the major cities.

This dependency makes the CEMAC economies pretty linked to international prices of natural resources, which can result in sudden and intense economic crisis. In addition, natural resources exploration can be easily a victim of corruption and shady practices, which makes the distribution of its revenues pretty unequal.

The second most important economic sector is agriculture. All of the CEMAC countries are heavily linked to agricultural activities since the majority of its population is rural. It also makes a big portion of its GDP. Although agriculture is pretty important in the CEMAC economies, we will see in the next sections how modern the practices got and how each country is trying to develop in this sector.

Table 2: agricultural production in CEMAC

	<b>Chad</b>	<b>Cameroon</b>	<b>Gabon</b>	<b>Equatorial Guinea</b>	<b>Congo</b>	<b>Central Africa Republic</b>
<b>Agro- Economy</b>	Oil, Sugar, Cotton, livestock, gold, Norton, Cattle, Gum Arabic	Oil, timber, Cocoa, Coffee, Cotton, Banana	Oil, timber, manganese, Rubber, Cocoa, Coffee	Oil, timber, cocoa, Banana	Oil, timber, sugar, metal, gold, iron, phosphate	Cotton, coffee, cassava, bananas, gold, diamond

Source: [www.cemac.int](http://www.cemac.int)

All of the 6 countries inside the CEMAC region, based their economic systems on the production of raw materials and agriculture. All of the 6 countries have solid agricultural sector based on different products ranging from cocoa and coffee to cotton and bananas. Other than the republic of Central Africa, all the CEMAC countries produce crude oil.

Table 3: Production of petroleum in CEMAC by thousand of barrels per day.

	<b>Congo</b>	<b>Guinea</b>	<b>Gabon</b>	<b>Chad</b>	<b>Cameroon</b>	<b>Central Africa</b>	<b>CEMAC</b>
<b>2015</b>	269,000	250,000	213,000	120,000	95,000	-	947,000
<b>Word ranking</b>	34	35	39	42	45	-	-

CIA yearly report, 2015.

Their production varies however from country to country, ranging from 95,000 Barrel per Day in Cameroon and 269,000 Barrels per Day for the republic of Congo. In the Global ranking of oil producers, the republic of Congo is ranked as 34th and thus the 1st in the CEMAC area, while Cameroon is 5th (just before Central Africa) in the CEMAC area and 45th on a global level with 947,000 barrels a day.

Two of the CEMAC countries are members of the OPEC (Organization of Petroleum Exporting Countries), those countries are Gabon and Equatorial Guinea. This affiliation shows a promising amount of reserves in these two small countries.

In the next parts will go into more depth with the economic situation of each country, but let's begin by exploring some general facts.

Table 4: The macroeconomic of CEMAC countries

	Chad	Cameroon	Gabon	Equatorial Guinea	Congo	Central Africa Republic	CEMAC	Africa
<b>GDP 2016 (in \$ billions)<sup>3</sup></b>	9,6 (134) <sup>4</sup>	24,2 (100)	14,2 (117)	10,1 (132)	7,8 (140)	1,7 (169)	67,7	6,039,936
<b>In %</b>	11%	29%	19%	22%	17%	3%	-	-
<b>Inflation, average consumer prices % 2016<sup>5</sup></b>	-1,2	0,8	2,08	1,4	3,5	4,6	-	-
<b>Unemployment Of total%<sup>6</sup></b>	5.7	4.5	18.5	7.3	11.1	7.2	-	-
<b>GDP/cpt 2016 (in dollars)</b>	852	1,238	7,586	14 174	1783	364	25,997\$	1.871
<b>Real growth (%)2016</b>	-7	4,5	2,2	-9,6	-1,8	4,5	4,5	3,5

The CEMAC countries have massive differences in their GDPs, ranging from just 1,7 Billion \$ for the republic of Central Africa to 24,2 Billion \$ for Cameroon.

The total GDP of all the CEMAC countries is estimated to be at 67, 2 Billion \$, which represents merely 8% of the Turkish GDP estimated at 857 Billion \$.

With the exception of Equatorial Guinea, all the countries in CEMAC have a relatively high real GDP growth ranging between -7 percent in the case of Chad and 4, 5 in case of Central Africa. Those numbers can be deceiving and do not give the reality of the CEMAC economic situation that is why further exploration is necessary which will be done in the next sections.

The monetary policy in the CEMAC region is conducted by the supranational central bank for CEMAC, the Banque des Etats d'Afrique Centrale (BEAC). The BEAC operates in close cooperation with the French Treasury as part of the CFA franc zone arrangement.<sup>8</sup> Main objectives of BEAC's monetary policy are to maintain price stability and an appropriate level of foreign reserves in the pooled foreign exchange reserves of the members. The French Treasury holds 50 percent of CEMAC countries' foreign reserves and guarantees the convertibility of the CFAF into euros at a fixed exchange rate.

During 2016, the inflation rates in the CEMAC countries ranged between a case of deflation in Chad, with an inflation rate of -1,2% and an inflation with 4,6% in the case of Central Africa.

<sup>3</sup> World Development Indicators database, World Bank, 17 April 2017

<sup>4</sup> Gross Domestic Product 2016, world Ranking

<sup>5</sup> World Development Indicators database, World Bank, 17 April 2017

<sup>6</sup> World Development Indicators database, World Bank, 17 April 2017

So during 2016, we can conclude that the inflation rates and though the prices were on an acceptable and safe level. This due to the fact that the currency CFAF is linked with Euro at a fixed exchange rate.

However, a change in commodities prices in the international markets can have an effect on the inflation rates in the future, with Cameroon and Central Africa being very vulnerable to the oil prices while Gabon and Equatorial Guinea being vulnerable to the food prices since their economies are not diversified and though have to import a lot of agricultural products.

### **Attractive Problems Of FDI in CEMAC**

#### **Corruption**

Among the institutional problems undermining the expansion of FDI in the CEMAC, corruption is undoubtedly the most significant factor in the years of independence of these countries, especially in mineral and oil sectors, as well as the award of public contracts. Corruption has been the subject of much reflection on the part of international organizations and bodies specialized in the defense of rights and legality. For example, organizations such as the International Country Risk Guide (ICRG), Institute for Management Development (IMD), Transparency International (CPI) have developed corrupt perception indices that are published regularly at the end of each month or year.

For African countries south of the Sahara (PASS), Assiedu (2002) argues that corruption is the biggest deterrent to FDI in African countries.

Every year, the ONG Transparency International, which is present in many countries, publishes its report on corruption in the various countries of the world. The scores range from 10 to 0, and are ranked from the least corrupt countries (near 10) to the most corrupt countries (close to 0).

At the CEMAC level, according to the Transparency International (TI) executive, Cameroon ranks 8th among the most corrupt countries in the world with 1.8 points compared to 2.2 in 2002, During which the country ranked 13th out of 122 of the arrested sample. For the 2003 edition, Cameroon ranked as the second most corrupt African country behind Nigeria, which, for the second consecutive year, ranks second in the world in terms of corruption, being 125th among the 133 countries Constitute the sample selected in 2003.



Table 5: CEMAC level, according to the Transparency International arrangement

2005			2010			2015			2017		
SIRA	ÜLKE	PUAN	SIRA	ÜLKE	PUAN	SIRA	ÜLKE	PUAN	SIRA	ÜLKE	PUAN
97	Gabon	2,9	110	Gabon	2,8	99	Gabon	3,4	117	Gabon	3,2
130	Kongo	2,3	146	Kameron	2,2	130	Kameron	2,7	153	Kameron	2,5
137	Kameron	2,2	154	Kongo	2,1	139	E. Gine	2,5	156	Orta Afrika	2,3
152	E. Gine	1,9	154	Orta Afrika	2,1	145	Orta Afrika	2,4	161	Kongo	2,1
158	Çad	1,7	168	E. Gine	1,9	146	Kongo	2,3	165	Çad	2,0
170	Orta Afrika		171	Çad	1,7	147	Çad	2,2	171	E. Gine	1,7

Kaynak: Transparency International

According to the Transparency International report in 2005 all, the CEMAC countries are among the most corrupt countries in the world. In the region Gabon is 97<sup>th</sup> with 2.7 point is the first and the second country was Congo Republic is 130<sup>th</sup> with 2.5 point and Cameroon was the third country 137<sup>th</sup> with 2.2 point, the fourth country Equatorial Guinea was 152<sup>th</sup> and Chad is the latest country in the list and in the region 158<sup>th</sup> out of 158 countries and Central African Republic was not exist in the list.

In October of 2010 according to the Transparency International (TI) report the CEMAC countries performances less than the former years Gabon was ranked 110<sup>th</sup> with 2.8 point Cameroon was 146<sup>th</sup> with 2.2 point and Congo republic and Central African Republic was 154<sup>th</sup> with 2.1 point, Equatorial Guinea was 168<sup>th</sup> with 1.8 point, and Chad was 171<sup>th</sup> with 1.7 point out of the 178 countries included in this report

According to the Transparency International (TI) report in 2015 CEMAC countries was become much better than before, Gabon is 91<sup>th</sup> with 3.1 point and the second is Cameroon was 131<sup>th</sup> with 2.7 point, then Equatorial Guinea was 139<sup>th</sup> with 2.5 point, Central African Republic was 154<sup>th</sup> with 2.4 point, after that Congo republic was 146<sup>th</sup> with 2.3 point, and Chad was 146<sup>th</sup> with 2.2 point, out of 167 countries.

From the former reports up to 2015, It shows that CEMAC ranks last, by comparing the rankings, in 2015 four CEMAC countries have regressed, one has retained its ranking (Chad) and another has won a place (Congo).

According to the world transparency index of 2017 we realized that out of 180 countries among the CEMAC region countries, Cameroon become 117<sup>th</sup> with 3.2 point, the second country is Cameroon, and Central Africa is 153<sup>th</sup> with 2.1 point, then Chad after that the 6<sup>th</sup> countries is Equatorial Guinea become the latest. It means that after the political instability of the other countries and the falling of petroleum prices give the countries an effort to reduce the corruption inside the countries.

### Coups d'état and political instability

Cameroon has not experienced a military coup, but an attempt to overthrow of civilian rule by the military in the early 1980s, which resulted in a repression in a bloodbath by the current

regime. Since that date, the regime remains in power by being re-elected every seven years with the blessing of the army.

Equatorial Guinea is governed by a former general who overthrew the dictator Macias Nguema by a bloody coup and since then, this small country in the Gulf of Guinea that lived as a recluse and was often considered as the poorest in the world. Until then the recent discovery of oil, now is the richest potential country in Central Africa region ahead of Gabon.

Congo is the country that we can call the "tragedy of Central Africa" because it is in this small country of three million inhabitants that CEMAC experienced its first military coup and the first assassination of a head of state after a coup d'état (the first president Marien Ngouabi overthrew the president-elect and was himself assassinated some time later by a soldier). The current president Denis Sassou Nguessou who replaced Ngouabi was overthrown by the elections during the democratization of CEMAC in the 90s and returned to power by a coup after a three-month civil war against the elected president Bernard Koléla who was forced to exile.

Arms have always ruled Chad, whose first coups failed in 2006 and 2008, since the death of its first president Ngarta Tombalbaye assassinated during a military coup. Then since there has been a succession of coups d'état led either by rebels (Hissène Habré) or by military (Félix Malloum, Idriss Deby) or even by civilians (Ngoukouni Oueidei). Idriss Deby, the current president, tries to establish democracy, but at the same time, he has made the constitution change as he pleases in order to stay in power.

We note and realized that all these countries affected by multiple coups and one Political instability. Do not represent a favorable location for FDI. The economic problems that have plagued these countries since 1990, however, have forced their leaders who are under pressure from the World Bank to open up and restructure their country. The wind of democracy that has blown in Central Africa is changing a bit.

The Central African Republic became independent in 1960. David Dako was appointed its first president. In 1965, army Chief Jean Pédel Bocassa overthrew President Dacu. In 1972, Bocssa declared himself president for life. In 1979, he was overthrown. In a coup led by former President David Dako, backed by French forces after widespread protests in which many schoolchildren were arrested and massacred during their detention.

At the beginning of 1981, President Dacu was destroyed in a coup led by army Chief Andrei Collingba. 1982 October, in which multi-party presidential and parliamentary elections were held, President Collingba came in last but was overturned by the Supreme Court because of widespread irregularities. In 1988, he was sentenced to death for murder and embezzlement, but his sentence was commuted to life imprisonment. The country's first multi-party democratic elections were held in 1993 with the assistance of donor nations and the United Nations. The election came after President Ange Felix Patasse defeated Collingba and Dacu in the election to become president to end 12 years of military rule. Collingba and several thousand political prisoners, including Bocssa, are called before he takes office.

In 2003 there was a coup led by General Francois Bozize, who won a democratic election in May 2005. Which led to rebellion against his government. The rebellion was led by an alliance of armed opposition factions known as Silica during the Central African Republic (2004-2007) war of the bush and the Central African Republic conflict 2012-2013. In the end, this led to his overthrow on March 24, 2013. Because of the coup d'état and chaos, all the government disappeared. Prime Minister Nicolas Tiengé said that the country was "chaotic and not a state" and that both the president and the prime minister were removed in January 2014, leaving behind temporary leaders.

Jan 2014 - Interim President Michel Djutudia resigns for criticism that he has failed to stop sectarian violence. , Followed by Catherine Sampa Banza as interim president. Then in August 2014 - a Muslim politician Mohammed Kamoun, charged with leading a transitional

government. In February 2016, Faustin-Archang Twadira wins the presidential runoff up to now.

### **Econometric Analysis of FDI And Growth Relationship**

#### **The literature Study on the relationship between FDI and economic growth**

In the models of endogenous economic growth, FDI is often considered more productive than local capital. The argument used is that FDI favors the integration of new technologies into the aggregate production function (Borensztein et al., 1998; Lall and Narula 2004). The associated technological externalities would thus make it possible to compensate for the decreasing returns of capital, by accelerating the rate of convergence of the economy towards the steady state. This mechanism is based on the principle of a multiplier: Higher technology is first transferred by multinationals to subsidiaries and then subsidiaries to local businesses without paying a formal price associated with the transfer.

The consequence of the law of diminishing returns is that capital should flow from Capital of rich countries to the capital of poor countries, due to higher returns (Assuming the free mobility of capital). In the long run, the persistence of these flows should be reflected in the convergence of countries in terms of capital-labor ratio, Technology and income. In fact, this phenomenon does not seem obvious, synthesized by what is called "the Lucas paradox": despite the theoretical predictions, most of capital flows between developed countries (Lucas, 1990).

Romer (1986) argues that there is an exception to the law of diminishing returns, which means that there is no real convergence between rich and poor countries. He believes that the growth of the stock of technology in developed countries causes an increase (and not a decrease) in the rate of investment and return on capital. Thus, there is no argument to expect that capital (including FDI) flow from rich countries to poor countries. This also explains why the largest volume of FDI is made between the developed countries themselves. Romer's core idea is that technology is the key to long-term growth. Given that FDI includes, in addition to capital flows, a flow of technology and knowledge, they also contribute to the growth of the local technological level.

According to the identification of the mechanism by which FDI affects long-term economic growth thus enables the endogenization of technological progress. In addition, through the promotion of specific measures, governments can stimulate technical progress and implicitly long-term growth. Recognizing that FDI is recognized as one of the most important ways of deploying new technologies (DeMello, 1997), an example of such measures would be the attractiveness policies of foreign investors. The contribution of FDI to technical progress is considered in a very broad sense: new capital goods, intermediate goods and technologies, human capital formation, management skills and marketing (Blomstrom and Kokko, 1998).

Borensztein et al. (1998) found a result of 69 developing countries, between 1970 and 1989, that FDI has a positive effect on economic growth if and only if the level of education is relatively high. In addition, this shows that the interactive relationship between human capital and FDI is positive. FDI has an impact on economic growth through human capital, which remains the capacity to absorb technological,

Carkovic and Levine (2002) conducted panel data analysis for 72 countries for the period 1960-1995, and found that direct foreign investment in both developed and developing countries did not have any effect on economic growth.

Basu, Chakraborty and Reagle (2003) found a direct relationship between FDI and short- and long-term economic growth. Alfaro, Chanda, Kalemli-Ozcan and Sayek (2004) examined the link between FDI, the financial market and economic growth in a example of 71 developing countries. They found that FDI has a positive influence on economic growth, but this requires financial market development.

Akinlo (2004) examined the relationship between foreign direct investment and economic growth in the Nigerian economy for the period 1970-2001. According to the findings, it is revealed that both private capital and delayed foreign capital have little and statistically significant effect on economic growth.

Merlevede and Schoors (2004) studied the impact of structural reforms in the transition economies as well as the growth of foreign direct investment through panel data system connections. The survey results show that foreign direct investment has a positive effect on growth.

In the Deger and Emsen (2006) study, FDI and growth relationships were examined using panel data for 27 transition countries. In this study, the result shows the fixed effects, and random effects were estimated for growth. According to the estimation results, foreign direct investment is an important factor in the growth of economies in transition with relatively greater political and economic stability.

Zhang (2006) examined the relationship between foreign direct investment and economic growth, given the period from 1992 to 2004 for the Chinese economy. According to the analysis, foreign direct investment in China affects economic growth positively. In addition, income levels in coastal areas are higher than in China's inner regions.

The Esso (2010) study was conducted for 10 African countries. The relationship between foreign direct investments and growth has been carried out for individual countries within the context of coherence and causality analysis. According to the results of the research, there is a positive long-run relationship between the variables that are subject to research in the Angola, Ivory Coast, Kenya, Liberia, Senegal and South African economies. In addition, Angola, Ivory Coast and Kenya towards foreign direct investment to grow; For Liberia and South Africa, on the other hand, there is a causality relation

While there are exceptions in the context of the studies reviewed, most of the studies indicate that foreign direct investment and economic growth variables work together in the long run. In addition, the result of the one-way causality to the variable of economic growth of foreign direct investment is mainly the results obtained, from here we can said there are positively relationship between Forgin direct investment and economic growth in the majority of the studies.

Table 6: Some Empirical Studies and Results of Investigating the Relationship between Foreign Direct Investment and Economic Growth.

Author	Data Set	Method	Results
Blömstorm, Lipsey and Zejan (1992)	period from 1960 to 1985 for 78 developing countries	Granger Causality test	There's positive effect
Balasubramanyam, Salisu and Sapsford(1996,1999)	Period from 1970 – 1985 for 46 countries	Least Squares	positive effect
Borensztein, De Gregorio, Lee(1998)	Period from 1970- 1989 for 69 countries	Seemingly Unrelated Regression (SUR)	FDI , and economic growth has positive effect, specifically on (human capital)
De Mello(1999)	Period from 1970- 1990 for 32 countries	Unit Root Dynamic Panel Data	FDI , and economic growth effecting positively all the countries
Agosin and Mayer (2000)	Period from 1970- 1996 for 32 developing countries	Seemingly Unrelated Regression (SUR)	The result in African countries the FDI is positive, but in Latin

				America it has negative growth
<b>Alfaro, Canada, kalemî – Özcan, Sayek 2001</b>	Period from 1981- 1997 for 41 countries	horizontal cross section		FDI, Growth has enough positive effect in the financial markets
<b>Zhang 2001</b>	Period from 1960- 1997 for 11 countries in East Asia and Latin America	Augmented Dickey Fuller (ADF) Error correction Model		The FDI-growth links display positive significant between East Asia and Latin America
<b>Cheng Hsiao (2003)</b>	23 developing countries from 1976 to 1997	Vector Autoregression		The FDI effecting positively the growth
<b>Enisan Akinlo (2004)</b>	the period from 1970– 2001 in Nigeria	Error correction		The FDI in Nigeria only has a positive effect on growth
<b>Günaydın (2005)</b>	The period from 1976 – 2002 in Turkey	Co-integration Error correction		The FDI and growth in the all variables is positive and significant
<b>Karagöz (2005 )</b>	The period from 1970 – 2005 in Turkey	co-integration, causality		FDI , and economic growth has positive effect, specifically on (Forgin trade and export)
<b>XIAOYING LI (2005)</b>	The period from 1970 – 1999 in 84 countries	Unit root test		The interaction of FDI with human capital exerts a strong positive effect on economic growth in developing countries
<b>OKUYAN and ERBAYKAL (2006)</b>	from 1970 to 2006 for 9 developing countries	Toda Yamamoto (1995) Causality Test		can be considered as the indicator of movement of the foreign direct investment in upon the economic growth
<b>Mehmet Alagöz, Savaş Erdoğan and Nurgün Topallı (2008)</b>	from 1992 to 2007 in Turkey	Granger causality test, Regression analysis		it has been found that the effect of foreign direct investment on economic growth is positively effected
<b>Seymur AĞAYEV (2010)</b>	25 transition economies	panel co-integration panel causality		Foreign direct investment seem to have significant effect on growth. On the long terms
<b>ONGO NKOA B. Emmanuel (2014)</b>	Period from period 1980-2010 in CEMAC countries	Panel data analysis Levin and Lin (1992 &1993) , Pesaran, and Shin (2003).		The results show that FDI affect growth in all CEMAC countries except Congo
<b>Dilek ŞAHİN</b>	Period from period	Unit Root Analysis		The results show that

(2015)	1982-2013 in China	Co-integration	FDI affect positively the growth in in the long and the short-term
Leandro do Rosário Viana Duarte ,Yin Kedong & Li Xuemei (2017)	in Cabo Verde for the period 1987-2014	cointegration (ARDL) ECM-Granger causality analysis	the results indicated that FDI has a positive effect on the economic growth in Cabo Verde

### Purpose of the Study and Research Hypothesis

Nowadays there is a consensus that technological progress is the engine of economic growth, productivity gains and rising long-term living standards. Together, these elements lead us to wonder about the relationship between economy growth and FDI, with a view both theoretical and empirical. The purpose of this study is to check whether FDI is a key factor in the economic growth, and what role could play the investments in CEMAC countries on their growths. The following hypotheses are developed to better achieve the set objectives.

