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Wish to meet you all in this new international conferences...

**Kürşat ÇAPRAZ**

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## Contents

**Dollarization's Effects In Turkey Economy**

**72-106**

**Muhammed Ali Celaledin Önen  
Yurdagül Meral**

**Make-or-Buy Decision Criteria in Pakistan Pharmaceutical Industry; a case of Albert  
Pharmaceutical Industry**

**107-127**

**Mahnoor Fatima**

**İkili Ticari İlişkilerin İhracat ve İthalat Yoğunluk Endeksi ile İncelenmesi: Azerbaycan  
ve Kırgızistan Örneğinde (2010-2019)**

**128-148**

**Emine Arzu İmren Karaosmanoğlu  
Alig Baghirov**

**Bilgi ve İletişim Teknolojileri Kullanımı, İstihdam ve Ekonomik Büyüme İlişkisi**

**149-162**

**Nurcan Ece  
Güldenur Çetin**

**Capital Structure And Financial Crisis: Evidence From Turkey**

**163-178**

**Mohamed Mohamud Makaran**

## Dollarization's Effects In Turkey Economy

Muhammed Ali Celaledin Önen<sup>1</sup>

Yurdagül Meral<sup>2</sup>

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### Abstract

In order to preserve the value of assets in high-inflation countries, investors turn to currencies of economically stable and secure countries. Once liberalization measures were taken in the 1980s in Turkey, the volume of foreign exchange entering its economy also increased. However, high inflation, low domestic investment, increased volume of imports and weak financial base left the Turkish economy with the reality of dollarization. In this study, the definition of dollarization and currency substitution is explained in details. The aim of this study is to describe the difficulties Turkey faced with dollarization from the very beginning up to a certain period in chronological order. This study involves that by means of considering of time-series comparative analysis data method and investigating the facts that constitute the reasons for dollarization were associated to the by causality method. The expected result in this study is that high inflation and uncertainties in both the political and economic environment can lead to a high dollarization of the economy.

**Keywords:** Dollarization, Currency Substitution, Dollarization, Turkey

**JEL Codes:** B21 E31 E42 E50

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## **Dolarizasyonun Türkiye Ekonomisine Etkileri**

### **Özet**

Yüksek enflasyonlu ülkelerde varlıkların değerini korumak için yatırımcılar ekonomik olarak istikrarlı ve güvenli ülkelerin para birimlerine yönelmektedir. Türkiye'de 1980'li yıllarda uygulamaya konulan liberalleşme adımlarının ardından ekonomisine giren döviz hacmi de artmıştır. Ancak yüksek enflasyon, düşük yurtiçi yatırımlar, artan ithalat hacmi ve zayıf mali taban, Türkiye ekonomisini dolarizasyon gerçeğiyle baş başa bıraktı. Bu çalışmada dolarizasyon ve para ikamesinin tanımı detaylı olarak anlatılmıştır. Bu çalışmanın amacı, başlangıçtan belli bir döneme kadar Türkiye'nin dolarizasyonla karşılaştığı zorlukları kronolojik bir sıra içinde anlatmaktır. Bu çalışma, zaman serileri karşılaştırmalı analiz veri yöntemi dikkate alınarak dolarizasyonun nedenlerini oluşturan olguların nedensellik yöntemiyle ilişkilendirilmesini içermektedir. Bu çalışmada beklenen sonuç, yüksek enflasyon ve hem politik ortamdaki hem de ekonomideki belirsizliklerin ekonomide yüksek dolarizasyona yol açabileceğidir.

**Anahtar Kelimeler:** Dolarizasyon, Para İkamesi, Dolarizasyon ve Türkiye

**JELKodu:** B21 E31 E42 E50

## **Introduction**

With the process of globalization, many countries have had to experience the struggle with economic crises. The harsh criticism of the policies implemented in this process led to the emergence of new searches. Various suggestions have been put forward in order to regulate the financial structure and to alleviate the effects of the experienced global or regional crises. The most interesting of these is the fact that countries legally adopt the currency of the developing country by partially or totally giving up their national currencies. Intensive debates began on the implementation of this recommendation, known as currency substitution or dollarization, as a policy in many countries. Although dollarization is generally thought to occur as a result of high and unstable inflation, it is also affected by macroeconomic variables such as exchange rate changes, real Gross Domestic Products (GDP), money supplies and interest rates. In the 1990s, Turkey experienced periodic inflation exceeding 100%, and the income balance and macroeconomic stability in the country were severely damaged. For this reason, there were frequent changes of government and coalitions in the country in the 1990s. Later came the economic crisis of 2001. With the Strong Economy Transition Program announced on April 15, 2001, the Central Bank of the Republic of Turkey (CBRT) gained full autonomy to reduce inflation in the country and the CBRT was assigned as its primary area of responsibility. The task of “maintaining price stability” was given. Afterwards, Central Bank of the Republic of Turkey (CBRT) aimed to the inflation targeting regime from 2002 and carry out the implicit inflation targeting framework in the period of 2002-2005, and the explicit inflation targeting framework was aimed in the period of 2006 and on looking years. In 2018, inflation increased rapidly in Turkey due to internal and external reasons, and the inflation targeted by the CBRT as 7% in January 2018 was in the Government Program but at the end of the year inflation rate was 20.30% in terms of Consumer Prices (CPI) and in Producer Prices Index (PPI) at the end of 2018 was declared as 33.64%. This situation shows that inflation is on the way to become an important macroeconomic problem again in Turkey and has increased the need for academic studies and policy recommendations on the causes and prevention of inflation. It can be stated that there is a close interaction between inflation and interest rates in Turkey; the direction of the interaction is not from interest to inflation, but from inflation to interest [48]. For example, dollarization is a problem observed in Latin American countries such as Peru, Argentina and Venezuela, which are experiencing severe inflation (See Table A.1); Nigeria, Tunisia, Kenya in Africa (See Table A.2);

In Asia, Cambodia, Pakistan, Malaysia See Table A.3). It is a phenomenon that can be seen in countries such as Romania, Estonia and Russia in Europe (See Table A.4). Flexible exchange rate system and financial freedom increase the demand for foreign currency as well as the official currency of the countries. This increase in the demand for foreign currency is seen as an increase in foreign currency financial assets and foreign currency deposits. Increase in financial assets increase in the tax base is both positive and negative the size of the currency substitution. In short, dollarization is the unit of account of the national currency, exchange functions and substitution of savings by foreign currencies. It can come from demand and time deposits in foreign currency and in terms of various financial assets [51].

Table A. 1 Selected Latin American Countries' Inflation Rates<sup>3</sup>

Years	Argentina	Peru	Venezuela
2015	No Data	4,4	180,9
2016	No Data	3,2	274,4
2017	24,8	1,4	862,6
2018	47,6	2,2	130060,2
2019	53,8	1,9	9585,5
2020	36,1	2	2959,8
2021	No Data	3,2	2700

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<sup>3</sup> [19]

Table A. 2 Selected African Countries' Inflation Rates<sup>4</sup>

Years	Kenya	Nigeria	Tunisia
2015	6,6	9	4,4
2016	6,3	15,7	3,6
2017	8	16,5	5,3
2018	4,7	12,1	7,3
2019	5,2	11,4	6,7
2020	5,2	13,2	5,6
2021	6	16,9	5,7

Table A. 3 Selected Asian Countries' Inflation Rates<sup>5</sup>

Years	Cambodia	Malaysia	Pakistan
2015	1,2	2,1	4,5
2016	3	2,1	2,9
2017	2,9	3,8	4,1
2018	2,4	1	3,9
2019	2	0,7	6,7
2020	2,9	-1,1	10,7
2021	2,5	2,5	8,9

Table A. 4 Selected European Countries' Inflation Rates<sup>6</sup>

Years	Estonia	Romania	Russian Federation
2015	0,1	-0,6	15,5
2016	0,8	-1,6	7
2017	3,7	1,3	3,7
2018	3,4	4,6	2,9
2019	2,3	3,8	4,5
2020	-0,6	2,6	3,4

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<sup>4</sup> [20]

<sup>5</sup> [21]

<sup>6</sup> [22]

2021	3,8	4,3	5,9
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In the most basic sense, dollarization is the ability of a foreign currency to fulfill all the functions of money in a country, instead of the national official currency. Dollarization is also defined as currency substitution, as a foreign currency is preferred more in functions of being a unit of account, storing value and intermediating transactions, compared to the official currency. However, even though currency substitution and dollarization are two concepts that are generally used in the same sense, dollarization occurs as a result of the loss of the functions of domestic currency as a value storage and unit of account, while currency substitution is the fulfillment of all functions of money by foreign currency [6].

The aim of this study is to describe the difficulties Turkey faced with dollarization from the very beginning up to a certain period in chronological order. Also, when Turkey economy is faced seriously a dollarization effect is the another aim of this study.

This study is organized as follows: Section 1 represent theoretical framework of dollarization and currency substitutions words' definitions. Section 2 demonstrates the literature reviews which of related studies about dollarization in the Turkey economy. Section 3 gives information under chronological order about dollarization and Turkish economic structure by using tables and figures to develop comprehension. Last part in section 4 concludes in a detailed and coherent way to have better view on readers' minds.

### **Conceptual Framework**

## **Dollarization**

Dollarization is a term used to describe activities performed by households or organizations in response to economic uncertainty and excessive changes in prices. It pertains to the acts carried out by people or organizations to find appropriate means to achieve money and asset substitution. Money substitution makes reference to the usage of a foreign exchange to protect one's own money against highly inflationary depreciation. The United State's currency is the most widely used currency all around the world. To be deemed an elevated dollarized economy, the percentage of global money oriented funds in the economic system must be at minimum 20 percent of gross funds accordance with the World Bank [41].

Economic officials in nations fronting elevated inflation which is associated with increases outgrowth purchase dollars to defend their backs from declines in the valuation of their domestic properties. Dollarization is the term for this operation. Many studies have shown clear reciprocal causal relationships between inflation and foreign currency price [23] [31]. The exchange rate pass through is the jointly enduring impact of that rising price level changes drives up currency's value level deflation, that then contributes to rising inflation. This is especially valid in comparatively small or emerging open markets where deterioration of the national exchange raises the cost of manufactured commodities and worsens the rising inflation phase. Dollarization refers to the practice of venture capitalists and families keeping and purchasing dollars in order to keep the worth of their investments stable throughout the presence of greater rising prices. The rising request for dollars among agencies puts uphill stress on currency values, causing strong domestic currency downturns. We must understand additional possible issues in dollarized markets, including the effect of major fluctuations in global exchange prices on funding costs and financial institution's currency inequalities. Financial institutions commonly fund both dollars and national currency in dollarized markets. If households had dollar-denominated debt and their income is in domestic currency, and the domestic currency suddenly depreciated, household dollar-denominated monthly bills would increase significantly. Throughout most circumstances, these large changes, along with the fact that the country's money denominated income has not increased at the equivalent rate, indicate that there will be late in bills, effectively putting one in default. In a dollarized financial industry there is a strong link among inflation and the ratio of global money lending to domestic money lending, as [34] and [30] draw attention to. They state in their studies that the banking industry prefers to lend in international currency during

inflationary periods, but debtors want to get into debt in national currency (that means lack of credit validity). Even banking institutions that extend dollar loans in the hope of offsetting the risks of their cash holdings should incur an additional type of risk (unrealized credit stress) as described above. i.e., banking institutions just turn one degree of stress (currency rate stress) into the other (non-performed loans stress) without reducing their risks or offsetting their stances. As a result, heavily dollarized countries' economies are more exposed to sharp currency price changes than non- or mildly dollarized countries' economies. Furthermore, the use (purchase) of sound (stable) international money, including the US dollar, is the only financial tool available to buffer international currency value stresses at this time. In countries with chronic high inflation problems, the foreign currency first functions as a value storage or unit of account, then it is used as a medium of exchange. However, as the amount of foreign currency in circulation is not known exactly, dollarization rates are accepted as an indicator of currency substitution. For this reason, it is common to use dollarization and currency substitution as concepts interchangeably. Dollarization is classified differently according to the dimensions in which it is experienced. In addition to the foreign currency, the national currency is still in force, partially or unofficially (de facto) dollarization. The main reason for this is a rational indicator of economic agents' loss of confidence in the national currency. Officially, with the removal of the domestic currency from circulation, the situation where a foreign currency fulfills all the functions of the national currency is called full or official dollarization. Panama and Ecuador official dollarization, Argentina, Mexico and Peru are among the countries experiencing partial dollarization. Private sector and public borrowing in foreign currency in developing countries is expressed as liability dollarization. This situation both makes the country market fragile and makes the management of macro variables difficult [33].

The realization of the return and production costs of firms that export final goods or use imported intermediate goods in the production of final goods in foreign currency is known as official dollarization [26]. Currency substitution also varies according to its size. The situation in which residents and nonresidents demand national and foreign currency at the same time is symmetric currency substitution. Asymmetric currency substitution, on the other hand, is the situation where the foreign currency units demand low demand for the currency of the other country, despite the intense foreign currency demand of the residents [32]. Money substitution is also defined with narrow and broad meanings. According to the narrow definition, currency substitution means the

substitution of foreign currency with national currency; in broad definition, it means the substitution of all external financial assets with the national currency. According to another approach, currency substitution is explained directly and indirectly. Direct currency substitution is defined as the competition of two or more currencies that can be used as a payment instrument in the same market, while indirect currency substitution is defined as investors turning to foreign financial instruments instead of domestic financial instruments [27]. In Turkey, where the demand for dollars increases day by day while saving owners create portfolios or invest, it also causes an increase in dollarization. While the economic and political instability initially undermines confidence in TL, it makes the cost of holding dollar assets and financial instruments advantageous. Because the rational individual wants to use channels in which he feels safe to obtain benefits and save for the future [51]. Countries experiencing dollarization process have to use external resources since they do not create sufficient resources for their financial development [35]. Individuals want to protect the economic value of savings and take advantage of the opportunities created by the volatility of macro variables by resorting to foreign resources. In this respect, dollarization is observed to be reflected in the balance sheets of economic units in two ways. First is the asset dollarization, which includes foreign currency and foreign currency assets included in the assets of economic agents' balance sheets, and secondly; liability dollarization, which refers to foreign currency liabilities in the liabilities part of their balance sheets. Financial dollarization includes both asset and liability dollarization [51].

### **Currency Substitution**

A certain proportion of use the terms Currency Substitution (CS) or dollarization to characterize the capital exit in a national economy [1], another authorities that illustrate the parallel (black) business exchange rate's dynamics [11]. Majority of authorities want to draw alertness to the common use of foreign exchange as a store of cash, unit of account, and medium of trade in the economy that occurs in domestic market [32] [28] [36]. While the word "dollarization" was being used to identify the CS operation in previous paragraphs, particularly it is most often used to point out that a foreign exchange operates as a unit of account or a store of value rather than a medium of exchange. An individual has to know that foreign currency is initially considered as a store of value or a means of payment in inflation elevated countries - just as these are the first two issues that the national currency loses in the context of elevated inflation , and then as a medium



of trade. Consequently, currency substitution is always the last step in the dollarization cycle [25].

Due to the uncontrolled nature of foreign currency holdings the dollarization cycle generally begins with foreign exchange operating as a store of value in place of the national currency. Since domestic currency is the most unpredictable of the three principal suppliers of revenue. Except for a few expenditures on housing, cars and other "big ticket" products, all expenditures by the individual are priced in foreign currency depending on the inputs in the production process, which continues to increase inflation. With the result that for this to occur inflation must not be excessively high or unstable. From the other hand, country's currency prefers to be used as a unit of account and a means of trade for almost all not long lasting commodities [10]. In the empirical literature, evaluating CS or dollarization is difficult since measuring the phenomenon requires a clear description of what is destined to exist to dollarization and conclusive data that nearly match that definition. Unless dollarization is described as a mechanism for that a foreign exchange takes over any or all of the processes of a national currency, the optimal remedy will entail all foreign exchange accounts kept by national citizens, along with foreign exchange bills, foreign exchange reserves in the national banking mechanism and foreign exchange reserves held beyond the bounds of a country [25].

If dollarization is narrowly explained as the method in which the national exchange is moved from its usual place as a medium of trade by a foreign exchange (as described in the concept of CS), the optimal approach will eliminate from consideration of all interest conveyor holdings and foreign exchange assets. As a consequent, the most prevalent approach in methodological studies is to use variables of dollarization as currency replacement variables, the most common of that is the portion of FEDs (Federal Reserve Bank) in the national banking mechanism in the wide extend of the total amount of money including of FEDs [25].

## **Literature Review**

### **Dollarization and Inflation**

The effect of dollarization in Turkey's inflation dynamics is investigated in this paper. According to descriptive research, structural factors played a significant role in the evolution of dollarization in Turkey, in addition to high inflation and economic uncertainty. The empirical results back up the duty of dollarization in inflation framework. The findings indicate that initial concussion to

dollarization result in decrease in the unit of currency as people shift their capital holdings from domestic to international. For a given budget deficit, the unit of currency from the other hand, increases sooner to generate the necessary inflation tax. The findings also show that the fiscal governing body is seeking to make up for some of the lost inflation tax income by boosting ruled rates. The rate of exchange reacts positively to dollarization shocks due to the large elasticity of replacement between internal and external exchange, as expected by Bahmani-Oskooee and Domaç (2003). The Vector Autoregressive Model (VAR) was applied as an empirical structure in Yilmaz and Uysal (2019)'s paper that looked at the link among dollarization and inflation in Turkey. The dollarization rate explains 0.63 percent of a 1 percent change in the consumer price index in the tenth period, according to the results of the disintegration of the variation . Inflation accounts for 5.32 percent of the 1 percent rise in the dollarization rate in that corresponding time frame. The Johansen Cointegration Test was used to analyze the connection among the parameters however no long time period link was discovered. Dollarization percentage is a determinant of consumer price index at a meaningful threshold of 10 percent in accordance with the Granger Causality studies. In the post-liberalization stage, this thesis aims to quantify the impact of dollarization on consumer price index, internal output, and private funding in Turkey. Karacal (2005) analyzed the short time and long time period connections among those parameters, as well as their durability, utilizing data for the monthly time period from 1987 to 2004 and an autoregressive distributed lags (ARDL) methodology. Dollarization had a significant influence on consumer price index however mainly a short-term effect on internal production and little influence on private funding, according to the findings. As a result, it suggests that, in the face of dollarization, monetary easing fiscal measures that are matched by monetary regulation might only raise internal output in the short time period of time, and merely at the cost of extended inflation, which might stifle economic growth.

Sever (2012)'s research used the Granger causality method to analyze the association among currency level volatility and dollarization level in Turkey for the time frame 1989:12–2010:12 and the sub- time period 2001:02–2010:12. The connection between dollarization and fluctuations in exchange rates is greater. Dollarization causes exchange rate volatility just after sixth lag. Besides that, also for time duration starting from 2001:02 to 2010:12, when a stable exchange rate regime was introduced, just one causative association between dollarization and exchange rate volatility was discovered. Meng Sui, Erick W. Rengifo and Eduardo Court

(2021)'s paper provides a thorough analytical investigation into gold's arbitrage power toward unfavorable consumer prices and changes in exchange rates in three nations: Turkey, Peru, and the United States as a standard. They observe that gold can provide security toward currency fluctuations and consumer price index fluctuations for Turkey and the United States at any and all time periods using quantile-on-quantile regression (QQR) method and quantile-on-quantile correlation (QQCOR) models, but not throughout Turkey's highly inflationary era.

Dollarization is calculated by the proportional levels of returning of internal and international monetary unit transacted reserves, projected adjustment in the currency rate, exchange rate endanger and the legitimacy of existing government reforms about economy, according to Civcir (2003)'s paper advanced portfolio framework. The findings which are related with the econometrics are consistent with the model's insightful forecasts. The rate of interest difference and predicted currency values are the most important factors in assessing dollarization, according to author's findings. In addition, the article illustrates the unwillingness of taking action in Turkey's dollarization phase. Kıvılcım Metin-Özcan and Vuslat Us (2009)'s study examines the origins of dollarization in Turkey ensuring by building metrics for wealth, responsibility, and overseas dollarization. The analysis is looking for the condition of two or more series are themselves non-stationary, but a linear relationship between these values. The findings indicate that wealth dollarization increased mostly as a consequence of increased appetite for international wealth prior to the 2001 financial collapse.

The aim of Uslu (2019) is to empirically analyze the interaction between inflation and interest rates in the 2002:M01-2019:M01 period, when the inflation targeting regime was implemented by the CBRT (Central Bank of the Republic of Turkey). Long-term analyzes were made using the ARDL method and it was determined that the inflation rate in Turkey increased by 0.25% with a 1% increase in commercial loan rates and by 0.05% with a 1% increase in deposit rates. On the other hand, it was observed that the 1% point increase in the inflation rate increased the commercial loan rates by 0.23% and the time deposit interest rates by 0.59%. Lastly, it was found that a 1% point increase in deposit interest rates increased commercial loan rates by 1.04%. In the short-term analysis, it has been determined that commercial loan rates increase inflation in the short term, and commercial loan rates are increased by inflation and time deposit rates.

Uslu (2018)'s work researched that the effects of interest rate and exchange rate on foreign trade in Turkey were investigated by time series analysis with structural break for the period 1989:M01-2018:M06. It has been observed that the increase in the interest rate decreases the exchange rate. In the short-term analysis; It has been determined that the increases in the exchange rate do not immediately affect the exports, but decrease the imports. It has been observed that increases in interest rates have a reducing effect on exchange rates in the short run. The causality relations between the series were examined with the Granger test and one-way causality relations from interest to exchange rate, from exchange rate to import, and two-way causality relations between interest and imports and between exports and imports were determined. This situation; It shows that the monetary policies implemented in Turkey can affect the exchange rate, and the exchange rate policies can affect imports.

### **Dollarization and Turkey**

We can say that the dollarization process in Turkey started with the applications of Foreign Exchange Deposit Account with Convertible to Foreign Currency and Credit Letter in order to solve the foreign exchange problem that occurred after the oil crises in the 1970s. In accordance with the stabilization program implemented later, at the end of 1983, the barriers to commercial banks' transactions in foreign currency were removed and the way for residents to have foreign currency deposits was opened. We can say that since this period, foreign exchange deposit accounts have become an important part of the broadly defined money supply [39].

Within the framework of liberalization tendencies in exchange rate policies, especially after the partial exchange liberalization in 1984, with the increasing inflationary tendency in the domestic currency, the escapes from the national currency started to gain momentum and the foreign currency needed by the public became more attractive than the Turkish Lira (TL)-denominated return rates, indicates that interest policies are not independent from foreign exchange policies. While a parallelism was observed between domestic interest rates and exchange rates from 1985 to 1987, the direction of movement of exchange rates after 1987 was the opening of the interest rate shear. Following the speculative movements of the exchange rate-interest spread opened in February 1988, decisions were taken to impose some restrictions on foreign exchange movements, but these restrictions were short-term. It can be said that the annulment of the Law No. 32, which was enacted in order to ensure that domestic borrowing and foreign savings are

included in the national economy in the financing of public deficits that support the increase of instability in the economy, is one of the important factors contributing to the opening of the exchange rate-interest spread [31]. With the decision number 32 taken in August 1989, the infrastructure of liberalization in Turkey has been largely completed. It is observed that some arrangements were made in the period of a few months following this decision. With these regulations, all restrictions on capital movements have been lifted [40].