- FDI is one of the main reasons for the strong economic growth of CEMAC markets during these last decades.
- FDI have more impact on the economic growth of CEMAC markets more than effects than other macroeconomic data.
- H0 there is long-term relationship between the dependent and independent variables. the FDI doesn't cause any relationship in the short and long-term .

To justify the above assumptions and macroeconomic data had been used in the studies, will allow us to make an empirical approach to the relationship of FDI on CEMAC countries' economic growth in recent decades.

### Description of Data and Methodology

In the analysis of panel data on the relationship between foreign direct investment and economic growth, 6 countries of the CEMAC economies (Cameroon, Central African Republic, Chad, Congo, Rep and Equatorial Guinea). Annual data covering the period of 1992-2016, and set up a model was used for all of the countries of the economic groups. The data used in the analysis are: actual GDP in U.S. dollars obtained by deflating the nominal GDP for all countries (GDP), Foreign Direct Investment (FDI), Human capital (H) Private Investment (K), Labour (L), Trade openness (Open), Infrastructure (Infrast). All data were obtained from the World Bank database system. EViews 9 statistical package programs were used in the study.

To execute our empirical model will be built on the FDI based on growth model of Mankiw. The analyses of this study are carried within three phases. Unit root, Engle and Granger co-integration, Error Correction (ECM) Model and Pairwise Granger Causality tests will be use to check out the relationship between FDI and economic growth.

### Methodology

The literature review suggests that we use a model of endogenous growth that allows us to integrate several variables. Taking into consideration the theoretical model of Mankiw et al. (1992) we have:

$$Y = K^{\alpha} H^{\beta} (AL)^{1-\alpha-\beta} \quad (1)$$

The application gives us the following specification:

$$Y = \alpha K + \beta H + \lambda A + \mu L \quad (2)$$

Where  $\lambda = 1 - \alpha - \beta$  and  $\mu = 1 - \alpha - \beta$

By integrating individual and temporal horizons in model (2) above, on one hand, and introducing the variable of foreign direct investment and other variables on the other hand, we have the following specification:

$$GDP_{it} = \alpha_0 + \alpha_1 GDP_{i,t-1} + \alpha_2 FDI_{it} + \alpha_3 K_{it} + \alpha_4 HC_{it} + \alpha_5 A_{it} + \alpha_6 L_{it} + \alpha_7 Infrast_{it} + \alpha_7 Openn_{it} + \mu_{it} \quad (3)$$

Where  $\mu_{it} = \alpha_1 + \mu_t + \varepsilon_{it}$ ,  $u_1$  captures the specific individual effects,  $v_t$  the temporal specific effects, and  $\mu_{it}$  the rest of the disturbances,  $i = 1, \dots, 6$  and  $t = 1992, \dots, 2016$ .

All the six CEMAC countries are included in the sample. They include, Cameroon=1, CAR=2, Chad=3, Congo=4, Equatorial Guinea=5 and Gabon=6. The time horizon includes any period during which the CEMAC economies have undergone remarkable changes.

Table 7: Unit Root Test Result

	GDP	FDI	HC	INFRAST	PRIVATE	L	OPEN
<b>Cameroon</b>	- 3.740772* (0.0121)	-4.121117* (0.0209)	- 6.799281 (0.004)	-4.396831* (0.0190)	-4.117476 (0.0059)	-4.376700 (0.0035)	- 4.992324 (0.0009)
<b>Central African Republic</b>	- 3.651284* (0.0125)	- 1.887642** (0.0576)	- (0.0206)	-3.424188* (0.0003)	-5.255390 (0.0027)	-4.333205 (0.0008)	- 5.634621 (0.0008)
<b>Chad</b>	- 3.872537* (0.0076)	-3.517791* (0.0164)	- 4.055938 (0.0084)	-8.077566 (0.0000)	- 3.174322* (0.0349)	-12.75251 (0.0000)	- 3.804621 (0.0089)
<b>Congo, Rep</b>	- 4.786045* (0.0119)	- 3.593344** (0.0519)	- (0.0043)	-4.358239 (0.0007)	-5.666108 (0.0000)	-6.204560 (0.0000)	- 3.254748 (0.0295)
<b>Equatorial Guinea</b>	- 4.245419* (0.00133)	-3.126111* (0.0379)	- (0.0247)	-3.338148* (0.0034)	-4.321140 (0.0132)	- 3.628017* (0.0132)	- 3.269031 (0.0023)
<b>Gabon</b>	-5.464760 (0.0002)	-4.632337 (0.0013)	- (0.0592)	- 2.912937** (0.0015)	-4.618563 (0.0002)	-4.467907 (0.0002)	- 5.370242 (0.0002)

Source: Author Calculated for this study.

Note: P value is in brackets, \* First level stationary, \*\*second level stationary

Table 7 shows the stability of variables in different forms. According to the ADF test, the series of stationary are from the first different in many countries. All variables of Cameroon, Chad, Central African Republic, Congo, Rep and Equatorial Guinea are stationary in the first differences. The dependent and independent variables of some countries are stationary at different durations. If the dependent and independent variables of the countries data are in the first order difference is stationary I (1).

### Panel Unit Roots Tests

We apply first generation unit root tests, (Levin, Lin and Chu, 2002), (Breitung, 2000), (Im, Pesaran and Shin, 2003), Fisher-ADF, Fisher-PP. The common assumption of these tests is that there is an integral part of the panel members. The tests (LLC), the results assuming a common unit root process, while the tests (Fischer-ADF and PP) allow unit root processes.

Table 8: Common Root Tests

Test Name	Statistic	p-value	Decision
LLC	-1.75005	0.0401	there is
ADF.F	27.7171	0.0061	there is
PP.F	40.0041	0.0001	there is

Tests in this table above (LLC) indicate the results assuming common unit root process, whereas tests (Fischer-ADF and PP.f) allow for individual unit root processes. It is clearly seen from the table above that the real GDP to FDI of 6 CEMAC countries are nonstationary, namely data of 6 countries include a unit root, except LLC for only intercept model and ADF-Fisher for intercept and trend model which give support to stationarity in GDP to FDI. So it is possible to investigate whether there is a co-integrated relationship or not by (Engle and Granger)

### Cointegration Analysis

Table 9: Engel and Granger Co-integration Result

	Prob. (None*)	Decision
Cameroon	0.0439	Cointegrated
Central African Republic	0.0369	Cointegrated
Chad	0.0065	Cointegrated
Congo, Rep.	0.0003	Cointegrated
Equatorial Guinea	0.0264	Cointegrated
Gabon	0.0043	Cointegrated

Source: Authors' Computation

Table 9 summarizes the integrated analysis results of the variables; Engle and Granger describe the long-term partnership as a result. In terms of error equations stand at the level. Which in turn prove the integration. Thus, the presence of the Co-integration vector indicates a long-term equilibrium partnership among the variables. For this reason, our annual data (1992-2016) supports the idea of a long-term relationship between variables in Cameroon, Central African Republic, Chad, Congo, Rep, Equatorial Guinea and Gabon.

### Error Correction Model

The next step after the long-term relationship between the series is identified is to determine the causality relationship and direction between the series. Granger (1988) suggested that standard Granger causality would not be valid when the variables were co-integrated, and that the error correction model (ECM) of the causality analysis between the series would be more appropriate. The error correction model has been developed for this purpose and is also used to distinguish between long-term dynamics and short-term dynamics (C. Aktaş, 2009:). The error correction model can be shown as follows.

$$\Delta X_t = \alpha + \sum_{i=1}^m \beta_i \Delta X_{t-i} + \sum_{i=1}^n \gamma_i \Delta Y_{t-i} + \sum_{i=1}^p \psi_i \Delta Z_{t-i} + \lambda EC_{t-1} + e_t \quad (4)$$

The  $\lambda$  parameter in the model is the error correction parameter that forces the variables to approach the equilibrium value in the long run. If this parameter is statistically significant, then the deviation from the



equilibrium state is mentioned. In the long run, the convergence rate of the equilibrium value is expected to be negative and meaningful. Because deviations from equilibrium will be corrected according to the magnitude of the error correction coefficient. In the model,  $\Delta Y$  and  $\Delta Z$  reflect the effect of short-term deviations in  $\Delta X$ , while  $EC_{-}(t-1)$  expresses the 1 delayed value of the error term obtained from the cointegration equation.  $\beta_i$ ,  $\gamma_i$ , and  $\Psi_i$  are short-term parameters with direct effects on the dependent variable, indicating that the statistic of the F statistic or the error correction coefficient of these parameters collectively has significance.

Table 10: Error Correction Model (long - term)

	Coefficient	Prob	R-squared
<b>Cameroon</b>	-0.328	0.2008	0.61
<b>Central African Republic</b>	-0.057	0.5446	0.55
<b>Chad</b>	-1.210	0.0011	0.70
<b>Congo, Rep.</b>	-0.846	0.0039	0.68
<b>Equatorial Guinea</b>	-0.266	0.2134	0.57
<b>Gabon</b>	-0.594	0.0138	0.78

Source: Calculated for this study.

Table 10 summarizes the results of error correction model analysis between dependent and independent variables. In Chad and Congo Republic, the coefficients are negative and significant; it means there is a long-term causality between dependent variables and independent variables. The growth of these countries can be said have long-term causality from independent variables. The coefficients are not significant in Central African Republic, which has no causality of (GDP) in the long-term between independent variables and dependent variables.

Table 11: Granger Causality Tests

Zero Hypothesis	Cameroon	Central African Republic	Chad	Congo, Rep	Equatorial Guinea	Gabon
<b>FDI is not the cause of GDP</b>	0.1208	0.3991	0.6092	0.0016	0.0197	0.0067
<b>INFRAST is not the cause of GDP</b>	0.8655	0.3463	0.4828	0.1871	0.0018	0.1723
<b>PRIVATE is not the cause of GDP</b>	0.3834	0.0034	0.7986	0.0408	0.8364	0.2854
<b>L is not the cause of GDP</b>	0.1477	0.0088	0.4726	0.8820	0.1067	0.0226
<b>OPEN is not the cause of GDP</b>	0.3626	0.1177	0.8591	0.0016	0.3318	0.0113
<b>HC is not the cause of GDP</b>	0.5306	-	0.3043	-	-	-

Source: Calculated for this study.

Table 11 Shows the results of short-term relationship between dependent and independent variables. The results show that in the short term GDP is caused by FDI in Congo, Guinea and Gabon. In the long-term, it can be seen that the GDP effected by INFRAST only in Equatorial Guinea, also we can realized that in short term GDP is caused by PRIVATE only in Central African Republic. The Labour in the long-term we can see

that GDP caused in Gabon and Central African Republic. Moreover, In the long-term The OPEN see that is the reason of GDP in Congo, Rep and Gabon. However, the Human Capital in all countries are not caused by GDP in the Short-term.

### 1.1 Panel Granger Causality Tests

In the panel, Granger (1969) developed a methodology to analyze the causal relationships between time series. Suppose that  $x_t$  and  $y_t$  are two stationary series. Then, the following model:

$$y_t = \alpha + \sum_{k=1}^K \beta_k y_{t-k} + \sum_{k=1}^K \gamma_k x_{t-k} + \varepsilon_t \quad (5)$$

can be used to test if  $x$  causes  $y$ . The basic idea is that if the past values of  $x$  are significant predictors of the current value of  $y$  even when the past values of  $y$  were included in the model, then  $x$  exerts a causal influence on  $y$ . Using (5), one could easily test this causality on the basis of an F test with the following null hypothesis:

$$H_0: \gamma_1 = \dots = \gamma_K = 0 \quad (6)$$

If  $H_0$  is rejected, there can be no causality. The  $x$  and  $y$  variables can be interpreted to test causality in the other direction, and bidirectional causality can be observed. (Also called feedback)

As in Granger (1969), the procedure for determining the existence of causality is to test the significant effects of past values of  $x$  on the present value of  $y$ . The null hypothesis is defined as:

$$H_0: \gamma_{i1} = \dots = \gamma_{iK} = 0 \quad \forall i = 1, \dots, N \quad (7)$$

which corresponds to the absence of causality for all individuals in the panel.

The test assumes there can be causality for some individuals but not necessarily for all. The alternative hypothesis thus writes:

$$H_1: \gamma_{i1} = \dots = \gamma_{iK} = 0 \quad \forall i = 1, \dots, N_1 \quad \gamma_{i1} \neq 0 \text{ or } \dots \text{ or } \gamma_{iK} \neq 0 \quad \forall i = N_1 + 1, \dots, N \quad (8)$$

where  $N_1 \in [0, N - 1]$  is unknown. If  $N_1 = 0$ , there is causality for all individuals in the panel.  $N_1$  is strictly smaller than  $N$ , otherwise there is no causality for all individuals and  $H_1$  reduces to  $H_0$ .

Table 12: Causality

Null Hypothesis:	Obs	F-Statistic	Prob.	Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause GDP	138	5.41762	0.0055*	GDP does not Granger Cause FDI	138	12.6678	9.E-06
HC does not Granger Cause GDP	138	1.27161	0.2946	GDP does not Granger Cause HC	138	1.17658	0.3217
INFRASIT does not Granger Cause GDP	135	6.91399	0.0014*	GDP does not Granger Cause INFRASIT	135	2.91865	0.0506*
L does not Granger Cause GDP	138	0.43063	0.6510	GDP does not Granger Cause L	138	0.10447	0.9009
OPEN does not Granger Cause GDP	138	0.40922	0.6650	GDP does not Granger Cause OPEN	138	1.73926	0.1796
HC does not Granger Cause FDI	36	0.24716	0.7825	HC does not Granger Cause FDI	36	0.76042	0.4760
INFRASIT does not Granger Cause GDP	135	2.43032	0.0920	FDI does not Granger Cause GDP	135	2.13256	0.1227

<b>Cause FDI</b>					<b>INFRAST</b>			
<b>K does not Granger Cause FDI</b>	138	0.01538	0.9847		<b>FDI does not Granger Cause K</b>	138	0.80147	0.4508
<b>L does not Granger Cause FDI</b>	138	0.07927	0.9238		<b>FDI does not Granger Cause L</b>	138	0.00887	0.9912
<b>OPEN does not Granger Cause FDI</b>	138	2.96587	0.0509		<b>FDI does not Granger Cause OPEN</b>	138	2.48832	0.0869
<b>INFRAST does not Granger Cause HC</b>	36	0.23592	0.7912		<b>HC does not Granger Cause INFRAST</b>	36	2.42757	0.1048
<b>K does not Granger Cause HC</b>	36	2.61935	0.0889		<b>HC does not Granger Cause K</b>	36	0.56378	0.5748
<b>L does not Granger Cause HC</b>	36	1.99721	0.1528		<b>HC does not Granger Cause L</b>	36	1.48561	0.2420
<b>OPEN does not Granger Cause HC</b>	36	0.35535	0.7037		<b>HC does not Granger Cause OPEN</b>	36	0.19042	0.8276
<b>K does not Granger Cause INFRAST</b>	135	0.23739	0.7890		<b>INFRAST does not Granger Cause K</b>	135	0.09772	0.9070
<b>L does not Granger Cause INFRAST</b>	135	9.10264	0.0002*		<b>INFRAST does not Granger Cause L</b>	135	1.56347	0.2133
<b>OPEN does not Granger Cause INFRAST</b>	135	1.56447	0.2131		<b>INFRAST does not Granger Cause OPEN</b>	135	2.10916	0.1255
<b>L does not Granger Cause K</b>	138	0.30048	0.7410		<b>K does not Granger Cause L</b>	138	0.16727	0.8461
<b>OPEN does not Granger Cause K</b>	138	2.38690	0.0958		<b>K does not Granger Cause OPEN</b>	138	12.8720	8.E-06
<b>OPEN does not Granger Cause L</b>	138	0.11187	0.8942		<b>L does not Granger Cause OPEN</b>	138	0.19980	0.8191

Table 12 Shows the results of long-term causality relationship between dependent and independent variables. The results show that in the short term GDP is caused by FDI in all CEMAC region's countries. In the long-term, it can be seen that also the GDP and the INFRAST are significant each other, also we can realized that in the long term causality the LABOUR is caused by the INFRAST in the CEMAC countries, but according to the other variables there's no log relationship. As our frame work is focused on the relationship between the Forgin direct investment and Growth there's long term causality in CEMAC, as well as we have found the labour had effected positively by the infrastructure in long-term causality in the CEMAC region.

### Estimation Results

Our empirical analysis was performed on 6 CEMAC's countries economy over the period from 1992 to 2016.

The annual data support the proposition that there exist long run cointegrated relationship among variables in case of Cameroon, CAR, Chad, Congo, Equatorial Guinea and Gabon; there is a long run causality from dependent and independent variables.

The table 0.01 show that there is a causality relationship from LABOUR to INFRAST and also FDI, INFRAST to GDP, the estimation results show that foreign direct investment cause GDP of CEMAC. According to these results, we can say that there is long run causal relationship from foreign direct investments to GDP growth in the CEMAC countries economy.

These results also show that Foreign direct investment plays an important role in the growth of CEMAC's countries economy. There is a causal relationship from FDI to GDP in the case of Cameroon, CAR, Chad, Congo, Equatorial Guinea and Gabon.

### **Conclusion**

To conclude our analysis justified that, there is positive relationship between FDI and Growth as well as, The FDI caused positive relationship in the short and long-term and long-term relationship between the dependent and independent variables.

The FDI is one of the main reasons for the strong economic growth of CEMAC markets during these last decades. In addition, the FDI have more impact on the economic growth of CEMAC markets more than effects than other macroeconomic data.

The study provided that it is obsolete to increase foreign investments, focusing on issues of peace and security to achieving the objectives of economic development in the group, because of the large number of conflicts and political instability experienced by some of the member countries of the group, which hindered the implementation of the work of the group.

The weakness of the transport and communication facilities between the group, the spread of evasion phenomenon and unregistered trade (parallel). The Community's application of some of the policies that hinder the growth of intra-regional trade. And to increase foreign investment to prevent the development of all these sectors.

The study pointed out that, the main reason for the decline in the foreign investment is the concentration on the agriculture and oil sectors. The agricultural sector accounts for the working forces of the group and allocates the member countries in the export of raw materials to foreign markets, especially some cash crops such as cotton and sugar. All the member countries of the group are the exporters of oil to world markets except the Central African Republic, and the proportion of oil exports is about 80% of the total exports of the group.

The need to partially waive the national sovereignty of Member States and develop new strategies to achieve the objectives of integration, and attention to the issues of regional border management and infrastructure projects in addition to issues of good governance, human rights and gender equality.

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## INNOVATIVE PROCESS IN BRAZIL: ECONOMIC IMPACTS

ANA PAULA MUSSI SZABO CHEROBIM\*  
GUTEMBERG RIBEIRO\*\*

### Introduction

This chapter aims to demonstrate economic aspects of innovation in Brazil. The environmental variables can assume differentiated values over a given period and associate themselves to form configurations of different economic contexts. Knowing the possible configurations of the organizational environment, it is possible to identify which indicators are most appropriate to measure innovation and to study different impacts on economic characteristics. Thus, with the empirical data analysis from Brazil and the states of São Paulo, Paraná and Sergipe, it was possible to highlight and characterize the different environmental configurations and their reflexes for the innovation measurement process and economic impacts. It should be emphasized that the environmental configuration is not the same all around the country. The three states were chosen among the 26 Brazilian States because they are very different among each other. One state is very poor: Sergipe; the other is medium: Paraná and the third is rich: São Paulo. The study shows that innovation characteristics (variables) have different economic impact among them.

Various studies seek to characterize which factors have the greatest impact on the treatment of innovation and which are the most relevant for economic development. And among those found in the literature, the environment stands out.

The restrictive and deterministic character of the environment is evidenced from the conception of the contingency theory, which has a strong influence on organizations and their strategies for achieving survival. However, in the literature it is observed that the influence of the environmental context is generally treated in a generic way, without characterizing its specificities. It is commonly observed the various characteristics attributed to the environment that make it difficult to address. These include complexity, dynamics, uncertainty, unpredictability and volatility (Ribeiro; Cherobim, 2017a). Although these adjectives are very pertinent, it is noted that they are comprehensive, generalist and linked to any environment.

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\* Professor at Federal University of Paraná,

\*\* Professor at Paraná Federal Institute



Regardless of the type of environment, organizations are faced with the challenge of knowing and understanding environmental contingencies so that they can create and leverage innovation (Li; Atuahene-Gima, 2001; TIDD, 2001), understood as the successful application and exploitation of an idea, even if the novelty is only at the local level (Manual De Oslo, 2005). However, it is difficult to have an effective conception of the environment without knowing its parts, characterized by environmental variables and configurations. Thus, this chapter seeks to answer the following research question: do environmental variables assume different values over time and conform differently, providing different environmental configurations and economic results?

By characterizing the dynamicity of variables and the possibilities of environmental configurations it becomes less complex to understand and manage the interaction of the environment and innovation.

### **The Conception of Organizational Environment**

In an objective way, environment is all that is found outside a system, which is conceived as a set of interacting and interdependent parts that relate to a common goal (Bertalanffy, 1968). The environment concerns the various social and physical factors that influence the organizational decision-making process and that are beyond the limits of the organization (McGee; Sawyerr, 2003).

Tsujia and Mariño (2013) define environment as a set of external factors that interact causing echoes in the organization. These factors are characterized by uncertainty and complexity. For these authors uncertain environment is where frequent changes occur in the external variables that impact the organization. However, the complex environment is characterized by covering a large number of external variables that influence the organization.

Another characteristic of the environment, according to Duncan (1972), is the dynamicity, described as the speed of changes in environmental variables in a given period of time. As environmental conditions change rapidly and constantly, another typical feature of the environment emerges: volatility. Therefore, uncertainty, complexity, dynamicity and volatility are the main characteristics of the organizational environment.

In addition to environmental mapping, it is necessary to know and understand the dimensions of the environment: 1) microenvironment: task or domain environment; and 2) macroenvironment: remote



environment. The first type is significant and has a direct impact on the organization's tasks and results and includes consumers, suppliers, competitors and other stakeholders. The other type, also important, has an indirect and long-term impact, including economic, educational, social, cultural, technological and legal variables (Manual De Oslo, 2005; Moysés Filho Et Al., 2010; Myburgh, 2004).

### Characterization of Innovation

Despite the various models of innovation, its concept has always revolved around the application of knowledge that adds value to something. For Schumpeter (1939) innovation is a function based on creative thinking and action, where products and consumption habits are replaced by new ones; innovation is everything that differentiates and gives value to a business. With the Oslo Manual (2005), the concept of innovation was expanded, characterized as the implementation of a new or significantly improved product, a process, a new marketing method, or the implementation of a new organizational method in business practices, in the workplace organization or in external relations.

It is true that the creative action of innovation gives the organization the ability to produce new products and services. In meeting the needs of the market, innovation expands organizational competitiveness. This is the reason for the increase in the number of studies on innovation and its impact on productivity and competitiveness (Santos; Vasconcelos; De Luca, 2013).

To better understand innovation, it is important to situate it in the context where it occurs and its scope. In this sense, innovation presents differentiated characteristics if analyzed at company, regional or national level (MANKIW, 2003). This segmentation has a consistent impact on internal and external factors (environmental context) related to the creation, application and diffusion of innovation, such as human resources (Cassiolato; Lastres, 2000), Markets (Barney, 1991; Porter, 2008), institutional conditions (Schumpeter, 1939), political and economic aspects (Silva; Da Silva; Motta, 2012).

The literature presents several types of innovation (Ribeiro; Cherobim, 2017b), but the radical and incremental types proposed by Schumpeter (1939), still predominate on a consolidated basis. Regardless of type, it is paramount to identify secure ways of measuring innovation. Although there is no universal tool for measuring innovation and competitiveness (Freeman; Soete, 2007), a positive way of reducing uncertainties as measurement goes through the understanding of how the environment influences them. In this aspect, the understanding of the behavior of the environmental variables and the way of conforming are presented as basilar for the management of innovation.

### Methodology

The study that originated this chapter uses the exploratory and descriptive research strategy. To make them operational, a bibliographical research was conducted, through the EBSCO host platform database and the journal portal of the Coordination for the Improvement of Higher Education Personnel – CAPES, and bibliometric analyzes, using the public databases described in Table 1.

Table 1: Public data sources

Variables	Public database
Economic	Brazilian Institute of Geography and Statistics – IBGE; Institute of Applied Economic Research – IPEA; Central Bank of Brazil– BCB; Ministry of Science, Technology, Innovation and Communications – MCTI; Ministry of Labor and Employment – MTE; Economic Research Institute Foundation – FIPE; Annual Report of Social Information – RAIS; Worker Support Fund – FAT; National Confederation of Industry – CNI; Federation of Industries of the State of São Paulo – FIESP; Federation of Industries of the State of Paraná – FIEP; Federation of Industries of the State of Sergipe – FIES; and Observatory of Sergipe.

Educational	Ministry of Education – MEC; National Development Fund for Education – FNDE; The National Institute of Educational Studies and Research Anísio Teixeira – INEP; Coordination of Improvement of Higher Education Personnel – CAPES; and Observatory of Sergipe.
Social	Brazilian Institute of Geography and Statistics – IBGE; Ministry of Labor and Employment; Annual Report of Social Information – RAIS; and Observatory of Sergipe.

Source: The authors, 2016.

Considering that this research deals with innovation and that the first research on the innovative process in Brazil occurred in the triennium 1998-2000, and the fact that this period was greatly influenced by the crisis of the Asian tigers (1997) and the Russian crisis (1998), with negative impact on Brazil, data from this period were excluded, as possible biases resulting from these crises could hardly be neutralized. Thus, the period of data collection was adjusted between 2001 and 2013. We established the upper limit based on the complete availability of data.

To facilitate the identification of the variable, it was created a structure to comprise the data. Each variable received the designation of construct, represented by the letter “C”, and named each indicator as variable, represented by the letter “V”. Thus, the economic variable termed as C1 and its first indicator of V1, so that the control code is V1C1 (variable 1 of construct 1). For the educational variable the designation C2 and for the social C3 were assigned. The same procedure were adopted for these variables regarding their indicators (V1C2; V1C3). Due to the fact that there are several variables/indicators over the years, the technique known as “time series analysis” were used characterized by the set of observations over a period (Stevenson, 1981).

In order to perform the calculations demanded in this research, the SPSS software (IBM/SPSS, 2012) and the GRETL (Gretl, 2013) were used.

### Presentation and Discussion of Results

Because the series of the research is short, the literature recommends the use of Spearman's correlation coefficient, whose reading of the correlation hypothesis is related to the following conditions of comparison between null hypothesis (H0) and alternative hypothesis (H1): a) **H0**: There is no correlation between the pair of variables; the correlation between them is null; and b) **H1**: There is correlation. Thus, if the p-value is lower than 0.05, the H0 hypothesis must be rejected.

The correlation coefficient can range from -1 to +1 (minus one to one), indicating whether it is directly or indirectly related. It should be also point out that the SPSS application (IBM/SPSS, 2012) highlights the significant “correlations” (marking them with an asterisk (\*)) and the “very significant”, (where two asterisks appear (\*\*)).

### Research Hypothesis Test – H1

In this test, the values of the indicators of the variables surveyed throughout the period and the correlations of the collected data with respect to Brazil. These correlations, with 15 economic variables (V1C1 to V15C1), 15 educational (V1C2 to V15C2) and 15 social (V1C3 to V15C3), set out in Tables 3, 4 and 5.

Table 2: Economic indicators and control variables

ECONOMIC INDICATORS	CONTROL VARIABLE
Gross Value of Industrial Production	V1C1
Consumption of cement	V2C1
Number of patent filings	V3C1
S&T Expenditures	V4C1
Public Debt	V5C1
Unemployment rate	V6C1
Inflation index	V7C1
Balance of the Trade Balance	V8C1
Trademark Application	V9C1
Gross Domestic Product – GDP	V10C1
Average household income per capita	V11C1
Average income value	V12C1
Employed Population	V13C1
Number of deposits of computer programs	V14C1
Rate of Economically Active Population	V15C1

Source: The authors (2016), based on public data

Table 3: Educational indicators and control variables

EDUCATIONAL INDICATORS	CONTROL VARIABLE
Youth rate - 15 to 17 years old enrolled - High School	V1C2
Number of Higher Education Institutions	V2C2
Students who Completed higher education - Face-to-face	V3C2
Graduated in Doctor Degree by Federal Unit ( states) and Brazil	V4C2
Graduated in the Master Degree by FU and Brazil	V5C2
Number of Postgraduate Grants awarded by CAPES	V6C2
Functional Illiteracy Rate of Population - 15 years and over	V7C2
Rate of 15-17 year olds attending school	V8C2
Number of Graduate Programs (M/D) with concept 5	V9C2
Number of faculty in Higher Education	V10C2
Number of PhD Faculty in Higher Education	V11C2
Number of years of study – People aged 25 years or more	V12C2
Number of years of School Lag - young people from 10 to 14 years old	V13C2
Illiteracy Rate, older than 10 years	V14C2
Number of face-face Courses	V15C2

Source: The authors (2016), based on public data.

Table 4: Social indicators and control variables

SOCIAL INDICATORS	CONTROL VARIABLE
Population projection	V1C3
Gini Coefficient	V2C3
Number available of jobs	V3C3
Number of physicians per inhabitant	V4C3
Household rate with water supply	V5C3
Rate of Adequate Sanitary Sewage	V6C3
Employee formal contract rate	V7C3
Rate of Appropriate Garbage Collection	V8C3
Household Rate of Precarious Housing Situation	V9C3
Rate of Extreme Poverty	V10C3
Rate of Urban Lighting	V11C3
Household Rate with all essential services	V12C3
Rate of Urbanization	V13C3
Rate of Population Participation	V14C3
Theil Index (distribution inequality individuals x Income	V15C3

Source: The authors (2016), based on public data.

As for the different values over the studied period, a variation occurs in the analyzed series, which is non-uniform and has no specific trend. This information can be seen in the indicators with the most changes over time in the economic, educational and social variables, constants of tables 5,6 and 7 respectively.

Table 5: Economic indicators with the greatest variations regarding Brazil

Year	(Mil/ton)	(Un)	(1.00 BRL)	(1.00 BRL)	(Un)	(Un)	(%)
	V2.C1	V3.C1	V6.C1	V8.C1	V9.C1	V14.C1	V15.C1
2001	38,912	21,555	10.00	2,641,924,000.00 USD	84,574	601	60.46
2002	<b>38,873</b>	<b>20,334</b>	<b>9.90</b>	13,129,854,000.00 USD	<b>80,712</b>	693	61.31
2003	<b>34,884</b>	<b>20,176</b>	10.50	24,824,547,000.00 USD	81,781	765	61.40
2004	<b>35,734</b>	<b>20,431</b>	<b>9.70</b>	33,693,424,000.00 USD	<b>80,071</b>	766	62.02
2005	<b>37,666</b>	21,852	10.20	44,756,852,000.00 USD	83,002	<b>671</b>	62.89
2006	41,027	23,152	9.20	46,074,080,000.00 USD	<b>77,547</b>	<b>665</b>	62.42
2007	45,062	24,840	8.90	<b>40,028,195,000.00 USD</b>	83,828	670	62.03
2008	51,571	26,641	7.80	24,745,809,000.00 USD	99,363	818	<b>61.97</b>
2009	51,892	<b>25,885</b>	<b>9.00</b>	25,347,409,000.00 USD	<b>94,255</b>	938	62.10
2010	60,008	28,099	8.15	<b>20,266.610.000.00 USD</b>	103,988	1182	61.06
2011	64,972	31,881	7.30	29,796,166,000.00 USD	122,458	1261	<b>60.02</b>
2012	69,324	33,569	6.70	19,430,645,000.00 USD	120,431	1436	60.46
2013	70,967	34,050	<b>7.10</b>	2,557,744,000.00 USD	132,330	1058	60.68

Source: The authors (2016), based on primary data.

The economic variables were tested for all country. The period of analysis starts on 2001 and finishes on 2013. In a first view, although the growing up of consumption of cement, patents, trade mark application and deposits of computer program, there is no significant improve on unemployment rate, trade balance or economically active population. So, it is necessary to investigate other factors to improve the analyses.

Table 6: Educational indicators with the greatest variations regarding Brazil

Year	(Un)	(Un)	(Un)	(Un)	(Un)	(Un)	(%)
	V2.C2	V4.C2	V5.C2	V9.C2	V10.C2	V13.C2	V14.C2
2001	1,391	6,040	19,641	589	219,947	1.20	11.38
2002	1,637	6,894	23,457	692	242,475	1.10	10.91
2003	1,859	8,094	25,997	799	268,816	1.00	10.67
2004	2,013	<b>8,093</b>	<b>24,755</b>	<b>791</b>	293,242	1.00	<b>10.59</b>
2005	2,165	8,989	28,605	862	305,960	1.00	10.27
2006	2,270	9,366	29,742	961	316,682	0.90	9.64
2007	2,281	9,915	30,559	1.017	334,688	<b>1.00</b>	9.32
2008	2,252	10,711	33,360	1.065	338,890	1.00	9.19
2009	2,314	11,368	35,686	1.094	359,089	1.10	8.93
2010	2,378	<b>11,314</b>	36,247	1.140	366,882	1.10	7.90
2011	<b>2,365</b>	12,321	39,544	1.227	378,257	<b>1.00</b>	<b>7.98</b>
2012	2,416	13,912	42,878	1.283	378,939	0.90	7.87
2013	<b>2,391</b>	15,585	45,401	<b>1.120</b>	383,683	<b>0.90</b>	7.68

Source: The authors (2016), based on primary data

Table 7: Social indicators with the greatest variations regarding Brazil

Year	(Un)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
	V1.C3	V6.C3	V8.C3	V9.C3	V11.C3	V12.C3	V13.C3	V14.C3
2001	172,385,826	53.89	83.22	3.06	96.02	64.05	85.16	57.90
2002	174,632,960	62.06	84.81	2.68	96.65	65.51	85.56	58.60
2003	176,871,437	62.43	85.60	2.44	96.98	66.22	85.63	<b>58.60</b>
2004	181,581,024	<b>62.17</b>	<b>84.65</b>	<b>2.80</b>	<b>96.77</b>	<b>65.86</b>	<b>84.37</b>	59.20
2005	184,184,264	<b>62.17</b>	85.55	2.48	97.09	66.83	84.26	59.80
2006	186,770,562	62.76	86.38	2.34	97.59	67.79	84.45	<b>59.30</b>
2007	<b>183,554,226</b>	64.76	87.16	2.24	98.13	70.30	84.52	<b>59.00</b>
2008	189,612,814	<b>64.60</b>	87.69	1.98	98.53	70.39	84.61	<b>59.00</b>
2009	191,506,729	64.37	88.45	1.73	98.86	<b>69.78</b>	84.73	59.40
2010	191,941,613	66.07	88.54	<b>1.83</b>	99.01	71.86	86.14	<b>58.45</b>
2011	192,376,496	67.76	88.82	<b>1.92</b>	99.33	73.95	<b>85.96</b>	<b>57.50</b>
2012	193,976,530	68.65	<b>88.79</b>	1.37	99.52	74.26	85.76	<b>57.50</b>
2013	201,062,789	<b>68.18</b>	<b>89.35</b>	<b>1.51</b>	99.57	<b>73.25</b>	85.98	<b>57.30</b>

Source: The authors (2016), based on primary data.

Thus, the correlations between the indicators of each variable – economic, educational and social – demonstrate the specific conformation of the environment. For this purpose, it is necessary to observe if there are correlations between the indicators of the same variable (intra correlation) and between the indicators of different variables (inter correlation).

Therefore, the correlations of only the indicators of a given variable were analyzed; then the correlation of these indicators with those of the other variables. It must be emphasized, because 1,653 correlations were treated, only the most significant ones for this study are addressed (\*significant; \*\* very significant). The tests proved that the economic, educational and social variables for Brazil were correlated.

An empirical research through the secondary data analysis was conducted, characterizing as the analysis of data previously collected and tabulated by other sources (Bhattacharjee, 2012). The data were collected in the research focus areas: Brazil, São Paulo, Paraná and Sergipe. The choice of the Brazil unit is due to the globalized approach of the variables. The states were selected based on their general characteristics of innovation, reflected in the competitiveness (Exame, 2015), and the accessibility to the statistical data of the environmental variables.

Regarding the diversity of environmental variables (Manual De Oslo, 2005; MOYSÉS FILHO et al., 2010; MYBURGH, 2004), these can be synthesized in: economic, educational (including technological), social (encompassing cultural) and political (which encompass legal variables). In this research, the political variables were disregarded for two reasons: 1) in the period of the study there was no alternation of the political group that commanded the country; and 2) the political variables do not show constancy of publication and reliability. Therefore, the environmental variables considered are: economic, educational and social.

In the literature review there are no studies dealing with the relation between the environmental configuration and innovation and its indicators regarding the reflexes in the measurement process. In another words, there is few studies about innovation and economic aspects. In order to achieve the objective, two research hypotheses were established:

- a) H1 - The environmental variables – economic, educational and social – can assume different values over a given period ranging from extremely positive positions to extremely negative positions and can correlate with each other; and
- b) H2 - The correlation of the economic, educational and social variables, in their different forms (ranging from positive to negative), results in eight distinct environmental configurations.

The indicators used to measure the value of each of the environmental variables were selected in public databases. The database were built with annualized and available data. The result was 15 indicators available for each of the studied variables.

For the analysis of the H1 hypothesis, data were collected on the indicators referring to the variables in the Brazilian scope, allowing for a broad and generic analysis. For the H2 hypothesis, the data were collected deal with the indicators of the states selected for the research. The variables and indicators are summarized in Table 8.

Table 8. Indicators of the environmental variables used in the research

ENVIRONMENTAL VARIABLES	INDICATORS
Economic variable	Trade balance; Inflation; Number of patent filings; GDP; Gross value of industrial production; Consumption of cement; S&T Expenditures; Public debt; Trademark Application; Average worker's income; Employed population; Average household income; Number of deposits of computer programs; Economically active population; Unemployment rate.
Educational Variable	Enrollment rate; Number of higher education institutions; Number of years of school lag; Number of faculty with PhD (higher education); Number of faculty in higher education; Illiteracy rate, aged 10+; Graduates in doctor degree; Graduates in master's degree; Number of graduate scholarships; Number of students completing higher education; Rate of youth served at school; Functional illiteracy rate; Number of graduate scholarships with concept 5; Number of years of study – people aged 25+; Number of face-to-face courses.
Social Variables	Gini Coefficient; Coverage of garbage collection; Sanitation coverage; Absolute poverty; Total population; Number of available jobs; Number of physicians per inhabitant; Household rate with water supply;

	Household rate of precarious housing situation; Rate of urban lighting; Household rate with all essential services; Rate of urbanization; Rate of population participation; Theil Index – distribution inequality amongst individuals according to per capita income; employees formal contracted rate.
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Source: The authors (2016), based on public sites.