With this practice, the purpose of positive interest application is to make foreign capital inflows attractive on the one hand, and to reduce the currency substitution event on the other hand. However, under the inflationary environment and economic conditions with public imbalance, Turkey has become dependent on short term hot money flows. The continuation of such capitals in the country is possible by keeping the real interest rates high. While this situation causes an increase in the share of foreign savings in the public imbalance, it creates problems in the current account balance as a result of the overvalued national currency causing a decrease in exports and an increase in imports [31]. As a result, capital outflows, which started after the negative developments in the expectations in the economy, which became dependent on speculative capital movements due to the low exchange rate-high interest pincer, created crises. In this context, after the financial liberalization practices, the inflation difference between the developed economies and the developing economies as well as the economic and political uncertainties and the expectations that the national currency will depreciate also triggered the dollarization trend [2]. Liberal economic policies also support national and international firms to develop their domestic and foreign economic relations. In this context, while improvement occurs in the purchasing and commercial relations of national companies abroad, at the same time, the commercial relations of international companies with domestic companies increase in various ways. The fact that the development of international integration requires more money from countries accepted in international trade in the portfolios of both national and international companies encourages dollarization [40].

In the period 1986-88, the share of foreign deposits in total deposits increased from 15 percent to 27 percent. At the same time, the share of time deposits in total deposits decreased from 66 percent to 42 percent. The important point that draws attention here is the presence of an acidmetric trend in the share of time deposits and the shares of foreign exchange deposits. This

may show that economic units move from time deposits to foreign currency or that the relationship between these two variables is in the opposite direction [14]. With the opening of the financial system in 1989, the cost of transactions in foreign currency decreased. Since this period, although the yields of foreign exchange deposit accounts are lower than assets linked to TL, currency dollarization has continued due to the unstable environment in the country [29]. After the capital account liberalization in August 1989, significant capital inflows occurred, which increased the real value of the national currency. While the real exchange rates decreased by 26 percent in the said period, the inflation rate decreased from 75 percent to 60 percent [14]. The 1990 is the period in which the Turkish economy was under the influence of intense capital flows accompanied by weak macroeconomic fundamentals, institutions and regulations. During this period, policies focused on different priorities rather than stability, structural reforms were not made and a loose fiscal policy was implemented. The monetary policy of the Central Bank can be summarized as adapting to this process and postponing a possible crisis as much as possible. As a result, inflation has reached the level of 80 percent, and the public borrowing requirement has increased to 15 percent of the gross national product. This structure has made the economy extremely vulnerable to external shocks in an environment where capital movements are free [39]. While the ratio of foreign exchange deposit accounts (FX deposits) to the broad money supply (M2Y) was 23 percent in 1990, this ratio increased to 42 percent in 1993 (See Table A.1).

On the other hand, evaluating the share of foreign exchange assets in total deposits as the determinant of dollarization may cause us to misinterpret the dollar rate. Because, although the yield rates of TL assets continued to be higher than those of foreign currency assets in these years, the shares of foreign currency deposits continued to increase. With the introduction of alternative investment instruments such as treasury bills and repo in the financial reform process, new investment instruments have become more preferred by households. While individuals prefer repo with more returns to time deposits, banks have tried to balance their portfolios with treasury bills [14].

If we look the Turkish economy history's overall in terms of exchange rate and interest rates, while Turkey applied a production and economic growth model based on import substitution, which was largely closed to the outside in the pre-1980 period, it adopted an export-based, open-ended economic growth model with the January 24, 1980 Decisions. Within the scope of the

foreign exchange regime applied previously, individuals are prohibited from holding and using foreign currency, while foreign currency transactions of companies are subject to the permission of the Central Bank, while the "Turkish Currency Exchange" No. 32 dated 11.08.1989. With the "Decision on Protecting Its Value", the use of foreign currency was released and international capital movements towards the country were made free [37]. In Turkey, where the fixed exchange rate regime was dominant since the early 1930s, when the Central Bank was established, the Turkish Lira, which was first tied to currencies such as Frank and Sterling, was tied to the US Dollar in the Bretton-Woods system that started in 1944. After a short fluctuation after the Bretton-Woods implementation that ended in 1971, a managed floating exchange rate regime has been applied since the 1980s. A fastening process has been experience [4]. Exchange rates are one of the most important agenda items of the economy in every period in Turkey, which implemented a controlled floating exchange rate (floating exchange rate in the broadband) regime, following the fixed exchange rate regime (also called narrow band floating rate) tried between January 1, 2000 - February 21, 2001 [16] [24]. On the other hand, interest is the most important monetary policy instrument of the Central Bank of the Republic of Turkey (CBRT), especially after 25 April 2001, when the CBRT was made fully independent and its primary goal was to ensure price stability (preventing high inflation, reducing it). It has become more important for the Turkish economy. In periods when the need for foreign exchange in the country increases and the demand for foreign currency rises, the CBRT tries to attract more foreign financial capital to the country by increasing the funding rates of the banks. The most recent example of this happened in 2018, and the CBRT overnight lending rate, which was 9.25% in May 2018, was increased to 16.50% on 1 June 2018 and 19.25% on 8 June 2018 in order to curb the rising exchange rate. Not seeing this as enough, the CBRT increased the late liquidity window lending rates, which it used to lend to banks after 16:00, to 20.75% on 8 June 2018 [47].

On 14 September 2018, the interest rate increased to 24.00% with an increase of 6.25%. The irregularity of foreign exchange prices in the Turkish economy, which has an unstable movement in interest rates, has caused a great pressure. In the period between 2019 and May 2020, interest rates gradually decreased. The interest rate, which went down to 8.25%, decreased risk appetite together with the COVID-19 pandemic, which affected developing economies on a large scale, and the decrease in incomes, which are described as hot money coming out of the economies, prompted the policy makers of the Turkish economy to increase the interest rates again. With the

interest rate of 19.00 on March 19, 2021, the serious depreciation of the Turkish Lira, especially in the last quarter of 2021, and the outflow of foreign investors in the country's economy, an unconventional action has been taken and a trend towards lowering the interest rates has begun to be followed. As of January 2022, the interest rate is hovering around 14.00% and the signals that it will decrease further have been given decisively by the policy makers.

If we look at the Turkish economy's exchange rate policies, in the 1980-1989 period, the fixed exchange rate system with frequent devaluations, the controlled free exchange system in the 1989-1999 period, and the fixed exchange rate system in which daily increases were determined in the 2000-2001 period were applied. From the second half of 2001 to the present, a free exchange rate system, in which CBRT interventions are limited, has been implemented. It can be said that in the 1980-2001 period, when exchange rates were used as a means of gaining advantage in foreign trade, the implementation of the export-based growth model started in real terms after 2001 [7]. It can be said that the exchange rate policies implemented on the Turkish economy have significant effects and that it is also an important reason for the economic crises experienced. The fact that the Turkish economy has faced crises at more frequent intervals since the 1990s is closely associated with the exchange rate policies implemented in this period experienced a financial crisis and TL was devalued by 120% against the dollar [8]. Although a significant increase was observed in the level of exports in 1994, due to the growth and spending policies followed in 1995 and the following years, the domestic demand increased significantly and the import rate increased as a result of the real appreciation of the TL [9]. With the effect of a series of financial crises experienced by the world economy between 1998-2001, Turkey went through turbulent periods in 1998-1999, 2001 and 2008-2009. In 1999, a special monetary and exchange rate policy was determined within the framework of the stand-by agreement. This system can be defined as a crawling pag system that works on the basis of a coin board. The optimistic atmosphere, which continued until the middle of 2000, in the economy and financial markets in general, showed a sudden deterioration at the end of the year. After the financial crises in November 2000 and then February 2001, the program based on the mobile anchor was abandoned [46]. With the policy implemented after the 2001 crisis, the exchange rates were left to fluctuate and a new program aiming at a permanent and sustainable improvement in macroeconomic indicators was put into practice.



Table A. 5 Dollarization Rates and Foreign Exchange Rates of Change<sup>7</sup>

<b>YEARS</b>	<b>FEDA/M2Y</b>	<b>FD/GNP</b>	<b>FCB/TDD</b>	<b>\$/TL RATE OF CHANGE</b>
1989	0,24	0,26	-	0,274
1990	0,23	0,27	-	0,266
1991	0,31	0,28	-	0,733
1992	0,34	0,29	-	0,685
1993	0,42	0,30	-	0,689
1994	0,48	0,45	-	1,657
1995	0,43	0,38	-	0,593
1996	0,45	0,37	-	0,760
1997	0,46	0,36	-	0,904
1998	0,47	0,41	0,07	0,530
1999	0,43	0,47	0,05	0,727
2000	0,47	0,50	0,08	0,243
2001	0,52	0,71	0,30	1,142
2002	0,55	0,63	0,28	0,135
2003	0,50	0,55	0,19	-0,146
2004	0,41	0,46	0,16	-0,038
2005	0,36	0,41	0,15	0,006
2006	0,33	0,44	0,12	0,052
2007	0,34	0,42	0,09	-0,175
2008	0,32	0,46	0,07	0,298
2009	0,31	0,53	0,04	-0,004
2010	0,29	0,45	0,03	0,026

<sup>7</sup> [40]

Figure A.1 shows that Turkey's foreign exchange has been steadily rising throughout the timeframe, with a higher upward acceleration in the previous five years. Also it's important noting that gold has had a nearly 1:1 connection with domestic money and foreign exchange over the previous five years [41].

If we look at the Figure A.1, Figure A.2 and Figure A.3 altogether Turkey experienced a fairly stable inflation rate, especially between 2002 and 2018. However, after the asymmetric exchange rate attacks that shocked the markets in 2018, rising inflation rates became inevitable for the Turkish economy, whose economic activity is highly dependent on the dollar exchange rate. While all these are happening, the gold price chart in the free market follows an upward trend. It is very difficult to say the correct ratio of inflation and dollar rate movements to each other for the ounce price of gold. We cannot say that the upward movement in gold prices, inflation and dollar rate levels are directly affected by this upward movement. While the price index on the consumer side was flat, and the low pricing in the dollar supporting this, of course, the downward trend in prices throughout the country must have created an opportunity for gold investors, as the high demand for gold caused gold prices to be priced upwards.