### 5.1.1 Analysis of the economic variable

Regarding the economic variable (C1), there are 28 correlations. Half of these (14) are very significant (\*\*), evidencing that these indicators can relate to one another by providing specific characteristics to the environment. Among the very significant correlations, 13 are directly related, that is, the increase in the value of an indicator implies an increase of a correlated one.

The indicator that most correlated with the others was the code “V2C1” – cement consumption, which was related to six other indicators in a significant way, followed by indicators “V1C1” – gross value of industrial production and “V3C1” – number of patent filings. These indicators characterize a particular type of environment depending on they appear positively or negatively.

A very significant direct correlation was characterized in the pair “V1C1-V3C1” (Cc 0.711\*\*;  $p_{\text{value}}$  0.010), where it is necessary that the increase in the gross value of the national production is directly correlated to the number of patent filings. The converse is also true, since the reduction of one indicator will also produce the same effect, reducing the other correlated.

This reasoning applies to other correlated pairs. It must be highlighted the only one very significant indirect correlation, synthesized in the pair “V2C1-V6C1” (Cc -0.750\*\*;  $p_{\text{value}}$  0.005). The relationship between cement consumption and the unemployment rate was indirectly linked; the increase of one indicator reduces the other. Cement consumption is related to the acceleration of the economy, implying the demand for labor; the faster the economy, the greater the absorption of workers into employment opportunities, the lower the rate of unemployment. It is clear that the construction activity has the power to push the economic activities, especially the less sophisticated.

Among the 28 pairs of correlated indicators a perfect correlation was identified, indicated by the pair “V2C1-V3C1” (Cc 0.949\*\*;  $p_{\text{value}}$  0.000). By this relation, the consumption of cement is perfectly correlated with the number of patent filings. The statistics referring the values of these two indicators can be linked. The consumption of cement, related to the acceleration of the economy or the development of a certain location, is in some way linked to an environment conducive to development, reflecting the increase in the number of patent filings.

The indicators of the same variable, in this case the economic one, are related to each other, considering the 28 significant and very significant correlations, and that one exerts influence on the other, since most are positively related. Thus, a block of indicators of the same economic variable can provide a positive or negative environment, according to the performance correlated over the years; and reality supports this statistical evidence.

### Analysis of the Educational Variable

In examining data concerning hypothesis H1, considering only the indicators of the educational variable in Brazil, it is observed that there are 12 correlated pairs, 8 being significant (\*) and four very significant (\*\*). It is also found that seven of these correlations are direct and five indirect.

Among the very significant pairs, some relationships are elementary, as the correlation of pairs “V2C2-V10C2” (Cc 0.720\*\*;  $p_{\text{value}}$  0.008) and “V2C2-V15C2” (Cc 0.713\*\*;  $p_{\text{value}}$  0.009), which emphasizes the validity and reliability of the statistical calculation, since the higher the number of Higher Education Institutions, the higher the number of faculty in higher education and the greater the number of face-to-face courses, which is the most common modality.

An important indirect correlation is represented by the pair “V7C2-V9C2” (Cc -0.720\*\*;  $p_{\text{value}}$  0.008), indicating

the existence of a close relationship between the reduction of the functional illiteracy rate of the population aged 15 years or older and the search for a better level of study, because the lower the illiteracy rate, the greater the number of graduate programs, in master's and doctoral level with concept "5".

Amongst the educational indicators that most correlate with each other are the "V2C2" – number of higher education institutions, and the "V3C2" – graduates in higher education (face-to-face). The indicators that most correlate with economic indicators are "V2C2" and the "V15C2" – number of face-to-face institutions and courses. The loadings of significance of these correlations show that the link between the economic and educational environments are evidenced and conform a specific environment.

In analyzing the most significant correlated pairs and those that are directly related, the reflection of one over the other is large, which gives a distinct characteristic to the environment depending on how the indicators of this variable are presented.

This correlation emphasizes the relevance of education to improve economic aspects.

#### Analysis of the Social Variable

In relation to social variables, there are 11 correlations between its indicators, highlighting that seven are significant and four are very significant, and among these, only one is very significant and indirectly correlated. There is a direct and very significant relationship between the pair of indicators "V2C3-V15C3" ( $C_c$  0.764\*\*;  $p_{value}$  0.004), indicating that the Gini index or coefficient, which refers to the measure of social inequality of a country or region, characterizing income concentration, is directly related to the Theil index, which measures the inequality in the distribution of individuals according to per capita household income.

Another very significant correlation adheres to the pair "V6C3-V7C3" ( $C_c$  0.817\*\*;  $p_{value}$  0.001), the rate of adequate sanitary sewage and employee formal contract rate are directly related. This fact refers to the more structured environment, where the formally contracted worker is more able to perceive the importance of adequate sanitary sewage to the health of their family. These two associated indicators denote a more conscious and developed environment in terms of quality of life.

To characterize the formation of a specific social environment, the pair correlation "V13C3-V14C3" ( $C_c$  -0.852\*\*;  $p_{value}$  0.000), shows that more urbanized area denote, lower rate of population participation, defined by the number of people who work at least one full hour in paid work. This means that in an urbanized place it is common to have better living conditions, smaller families and, especially, the younger devote themselves to studies. In less urbanized areas, it is normal for larger families and under less favored conditions, leading the younger ones to seek work to help support the family.

#### Considerations on Indicators and Correlations

In the intra and intercorrelations of indicators of economic, educational and social variables there are perfect correlations ( $p_{value}$  = 0.000) in the pairs "V2C1-V3C1", "V11C1-V15C2", "V15C1-V14C3" and "V13C3-V14C3", as well as in the number of pairs with correlation coefficients ( $C_c$ ) above 0.800, with  $p_{value}$  close to zero. The various assume different values over a period of time, varying between positive and negative positions, as can be observed in the values of Tables 6, 7 and 8.

By analyzing the values and correlations of the indicators of the studied variables, the hypothesis H1 is confirmed as a result of the consolidation of differentiated formats of the environments resulting from the interaction of these indicators and variables. Therefore, it is proved that variables can assume different positions over time and that effectively correlate with one another, providing the environment with unique and specific configurations. Thus, hypothesis H1 is true.

#### Research Hypothesis Test – H2

To test the second hypothesis a basic premise was adopted. The economic, educational and social variables may present indicators with positive or negative characteristics, that is, the indicators of each variable grouped can express how they appear in the environment. As an example, the economic environmental variable (VAEc) may be positive, characterized by its pooled indicators, reflecting a development environment, or negative, implying a recessionary environment. The environmental educational variable (VAEd) may change from an



evolved situation to the obsolete one; and the social environmental variable (VASo), may range from an advanced to a stagnant environment.

In this research the political environmental variable was disregarded, as explained in the methodology. Thus, the environmental configuration approach (CA) in this study admitted two extreme possibilities for each variable, one positive and one negative, with eight Environmental Configurations ( $CA \Rightarrow 2^3 = 8$ ), ranging from an extremely positive configuration (+++) to the other extremely negative (---). These possibilities are characterized in Table 9.

Table 9: Possibilities of Environmental Configurations

Configuration	Environmental Macro variables					
	Economic – VAEc		Educational – VAEd		Social – VASo	
	Positive	Negative	Positive	Negative	Positive	Negative
CA1	x		x		x	
CA2	x		x			X
CA3	x			x	x	
CA4	x			x		X
CA5		x	x		x	
CA6		x	x			X
CA7		x		x	x	
CA8		x		x		X

Source: The authors (2016).

The correlations referring to Brazil has 143 correlated pairs presenting significance, with 66 being very significant and 77 significant. In order to test whether hypothesis H2 is true or not, the intercorrelation between the indicators of the several environmental variables of São Paulo, Paraná and Sergipe were verified.

To analyze the differences from rich, medium and poor state the same indicators are used. What differs are the values of each indicator, obtained from primary sources.

Initially São Paulo was analyzed, considered for the purpose of this study as the most developed and innovative state. The first finding refers to the number of correlations. While in Brazil the number was 143, with 46% of correlations being very significant, in São Paulo it totaled 117, with only 32% being very significant, characterizing a more homogeneous environment.

The distributions of the correlations are not the same, including changes occurring in the distribution of pairs of indicators with more significant correlations, as well as the correlation coefficients in São Paulo are stronger, that is, they have greater loading. Considering that the São Paulo environment is more stable in relation to Brazil, it is justified that correlations, especially with respect to economic indicators, have greater loadings. The balance between environmental variables provides stability to the indicators.

Effectively, the indicators make the São Paulo environment a differentiated place in terms of positive correlation of the various indicators of environmental variables. Correlation Coefficients, such as pairs “V2C1-V4C1” ( $Cc = 0.853^{**}$  and  $p_{value} = 0.000$ ) and “V2C1-V8C1” ( $Cc = 0.855^{**}$  and  $p_{value} = 0.000$ ), indicating perfect correlations, show that the indicators are intrinsically associated.

The values that corroborate for this assertion are mainly the indicators of the educational variable, which are consistent in terms of correlation. There are positive values when compared to Brazil. The correlation coefficients confirm the consistency of the environment, because there are perfect correlations for educational indicators such as in pairs “V2C2-V7C3” ( $Cc = -0.849^{**}$  and  $p_{value} = 0.000$ ) and “V13C2-V8C1” ( $Cc = -0.870^{**}$  and  $p_{value} = 0.000$ ), in addition to several strong correlations, with correlation coefficients close to 1 (absolute value), very significant and with  $p_{value}$  close to zero, as is the case of pairs “V2C2-V9C1” ( $Cc = -0.827^{**}$  and  $p_{value} = 0.001$ ) and “V3C2-V15C2” ( $Cc = -0.839^{**}$  and  $p_{value} = 0.001$ ).

The main data of the state of Paraná, considered median in terms of development in the criteria of this study is

presented to broaden the analyzes and considerations about the relationships of the indicators in the several variables. The comparison of the correlations in Brazil and São Paulo with those of Paraná shows that the environments are effectively different considering the coefficient of correlation of the economic, educational and social indicators.

The data for Paraná are distinct in relation to Brazil and São Paulo, mainly due to the fact that only 22% of the total correlations are very significant, against 46% of Brazil and 32% of São Paulo. This factor reinforces the argument of the divergence of environmental configurations considering the values of the indicators.

The pairs characterized as very significant have Correlation Coefficients below 0.800, as the cases of pairs “V4C1-V9C1” ( $C_c = -0.713^{**}$  and  $p_{\text{value}} = 0.009$ ); “V8C1-V15C1” ( $C_c = -0.795^{**}$  and  $p_{\text{value}} = 0.001$ ); “V8C1-V6C2” ( $C_c = -0.727^{**}$  and  $p_{\text{value}} = 0.007$ ); “V10C1-V11C1” ( $C_c = 0.734^{**}$  and  $p_{\text{value}} = 0.007$ ); and “V11C1-V3C2” ( $C_c = -0.713^{**}$  and  $p_{\text{value}} = 0.009$ ), among others, denoting reduction of the correlation loading, which characterizes this environment as inferior if considered to that of São Paulo.

The crisis that affected several environments between 2008 and 2009 was not reflected, at least not immediately, in the various social indicators of the State of Paraná. During this period most of the indicators improved, especially the increase of the number of available jobs “V3C3” and rate of urbanization “V13C3”, as well as reducing the rate of extreme poverty “V10C3”, which declined even in adverse conditions.

To consolidate the diagnosis with a view to confirming or not hypothesis H2, the data of the environmental variables of Sergipe were inserted. This environment is considered the more modest variables for the purpose of this study, as a stagnant environment. The term “stagnant” refers specifically to a condition that serves the purposes of this study.

Sergipe the poorest state presents 113 correlated environmental indicators. Despite the modest indicators, the number of very significant correlations was high, with 30% of the total, denoting that there is a specific effort to change the environment. Among those surveyed, this state is the one that presents the most perfect correlations, with a high coefficient of correlation ( $C_c$ ) and  $p_{\text{value}}$  equal to zero. Among these, “V4C1-V11C1” ( $C_c = 0.881^{**}$  and  $p_{\text{value}} = 0.000$ ), correlating expenditures on S&T and the number of PhD faculty in higher education. This relationship is perfectly plausible, since the greater number of physicians in higher education implies more research, with the necessary investment in physical and technological resources.

However, attention is drawn to the pair “V8C1-V14C1” ( $C_c = -0.893^{**}$  and  $p_{\text{value}} = 0.000$ ), which inversely correlates the balance of trade and the number of deposits of computer programs. It seems to be an inconsistency a better balance in the trade balance entail a reduction of the creation of computer programs. However, this is a feature of a stagnant environment. This is reinforced by the pair “V8C1-V7C3” ( $C_c = 0.879^{**}$  and  $p_{\text{value}} = 0.000$ ), which presents a perfect indirect correlation between the trade balance and number formally contracted workers. Another contradiction may be perceived, since there is a direct relationship between these two indicators, since the better the trade balance, more positive economic conditions, reflected in the number of employment and the employee formal contract rate.

Although certain findings seem illogical, this fact implies in the specificity of the state of Sergipe, which characterizes the differentiations of indicators and variables, as well as how they correlate and form a specific context.

The indicators of the environmental variables of Sergipe were the most affected in the crisis of 2008-2009, considering some negative results or slight increases in certain indicators. There was a sharp reflection in the employment rate (V7C1) and successive deficits in the balance of the trade balance (V8C1) throughout the series, despite the increase in the value of GDP (V10-C1). This fact, once again must be evidenced, because it indicates that the studied sites have specificities depending on the set of correlations between their indicators and variables.

Not unlike the indicators of the economic variable, the educational and social indicators of Sergipe also show marked diversity in relation to classified sites as developed and medium. The modest indexes regarding the educational variable must be highlighted. Some indicators practically do not exist when compared to São Paulo and Paraná, as the number of graduates in the doctor degree “V4C2”. The official statistic indicates that in the years 2001-2003 there were no persons qualified in this degree. Until 2009, Sergipe had only 10 PhDs.

There is actually a difference between the places surveyed. After present, discuss and characterize the three

places in this study, it can be said that correlated indicators provide specific characteristics for each environmental variable. And the interrelated environmental variables form a particular context that reflects the specificities of the indicators captured for this reality.

Analyzing the results and considering the intra and inter correlations of the indicators of the economic, educational and social variables, the sites studied can be classified in relation to the Environmental Configurations in Table 10. Thus, with the correlation data of the three states under analysis, São Paulo presents the most significant correlations considering the economic, educational and social aspects. The difference in the values of the indicators in relation to the others is notable, providing an advantageous conjuncture for development in this state, as there are the necessary resources in quantity and quality.

The state of Paraná presents economically values that do not leave a great deal to be desired. However, in terms of educational resources, although not so bad, the state has a lot of room to develop.

Finally, the state of Sergipe is far from desired when compared to the other two states. Despite efforts to develop, which are reflected in recent public data on this state, the reality is still far from the ideal. The indicators of economic, educational and social variables allow to assert that Sergipe lacks the resources to be able to leverage the bases for innovation and consequent competitiveness. And because it does not gather in quantity and quality such resources, the state can be classified, for the purposes of this study, as stagnant.

Therefore, considering the possibilities of environmental configurations and the characteristics of the studied states, we can classify these as follows: São Paulo: CA1; Paraná: CA3; and Sergipe: CA8.

Table 10: Classification of Environmental Configurations of the researched places

Configuration		Environmental variables					
		Economic - VAEc		Educational - VAEd		Social - VASo	
		Positive	Negative	Positive	Negative	Positive	Negative
<b>São Paulo</b>	<b>CA1</b>	x		x		x	
	CA2						
<b>Paraná</b>	<b>CA3</b>	x			x	x	
	CA4						
	CA5						
	CA6						
	CA7						
<b>Sergipe</b>	<b>CA8</b>		x		x		x

Source: The authors (2016).

Thus, despite the fact that only three specific environments were characterized, the second hypothesis of the research, was confirmed. It can effectively result in the eight environmental configurations, with the surveyed sites being classified according to these configurations. Therefore, hypothesis H2 is true.

### Final Considerations

Effectively the environmental characteristics present reflexes in the level of innovation and economic development in relation to the place in which it is analyzed, according to Damanpour (1996); Tidd (2001); Oslo Manual (2005); Zhang, Majid and Foo (2011) and Tsuja and Mariño (2013).

The study sought to demonstrate that environmental variables can assume differentiated values over a given period and associate themselves to form different environmental configurations. Thus, if the possible configurations of the environment are characterized, it is feasible to identify which indicators are most adequate to measure innovation and its impact on economy aspects.

After established two hypotheses of research, it was verified that the environmental variables – economic, educational and social – assume different values over a certain period of time, ranging from positive to

negative, as well as correlate with one another. It is also found that the correlations of these variables, in their different forms (positive or negative), eight different environmental configurations may result.

Therefore, it is evidenced that a new need arises in the study of the measurement of innovation, which is to characterize and identify in what environmental context the innovation process occurs so that it is possible to select which indicators are the most adequate for achieving this purpose. However, in order to make this attempt feasible, studies are needed that relate the indicators of innovation measurement to the respective environmental configurations.

Thus, failure to consider the political variable is a limitation of this study, because, in theory, there are the possibility of conformation of 16 environment configurations ( $CA \Rightarrow 2^4 = 16$ ), and this study considers only the economic, educational and social variables, totaling eight possible environmental configurations.

Finally, the knowledge of the possible environmental configurations allows to understand the interaction between the environment and the innovation. It allows greater rationality to the innovative process, because the activity of measuring innovation according to the type of context where it occurs makes management more effective with the ensuing desired results, such as competitiveness.

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## AN OVERVIEW OF TURKEY'S NATIONAL ENERGY POLICIES

Seyfettin ERDOĞAN\*

Ayfer GEDİKLİ\*\*

Sema YILMAZ GENÇ\*\*\*

### Introduction

“Safety and security of oil lie in variety”  
Winston Churchill

Security of energy supply and sustainable economic growth are central concerns for policy makers. Despite the fact that they have paramount importance to all countries, just the countries with rich natural resources may respond to energy security threats. As an energy importer country, Turkey has been struggling with sustainable energy supply as well as providing indigenous energy. Parallel to economic growth, the demand of energy has been increasing in Turkey and energy supply security became critical. Ministry of Energy and Natural Resources put the goal of the national energy strategies and mining policies to have uninterrupted energy supply with energy efficiency to improve and sustain the welfare of living of the population with continuing economic growth. In this study, firstly, theoretical framework of energy security and energy efficiency will be analyzed. Then energy policies of Turkey will be explained by comparing the 1990's and 2000's. Finally, some policy recommendations will be put forth for successful national energy policies and energy supply security.

Access to uninterrupted energy is one of the most important factors for a country to have sustainable development. It is fact that almost all of the production processes are dependent on energy input. Either as a raw material or an intermediate good, energy is directly correlated with the economic, social and environmental development of a country. It is predicted that energy demand will be expanded by 45% by 2030 and by 300% by the end of this century. This rough calculation points that it will be necessary to tripple the investment in infrastructure to satisfy the demand. According to this scenario, the depletion of fossil fuels will be unavoidable. Hence, there will be increasing demand for clean, affordable and secure energy in all countries (Chalvatzis and Ioannidis, 2017:2916).

Because of this dark scenario for the near future, energy security strategies have become one of the most important policies of both energy importer and exporter countries. Actually, energy security studies have been in all countries agenda since the 1970s oil crises to disrupt energy supply. At this point the following questions should be answered: “Security for whom?”, “Security for what?”, “What threats the energy security?”, “Whats strategies should be implemented to have secure and uninterrupted energy supply?” (Cherp and Jewell, 2014:415). The countries which can find wise solutions to these questions will be the leader of the 21st century. Indeed, we are living in the period of changing balance of economic power among the countries. In this period, the energy sector is critical with its extremely dynamic position in all economies. Any energy strategy that each country implement may have both short and long term impacts among the countries at both regional and global level. And also, economic growth, energy demand, sustainability and environment relations are crucial

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\* İstanbul Medeniyet University, Faculty of Political Sciences,  
seyfettin.erdoganmedeniyet.edu.tr

\*\* İstanbul Medeniyet University Faculty of Political Sciences, ayfergedikli@yahoo.com

\*\*\* Kocaeli University, Kocaeli Vocational School  
semayilmazgenc@kocaeli.edu.tr

subjects even for the countries with the richest natural resources.