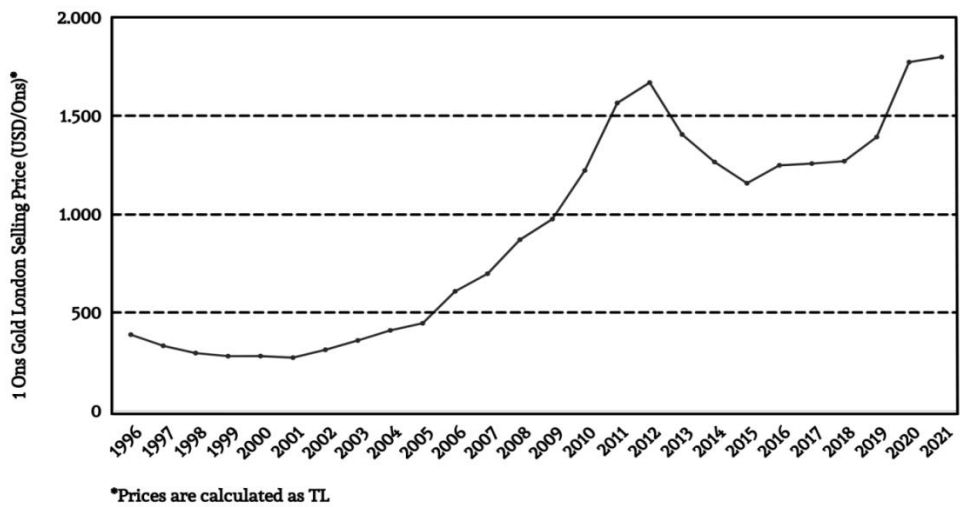


Figure A. 1 1 Ons gold London selling prices years between 1996 and 2021<sup>8</sup>

<sup>8</sup> [13]

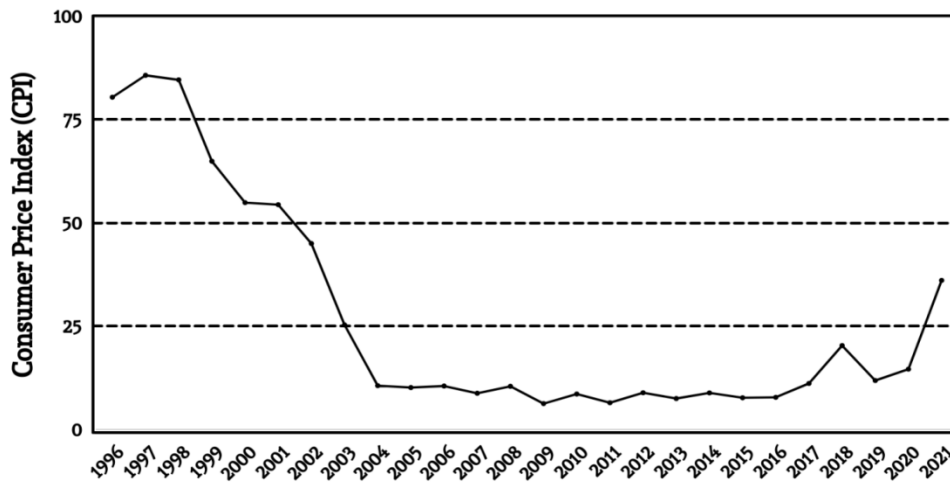


Figure A. 2 Consumer price index level in turkey years between 1996 and 2021<sup>9</sup>

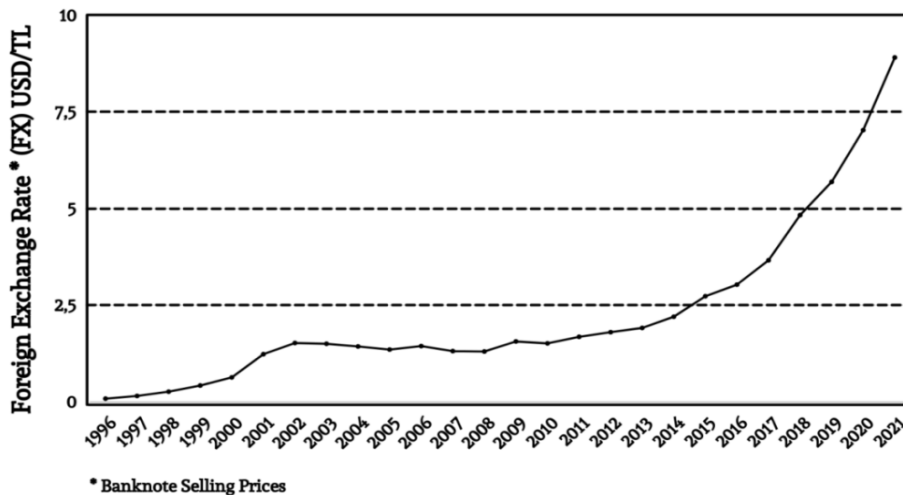


Figure A. 3 Foreign exchange rate levels in Turkey years between 1996 and 2021<sup>10</sup>

Domestic households were permitted to setup foreign exchange bank deposits in January 1984 as part of a stimulus policy aimed at reforming the financial market. The poorly developed financial industry and elevated consumer prices levels prompted an increase in global currency savings in

<sup>9</sup> [42]

<sup>10</sup> [12]

the banking industry when Turkey concluded its capital account globalization in 1989 by allowing absolute quality of a currency of being exchangeable for other currencies of the TL and removing caps on external capital movements (See Figure A.4) [41]. Global money units especially the Deutsch Mark (DM) have long been present in Turkish households' group of investments. The DM has become a near alternative for the TL, particularly between non-urban areas' populations with descendants who have been overseas since the late 1960 time periods, due to the growing presence of Turkish employees, primarily in Germany. This, nevertheless, cannot be considered money substitution in and of itself. While there is no accurate evidence on the amount of international money owned by the general population as a means of trade, it is fair to say that they were insignificant before international currency restrictions were abolished. Prior to the financial service's modernization, no international exchange was commonly used as a unit of account in internal trades. As a result, the trend of dollarization (or markization) in the Turkish market began in the mid-1980s [38].

If we look at the rate of foreign exchange deposits in the broad money (see Figure A.4 and Figure A.5), we can see that the upward trend has progressed aggressively after 1985 until the 1997 Asian financial crisis. The money supply, which increased with the effect of the crisis, decreased the share of foreign exchange, but with the effect of the recovery, we see a relatively flat rate in the short term until the 2001-2002 banking crisis. The 2001 Turkish crisis dealt a heavy blow to the economy by breaking the record of foreign currency demand in the last 25 years. The political and economic stability achieved with the balancing of inflation after 2002 also reduced the domestic demand for foreign currency. The stability, which was preserved until 2015, was interrupted by the manipulative movements organized by external forces and did not allow the normal functioning of the economic wheels. With the coup attempt that took place in 2016, the currency attacks in 2018 and the pandemic that broke out in 2020, the demand for foreign currency in the country increased, and this caused an inflationary atmosphere.

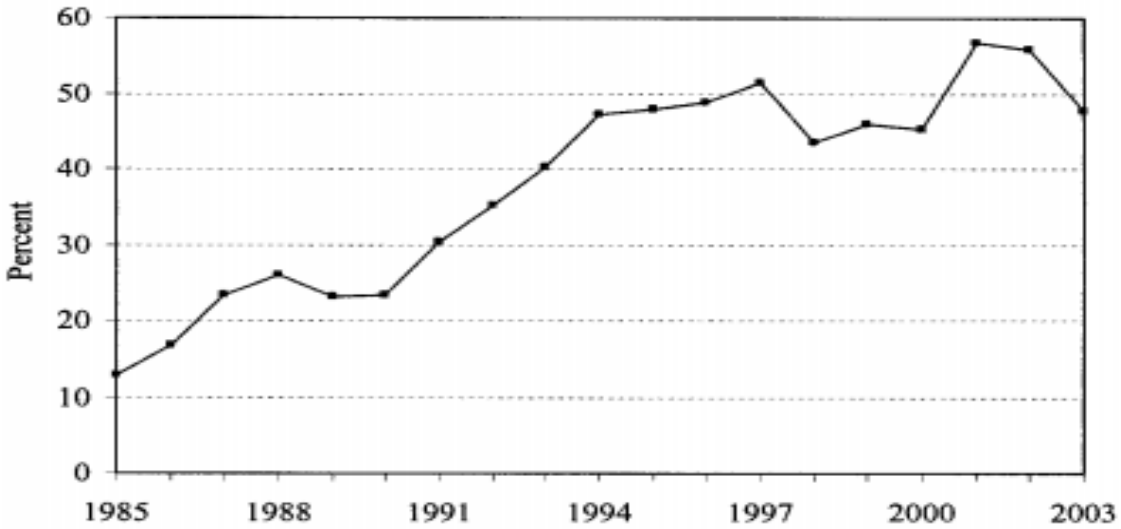


Figure A. 4 Share of foreign exchange deposits in broad money (M2Y)<sup>11</sup>

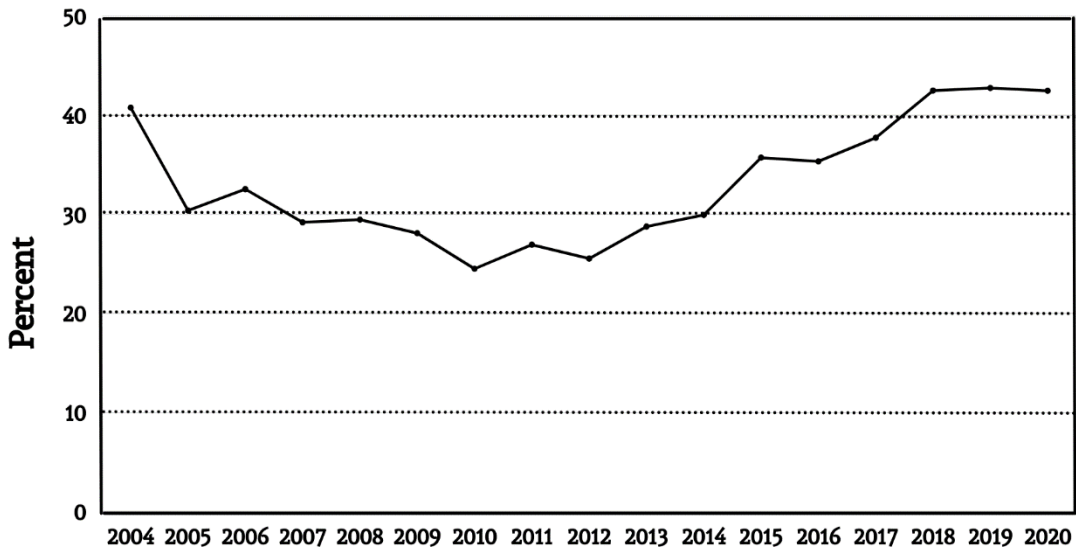


Figure A. 5 Share of foreign exchange deposits in broad money (M2Y)<sup>12</sup>

Another of the remarkable aspects of the 1980s is the incapacity to develop the fixed gross capital creation essential to maintain the first export expansion of the decade. The key causes for the

<sup>11</sup> [25]

<sup>12</sup> [6] [42]

incapacity to produce a large generating of funding growth may be considered to be the macroeconomic uncertainty and excessive loan prices of the period. The development of economic and social facilities structure was the primary emphasis of the public funding plan. During the period 1990-1994, the transportation and telecommunications industry accounted for 37.6 percent of all public expenditures which was 15 percent greater than the mean between 1980 and 1984. The state's engagement in the production business has steadily diminished, for example, the production business's proportion of overall total fixed expenditures in the public area has reduced from 19.4% in 1980-1984 to 7.9% in 1985-1989 and 4.3 percent in 1990-1994 (See Figure A.6) [25]. Nevertheless, private industry expenditure could not offset the reduced rates of state expenditure that might be related to excessive source activation prices and the availability of vacant productivity at the start of 1980. Starting from 32.7 percent in 1980-1984 to 21.6 percent in 1985-1989 and 24.8 percent in 1990-1994, the production business's proportion of private sector expenditures fell to 21.6 percent in 1985-1989 and 24.8 percent in 1990-1994. Private sector expenditure in the residential industry on the other hand, grew significantly from a mean of 29.6 percent in 1981-1983 to a mean of 40.2 percent in 1994-1996 (refer to Figure A.6). Nonetheless, overall private expenditure as a proportion of Gross Domestic Products (GDP) has remained stagnant throughout the previous two decades with 13.3% in 1980, 15.8 percent in 1990, 16.1% in 1999, and 17 percent in 2000 (see Figure A.4) [25]. While examining the private investments made in the sectors, the volumes of the industry and construction sectors, which are actually two of the dynamo sectors of the Turkish economy, are the main indicators that should be taken into account when examining the Turkish economy. When we look at Figure A.7, the value added volumes of the industry and construction sectors in the country from 1971 to 2002 do not even reach 100 billion Turkish Liras, and this allows us to make observations about the limited economic activity in the country. Figure A.3, Figure A.4 and Figure A.5 allow us to have an interpretation of the rate of demand for foreign currency within the country. The less the demand for foreign currency in the country, the more positively the volume of economic activity will be affected. The price stability achieved especially after 2002 and the low demand for foreign currency also positively affected the volume of investments in the country. The sector volume of 100 billion TL, which could not be reached in the 30 years from 1971 to 2002, reached 200 billion TL in a short period of 5 years between 2003 and 2008. In the history of the country, another record was broken in the economic frame.