This situation is not much different for Turkey. After the Millenium, Turkey showed a remarkable performance not only in macroeconomic conditions, but also in welfare level, as well as in social and political life. The development of Turkish economy in all sectors, brought increasing need to energy. In fact, in the last 15 years, Turkey became one of the pioneer developing countries which has the highest energy demand increase. At this point, national energy and mining policies become the hot topics of the government. In this study, national energy and mining policies as well as energy security and energy efficiency strategies will be discussed. In the firts part of the study, theoretical and conceptual framework of energy supply will be analyzed. Then historical backgound of energy supply security will be mentioned. In the next part of the study, current situation of Turkish energy structure and energy supply security strategies of the government will be discussed. Finally, some policy suggestions will be put forth in order to have a sustainable economy and uninturrpted energy supply in Turkey.

### **Theoretical And Conceptual Framework of Energy Supply Security**

Energy supply security can be defines is “availability of sufficient supply at an affordable price” (Yergin, 2006:70). In a wider perspective, European Commission (2000) defines energy security as availability of sufficient and uninterrupted energy supply on the market with affordable price. Barron et al (2004:5) defines energy security as a condition in which a society and particularly citizens and businesses can reach to sufficient energy resources with reasonable prices for the predictable future which is free from the risks of disruption of services. According to the definitions, energy supply security involves both resource availability without disruption and paying reasonable price at a competitive international market. Martin, Imai and Steeg (1996) defined energy security as trilateral. In one side of the energy is protecting the national economy from the vulnaribilities to disruptions of imported energy. In the second side, there has to be an adequate supply with reasonable price both at home and in the global market. The third face of energy is related to environmental issues as international energy policies are based on “sustainable energy policies”. There is also 4A taxonomy to explain energy security. According to 4A taxonomy, first A is avalibility which represents physical availability of resource. The second A is accessibility which stands for geographical accessibility of resources. The third A is affordability which explains economic costs of energy. Market prices are affected both by market players (supplier and demand) and non-market factors (government policy changes, geopolitics etc). So, physical interruptions represents the problem in which the price of ready to be paid by the end user is below the cost of delivering that power. The last A is acceptability that reflects social and environmental aspects of energy. Besides these dimensions, in different explanations, foreign policy, technological aspects, social-cultural factors and military security are also included in the definitions (Cherp et al, 2012:330; KU Leuven Energy Institute, 2013:1).

According to a broader definition, energy security means timely delivery of power/energy flow to the consumer/importer country without interruptions. So, energy supply security has also time and spatial dimensions. Primary energy carriers are produced in the provider location, then transported through and transformed in the target location before it is consumed in an other location. Furthermore, transporting energy from one street to an other district is different from transporting it from the country or from a region to another one. For the short period, security of energy is providing the power at the moment with the existing energy system, whereas for the long period, energy security is tied to the investments which are necessary to an energy supply chain from the place of primary energy to deliver to end user when needed (KU Leuven Energy Institute, 2013:1-2).

Although in the definitions, the terms sufficient supply, foreseeable and reasonable prices are frequently repeated, actually they are not obvious. As an example, prices may vary over time and too high prices may cause inflation, unemployment, foreing trade deficit and economic recession. Since price is a critical factor because of the harmful effects of high energy prices on the economy, most of the governments believe that “the cheapest is the best”. However, too low energy prices cause higher consumption, less interest to energy

efficiency and energy saving, as a result higher dependence on external resources (Helgerud, 2008:9).

For less developed countries on the other hand, energy security stands for “accessing to modern energy services” (Chalvatzis and Ioannidis, 2017:2917). Hence, different interests of countries focus on different sides of energy security. For developing countries, energy supply security is providing stable energy prices in order to avoid problems of their balance of payments. For Russia, energy security is having great power and control over strategic resources and gaining superiority and power on main pipelines and international markets in order to ensure its hydrocarbon trade in international markets. As two fast growing countries, China and India define energy security as adjusting themselves to their new dependence as fast as possible which is a new strategy for them comparing with the previous “self-sufficiency policy”. For Japan, energy security is offsetting scarcity of indigenous energy resources by diversification, trade and investments on new infrastructures. (Yergin, 2006:71).

Furthermore, energy security problem is sometimes more complicated. In the literature, the continuing problems of energy supply are energy resources scarcity, global warming and commodity price fluctuations are called “energy trilemma”. For example, the EU has been suffering from lack of energy resources which conveys higher energy prices as well as environmental problems. Besides, energy storage, deployment of renewable energy sources and technological innovations may bring about disrupting the energy supply (Chalvatzis and Ioannidis, 2017:2917).

It is a fact that security of energy supply leads to independence of individual countries. Dependence on imported energy inputs may lead a strategic disadvantage in times of conflicts among the countries or times of war. In most of the cases, such an economic dependence and vulnerability can be used as a weapon in trade conflicts. Energy vulnerability may cause price fluctuations in both local and international markets which cause great problems in balance of payments, economic growth, production level etc. At this point, energy importer countries should have decisions on the following levels (Van der Linde et al, 2004:63-64):

- i. There has to be balance between domestic and external sources
- ii. There has to be balance between different types of technologies
- iii. There has to be balance between costs, environmental and national security policies. In this level taxation, public ownership, subsidization and different regulations can be applied.

Energy security covers both quantitative analysis of energy system and examining perspectives and strategies of energy security participants in the industry, primarily nation-states. These energy security strategies reflect the objective conditions. However, at the same time they are affected and limited by cognitive and political factors which shape the plans of policymakers. As a reaction to perceived energy security threats and risks, national governments initiate energy security strategies. National security strategies have been established in many countries and target to minimize the risks for the energy end-uses such as transport, residential and commercial energy usage which are the most vital agents for a given country (Chepr et al, 2012:365). The basic strategies for energy security are sovereignty, robustness, resilience, diversification and flexibility of energy system whereas other strategies provide more generic effects for the expected threats. these strategies are summarized as follows (Chepr et al, 2012:331, 365-367; Van der Linde et al, 2004:67-68; Yergin, 2006:76):

**a. Sovereignty Strategies:** Sovereignty focuses on disruptions that arise from attempts of external factors such as terrorist attacks, unreliable exporters, overly powerful energy sector agents. Indeed, sovereign-driven strategies focus on increasing control on existing energy resources. “Resource nationalism” is one of sovereign strategies. The Venezuela’s re-nationalization of its energy sector in 2003 can be an example of resource nationalism. Also, Russia transferred many major oil and gas projects from international oil companies to state companies. Resource nationalism strategy can be also applied in energy importer countries.

**b. Robustness Strategies:** Robustness is perceived risk that arise from predictable energy system. Scarcity of energy resources, failure of infrastructure, and lack of capacity are the subjects of robustness. Robustness strategies focus on minimizing predictable risks in energy industry. For example many developed countries have standards for reliable electricity transmissions and generation. To minimize the risk of disruptions and to reduce vulnerability to increasing prices, it is a good strategy to have enough accessible energy sources, and to



make investment in infrastructure with suitable technology.

**c. Resilience Strategies:** Resilience is a “security margin” in the energy supply system that provides a buffer when there is energy shocks and facilitates recovery after disruptions. In other words, resilience can be defined as improving ability to provide critical energy services without disruptions. Sufficient spare production capacity, strategic reserves, enough storage capacity and stockpiling of critical energy sources production and distribution as well as backup supply can be considered as resilience. The basic target is not being able to be independent from foreign sources, but having sufficient degree of resilience against disruptions in imports. Emergency fuel shocks may create an unexpected short term interruptions of energy supply and price volatility. Because of this risk, especially for natural gas usages, many countries prefer to have emergency storage of natural gas in case there is unexpected interruption of energy import. In case of energy supply disruptions, strategic stocks are very important in managing crisis. In this vein, both its volume and the availability of the facilities to transport and to process the resource for the market become critical when the shortage arises. It should be noted that in some cases sovereignty strategies negatively affect resilience. Nationalization of natural resources may reduce the energy revenues because of increasing inefficiencies. Besides, not allowing foreign companies to invest domestic projects may lead underinvestments and aging infrastructures if government cannot afford to invest enough capital, technology and know-how.

**d. Diversification:** Diversification stands for diversifying the dependency on a certain energy resource. As Churchill expressed at the beginning of 20th century, diversification of supply is one of the most important principles of supply security. Multiple supply sources provide with alternative sources if there is any disruption in one source. A large dependence on only one of the fossil fuels deepens the vulnerability and increases the risk of sustainability. Sometimes, governments try to establish new energy resource investments such as wind or solar energy. However, it should be noted that, at least with the current technologies, these energy resources cannot substitute fossil fuels. So, establishment of gas and oil storage units would provide more energy supply security than diversifying alternative energy resources. After the oil crises of the 1970s, diversification became even more important. In those years, the supply routes for natural gas were rigid and gas was transferred by specific pipelines. As an alternative method, gas is transferred by ships as liquified natural gas (LNG) and gasify the gas in the importing country. When gas is planned to be transferred by pipelines or as LNG, geopolitical and market factors become more important. Besides, the distance from production site to importer becomes crucial. Here, the cost of transport which is highly related to the distance and the political situation of the route that pipeline/transportation is critical. Thanks to technological improvements that reduced the cost of LNG transfers. Nevertheless, it is still so problematic to make a safe route from source country to consumer country.

**e. Flexibility of Energy System:** The higher the energy system flexibility, the greater security of supply. Flexibility of energy can be enhanced with a variety of measures. As an example, automobiles can use not only single fuel such as gasoline and diesel, but also LNG and electricity. Special arrangements and allowances such as tariff system or a modified tax mechanism may alter the preferences. In case there is lack of gasoline, automobile owners can easily turn to LNG or electricity.

**f. Recognizing the Reality of Integration:** Integration of energy markets is important in global information sharing and network. By this way global complex energy markets may have stability and avoid conflicts.

**g. Importance of Information:** In the energy supply industry, trustworthy information is important for well functioning markets. IEA takes a crucial role in providing high-quality information about the global energy markets.

Below, in Table-1, energy security indicators are illustrated both for short term and long term.

Table 1: Energy Security Indicators

Energy Source	Energy Security Indicators	
	Short Term Indicator	Long Term Indicator
Oil	<ul style="list-style-type: none"> <li>-Effects on the global oil market (import dependency, cost of imports)</li> <li>-Vulnerabilities in demand (annual growth in oil consumption, oil intensity)</li> <li>-Domestic availability of oil</li> <li>-Environmental effects of oil production and use</li> </ul>	Global oil scarcity
Natural Gas	<ul style="list-style-type: none"> <li>-Effects on the global natural gas market (import dependency, cost of imports)</li> <li>-Vulnerabilities in demand (annual growth in oil consumption, natural gas intensity)</li> <li>-Domestic availability of gas</li> <li>-Environmental effects of gas production and use</li> </ul>	
Coal	<ul style="list-style-type: none"> <li>-Effects on the global coal market (import dependency, cost of imports)</li> <li>-Domestic availability of coal</li> <li>-Environmental effects of coal production and use</li> </ul>	
Nuclear	<ul style="list-style-type: none"> <li>-Aging nuclear power plants</li> <li>-Capacity to construct new plants</li> <li>-Access to capital, reactor construction</li> <li>-Environmental safety and security of nuclear power</li> </ul>	
Hydro	<ul style="list-style-type: none"> <li>-Reliance on dams</li> <li>-Seasonal water availability in dam</li> <li>-Aging dams</li> <li>-Risk of dam failure and terrorist attacks</li> </ul>	Effects of climate changes on water sources
Electricity	<ul style="list-style-type: none"> <li>-Effects on imported fuels (dependency on imported fuels)</li> <li>-Effects on a single fuel market (using a single source for electricity production because of low diversity)</li> <li>-Enough capacity (annual growth)</li> <li>-Low investment and aging infrastructure</li> </ul>	
Transportation	<ul style="list-style-type: none"> <li>-Dependence on imported fuels</li> <li>-Demand side vulnerabilities</li> </ul>	
Residential and Commercial Usage	<ul style="list-style-type: none"> <li>-Dependence on imported fuels</li> <li>-Demand side vulnerabilities</li> </ul>	

<b>Export Side</b>	-Price fluctuations -Security of demand (diversity of routes and destinations) -“Dutch disease” and “curse of resource”	
<b>Cross-sectoral effects</b>	-Import dependency, cost of energy imports relative to GDP, cost of energy imports relative to export revenue -resilience of primary fuels -energy price volatility -Demand-side problems (consumption per capita, annual growth rate of consumption)	

**Source:** Cherp et al (2012:338)

For a robust and sustainable energy security has basic characteristics. These characteristics of energy security are explained below (Barton at al, 2004:8):

1. **Infrastructure:** One of the most important characteristic of energy security is the management of well designed and sophisticated infrastructure. Energy security is highly dependent on the integrity of regional and global networks as well as fuel supplies, capital expenditure, short term reliability and endurance to damages. Apart from these, as in the case of natural gas, energy security is highly dependent on the capacity for storage of gas near the consumption area.
2. **Growth in international trade of energy:** growth in energy trade is directly related to the networks and supply lines.
3. **Market competition:** Traditionally, there were few energy companies and unions which used to dominate global energy industry. That oligopolistic structure changed dramatically as parallel to improving a competitive energy market. However, increasing efficiency does not always bring security in energy markets.
4. **Environmental constraints:** Environmental concerns may conflict with energy security particularly in nuclear expansion and the burning coal which causes greenhouse effect. Environmentally based policies limit the construction of infrastructure and consumption of fossil fuels. On the other hand, environmentally based policies help energy security by reducing pollution and decreasing greenhouse gases.

It seems the challenge of energy security will be more in forthcoming years since there are different interests of each country on energy security while the scale of global energy trade is growing steadily as international markets get more integrated.

Security of primary energy is pertained to producer countries. For primary security, these countries should have sufficient reserves in mines and wells. There should be well-planned investments to open new wells and develop new extraction sites in time. These investments need to be started in the correct time in order to have availability of enough product in the market. However, even though resources are available and extracted in time, geopolitical factors can prevent the provider from providing energy to the importer (KU Leuven Energy Institute, 2013:2).

### Historical Background of Energy Supply Security

Energy security concept is relatively new phenomenon which was firstly used in the second half of the 20th century. As well known, the twentieth century was the century of energy. In a hundred years, modern world was improved by the development of energy resources. Age of coal was turned to age of petroleum in marine industry. Residential and commercial heating shifted from coal and wood to natural gas, electricity and hot water. Besides, transportation by automobiles and aircraft accelerated the consumption of energy. Furthermore residential and commercial cooling were first introduced by new energy technologies. Particularly electricity, which is an important source of many industries started to be used widely for heating homes and running industrial processes. The increasing dependence on energy brought it in a more critical position. In other words, reliance on energy brought the importance of energy security. The importance of energy security was first realized in military necessities. It was Winston Churchill who converted the British navy from coal to petroleum in order to continue the UK's dominance in the seas. Increasing usage of petroleum leded the changes of the international policies and Middle East became the hot point of the world in a short time. In the World War I, the USA faced with coal shortage which threatened the residential heating and industrial processes. The lack of coal also affected the ships which carry food, weapon and troops to Europe. It was a fact that if such a shortage would retain for a while, they would lose the war. The World War II was more dependent on the energy. Germany and Japan had great difficulty because of shortage of energy, so they had to revise their war strategies to gain access to it. The war had been won by the first use of nuclear energy. The modern energy security system takes its roots from 1973 Arab oil embargo. After the Arab-Israel War, OPEC countries used oil as weapon. OPEC's boycott confronted the consumer countries with the importance of security of energy for governments for business enterprises, and even for ordinary people in their daily life. In this term, energy independence was defined as 100% reliance on domestic resources of primary and secondary. In other words, in this period, energy security had a parallel meaning with national security (Barton et al, 2004:3). Because of the unexpected changes in oil supply and oil prices, importer countries tried to protect their domestic markets from the sharp international oil price increases. By relying on the continuity of high prices, supplier countries supported the development of relatively costly alternative energy resources. The countries which have rich energy resources preferred to take measures to protect these resources for domestic markets. As an example to this action, Canada constructed government supported pipeline to take oil from Western Canada to cities and industrial places. The countries which are poor of fossil fuel resources tried to develop domestic alternatives such as nuclear power and they tried to diversify sources of import. Some of the European countries and Japan preferred these energy policies. Over time, there has been more government involvement in energy sector (Martin, Imai and Steeg, 1996:23).

After the oil embargo, industrialized countries tried to avoid disruptions in supply and they try to encourage collaborations on international energy policies to protect themselves from oil disruptions as a weapon against them. Key institution is International Energy Agency (IEA) whose members are not only industrialized countries, but also strategic stockpiles of oil which monitor and analyze energy market and energy policies as well as energy conservation. Besides, emergency system was established to offset major disruptions which threaten energy supply and global economy stability. In this vein, commodity prices and the commodity cycles are not the subjects of the emergency system (Yergin, 2006:71).

In the last 10 years of 20th century, the age of petroleum shifted to the age of diversification of energy. Natural gas and renewable energy became more important than before. Furthermore, environmental considerations became more critical in the energy sector. At the beginning of Millenium, energy security has a wider coverage than security of oil supply. Indeed, comparing with natural gas and electricity, oil has a lower degree of security problems (Barton et al, 2004:4).

Currently, not only fossil fuels but also other energy resources are subject to energy security. And also energy security is now one of the most important subjects of international relations and international trade. It should also be noted that although it was just the energy importer countries' problems, today energy security strategies

became critical both for energy importer and energy exporter countries.

### National Energy Policies of Turkey

#### Energy Sector in Turkey

Before explaining the energy policies of Turkey, in Table-2, key energy indicators are given. According to Table-2, while energy production is 32 Mtoe, net energy import is 104 Mtoe which is almost 4 fold of indigenous production. Total primary energy supply is calculated as 129 Mtoe. Electricity consumption is 229 TWh. These data show the growing economy and growing demand to energy of Turkey. As expressed in 2018 Budget Presentation, one of the targets of Turkey is being one of the first 10 economies in the world (Enerji ve Tabii Kaynaklar Bakanlığı, 2017:5). This target brings the increasing demand to energy supply.

Table 2: Energy Indicators of Turkey, 2015

Key Energy Indicators of Turkey (2015)	
Population (millions)	77
GDP (billion, 2010 USD)	1.088
GDP PPP (billion, 2010 USD)	1.779
Energy production (Mtoe)	32
Net Import (Mtoe)	104
Total Primary Energy Supply (TPES) (Mtoe)	129
Electricity Consumption (TWh)	229
CO2 Emissions (Mt of CO2)*	317
TPES/Population (toe/capita)	2
TPES/GDP (toe/thousand, 2010 USD)	0.12
TPES/GDP PPP (toe/thousand, 2010 USD)	0.07
Electricity Consumption/Population (MWh/capita)	3
CO2/TPES (t CO2/toe)	2
CO2/Population (t CO2/capita)	4
CO2/GDP (kg CO2/2010 USD)	0.29
CO2/GDP PPP(kg CO2/2010 USD)	0.18
*Emission just from fuel combustion	

Source: IEA (2017a)

Below, in Table-3, the energy balance of Turkey is given.