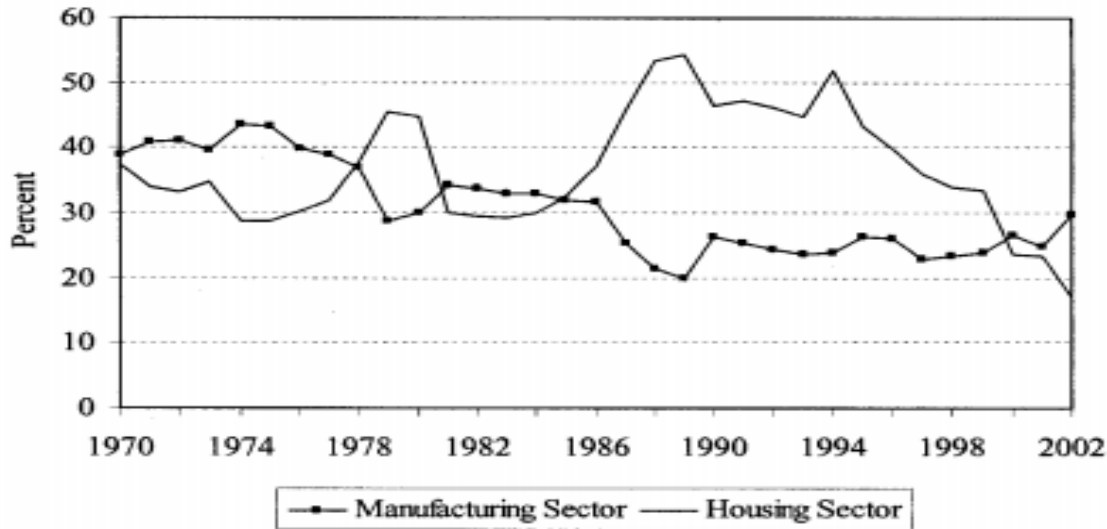


Figure A. 6 Private Investment by sectors, 1970-2002<sup>13</sup>

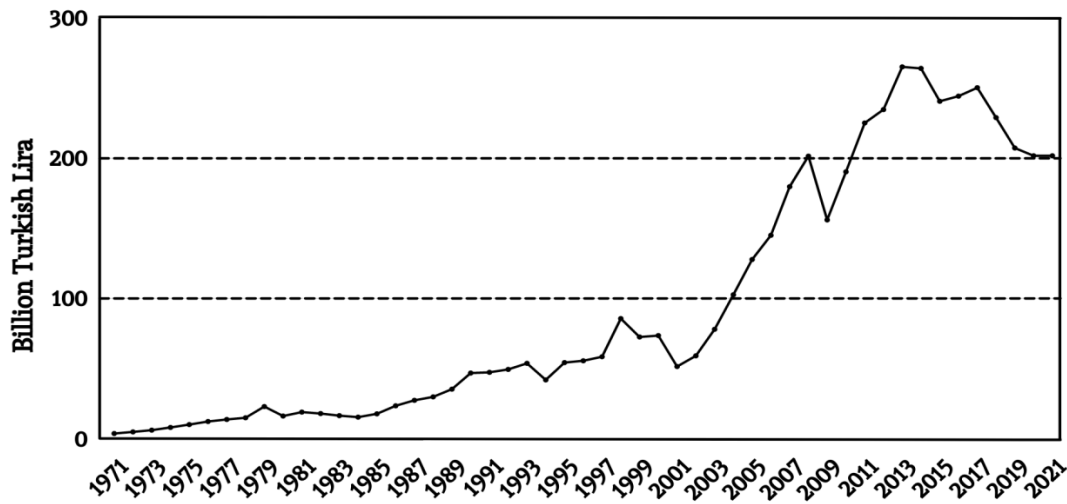


Figure A. 7 Industry (including construction), value added <sup>14</sup>

As seen in Figure A.8, after the economic crisis in 1994, there was a significant increase in the ratio of foreign borrowing from foreign currency to gross domestic product and the ratio of foreign exchange (FX) deposit account to large money supply (M2Y). It has not lived and has become permanent. It is possible to express that the foreign exchange deposit account rates did

<sup>13</sup> [25]

<sup>14</sup> [42]

not decrease in the 1990s as a reflection of the measures taken by the economic units against the exchange rate risk in an environment of instability. While foreign currency borrowings were negligible until the end of the 1990s, there has been a significant increase in the level of foreign exchange or foreign exchange indexed domestic borrowing since 2000 [18]. Turkey, which was exposed to many global and national economic fluctuations until 2002, became one of the countries that experienced the rapid transition to a stable economic structure. When we look at Figure A.8, the frequent fluctuations experienced between 1986 and 2000 indicate that it is difficult to achieve economic stability. Especially when we look at the framework from the point of view of depositors, the tendency towards foreign currency has increased during the economic crises and the bottleneck processes and this tendency has become an irresistible reflex. In order to reverse the tendency towards the demand for foreign currency, a solid financial structure should be established and the country's economy should catch the positive trend in terms of macroeconomics. When we consider all these, the period when all the conditions listed were met after 2002. First of all, extreme fluctuations were replaced by a stable trend, which increased the confidence felt in the economy for depositors. We see that the tendency towards foreign currency deposits has decreased with the establishment of increasing confidence in the economy. Balanced inflation data, together with the positive pricing on the consumer and producer side, and the effect of the low exchange rate, FX deposits became the decreasing side when we compare them with the money supply and M2. However, especially after 2018, increasing inflation and speculative exchange rate attacks once again increased the tendency towards foreign currency. Since an increase was achieved in the M2 wing with the increasing inflation, there was no significant increase in the Foreign currency deposits (FCD)/M2 ratio, but the primary reason for the increase in the FCD/Total TL Deposits ratio is the increasing exchange rate and the increase in domestic demand for foreign currency (See Figure A.9).



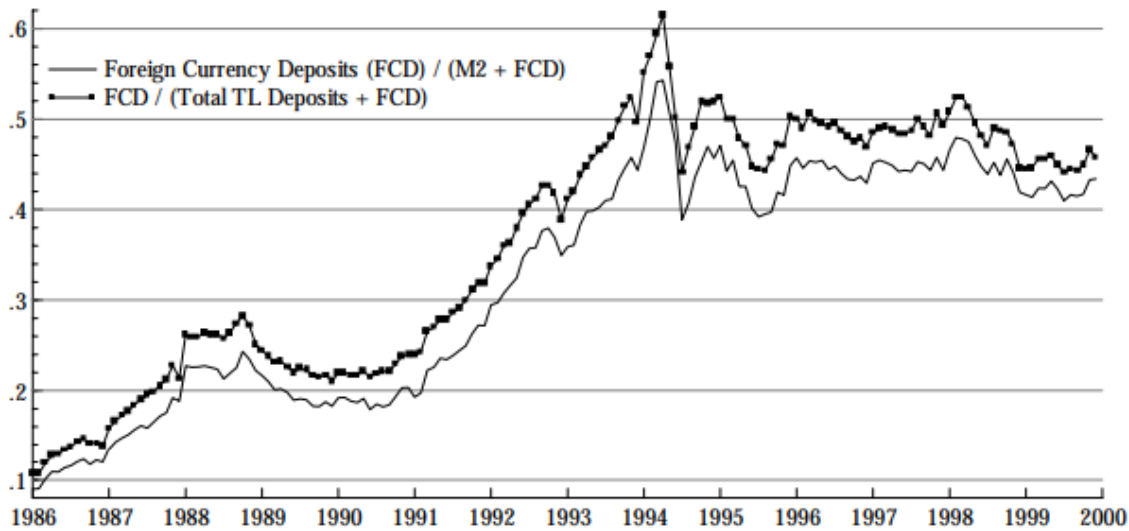


Figure A. 8 Proportion of Foreign Currency Deposits and Money Supply Proportion of Foreign Currency Deposits and Total TL Deposits<sup>15</sup>

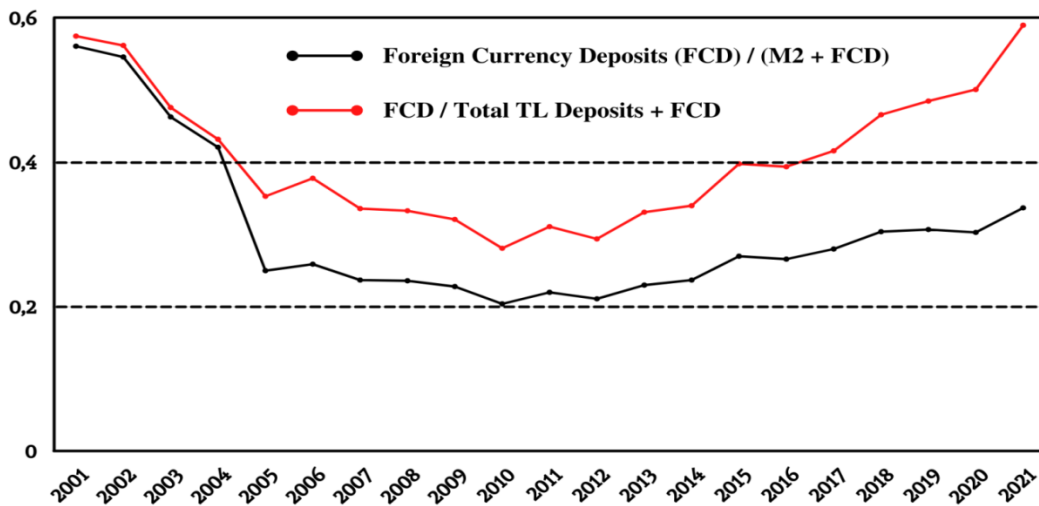


Figure A. 9 Proportion of Foreign Currency Deposits and Money Supply Proportion of Foreign Currency Deposits and Total TL Deposit<sup>16</sup>

<sup>15</sup> [18]

<sup>16</sup> [6] [42]

In Figure A.10, as dollarization indicators, the ratio of FX deposit accounts to the broad money supply Foreign Exchange Deposit Account (FEDA) / M2Y, the ratio of FX domestic borrowing to the total domestic borrowing amount (FCB / TDD) and the ratio of external borrowing to gross domestic product Foreign Debt (FD) / Gross National Products (GNP) offered. Besides, the percent change values in the United States Dollar (USD) / TL exchange rate are also shown on Figure A.10 [18].

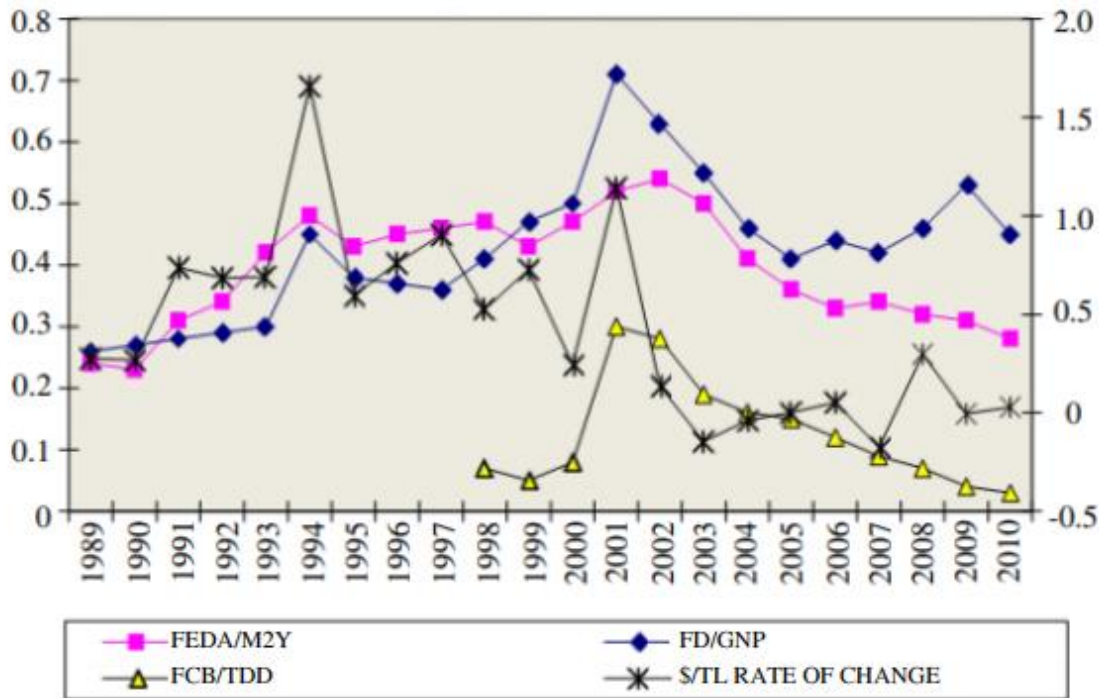


Figure A. 10 Dollarization Rates and Foreign Exchange Rates of Change<sup>17</sup>

Following the confidence environment created by the economic program implemented after the 2001 crisis in Turkey, significant decreases are observed in both asset and liability dollarization. Foreign currency borrowing rate at the end of 2010 dropped to the level of 15 percent. While the ratio of foreign exchange deposits to the broad-based money supply was 55 percent in 2002, this ratio decreased to 29 percent in 2010. On the other hand, the fact that the ratio of the average

<sup>17</sup> [40]

foreign exchange deposit account to the money supply for the last four years is above 30 percent can be interpreted as an indication of the economic agents' belief that the economy will exhibit vulnerability in the face of shocks [40].

To summarize, while the dollarization process in Turkey displayed an upward trend between 1989 and 2001, it was observed that there was a decrease in the rate of dollarization after 2001. In the uncertainty environment caused by the crisis environment in 1994 and 2001 caused the increase in the level of dollarization. With the decrease in inflationary pressure within the framework of the economic program implemented successfully after 2001, there was a significant decrease in the rate of dollarization. However, one of the most important factors of the lower than expected reversal rate in the dollarization process after the crisis is the free exchange rate policy implementation and the tendency of economic agents to protect themselves against various risks [40]. On the other hand, an increase and a decrease occur in the rate of change of the exchange rate depending on internal and external factors in the economy. In line with the program announced in 1980, exchange rate policies were aimed to liberalize the balance of payments and exchange rate system, together with the creation of a realistic real exchange rate. In this respect, as in other pricing, the value of exchange rates is generally shaped as the reflection of prices formed in market conditions. Although it is widely accepted that the applied exchange rate policies are governed by passive or relative purchasing power parity rule, it would be more appropriate to say that they are actually in the form of a policy of continuous real effective value losses. From the end of 1979 until the end of 1988, TL depreciated by 55 percent in real effective terms and there was an erosion in real effective exchange rates at an annual average rate of 6.11 percent [3]. The exchange rate policies implemented from 1994 to 1999 are in the form of a free exchange rate system managed to prevent uncertainty in the markets. In lieu of this, efforts were made to move the exchange rates according to inflation expectations and to adopt interbank interest rates as reference interest rates in the markets [25].

## **Findings**

While the total foreign currency deposits of real and legal persons in Turkey approached 190 billion dollars, the lower limit of dollarization (FEDA / M2) reached critical levels such as 0.47%. It is undeniable that variables such as Central Bank independence, speculative exchange rate, interest rates, country risk premium (CDS), credit rating grades, as well as price stability,

play a role in the loss of confidence in the national currency. In this sense, the first thing to do is reallocate trust in the national currency. Otherwise, it is almost impossible to prevent foreign currency demand without meeting the expectations of the economic agents and without providing legal security [51].

In times of high inflation, economic agents can increase their demand for foreign currency and financial assets in order to maintain their purchasing power. However, the devaluation of the national currency in countries where this situation is intense brings the problem of dollarization. Political tensions and election processes, deterioration in international relations, financial fragility and macroeconomic cause instability in Turkey, which has been a problem of inflation for years, lead to an increase in volatility in exchange rates. Ultimately, this situation increases the exchange rate, that is, it decreases the value of the TL against foreign country currencies. Individuals with reduced purchasing power rationally protect themselves by keeping their money in foreign currency, causing an increase in dollarization. As the foreign exchange deposits in hand increase, the success of the policies implemented is interrupted, eventually the monetary policy loses its effective functioning [51]. Taking all things into account, in order to fix the Turkish economy, it must first maintain its political stability and at the same time take steps to reduce inflation. The first step in reducing inflation is to ensure that FX deposit accounts are converted into TL deposits. While performing this step, new systems should be established to enable depositors to convert their money into TL, protecting them from heavy taxes and speculative currency attacks. Thus, depositors who feel safe from the exchange rate volatility and imposed taxes will have no reason to keep their money in FX deposits. These policies should be expanded step by step, and all institutions from legal entities to companies, which have foreign exchange affiliates, should be encouraged to keep their money in TL under state guarantee. In this way, increasing inflation will be prevented and the amount of dollarization will decrease to a large extent.

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## ABBREVIATION LIST

**ARDL:** Autoregressive Distributed Lags

**CBRT:** Central Bank of the Republic of Turkey

**CDS:** Credit Default Swap

**CPI:** Consumer Price Index

**DM:** Deutsch Mark

**FCB:** Foreign Currency Borrowing

**FCD:** Foreign Currency Debt

**FED:** Federal Reserve Bank

**FEDA:** Foreign Exchange Deposit Account

**FX:** Foreign Exchange

**GNP:** Gross National Product

**M2:** Money Supply

**PPI:** Producer Prices Index

**QQCOR:** Quantile-on-Quantile Correlation

**QQR:** Quantile-On-Quantile Regression

**TTD:** Total Domestic Debt

**TL:** Turkish Lira

**USD:** United States Dollar

**VAR:** Vector Autoregressive Model

# **Make-or-Buy Decision Criteria in Pakistan Pharmaceutical Industry; a case of Albert Pharmaceutical Industry**

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## **Abstract**

The goal of this research is to look into how Pakistan Pharmaceutical industries took make o buy decision. The “Make-or-buy” decision is an important choice in an organization. This decision can affect costs, competencies, and capability in the organization. The data has been collected from specialists of Albert manufacturing company in Pakistan. The questionnaire has been distributed to seven decision-makers of the Albert Pharmaceutical industry. Albert Pharmaceutical Industry mostly follows the decision-making criteria for core activities because it is a government requirement that all documents related to the manufacture and testing of medicines shall be submitted to Pakistan's Drug Regulatory Authority (DRAP). Because these are life-saving drugs, the government must take all precautionary measures. We have observed the relationship among the Resource-Based View, Cost Reduction, Environmental Uncertainty, and Financial Benefits, and the Decision-Making Criteria, on the other hand. The results of our study reveal that the Resource-Based View, cost reduction, and financial benefits are highly related to the decision-making criteria, whereas environmental uncertainty does not influence them at all. The outcomes of this study have also stated that making criteria is beneficial for the pharmaceutical industry. We also implement the regression analysis to see which factor has the greatest influence on the decision-making criteria, disclosing the Resource-Based View to be the most influential variable. Also, participants specify that they prefer manufacturing because they have most of the requisite resources and machinery along with human resources, organizational resources, and financial resources.

**Keywords:** Make-or-buy, resource-based view, decision-making criteria

**JEL Code:** M31

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## **Introduction**

Pakistan is a developing country and the Ministry of National Health Services legislation and Coordination is in full control of them. Pharmaceutical law is ruled through the Drug Regulatory Authority of Pakistan (DRAP), which ensures that the Drugs Act of 1976 is followed. The national essential medicine list (NEML) in Pakistan is primarily based on WHO standards and promotes standard medications; however, the whole report is generally only seen in public health centers (Rasheed et al., 2019).

The initiative of the Prime Minister's Health Insurance Program to establish rules for manufacturing and strict penalties for drug-related law violations are just a few examples of how the government is critical to maintaining health insurance. Pakistan had no Pharmaceutical industry when it achieved independence. The only way of fulfilling people's medical needs is export which is a very expensive way. But now many national and international pharmaceutical industries are working in Pakistan (Dawood, 2012).

In the current business environment, it is critical for most pharmaceutical industries to address and concentrate to their overall corporate capabilities to obtain a higher advantage. This can help the organization achieve its desired organizational goals. In this regard, many pharmaceutical companies implement a strategy of concentrating on their core activities, which requires defining important functions and evaluating which could be made in-house or outsourced. Industries flip to conducting their operations themselves, consisting of human resources (HR), production, packing, warehousing, transportation, and substances planning, in the reaction of those permanently changing needs and increasing complexities (Bastani et al., 2019).

The well-known motivations of enforcing these operations can be categorized into three types: enhancing abilities, increasing profit, and reducing expenses. Core competencies, on the other hand, are the outcome of a combination of capabilities, routines, and firm-specific resources. A firm's performance is uncertain as environmental conditions such as competition and market dynamics play significant roles.

The traditional nature of business operations requires the majority of economic activities are conducted inside the organization. However, with the evolution of markets and increased variety

of specialized decision-making criteria within these markets, the opportunity for outsourcing many non-core activities has grown significantly. An important phase in making in-house decisions or the process of outsourcing deals with the identification and assessment of potential risks.

The make-or-buy decision is one of the most crucial choices for any manufacturing organization. Typically, production corporations have loads of components, each of which may be made in-residence or outsourced. The outsourcing decisions are not best limited to substances and additives of a product but additionally apply to non-manufacturing support which includes assisting supply. For many businesses, the number of outsourcing choices is great. Besides cost and profit, outsourcing decisions additionally consider method issues, efficiency, and hazard dimensions associated with providing high-quality, lead times, and adequate transportation performance. If any of these elements are considered together, a procurement decision may be extremely complicated, having an impact on the firm's profitability. Hence, a bad decision can lead to inadequate organizational effectiveness (Venkatesan, 1992; Welch & Nayak, 1992).

The make-or-buy choice is one of the toughest duties faced by industries. Therefore, it necessitates extensive knowledge to evaluate the types of trade-offs, to identify all the available resources, and to make a decision that balances the organization's brief and long-term objectives. Furthermore, as organizational standards and marketplace circumstances change, this choice might also need to be taken in a complete one-of-a-kind manner within the future (McIvor et al., 2014).

Within corporations, due to strategic implications, the choice to make or buy is being given special attention. The choice to make or buy can frequently be a primary determinant of profitability, making a significant improvement to the organization's economic health (Yoon et al., 1994). Over the last few years, there is an increase in the number of organizations that outsource. The reason behind this trend refer to the risk related to a "make" approach, because of fast marketplace changes and the lack of pliability that characterizes in-house production (Hayes & Abernathy, 2007). Although, the trend to outsource parts that were previously manufactured in-house can result in an unexpected charges' increase, with many businesses failing to integrate the make-or-buy choice into the overall manufacturing approach (Probert et al., 2002).

Consequently, making it a crucial business strategy in which the firm is most involved, organizations have usually sought approaches to acquire an aggressive advantage over their potential competition to serve the need to respond to marketplace changes; although the current quite aggressive environment in which today's businesses operate acts as a robust stimulus for companies when choosing whether to outsource or not to outsource, an organization must understand several factors that may affect its performance by outsourcing.