Table-3: Turkey's Balance (2015)

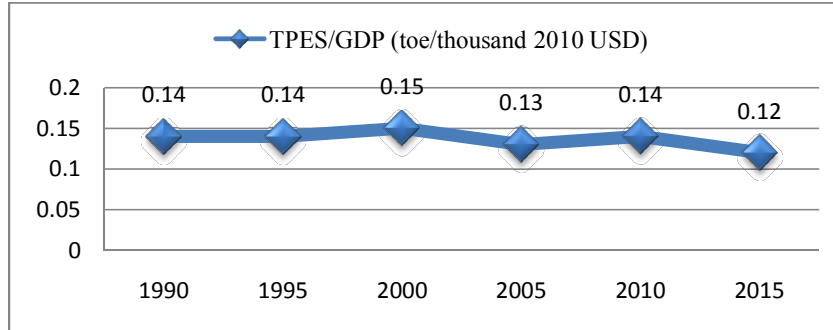
	Coal	Crude Oil	Oil Products	Natural Gas	Hydro	Geothermal, solar	Biofuels and waste	Electricity	Heat	Total
	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe	ktoe
Production	12.798	2.657	0	313	5.775	6.831	3.278	0	0	31.653
Import	22.029	26.609	23.084	39.865	0	0	0	614	0	112.201
Export	-170	-424	-7.196	-514	0	0	0	-275	0	-8.579
Int. Marine bunkers	0	0	-836	0	0	0	0	0	0	-836
Int. Aviation bunkers	0	0	-5.563	0	0	0	0	0	0	-3.563
Stock changes	-150	-1.041	-582	-292	0	0	0	0	0	-2.065
TPES	34.507	27.802	10.906	39.372	5.775	6.831	3.278	339	0	128.811
Transfers	0	1.688	-1.651	0	0	0	0	0	0	38
Statistical Differences	-1.075	-590	264	186	0	0	0	0	0	-1.216
Electricity Plants	-17.761	0	-355	-14.673	-5.775	-3.998	-195	21.799	0	-20.958
CHP Plants	-840	0	-314	-2.331	0	0	-171	714	2.312	-630
Heat Plants	0	0	0	0	0	-116	0	0	116	0
Oil Refineries	0	-30.927	29.671	0	0	0	0	0	0	-1.256
Coal Transformation	-2.655	0	0	0	0	0	0	0	0	-2.655
Liquification Plants	0	0	0	0	0	0	0	0	0	0
Other Transformation	0	2.027	-1.667	-343	0	0	0	0	-116	-99
Energy Sector own use	-962	0	-1.778	-1.369	0	0	0	-1.237	0	-5.346
Losses	0	0	0	-3	0	0	0	-3.141	0	-3.144
Total Final Consumption	11.215	0	35.076	20.841	0	2.717	2.911	18.474	2.312	93.545
Sector	5ç442	0	990	8.442	0	283	0	8.689	2.312	26.158
Transport	0	0	23.781	348	0	0	108	91	0	24.329
Other	5.773	0	3.735	11.765	0	2.434	2.803	9.694	0	36.204
Residential	1.968	0	335	9.054	0	1.854	2.803	4.119	0	20.135
Commercial & Public Service	3.804	0	627	2.601	0	0	0	5.154	0	12.187
Agriculture	0	0	2.693	61	0	580	0	411	0	3.745
Fishing	0	0	79	49	0	0	0	80	0	136
Non-Specified	0	0	0	0	0	0	0	0	0	0
Non-energy use	0	0	6.571	284	0	0	0	0	0	6.854

Source: International Energy Agency (IEA) (2017)

ktoe: thousand tonnes of oil equivalent

Unfortunately Turkey is highly dependent on external sources of oil and gas since just 24.8% of energy supply is met by domestic sources. Furthermore, because of the fast growing economy, energy supply in Turkey has been on an upward trend in last 50 years. This led to more dependency on energy imports. In last 30 years almost 75% of Turkey's primary energy consumption was met by import resources. Comparing the other resources, natural gas consumption increased faster than the other sources since there has been an increasing residential penetration rates as well as increasing number of natural gas fired power plants. Contrary, share of oil in primary sources has decreased from 35% to 25%. Coal import stayed almost the same at level of 15% through 2000s. In 2010's, Turkey tried to use its own resources more than before. Accordingly, in 2014, ¼ of primary energy consumption is met by domestic resources. Low calorific indigenous coal and renewable energy have been used to meet the local energy demand. As illustrated in Graphic-1, TPES was 129.7 million tonnes of oil-equivalent. Comparing with the value of 84.2 million tonnes in 2005, TPES increased 54%. Comparing with the other IEA member countries, Turkey has the lowest TPES per capita with 1.7 tonnes of oil-equivalent (toe) per capita in 2015 whereas in the same year IEA average was 4.5 toe per capita. Contrary, in GDP, energy intensity of Turkey represents average of IEA. Besides, since 2005 fossil fuels increased by 53.2% and reached from 74.2 million toe to 113.6 million toe in 2015. In 2015, natural gas had the share of 30.2%, oil had 30.1% and coal had 27.3% which represent 39.2 million toe, 39 million toe and 35.3 million toe respectively. Despite this increase in supply, Turkey's indigenous energy production covered 24.8% of total supply or 32.2 million toe. Domestic production is composed of fossil fuels, basically coal (mostly lignite): 41.8%, oil: 8.3%, solar 3% and wind 3.1%. Despite these modest rates, the government is planning to double TPES and reach

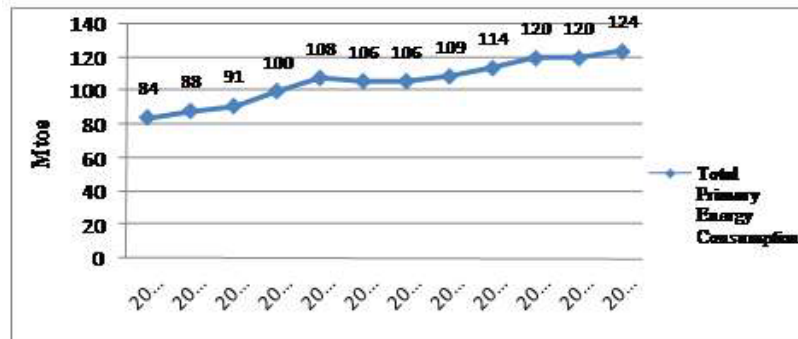
222.4 million toe by 2020 (World Energy Council, 2016:15; IEA, 2016:23). In Graph-1, total primary energy supply relative to GDP is illustrated. According to Graph-1, total primary energy supply by GDP stayed almost the same between 1990-2015, but started to decrease towards 2015. While this ratio was 0.14 in 1990, it declined to 0.12 in 2015.



Graph-1: Total Primary Energy Supply by GDP (1990-2015)

Source: IEA Statistics (2017)

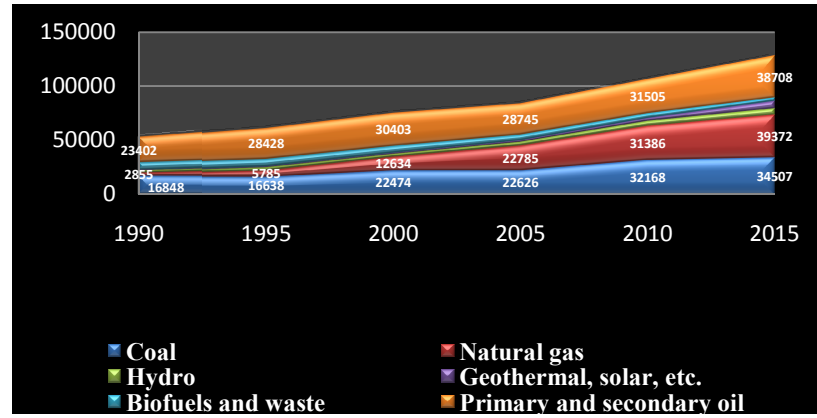
In Graph-2, primary energy consumption between 2003-2014 is sketched. It is clear that, energy consumption rate increased steadily since 2003. While it was 84 Mtoe in 2003, energy consumption rate reached to 124 Mtoe in 2014.



Graph-2: Total Primary Energy Consumption (2003-2014) (Mtone)

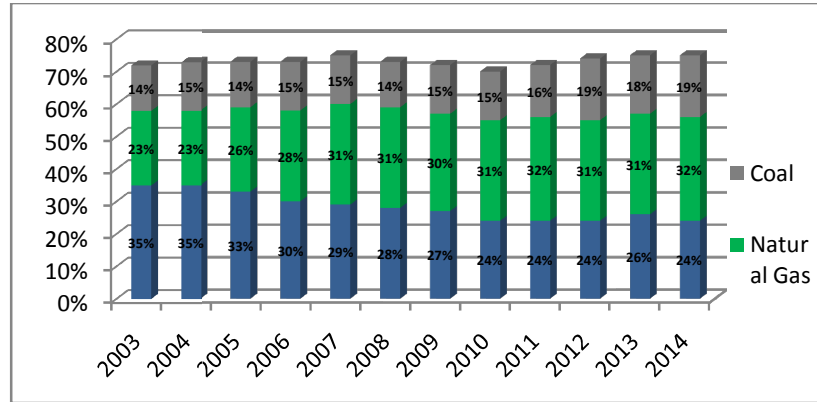
Source: World Energy Council (2016:15)

In Graph-3, total primary energy supply of Turkey is sketched. According to Graph-3, the greatest energy supplies are coal, natural gas and primary and secondary oil. Comparing to these sources, hydro energy, biofuel, geothermal and solar energies have a small proportion. As Turkey has rich water resources, springs and geothermal resources as well as solar power, the country should take the benefit of these resources.



Graph-3: Total Primary Energy Supply of Turkey (ktoe) (1990-2015)

Source: IEA (2017a) Statistics  
ktoe: thousand tonnes of oil equivalent

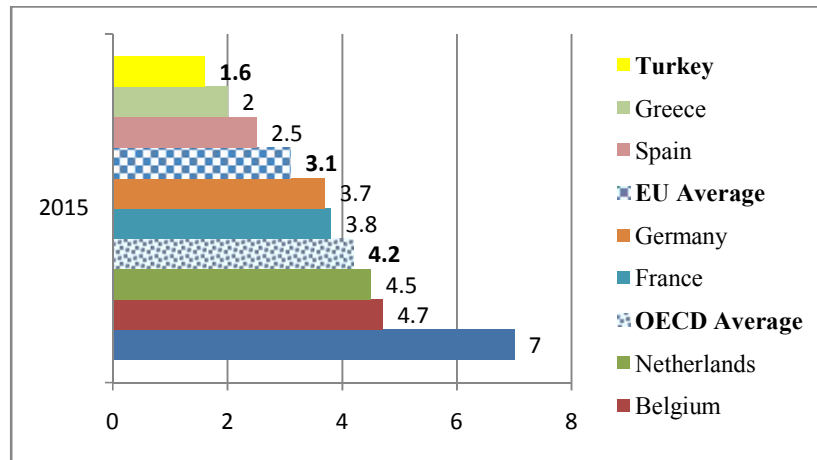


Graph-4: Import Shares of Different Sources

Source: IEA (2017a) Statistics

Graph-4 illustrates the import shares of coal, natural gas and oil. Between 2003-2014, import rate of coal increased by 5%. The reason behind this is that although Turkey has coal mines, their heating quality is not satisfactory. Parallel to the increasing demand to energy, coal demand increased and high quality coal import rate increased. Between 2003-2014 period, natural gas import rate increased from 23% to 32%. Increasing household and factory usage can be a reason for that. Contrary, oil import decreased from 35% in 2003 to 24% in 2014. Diversification strategies and increasing natural gas usage could cause this decline.

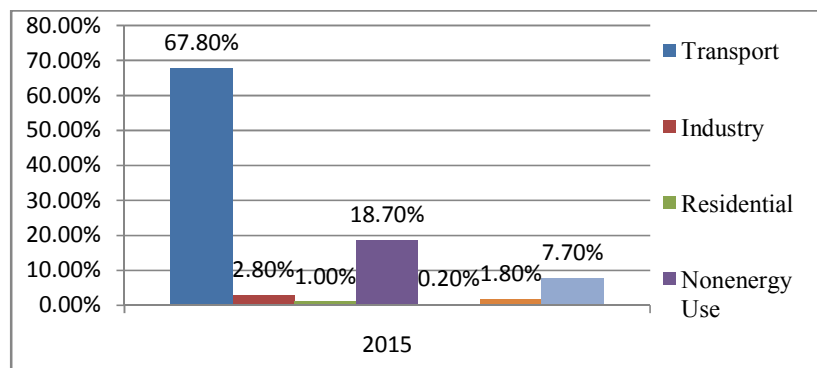




Graph-5: Energy Consumption Per Capita for Different Countries (toe per capita)

Source: World Energy Council (2016:15)

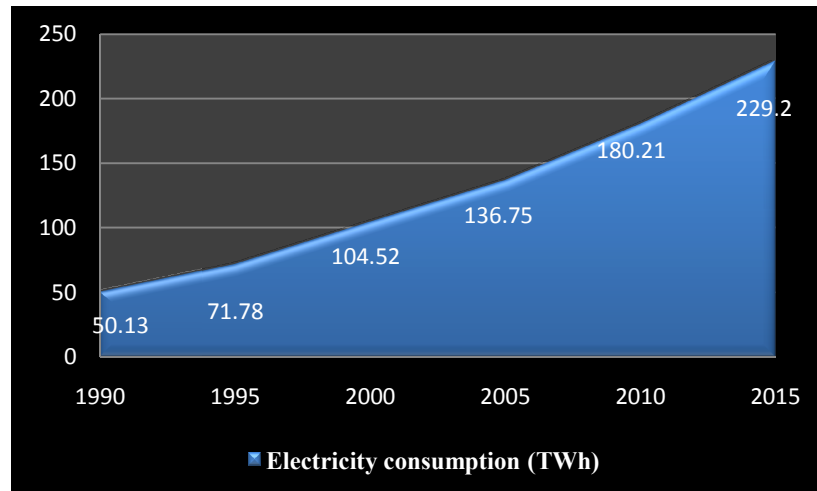
According to Graph-5, energy consumption per capita is compared between selected countries. While an American spends 7 toe, a Greek spends 2 toe and a Turkish spends 1.6 toe. Comparing to Turkey, OECD average is 4.2 toe/capita and EU average is 3.1 toe/capita. It is a fact that because of the fast urbanization and industrialization, energy consumption rate has been accelerating in Turkey. Accordingly, it was predicted that primary energy consumption per capita will be 1.92 in 2018 (World Energy Council, 2016:15). Besides, 28.1% of total energy consumption is done by industrial activities and 30.2% consumption is done by transportation (IEA Statistics, 2017). Below in Graph-6, oil product consumption by sectors is illustrated. According to Graph-6, the greatest proportion of oil product consumption went to transportation by 67.8%. The second greatest consumption of oil products was nonenergy uses. Agriculture took the third highest degree in oil product consumption with 7.7%.



Graph-6: Share of Oil Products Consumption by Sectors (2015)

Source: IEA Statistics (2017)

In Graph-7, total electricity consumption for 1990-2015 period is shown. Electricity consumption increased almost 5 folds since 1990. While it was 50.13 TWh in 1990, it increased steadily and reached to 229.2 TWh in 2015.



Graph-7: Total Electricity Consumption of Turkey (TWh) (1990-2015)

Source: IEA (2017a) Statistics

### National Energy Security Policies of Turkey

With the economic growth, the need for energy increased dramatically and urged Turkey to diversify its energy policies. As indigenous resources could not meet the growing energy demand, the external energy dependency of Turkey increased gradually. Today nearly 70% of its energy demand is provided by imported energy. This brought increasing current account deficits. Therefore to satisfy the increasing energy demand and to compensate the current account deficits, Turkey had to initiate new energy strategies. Accordingly, to reach 2023 targets of Turkey, Ministry of Energy and Natural Resources (MENR) initiated 2015-2019 Strategic Plan. The plan underlines the need for reducing external energy dependency and steers Turkey's energy transition and transformation. 2015-2019 Strategic Plan emphasises on the increasing usage of indigenous energy resources as well as using more renewable energy in order to decrease the dependency to imported energy. Furthermore, investments on LNG storage, construction of two nuclear plants and supporting major pipeline projects will contribute to Turkish energy policies. The last program that was launched by MENR named "Independent Energy, Strong Turkey" reflects the combination of security of energy supply, indigenization of energy and foreseeable energy market. Energy supply security has the highest priority in Turkey's energy policies. This priority is related to have uninterrupted energy supply for increasing economic activities. Since oil and natural gas are used in many sectors as well as residential needs, Turkey has to find alternative policies to maintain its security of supply. Figure-1 illustrates the national energy and mining policies framework of Turkey. In this vein, diversification of energy resources and markets, sustainability and reliability of resource transfers as well as reduction in energy costs are primary expectations of near future (Karagöl et al, 2017:9, 12-13).

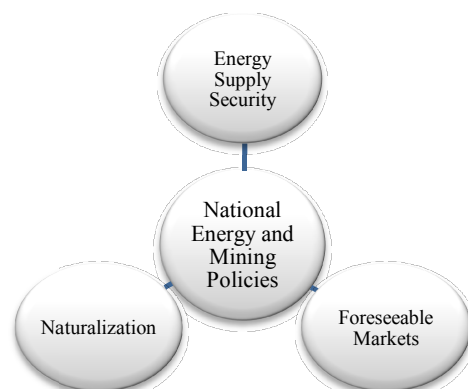


Figure-1: Components of National Energy and Mining Policies

Source: Karagöl et al, 2017:10

It is a fact that Turkey is still dependent on a few countries on oil and natural gas supplies which carry risks of security of uninterrupted energy supply. Turkey's dependency on imported oil and natural gas is over 90%. The greatest portion of natural gas is imported from Russia (via West Pipeline and Blue Stream), Azerbaijan (via Baku-Tbilisi-Erzurum Pipeline, BTE), Iran, Nigeria, Qatar, Algeria and USA. Turkey started to import LNG in 1994 from Algeria and Nigeria through the first regasification terminal in Marmara Ereğli. Following this terminal, in 2001, Ege Gaz Aliğa terminal was found in the Aegean. Through these two regasification terminals, Turkey imports almost 12 billion cubic meters of LNG. Oil is imported mostly from Iraq (via Kirkuk-Yumurtalık Pipeline), Russia, Iran and Azerbaijan (via Baku-Tbilisi-Ceyhan Pipeline, BTC). Aside from these pipelines, to have more diversified import market, Turkey has been working on different pipeline projects such as the Trans-Anatolian Natural Gas Pipeline (TANAP) that will transfer natural gas from Azerbaijan to Turkey. An other project is "Turk Stream Natural Gas Pipeline Project" between Turkey and Russia which is planned to be an alternative to West Pipeline. As an other project, "Eastern Mediterranean Natural Gas Pipeline" project targets to strengthen Turkey's security of natural gas supply by increasing the diversification of its natural gas supplies (Karagöl et al, 2017:14). According to Ediger (2008:82), major challenges of energy industry in Turkey can be summarized as follows:

1. Highly dependence on imported energy sources. As demand increases, energy supply cannot satisfy the demand.
2. Domination of energy consumption by fossil fuels
3. Low energy efficiency

Below in Table-4, different energy sources and import/export position of Turkey is explained. The data shows the domination of fossil fuels and highly dependence on imported energy sources. In 2016, the greatest crude oil import is done from Iraq with 36.9%. As Iraq is one of our pioneer partners, political stability of that country is crucial for Turkey in terms of energy supply security. For oil product, Russia is the greatest provider with 24.9 Mt. Similarly, natural gas is imported mostly from Russia (46.3 bcm). Although there is a small amount of export to Greece with 3.2 TWh, electricity is imported mostly from Bulgaria with 7.1 TWh.

Table 4: Different Energy Sources and Import/Export Positions of Turkey

Fuel	Quantity	Country	Percentage
<b>Crude Oil</b>			
Import	25.1 Mt	Iraq	36.90%
Export	0.6 Mt	Singapore	31.30%
<b>Oil Products</b>			
Import	24.9 Mt	Russia	23.50%

<b>Export</b>	5.8 Mt	Egypt	19.60%
<b>Natural Gas</b>			
<b>Import</b>	46.3 bcm	Russia	53%
<b>Export</b>	0.7 bcm	Greece	100%
<b>Coal</b>			
<b>Import</b>	36.2 Mt	Colombia	42.70%
<b>Export</b>	0.1 Mt	Nowhere	100%
<b>Electricity</b>			
<b>Import</b>	7.1 TWh	Bulgaria	67.90%
<b>Export</b>	3.2 TWh	Greece	88.20%

Source: IEA (2016)

It is clear that a successive economic performance of Turkey is highly dependent on the success in energy policies. In Table-5, energy strategies and goals of national energy and mining policies are explained.