Eventually, Albert pharmaceutical company, and also other top pharmaceutical companies in Pakistan have implemented manufacturing processes. This study seeks to bridge the gap through Resource-Based View, cost reduction, Environmental Uncertainty, Financial benefits Relationship with Decision-Making Criteria of Albert pharmaceutical company. Furthermore, this study will go thoroughly to identify how Albert Pharmaceutical followed the decision-making method and our main focus is to find if the decision, taken in the methodological terms of the company, is beneficial or not.

### **Literature Review**

Various studies are available in the field of Make-or-Buy decision, of which all have mixed results. Most of the studies use a model for the determination of the suitability and cost-effectiveness of their decision. In this study, we highlight the way in which decisions are taken in Pakistan's industrial sector.

Starting in the early seventies, purchasing from corporations was done primarily to obtain best prices, with other elements such as high quality and transportation being taken into consideration. Moreover, in so many circumstances, a substantial wide variety of elements along with transport reliability, technical capability, value functionality, and economic stability of the supplier had been now overlooked. Several businesses have implemented a competitive strategy regarding make-or-buy decisions, with many companies deciding to buy rather than make for short-term efficiency gains and company development (Ford et al.,2009).

Outsourcing has shifted its focus from peripheral activities such as cleanliness, serving, and security to more important business activities such as design, manufacturing, marketing, human resource management, and transportation (McIvor, 2000, 2009). When deciding whether to

outsource or insource, it is important to consider financial issues, market issues, reliance, and the availability of employees and equipment (Damme & Amstel, 1996).

In practice, many firms have no method for evaluation in the process of decision making. According to Edward Davis, many corporations base their outsourcing on overhead costs. The choice of which additives to outsource is made by using ascertaining what's going to store maximum overheads expenses, in preference to on what makes the most long-run businesses sensibility (Davis, 1992).

### **Making Criteria**

“Make” is the approach which should be followed in order to preserve the manufacturing process in-house. On the contrary, if the corporation is presently outsourcing the production, then it could desire to internalize it eventually. It is additionally crucial to preserve any present-day benefit by further developing the competency in order to limit the danger of competition. Ideally, an organization desires to have aggressive benefits in as many of its center activities as feasible (McIvor et al., 2016).

Making-or-purchase cost evaluation means identifying the cost to procure an element and comparing that value to the expenses involved by the item's purchase. The buying decision must be made whether all the costs associated with the buying decision, including transaction and coordination costs, are smaller than the production expense (Arya et al., 2008).

It is important to differentiate between the essential and semi-essential activities of the firm. It is also important to include a core activity to outline what is anticipated. Key interests are valuable to the corporation when it comes to correctly serving the desires of the capable customer in all marketplaces. The customer perceives the activity to be valuable, and thus it becomes a primary determinant of aggressive profit. Making the distinction between important activities and unessential activities is complex, and there should be ensured that long-term strategic issues and benefits are analyzed (McIvor et al., 2016).

Tayles and Drury (2001) stated that descriptive elements, as well as dishonest providers, the desire to govern production and quality of elements, as well as retain knowledge within the organization, will contribute to a decision. Other aspects include layout privacy, the ability to strengthen manufacturing, and workload pressure variability (Burt et al., 2010).

Making criteria consist of Cost, Quality, Time Experience, Financial position, Workload, Design secrecy, Production control, Environmental protection, Legislation, and Distribution control (Moschuris, 2014).

### **Environmental Uncertainty**

Environmental uncertainty can be defined as a company's inability to accurately determine the outcome in their selection (Wong et al., 2011). Environmental uncertainty typically has influences on the supply chain's overall result and dictates which aggressive factor should be highlighted and reviewed to establish a prevailing aggressive approach (Premkumar et al., 2005).

To maintain a competitive advantage, a successful manufacturing firm must consider whether a proper supply chain strategy is required to align with distinct environmental uncertainty. Evaluating and monitoring an organization's environment is critical for making correct choices and modifying techniques to a constantly changing context (Sun et al., 2009).

According to Anderson and Weitz (1986), environmental uncertainty has an adverse influence on both make or purchase choices. Certainly, creating and implementing policies to an external actor is difficult in an uncertain environment. Even so, wholly-owned corporations face similar challenges in coping with environmental uncertainty.

In this vein, corporations producing goods with rapid technological changes will gain from outsourcing, because they minimize the risk of never repaying their sunk costs as innovative technology emerges (Bartel et al., 2014).

### **Resource-Based View**

The resource-based view (RBV) examines many aspects while considering threats and opportunities. From the resources point of view, a company creates the capabilities and competitive advantage for a specific business interest. RBV defines resources as physical and intellectual property inside the corporation. The useful resource-based view is entirely based on the concept of efficient resources (Barney, 1991).

In RBV, the company compares its available resources with those of its competitors and attempts to have a few more resources than the competitor, giving him an edge over the competitors (Neves et al., 2014). According to Barney (1991), a significant factor that affects producing



competitive benefits must be investigated based on the following criteria: price, desirability, rareness, and business enterprise. Moreover, the researcher believed that the corporation must be organized to maximize its resources and abilities.

The specialized technique is the basic function due to which a corporation gains the competitive edge. The techniques and other aspects that are not specialized can be outsourced. This summarizes that RBV is used to comprehend how the company's capabilities expand and influence its rank and overall effectiveness (Eric et al., 2019).

### **Financial Benefits**

During the last three years, numerous types of research have been conducted by researchers in addition to assessing the financial condition with the assistance of various profitability ratios by employing statistical analysis techniques. Business overall output analysis refers to the methods required to fully assess a firm's capacity and obstacles using the connection between the heads of financial statements and the balance sheet (Panday, 1992).

The financial evaluation is defined as an investigation of causal relationships in terms of economic role and profit margins. The financial evaluation consists of three steps: Selecting, Relating and Evaluating financial records (Hingorani et al., 1973).

The major purpose of economic evaluation is to learn about the organization's fiscal overall effectiveness and control function, as reflected within the economic statistics and reports (Hampton, 1986). Aside from fiscal evaluation, the selection of a location is also important within the powerful asset utilization and cost reduction topics (Schumacher & Sathaye, 1999).

### **Cost Reduction**

Starting within the late 1970s and extending during the 1980s, most firms trusted conventional price reduction, which means that a group of crash applications concentrate on slicing prices via relowering payrolls and downsizing (Richardson, 1988). It is also surprising how firms can save sufficient resources to support additional expenses while still reaching the profit target and developing a feature for other organizations that might make that component (Akeem, 2017).

A conventional fee discount application is usually a distress tactic centered on employees. It is caused in reaction to an instantaneous danger, which includes poor performance, lack of

contracts, or price reductions. Some of those packages (mainly offshore retreat and diversification, both of which might be explained below) are booked with the desire of escaping to places wherein hard work and center fees are inexpensive. While those conventional techniques often lessen costs straight away, the associated reduction of the value of human belongings sets the level for the failure of abilities, in the long run, five regularly used traditional COSI Deduction programs are defined within the sections under their effectiveness (Skinner, 1989).

The phrases cost saving and value discount sound quite similar to a commonplace man, but their meanings are different. The cost-saving way to simply lessen the production fee by any means can be made through the use of raw cloth, with the aid of products, or even through wrong storage while applying price reduction without compromising the product quality. Cost reduction is decreasing the quantities of money spent on manufacturing and wages so that it will generate greater profit for the enterprise whilst preserving the quality of the product (Yadav et al., 2013).

### **Case Study**

Most of the national industries are operating in Pakistan and their majority has chosen to outsource. The number of industries that carry on the whole manufacturing process in developing countries is small. In developed countries, research on Make and Buy is being conducted mostly by using a specific model for the determination of what decision is beneficial to their industry. Therefore, the primary goal of this research is to investigate the Making process of any Pakistan industry. So, we selected the Pharmaceutical industry as it plays a vital role in people's lifesaving and it is important for developing countries because the pharmaceutical industries in Pakistan own the manufacturing process. This is why we selected the Albert Pharmaceutical industry and collected data from the decision-maker and have knowledge about their decision-making choices and results.

### **Data and Methodology**

Management is included in the decision-making process, given its responsibility of examining the criteria on which is based. This research reveals a case study approach; we assume that the management occupying senior positions within the pharmaceutical industry are more knowledgeable about the environment, strategies, and financial performance. Therefore, our

research is based upon primary data and secondary data, also known as the mixed method. The data was collected by questionnaire, given that an online survey was directed to an Albert pharmaceutical industry of Pakistan. The top executive of the Albert pharmaceutical industry was asked to respond to the survey, on the assumption that they have know-how regarding firms' strategic issues. The survey guide concerning questions included Resource-Based View, cost reduction, Environmental Uncertainty, financial benefits that affect Decision-Making Criteria. In order to give an insight not only into the making of service-related activities (such as resources and accounting), Albert pharmaceutical industry was chosen as the sample for this study and also allowed us to scrutinize the dynamics of manufacturing.

The sample consists of 7 people, of which there are 6 males and 1 female. Data included 14.3% female respondents 85.7% male respondents. Moreover, the age of 85.7% of the total respondents ranged from 26-30 and the rest of 14.3% ranged from 30-40. All the respondents were post-graduated and their work experience in Albert pharmaceutical company ranged from 1 to 5 years (for 14.3%), 6 to 10 years (for 71.4%), and the rest of 14.3% of the total respondents' experience was 10 years or above. The total data was collected from the top 7 executives of the Albert pharmaceutical industry.

The analysis of the data is based on a quantitative technique. The Structured Questionnaire is designed as a Tool for data collection. When the Questionnaire is adjusted, it is compulsory to measure the validity and quality of the questionnaires. However, the validity of this questionnaire has been approved by the concerned professional. The questionnaire is developed based on the Five-Step Likert Scale, which includes Strong disagree, Disagree, Neutral, Agree, and Strongly Agree, and a linear scale which includes very high to very low. We collected primary data through questionnaires and secondary data through previous research and data available on the internet. To begin with, the technique used for the sampling is non-random sampling in the cross-sectional time. The analysis of collected data is done through the software SPSS. The Study setting has been conducted in Natural Environment with Minimal Interference.

## **Measures**

Within this research, we have concluded that the resource-based view, cost reduction, environmental uncertainty, financial benefits are independent variables, whereas the dependent

variables are the decision-making criteria of Albert pharmaceutical company. In order to keep the exploratory nature of this research, we elaborated detailed hypotheses and the decisions have not been examined before. Consequently, the hypotheses were tested to investigate the relationship between the independent and the dependent variables.

### **Decision-making criteria**

Multiple conflicting criteria in the higher cognitive process are evaluated by a subdiscipline of research, expressly through multiple-criteria decision analysis. The stocks usually carry a high risk of losing cash that has the potential to transfer high returns, but managers propose to reduce the risks while recording high returns. By evaluating conflicting decision criteria which are typical because of price, quality simply increases in value. This analysis of make-or-buy demonstrates that the two-dimensional approach can be used in determining the make-or-buy decision. In industry, the price of providing services and client satisfaction are the basic conflicts in decision-making criteria. Significantly, the dynamic nature of analysis issues is captured through the planned methodology. The criteria are time-dependent and distinctive assumptions are made according to relative priorities by the model which only performs a time-dependent assessment of make-or-buy alternatives. In the proposed questionnaire submitted in Albert pharmaceutical industry, 11 items were designed to measure decision-making criteria. The respondents were asked to rate accordingly the impact of each criterion on a make-or-buy dilemma during the online survey by using a five-point Likert scale (1 for very low, 5 for very high). The value of Cronbach's Alpha for these dimensions is .890.