Table 5: Energy Supply Security and Goals of National Energy and Mining Policies

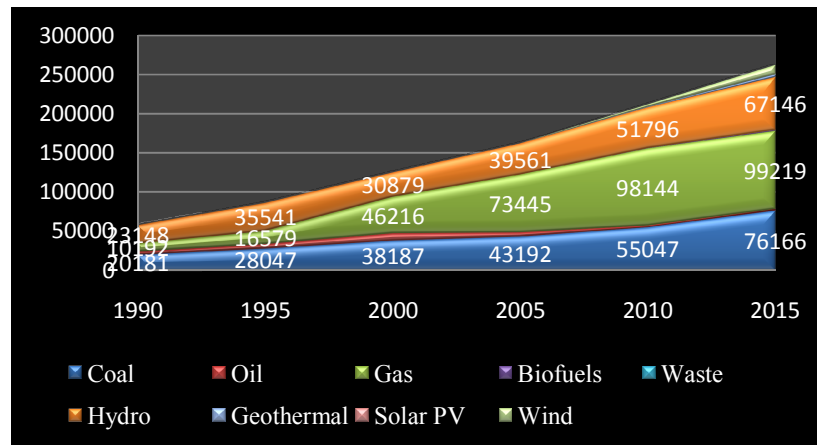
	STRATEGIES	GOALS
<b>SUPPLY SECURITY</b>	<ul style="list-style-type: none"> <li>• ↑diversification of energy resources</li> <li>• ↑diversification of supplier countries</li> <li>• ↑natural gas capacity to meet the need</li> <li>• To strengthen the infrastructure of pipelines</li> <li>• ↑energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• By higher security of supply, achieving sustainable and quality energy</li> <li>• To reach 10 bcm gas and 5 mto storage capacity</li> <li>• Starting oil and natural gas explorations in Mediterranean and Black Sea</li> <li>• To include all Turkish provinces to natural gas providing network</li> <li>• To save 8.4 billion dollars from energy expenses</li> </ul>
<b>INDIGENIZATION</b>	<ul style="list-style-type: none"> <li>• ↑Renewable energy investments, ↑R&amp;D and YEKA</li> <li>• ↑Electricity generation by using nuclear technologies</li> <li>• ↑indigenous mining technologies</li> </ul>	<ul style="list-style-type: none"> <li>• ↑Domestic energy production</li> <li>• ↑Share of renewable energy in total energy production (at least 30%)</li> <li>• ↑the share of nuclear power plants in electricity generation at least 10% by 2023</li> <li>• ↓imports in mining sector by enrichment and reusing of indigenous mines</li> </ul>
<b>FORSEABLE ENERGY MARKET</b>	<ul style="list-style-type: none"> <li>• To improve energy supply infrastructure</li> <li>• Restructuring the institutions of energy sector</li> <li>• To empower the energy markets</li> <li>• To consolidate the mining market</li> </ul>	<ul style="list-style-type: none"> <li>• To improve the natural gas storage infrastructure, oil and LNG pipelines</li> <li>• To restructure TEİAŞ, BOTAŞ, TPAO and ETİMADEN</li> <li>• To have more functioning energy exchange market (Energy Exchange Istanbul) (EXIT)</li> <li>• To improve mining sector by collaborations between public and private sector representatives</li> </ul>

Source: Karagöl, 2017:11

### Renewable Energy Industry in Turkey

According to new national energy policies of the government, new capacity investments, energy efficiency and energy diversification as well as renewable energy became one of the most important critical point for Turkey conjunction with increasing primary energy demand. Particularly to decrease dependency on the external resources, renewable energy has become more important than it was in previous years. So, innovation in renewable energy industry plays critical role in the energy policies. Total capacity of renewable energy increased to 5.8 GW (7.9% of total capacity) in 2015. Regarding to the targets of 2023, the government

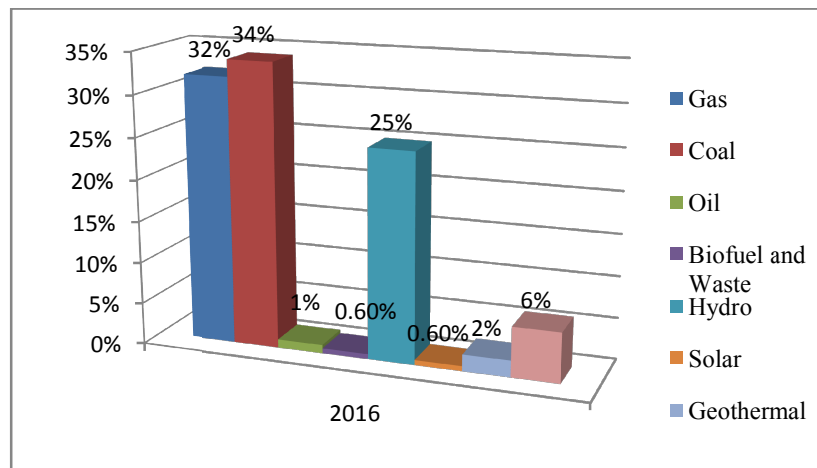
couraged to generate electric by renewable energy sources such as wind, hydro, geothermal and solar energy. Considering solar radiation and sun shine duration, Turkey has the highest capacity in solar energy in Europe along with Spain. The Southeast and Mediterranean regions are the most farovorable regions for solar energy investments with 2.993 and 2.956 hours of average sunshine duration and 1.450 kWh/m<sup>2</sup> and 1.390 kWh/m<sup>2</sup> of average solar radiation In 2016, electricity generation of Turkey was 273.4TWh. 33% of the total generation was provided by renewable energy (World Energy Council, 2016:28). In Graph-8, electric generation from different resources is explained for 1990-2015 period. According to Graph-8, coal, natural gas and hydro energy are mostly used to generate electric in Turkey. Electric generation via natural gas dramatically increased between 1995-2000, and continued to increase towards 2015.



Graph-8: Electric Generation with Different Sources in Turkey (GWh) (1990-2015)

Source: IEA Statistics (2017)

Graph-9 explains the sources of electric generation. In 2016, coal is still the pioneer source for electric generation with 34%. Natural gas follows coal with 32%. Hydro energy sources are the third source for electric generation in Turkey with 25%. Electric generation from wind source is 6% and expected to increase in the forthcoming years.



Graph-9: Electricity Generation with Different Sources (2016)

Source: IEA (2016)

## Renewable Energy Security Strategies

In the recent years renewable energy resources have been accepted as an alternative to the problem of import dependency, resource scarcity, and environmental degradation. Furthermore, renewable energy strategies bring sustainable development and poverty alleviation by contributing to the economies of countries. Green energy provides diversity in energy supply markets and secure long term sustainable energy resources. Besides, those strategies protect the environment by reducing atmospheric emissions, and create new employment opportunities. It is a fact that with its natural advantages, Turkey has a high capacity for renewable energy investments (Ediger, 2008:86-87). Since 2000's Turkey has been investing on renewable energy. Accordingly, Turkey became a party to the UN Framework Convention on Climate Change (UNFCCC) in 2004 and to Kyoto Protocol in 2009. However Turkey was disadvantageous of being an Annex I party since the countries in that category could not benefit from Kyoto's flexibility mechanisms such as clean development mechanisms, getting financial, capacity building and technologic support from developed countries. Turkey needs to invest in energy structure, especially in electricity and natural gas in order to supply affordable energy to local people. The increasing demand of Turkey and energy-intensive manufacturing industry needs competitive energy supplies. In this vein, great investments in gas and electricity infrastructure have priority. The Turkish electricity grid confront with challenges related to fast growing demand since the greater amount of consumption is located in Ankara, Istanbul and Izmir which are far away from the resources. It is predicted that 260 billion \$ will be needed for electricity sector by 2030. In order to attract investments, government should support competitive energy markets. In 2016, government announced a new agenda to start reforms in energy sector. Accordingly, IEA supports the government to initiate a market approach and complete the privatisation process in electricity sector and in gas markets. With these newly initiated policies, Turkish economy may benefit from the integrated energy and climate strategies. The strategies consist 2023 targets and 2030 targets that will be based on energy demand/supply scenarios and cost effective protections as well as GHG emissions reductions. Processes should be monitored through performance-based intermediate targets, energy and climate indicators and allocation of resources (OECD and IEA, 2016:30-32). In Table-6, energy and carbon intensity of Turkey and IEA average is shown comparatively. While TPES per capita for Turkey is 1.72 toe/capita, this ratio is 4.42 for IEA average. Parallel to this gap, electricity consumption per capita is 3.09 MWH/capita in Turkey. This rate is 8.69 for IEA average which is almost three fold of Turkey's rate. CO<sub>2</sub> emission per capita is 4.1 in Turkey. As expected, it is much higher in IEA average with 9.8.

Table 6: Energy and Carbon Intensity of Turkey &amp; IEA Average (2016)

	Turkey	IEA Average
<b>TPES per capita (toe/cap)</b>	1.72	4.42
<b>Electricity Consumption per capita (MWH/cap)</b>	3.09	8.69
<b>Emissions per capita (tCO<sub>2</sub>/cap)</b>	4.1	9.88
<b>Energy Intensity (TPES) (Mtoe/USD PPP million)</b>	73	96
<b>Emission Intensity (tCO<sub>2</sub>/USD PPP million)</b>	178	193
<b>Source: IEA (2016)</b>		

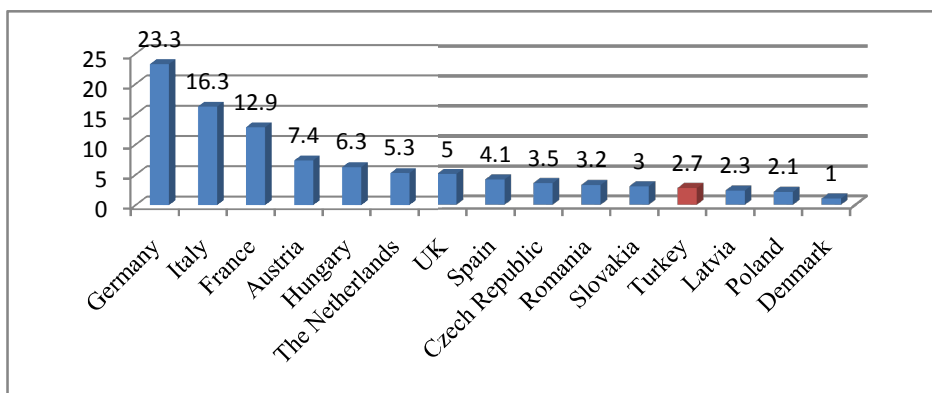
## Natural Gas Security Strategies

Although oil has always had an important place in energy sector, natural gas has been playing a growing role in the energy balances. Actually, natural gas markets have become competitive all over the world. The

deregulations, environmental regulations and new technologies in transportation of natural gas brought this source in a more demandable position (Martin, Imai and Steeg, 1996:26). Natural gas has been accepted as a secure fuel. Traditionally, most of the extracted natural gas was consumed in close areas. So, in the close history, inter-regional trade was so limited. Besides, gas was primarily transported by pipelines based on long-term contracts. Today, natural gas became one of the most strategic energy resources which have a great importance to the inclusion of gas in energy security policies (IEA, 2015:1). To have energy security, natural gas storage facilities introduce a perfect solution for seasonal differences in consumption and potential technical failures. Those storages are generally located in underground reservoirs. Natural gas storage facilities are used for (Karagöl, 2017:15):

- Meeting short-term excessive consumption of natural gas in cold winters
- Meeting increasing demand for cooling via electricity
- Balancing outflows in natural gas pipeline systems
- Controlling the price fluctuations

Because of all these facilities, among IEA countries, the share of natural gas increased from 19% in 1973 to 26% in 2012 as natural gas was started to be used for electricity production. Between 2012-2018 term, the volume of gas supply traded inter-regions have grew almost 30%. Since 2000, there has been an increasing demand for natural gas in residential sector all over the world and particularly in Europe. So, providing security of gas supplies of importance in winter months. Besides, because of more investment on constructing pipelines, natural gas market became more global. As natural gas market improves, the risk of disruptions and its impacts on the countries are not limited to one or two countries. At October 2009 meeting, IEA extended its monitoring, enhancing long-term capacity and emergency response capacities in case of possible disruptions for both oil and natural gas (IEA, 2015:1-2). Indeed, most of the problems related to natural gas are related to extraordinary events which may impact normal market fluctuations. As an example, extremely cold weather conditions cause a sharp and immediate increase in natural gas consumption which leads to a sharp rise in gas demand for residential usage and gas-fired power demand to run air-conditions. To some extent, seasonal fluctuations can be absorbed and should not be classified as “gas crises”. In the circumstances, emergency gas stocks can be a clever solution. Emergency gas stocks are the stocks of natural gas which are not available in the market under normal conditions. In the case of oil, emergency gas stocks can be either government owned volumes or industrial stocks related to the stockholding measures of government. All protections are directly target to protect the consumers against nonmarket risks. Here, nonmarket risk stands for a risk that cannot be predicted to be covered by the market under normal conditions. gas storages can be either underground (in depleted oil or gas reservoirs or salt cavern formations) or aboveground (as LNG) (IEA, 2015:6-7).



Graph-10: Maximum Storage Capacities of Selected Countries (2014, %)  
**Source:** Karagöl et al (2017:14)

In Graph-10, maximum storage capacities of selected countries are given. According to Graph-10, the highest

storage capacity belongs to Germany with 23.3%. Italy and France follows Germany with 16.3% and 12.9% successively. Comparing these pioneer countries, Turkey has a modest storage capacity with 2.7%.

#### National Mining Strategies

Turkey's mining industry grew parallel to the economic growth of the country. In 2014, Turkey was the 12th greatest producer of coal in the world with a volume of 70.6 million tones. However, as almost 90% of extracted coal is lignite with low heat contest, Turkey has been importing high quality lignite. According to 10th Development Plan, Turkey tries to increase the share of domestic coal in electricity generation. Coal mines cannot be runned by private enterprises due to constitutional prohibitions. However, the Mining Law allows for a transfer of the operation of coal mining licence to a private company. Because of necessity of extra capital to meet the coal demand, state-owned enterprises use r  d  vans contracts to contract out coal mining operations to private enterprises since 1984. R  d  vans contracts are used to enable private sector to engage in mining operations. These contracts are a form of lease agreements which involves the employer/owner's responsibilities are transferred from owner to the operator or r  d  vans holder. In 2010, a detail regulation of r  d  vans agreements was introduced and in 2015 further amendments have been added following the mining accidents in 2014 (TEPAV, 2015:1-2).

Because of the strategic importance of minin in Turkey, a national policy should be developed which ensure the optimal levels of safety and health protections in mining sector. Besides, in parallel to Turkey's macro targets which are expressed in 10th Development Plan and Prioritized Transformation Program, a sectoral development strategy for the coal industry should be improved. Although there is a well designed documentary which draws a good framework, a more detail perspective is needed. Accordingly, the following strategies can be useful for mining industry (TEPAV, 2015:4):

- Energy policies should be overviewed by taking into account sustainability: Coal satisfies a great proportion of energy needs. In 2014, share of coal and lignite is 30% in Turkish primary energy supply which is 90% share fossil fuel dependent. This level of dependence on fossil fuel brings a great amount of greenhouse gas emission. Between 1990-2013 greenhouse gas emission increased 110%. Contrary, international development policies refer low carbon emission. So, Turkey needs to adopt low-carbon renewable energy alternatives.

- Providing a qualified assessment and monitoring of compliance with OSH standards
- Ensuring that r  d  vans contracts and subcontracting arrangements are not missused
- Ensuring that workers can exercise their rights
- Preparing a centralized database on national mining activities

#### Nuclear Energy Strategies

Although there has been hot quarrels of investing in nuclear energy, it is a fact that nuclear power is critical in diversification of energy resources and security of energy supply. So, the government has been implementing new energy policies for adding nuclear power plants to its fuel mix. Turkish government signed an agreement with Russia to build the first nuclear power plant in Mersin. Akkuyu Nuclear Power Plant (NPP) is planned to start operation in 2023. The other project of NPP has been in progress with a Japanese –French consortium with 51% share and E  A   with 49% share. It is expected to attract around 8 billion USD with nuclear energy investments (World Energy Council, 2016:28).

#### MENR and Energy Efficiency

Energy conservation is any attempts to use less energy. Energy efficiency is the use of technologies that require less energy to have same quality of performance. Prefering a compact fluorescent light bulb can be an example of energy efficiency (Intermediate Energy Infobook, 2017:50). To have more energy efficiency, the government should be more proactive. To improve efficiency, MENR lauched different strategies as follows (MENR, 2017:31-40):



- Establishing and increasing efficiency of Energy Management Systems: Increasing the effectiveness of the energy management activities which are necessary for building and industrial businesses.
- Developing national financial mechanism for energy efficiency
- Supporting energy efficiency projects
- Developing guides, standards which contain technical and financial aspects
- Developing registration, database and reporting as well as administrative and institutional structure for efficiency system
- Improving the facilities, effectiveness, auditing and following the international energy efficiency improvements
- Improving awareness of energy efficiency
- Having sustainable policies in energy efficiency

### **Policy Suggestions and Conclusion**

As an energy importer country, energy supply security is a critical issue for Turkey. To reduce the risks arising from energy supply security and to ensure that energy is produced and used more efficiently parallel to the significant increase in energy demand, the formation of free market conditions and the development of a competitive investment climate became the key strategies. Large, flexible and well-functioning energy markets can absorb the imbalances in the energy market by eliminating shocks and by being a stable buffer for supply and demand to respond more quickly. A well-functioning energy supply market will guarantee security for the other growing energy markets which will result in greater confidence of the countries to import energy. It is also necessary to create resource alternatives for energy import by diversifying the alternatives of the countries where oil and natural gas are imported from. Renewable energy investments contribute to diversifying the fuel mix. Renewable energy investments also contribute to control air pollution which is a major result of fossil fuels. Reducing demand for fossil fuels will bring less imports and less vulnerability in their economies in the local countries. This approach should also consist of building energy storage facilities.

To decrease dependency on foreign resources, the government needs to accelerate the exploration of oil and natural gas resources both on land and at sea. And foreign companies should be invited with attractive conditions to explore natural resources as there is no domestic company yet. Another side of energy security is creating extra energy storage facilities in case there are supply deficiencies and shortages that may arise either because of excessive consumption of the natural gas, or because of the disputes or problems with the source country. So, the most important issue in energy supply security is to prevent any problems that may cause interruption of flow of natural gas and oil. Wise international policies and diversification of source countries are the basic factors of uninterrupted energy flow. Furthermore, security of the source countries is also very important for uninterrupted energy flow. It is a fact that the most important expenditure that increases the current account deficit in Turkey is the energy expenditures. So, national energy policies need to be developed in order to reduce the share of energy costs in the balance of payment. Besides, with the international collaborations, Turkey may reinforce its position in the global energy sector and ensure to be an energy hub of the region. Also, while applying national and local energy policies, it is also beneficial to carry out urbanization and urban transformation policies on the axis of energy saving and energy efficiency. And also, investing in energy transmission and distribution channels, as well as improving infrastructure will improve energy efficiency and reduce energy costs. Smart cities and smart apartments should be put in the agenda of the contractors and politicians in order to save energy and energy efficiency. It is also important to reward and encourage energy efficiency and energy saving projects. To improve energy efficiency, foreign direct investment should be careful on energy saving and energy efficiency in Turkey. The government should establish a reasonable and functional institutional framework which includes expansion of services, efficient pricing mechanism, and other financial incentives. There must also be awareness and a positive perception between the consumer and the investor in order to increase energy efficiency and energy efficiency. All projects that target renewable energy sources and technologies should be supported and developed. And finally, there has to be affordable, reliable and environmental friendly energy supply all over the country to have sustainable

environment. To improve public awareness, there must be programmes and certain incentives to save energy.

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## TRANSMISSION OF WORLD COTTON PRICE TO DOMESTIC COTTON PRICE IN TURKEY

HASAN MURAT ERTUGRUL \*

BURAK DARICI \*\*

HALIS KIRAL \*\*\*

FATİH AYHAN \*\*\*\*

### Introduction

The agricultural sector has been one of the most prominent sectors in many countries. Particularly cotton as an agricultural product has a crucial role, since it is a prime commodity in the world economy. In Turkey it is also a fundamental income source for millions of households. The relationship between domestic and international prices has been a hot topic in international economics for a long time. Cassel (1918) suggested the concept of purchasing power parity and the law of one price (LOOP) in terms of international trade for the first time. LOOP points out the integration of all similar commodity markets in all over the world. That means there should be one price, which is adjusted according to exchange rates, for identical goods in different locations. Ravallion (1986) contended that measurement of market integration is crucial for analyzing the functions of some particular markets. At this point it is obvious that these analyzes are vital for governments to take new economic actions. The type of integrated market also has an important effect on government's regulations and economic policies.

The integration degree of a market generates different outcomes. For instance government intervention within the borders of the country will most probably be inefficient or extremely costly, if the market is internationally integrated. The markets that are geographically located in different places will be spatially integrated if the goods and information flow freely. Therefore these markets are interrelated, which means if the price changes in one market, it affects the prices in the other market (Fossati et al, 2007).

This mechanism, which can be considered as a price transmission system, is also beneficial for examining the stability of international prices. For instance a decrease in international prices, which is not fully transmitted, will end up decreases in world supply and increases in world demand. This may cause much more sharp and persistent price decreases.

The price transmission is theoretically the ratio of the percentage changes in prices of two different markets. In econometric analyzes, prices are co-integrated, which indicates that price tendency in both markets are similar in the long run. In the literature there are many studies that examine the market integration by using various integration tests. In this context co-integration tests support the theoretical long term analyzes. Even though prices may differ in the short run, they approach to their long-term equilibrium through arbitrary (Ghoshray, 2011).

In the present study, cotton prices are our main concern since cotton is one of the most crucial income sources in Turkey. According to World Atlas data, Turkey is one of the eight biggest cotton-producing countries (respectively China, India, United States, Pakistan, Brazil, Uzbekistan, Turkey, and Australia<sup>1</sup>) in the world, presenting almost 80% of total cotton production. Besides that, cotton is an important input in Turkey, particularly in textile and ready-made clothing sector. Textile industry has been accepted as a cornerstone for

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\* Undersecretariat of Treasury, Turkey, murat.ertugrul@hazine.gov.tr

\*\* Faculty of Economics and Administrative Sciences, Bandirma Onyedi Eylul University, Balıkesir-Turkey. bdarici@bandirma.edu.tr

\*\*\* Social Sciences University of Ankara, Faculty of Economics and Administrative Sciences, Ankara- Turkey. halis.kiral@asbu.edu.tr

\*\*\*\* Bandirma Onyedi Eylul University Gonen Vocational High School, Bandirma Onyedi Eylul University, Balıkesir-Turkey. fayhan@bandirma.edu.tr

<sup>1</sup> <http://www.worldatlas.com/articles/top-cotton-producing-countries-in-the-world.html>

Turkish economy, since currently 8% of the national income, 16% of the industrial employment and 18% of export are composed of this sector.

The statistical data show that domestic cotton consumption was approximately 1.38 MMT (6,3 million bales) in Turkish Marketing Year (MY) 2013. Turkish yarn and garment producers managed to raise their market share in Europe in spite of recession, which has dominated since 2008. In MY 2014, garment and textile export went up approximately 8% and 6% respectively. However particularly as a result of antidumping investigations on US cotton exports to Turkey, cotton import decreased by 10% during the first five months of 2014 when compared to the previous year. This negative effect was obvious since the US was the leading supplier in the world with 93,000 MT, being followed by Greece with 80,000 MT, and Turkmenistan with 54,000 MT (Sirtioglu, 2015).

The cotton yarn and fabric import were respectively 130,000 MT by a 7% increase and 420 million m<sup>2</sup> by 17% drop in 2014. In this year Turkey mostly traded with Central Asian countries, Pakistan and China to meet its cotton demand. On the other hand Turkey exported 7,300 MT (33,500 bales) cotton during the first five months of 2014. Vietnam (1000 MT) and Bahrain (700 MT) were the import partners of Turkey in the mentioned year.

There are numerous theoretical and empirical studies about international price transmission. However these studies mostly don't focus on transmission degree of the world market shocks to domestic cotton market in Turkey. In this context, the aim of this study is to analyze the effect of sudden changes in world cotton prices on Turkish cotton prices by using time series techniques.

Within this framework in the following section of this paper, we review the previous literature. Then we make the empirical analysis, which includes the description of data set, outline of empirical strategy and the results of the analysis. Finally we remark the conclusions in the 4<sup>th</sup> Section.

### **Literature Review**

There has been a growing interest of empirical studies on the world price transmission into domestic market. Within this scope, Hazell et al. (1990) investigated the degree of world price transmission into domestic market by using data from 22 developing countries over the period of 1961–87. They concluded that the variability in world prices has been almost entirely transmitted to developing countries in the dollar value of their export unit values. However, there are some impediments to full alignment between world and domestic prices such as real exchange rates, domestic marketing arrangements and government intervention.

Mundlak and Larson (1992) examined the relationship between domestic prices and world prices of agricultural commodities for the Food and Agriculture Organization of the United Nations for 58 countries during 1968-1978 and for the countries of the European Community during 1961-1985. Their results showed that world prices are the major contributor to variations in domestic prices. On the other hand, Quiroz and Soto (1993) indicated that world agricultural commodity prices were not transmitted into domestic price by using data from 60 countries during 1966–91 whereas Morisset (1998) found that upward movement in world prices were clearly passed through in domestic prices by analyzing industrial countries during 1975–94.

Baffes and Gardner (2003) investigated the degree of transmission of international agricultural commodity (including cocoa, coffee, maize, rice, soybeans, sorghum, sugar, palm, oil, and wheat) price signals into domestic prices for eight countries, which all undertook substantial policy reforms during the mid-1980s to early 1990s. They pointed out that Chile, Mexico, and Argentina were the only countries whose domestic commodity markets were integrated with world markets.

Dawe (2008) suggested that there were incomplete transmission between world and domestic markets in the Asian countries due to exchange rate appreciation of their currencies against the US dollar for the period from 2003 to 2007. He also indicated that the price transmission varied across commodity types. Conforti (2004) analyzed the price transmission patterns for developing countries by employing Autoregressive Distributable Lag (ARDL) models. He found that the price transmission were incomplete in African countries, relatively more complete among Asian countries, and more mixed in Latin America.

Robles (2011) also investigated the price transmission effects from international markets to domestic markets in a number of case studies in Asia and Latin-America. His findings suggested that there were positive

transmission effects in the case of wheat in Latin American countries and in two out of three Asian countries and also positive transmission effects in the case of rice for most Latin American and all Asian countries part of this analysis.

Baltzer (2013) examined the price transmission from international maize, rice and wheat markets to domestic markets in fourteen developing countries during the global food crisis in 2007-08. He showed that the price transmission patterns varied from country to country; from almost no price transmission in China and India to close relationship between international and domestic prices in Brazil and South Africa.

Baltzer (2013) also emphasized that the degree of price transmission from world to domestic markets varied significantly across countries. Considering this fact, in addition to country groups, there have been a number of studies focusing the degree of world price transmission into domestic market in a single country; such as Brazil (Mueller and Mueller, 2012), China (Huang, Yang and Rozelle, 2013), Ethiopia (Kelbore, 2013), Ghana (Abdulai, 2000), India (Ganguli and Gulati, 2013; Shrinivas and Gomez, 2016), Iran (Toossi, 2013), Malawi (Myers, 2008), Senegal (Resnick, 2013), South Africa (Kirsten, 2012) and Vietnam (Nguyen, 2013), etc.

On the other hand, there are a limited number of empirical studies focusing on the Turkish cotton market. Within these studies, Telatar et al. (2002) analyzed the long-term relationship between world cotton prices and those of the Turkish domestic market. They used linear and non-linear cointegration analysis methods and indicated that there was a clear link between international stock exchanges and Turkish cotton prices.

Buguk and Brorsen (2005) also investigated the cointegration between Turkish cotton exchange's spot and futures cotton prices and the New York Cotton Exchange (NYCE) and the Liverpool Cotton Exchange's (LCE) spot and futures cotton prices over the period from 1996 to 1999. They could not find any evidence on long-term price relationships between the three cotton prices. They also noted that Turkish spot prices had a stronger connection to LCE futures prices than to NCE.

Öz and Özertan (2013) used time series method in order to show the short and long term relationships between prices in the Turkish (Aegean) cotton market, Memphis and the International Liverpool A-index during 2001-2012. They found a bidirectional Granger causal relationship between the Aegean and Memphis and the Aegean and Liverpool A-index prices. This demonstrates that Turkish cotton prices are closely linked to the United States and the A-index cotton prices.

### Data and Methodology

In this research paper, we use World and Turkish cotton prices for 2000 January - 2014 December period. World cotton prices are obtained from National Cotton Council of America and Turkish cotton prices are obtained from Turkish Statistical Institute. We employ natural logarithm of world and Turkish cotton price variables parallel with the existing literature in order to obtain elasticity coefficients between the variables.

In the empirical modeling, we firstly check stationarity characteristics of the variables by using both conventional unit root test including Ng-Perron (2001) test and unit root test with structural break including Zivot Andrews (1992) test.

After stationary check, we make causality analysis in order to reveal the direction of the causality and determine dependent and independent variables between world cotton prices and Turkish cotton prices. For causality check we employ both standard Granger Causality test and Toda-Yamamoto causality test (Toda and Yamamoto, 1995).

Following stationarity and causality check, we analyze long term co-integration relationship between the world and Turkish cotton prices by using the Bounds Test approach proposed by Pesaran et. al (2001).

After cointegration check, in order to investigate long term spillover relationship between world and Turkish cotton prices, we employ both static and dynamic methods. For static modeling we employ ARDL (Autoregressive Distributed Lag) model to analyze long run static spillover effect between world and Turkish cotton prices. We also compare ARDL model results with Full Modified Ordinary Least Squares (FMOLS<sup>2</sup>)

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<sup>2</sup> FMOLS model is more reliable to account for serial correlation, potential endogeneity and multicollinearity problems and thus preferable to a simple OLS model (Philips et al, 2012).

and Dynamic Ordinary Least Squares (DOLS<sup>3</sup>) models for robustness check.

Finally, we make dynamic regression analysis by employing Kalman filter model. Kalman Filter model enables us to investigate dynamic spillover relationship between world and Turkish cotton prices.

### Results

In order to investigate the stationarity properties of the variables we employ both conventional unit root test and unit root test with structural break. We use Ng-Perron (2001) test for its superior properties from other conventional unit root tests (Ertugrul and Soytas, 2013). Our sample includes crises periods. In order to take into consideration the effects of structural breaks on the stationarity of the variables we employ Zivot Andrews (1992) unit root tests. Both Ng-Perron (2001) and Zivot Andrews (1992) tests indicate that world cotton price and Turkish cotton price variables are found I(1) which means stationary after differencing.<sup>4</sup>

After stationarity check, in order to determine direction of causality between the variables and dependent and independent variables we use causality analysis. For causality check, we use both standard granger causality test and Toda-Yamamoto (1995) Causality approach.

The Toda-Yamamoto test has superior properties over the conventional Granger causality test by eliminating the need for pre-testing for co-integration. The Toda Yamamoto (1995) test can be applied irrespective of the co-integration check between variables (Atasoy and Gur, 2016).

For the application of the test, we need the knowledge about the maximum order of integration of the variables. According to unit root test results, maximum order of integration of our variables is found as 1. The Toda-Yamamoto test estimates a VAR (s+dmax) model where s is the optimal lag length and dmax is the maximum level of integration and makes causality test for first s variables.

The results of both Granger Causality test and the Toda-Yamamoto test are denoted in Table1.

Table 1: Causality Test Results

GRANGER CAUSALITY TEST RESULTS				
From	To	Test Statistics	Prob Value	Results
World Price	Turkish Price	9.678	0.007	Causality
Turkish Price	World Price	3.144	0.208	No Causality
TODA YAMAMOTO TEST RESULTS				
From	To	Test Statistics	Prob Value	Results
World Price	Turkish Price	4.339	0.014	Causality
Turkish Price	World Price	2.030	0.135	No Causality

According to Table 1, we have found unidirectional causality running from world cotton prices to Turkish cotton prices according to both standard Granger Causality test and Toda Yamamoto Granger Causality Test.

After causality analysis we investigate long run co-integration relationship between the variables by employing Bounds Test Approach proposed by Pesaran et. al. (2001). The Bounds Test approach has some superior properties over the conventional co-integration tests such as it can be employed without investigating the stationarity of the variables and it has robust results in small sample over other co-integration approaches (Pesaran et al, 2001; Narayan and Narayan, 2004).

For the application of the Bounds test, the Unrestricted Error Correction Model (UECM) is estimated as shown in equation (1).

$$\Delta LP\_TR_t = \alpha_0 + \sum_{i=1}^m \alpha_{1,i} \Delta LP\_TR_{t-i} + \sum_{i=0}^m \alpha_{2,i} \Delta LP\_W_{t-i} + \alpha_3 LP\_TR_{t-1} + \alpha_4 LP\_W_{t-1} + \mu \quad (1)$$

After estimating equation 1, we test the null hypothesis of  $H_0: \alpha_3 = \alpha_4 = 0$  and compare the calculated F

<sup>3</sup> In the DOLS model, leads and lags of differenced right hand side variables are used to correct for endogeneity and serial correlation problems (Stock and Watson, 1993).

<sup>4</sup> We did not report unit root test tables in the paper in order to save space. The unit root test results can be taken from authors upon interests.

statistic with bottom and upper critical values of Pesaran et al. (2001). If the estimated F statistic is greater (lower) than the upper (bottom) bound of critical values, there is co-integration (no co-integration) relationship between the series. If the calculated F statistic is between the bottom and upper bounds, we cannot make any inferences (Narayan and Narayan, 2004). Bounds test results are presented in Table 2.

Table 2: The Bounds Test Results

K	F statistic	Critical Value at %5 Significance Level	
		Bottom Bound	Upper Bound
1	8.64	4.94	5.73

k is number of independent variable number in equation 1.

Critical values are taken from Table C1.iii at Pesaran et. al. (2001:300)

According to Table 2, calculated F statistics are greater than the upper bound of the critical values so we reject the null hypothesis of no co-integration. We conclude that there is a significant long run co-integration relationship between world cotton prices and Turkish cotton prices.

After we found co-integration relationship between the variables, we investigate the static long run spillover relationship between the world cotton prices and Turkish cotton prices by employing ARDL model. The ARDL model representation for our study is presented in equation 2.

$$LP\_TR_t = \alpha_0 + \sum_{i=1}^m \alpha_{1,i} LP\_TR_{t-i} + \sum_{i=0}^n \alpha_{2,i} LP\_W_{t-i} + \mu \quad (2)$$

We assume the maximum lag number 8 and employ Schwarz criteria and estimate ARDL (1,1) model. The estimated long-term spillover coefficients from ARDL (1,1) model are presented in Table 3.

Table 3: ARDL (1,1) Model Long Term Spillover Parameters

Estimated Long Term Coefficients From ARDL(1,1) Model		
Variables	Coefficient	T statistics
LP_W	1.066	4.674*
C	-0.474	-3594*
Error Correction Term for the ARDL(1,1) Model		
Variables	Coefficient	T statistics
ECT(1)	-0.053	-4.148*
Diagnostic Checks		
$X^2_{BG}$ (A)	0.331 [0.718]	
$X^2_{ARCH-LM}$ (B)	0.345[0.557]	
$X^2_{RAMSEY}$ (C)	1.454[0.148]	

\*denotes %1 significance level, (A) Lagrange Multiplier test of residual serial correlation, (B) ARCH-LM Heteroskedasticity test based on the regression of squared residuals on squared fitted values, (C) Ramsey's RESET test using the square of the fitted values.

Accordingly, world cotton prices have a positive spillover effect on Turkish cotton prices and a 1 percentage point increase in world cotton prices causes 1.06% increase in Turkish cotton prices<sup>5</sup>.

FMOLS model and DOLS models are also employed as robustness check. Table 4 compares the results of the ARDL model with FMOLS and DOLS models.

<sup>5</sup> According to diagnostic checks, there are no serial correlation, heteroscedasticity and misspecification problems in the model.



Table 4: Robustness Check

Variable/Model	ARDL (1,1)	FMOLS	DOLS
I_CONV	1.066*	1.178*	1.148*
C	-0.474*	-0.686*	-0.670*

\*denotes %1 significance level

As can be seen from Table 4, the results of the FMOLS and DOLS models are consistent with the results of the ARDL model. According to model results, 1% increase in world cotton prices causes 1.066-1.178% increase in Turkish cotton prices according to static models.

Finally we investigate dynamic spillover relationship between the variables by employing Kalman Filter model. Kalman Filter model enables us to investigate the dynamic spillover relationship between the world cotton prices and the Turkish cotton prices. Our dynamic Kalman filter approach is based on Harvey's approach (Harvey, 1989). The Kalman filter specification which is employed in our study is presented in equations (3-4).

$$LP\_TR_t = a_0 + a_{1t} LP\_W_t + \varepsilon_t \quad (3)$$

$$a_{i,t} = a_{i,t-1} + v_{i,t} \quad (4)$$

The time varying regression parameter estimates for spillover coefficients between the world prices and the Turkish prices are shown in Figure 1.

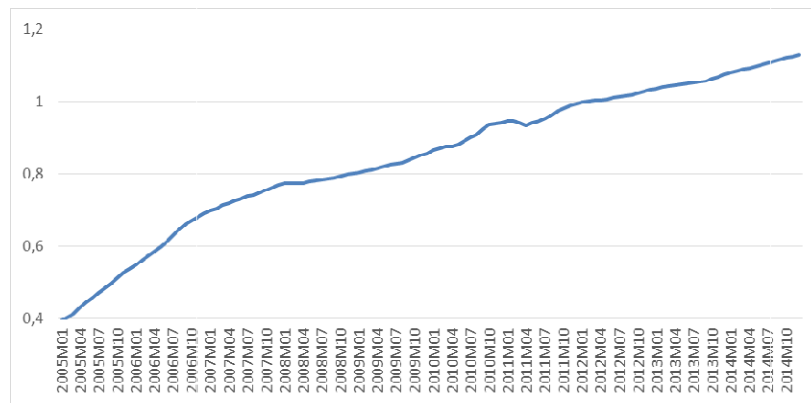


Figure 1: Time Varying Parameter Estimates for the World and the Turkish Cotton Price Spillover

As the results display, the dynamic spillover coefficients between the world cotton prices and the Turkish cotton prices have increased over the sample periods. The dynamic regression coefficients are consistent with static model results. Thus, this pattern can be interpreted as the effect of world cotton prices on Turkish cotton prices has increased over the sample period due to integration of Turkish cotton market with world markets

### Conclusion

Globalization and market reforms in many countries have raised the awareness of the price transmission mechanism. It is obvious that the price transmission, which is the ratio of the percentage changes in prices of two different markets, is an important indicator for policy makers and individuals as well as public and private institutions.

To analyze the overall economy, the price transmission provides important information in terms of the stability of international prices and the efficiency of government policy and regulations. Accordingly if a decline in international prices is not perfectly transmitted to domestic prices, then there will be decreases in world supply

and increases in world demand. This may cause much more sharp and persistent price decreases. Regarding to the government policy and regulations, government intervention will be ineffective and highly costly if a market is internationally integrated. The markets that are geographically located in different places will spatially integrated if the goods and information flow freely. Therefore price changes in one market affect the prices in other market through the transmission.

In this paper we investigate the degree of price linkages between Turkish cotton market and the world cotton market for the period between 2000 and 2014 by using co-integration and causality techniques. Our co-integration results demonstrate that Turkish cotton prices are highly integrated with the world cotton prices. In addition to this, both Granger and Toda-Yamamoto causality tests indicate the existence of a unidirectional causality from the world cotton prices to Turkish cotton prices.

Following the determination of co-integration relationship between two variables, we analyze static long-run spillover relationship by employing ARDL model. According to the results of ARDL (1,1) model, world cotton prices have a positive spillover effect on Turkish cotton prices. This shows that a percentage increase in the world cotton prices ends up with a 1,06 percent increase in Turkish cotton prices. Moreover, estimations of FMOLS and DOLS models are employed as robustness check of the results of ARDL(1,1) model. These results are also consistent with the ARDL model, which point out that a 1% increase in world cotton prices causes 1.066-1.178% increase in Turkish cotton prices.

Lastly we examine the dynamic spillover relationship by using Kalman Filter Model. The results show that the dynamic spillover coefficients between the world cotton prices and the Turkish cotton prices have increased over the mentioned period.

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