### **Environmental uncertainty**

Environmental uncertainties refer to the fact that firms affect chain performance as the future has unpredictable results under conditions of inaccurate choices. Sometimes environmental uncertainty determines the competitive factors in the market. Therefore, it should be evaluated and used as a winning competitive strategy. In unpredicted environments, writing and implementing contracts with external agents can cause trouble in the future. When investigating the decision-making criteria in changing environments, the sales fluctuations are very important to drive the pharmaceutical industry. Environmental uncertainty harms the production, purchase, and sales of products. This circumstances can force the management towards make-or-buy

decisions, the company being interested in minimizing sales fluctuations based on production in-house.

There were created five dimensions to test the environmental uncertainty. Each item was tested by using a five-point Likert-type scale, ranging from 1 “very low” to 5 “very high.” These dimensions are similar to those used by many developed to measure the following:

**H1.** There is a relationship between Environmental uncertainty and “making” criteria.

Opting for an in-house approach will grant higher profit by saving investments in some areas. However pharmaceutical industry can invest in required areas through in-house operations and these activities might perform by maintaining these variables. The pharmaceutical organization should pay attention to resource-based views (land, building, equipment, money etc.) and should also add a lot of facilities.

### **Resource-Based View**

Five items were developed on a Likert scale from (1) “strongly disagree” to (5) “strongly agree” and individual responses were collected to measure the Resource-based review. Each individual was asked to indicate their view on the “making” decision criteria. Accurate data is collected from respondents. The value of Cronbach’s Alpha for these dimensions is .932. It was ensured that supported resources claim that we want to include capabilities and competencies in the analysis since they need an impression on the potency to govern the other structures. The square measures the complementary ability for innovation during making in-house. One assumes self-seeking as a basic characteristic of human behavior. The resources should be used properly. The selection of assets in the governance structure has, therefore, to be created cut back. On the other hand, the second perspective focuses on the matter of restricted knowledge of resources. It is usually not possible to transfer information to alternative persons. The hypothesis was developed to measure the following:

**H2.** There is a relationship between Resource-Based View and “making” criteria.

### **Cost reduction**

The costs for the availability of production will have to be funded even in times when demand for the product is low and the facility might be underutilized. Essentially, making in-house

comprises the cost of manufacturing, profit margin, and internal resources. In Pharmaceutical Companies Cost reduction is done by a real and permanent reduction in the cost of products. They attempt to attain real savings in the price of distribution, administration, production, and commercialism. In the pharmaceutical industry, potential savings are buried; it is an attempt to excavate within the standards by planned efforts. The market lacks the dynamic approach however price management always needed standards intact of the variances. Cost management also seeks adherence and challenges in the price reduction standards. In pharmaceutical companies, the purpose of cost reduction is to check whether or not there's any chance of saving the prices incurred materials, labor, and factory overheads. Cost reduction begins wherever price management ends. Price management brings the actual harmonically change with the planned targets of making in-house.

A six-item construct was used to investigate assess cost reduction under making decision criteria. Each item was tested through a five-point of Likert-type scale (1) “strongly disagree” to (5) “strongly agree” The value of Cronbach’s Alpha for these dimensions is.877. The hypothesis was developed to measure the following:

**H3.** There is a relationship between cost reduction and “making” criteria.

### **Financial benefits**

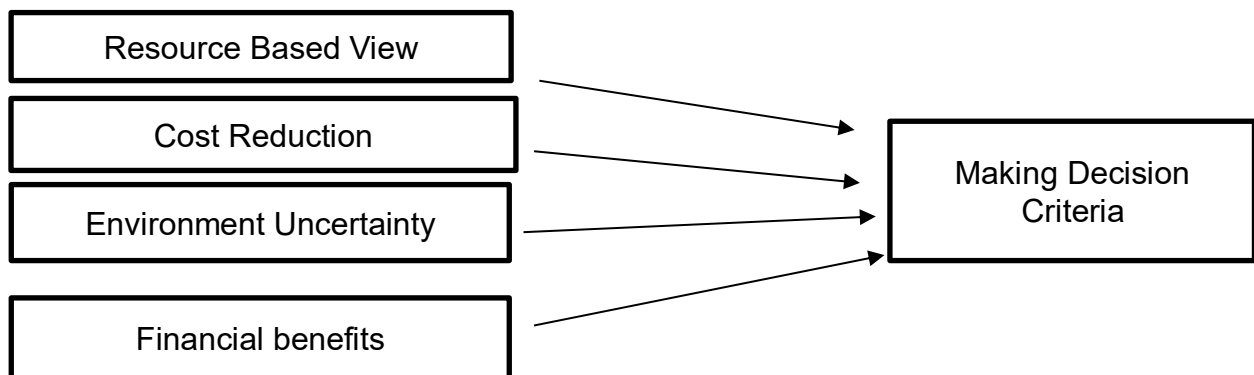
There are several ways pharmaceutical industries can get financial benefits by a greater focus and by increasing the availability of the drugs the greatest value can be attained. It can also be attained by Assets that produce more sellable product volume which operates longer between outages. The progressive volume made by additional reliable instrumentality carries a bigger margin of profit as a result of the fastened prices that were already unfolded across the baseline volume. Although the business isn't during a sold-out capability and therefore further volume isn't required, there are unit opportunities to create changes to operative shifts to cut back prices. When financial benefits are improved, maintenance prices are reduced often dramatically. Systems in pharmaceutical companies yield vital price reductions. Finally, to get financial benefits, assets area unit productive requires focus and our focus will yield higher high efficiencies. Funds might be deployed elsewhere for the nice of the business that may ordinarily be won't be replaced. However, in the pharmaceutical industry to create financial benefits focus

lead to modifications to the instrumentality to boost its reliability over the life of assets, and therefore newer instrumentality isn't needed anymore

Five dimensions are developed critically and effectively to measure financial benefits. Each dimension was rated with the help of a five-point Likert-type scale (1) for “strongly disagree” to (5). “Strongly agree” The value of Cronbach’s Alpha for these dimensions is .910. The hypothesis was developed to measure the following:

**H4.** There is a relationship between financial benefits and “making” criteria.

In the research, the poll for reliability test is created on SPSS for this study that inquiries both independent variables and dependent results. The reliability is tested on SPSS software under restrictions of thumb rule, the estimation of Cronbach’s alpha should be more than 70% which means 0.7. The value shows that the research of the data is reliable and satisfactory as the Cronbach’s alpha is 0.842. In this research, all five dimensions' reliability is based on Cronbach’s Alpha value that should be greater than 0.70. However, in the result of the reliability test, the amount of Cronbach’s Alpha of all the items is more than 0.70. So, the results have strong individual loadings on each dimension and show reliability and clarity in the conceptual structure.



**Conceptual Model**

## **Analysis/Results**

We analyzed the above responses to identify if there is any relationship among Resource-Based View, cost reduction, Environmental Uncertainty, the financial benefits Handling on Making Decision Criteria the dimensions to represent the relationships among the dependent and independent variables.

In analysis, The One-Sample Kolmogorov-Smirnov Test was used to test the normality of dimensions. The thumb rule of normality analysis is if the level of significance is more than 0.05 then the data is normal and if the level of significance is less than 0.05 then data is not normal. The significance (2tailed) of Making Decision Criteria is 1.000 which is  $>0.05$ . The significance (2tailed) of Environment Uncertainty is .803 which is  $>0.05$ . The significance (2tailed) of Resource-Based View is .983 which is  $>0.05$ . The significance (2tailed) of cost reduction is .905 which is  $>0.05$ . The significance (2tailed) of the financial benefits is .828 which is  $>0.05$ . Since the data is normal because the significance level of factors in data is greater than 0.05. The test results indicate that data is normal and the analysis is appropriate.

In our research, the model used for the correlation analysis computed the following information (principal components take values noted with double asterisk).



**Table 1 Correlation Table**

Sr. No	Variables	1	2	3	4	5
1	Environment uncertainty	1				
2	Resource-based review	.078	1			
3	Cost reduction	.188	.976*	1		
4	Financial benefits	.139	.975*	.958	1	
5	Making criteria	.24	.992**	.974**	.953**	1

\*\*Significant is at the 1% level of significance (2-tailed).

\* Significant at the 5% level of significance (2-tailed).

In H1 we failed to reject the null hypothesis, there is no relationship between Environment uncertainty, and making criteria.

In environment uncertainty, the Decision-maker may know the alternative that in which outcome it should be used but the condition of certainty always exists. The future is always unpredictable under the condition of uncertainty the cause and effect can occur on a daily routine. The day-to-day operations could be affected by environmental uncertainty but it does not affect making criteria. Under such conditions accurate and measurable and reliable information accordingly is available to the pharmaceutical industry. However, Environment uncertainty does not relate to making criteria and the variables do not have a relation with each other.

IN H2 we accept the alternate hypothesis as there is a highly significant relationship between the Resources based view and making criteria.

The setting should be introduced to bring innovation by using specialized potential and resources we already have in the pharmaceutical industry to compete with threats and rivalry in the market. However, it's different to deal with or adopt new traits, functions, or skills it's easier to use new

opportunities, competencies, and victimization resources, which we already have. Resources based view mode focus most on resources and supporters different structure strategy development

In H3 we accept the alternate hypothesis as there is a highly significant relationship between cost reduction and making criteria

A systematic examination of functions and assessment of the techniques is done for cost reduction. The various fields created investigation channels to test the performance improvement to increase the value of particular products and services to reduce cost and increase efficiency level through analysis pharmaceutical companies. However, it helps pharmaceutical companies to achieve cost for the greatest possible value. Hence, to analyze all aspects of an existing product/service for specific functional requirements should determine the minimum cost in Albert pharmaceutical company.

In hypothesis H4 we accept the alternate hypothesis as there is a highly significant relationship between financial benefits and making criteria.

The financial benefits lead to stability. Only the stability in operations in the industry can bring an increase in reliability and efficiency in performance which can bring financial benefits to the industry. The continuous method in pharmaceutical industries can realize not only the quality loss because of unstable operative excursions. This reduction in scrap prices and the stoppage of material wastes in the industry include financial benefits. The steadiness of the method should be reduced to reduce the speed. Instrumentality effectiveness, quality, availability and turnout performance can therefore reliability can also bring positive impact on all the factors of financial benefits.

Therefore, our correlation result shows that these factors financial benefits, Resource-based view and cost reduction have a highly significant positive relationship with “making” criteria.

**By implementing regression, we also find which factor has the greatest impact on the decision-making criteria:**

To investigate the effect of financial benefits we used the multiple linear regression analysis methods. The resource-based view and cost reduction, the effect three factors are analyzed. The

assumptions for multiple linear regression analysis (normality, linearity, and equality of variances) were fulfilled by data. There was no change in the dependent variable. The value of ANOVA was investigated in the model of making criteria. The model of ANOVA (identity of the population model summary) satisfied all the assumptions.

A post hoc analysis was done using Tukey's range test and results identify that the differences test was significantly conducted. The value of regression is 0.000 which is less than the significant value of  $\alpha < 0.05$ . The adjusted r square value is .980 which shows a high impact of an independent variable on a dependent variable although, there is a significant impact of the Resource-based view on making criteria.

**Table 2**

*Regression Analysis*

<b>Making Decision Criteria</b>	<b>Coefficient</b>	<b>Sig Value</b>
Resource-Based View	.497	0.000
Financial Benefit	-.275	.412
Cost Reduction	.139	.654
Environment Uncertainty	-.275	.341

Regression analysis shows that Resource-based reviews have a high impact on the decision-making criteria. While taking the make and buy decision the resource-based view is the most important factor.

**Conclusions**

In a highly competitive market, organizations strive to prepare for future schemes that will assist them in enhancing organizational success. Such processes assist businesses in gaining a competitive edge. Pharmaceutical companies in the competing and challenging marketplace can lower costs by reducing the cost of practices. The results depict that in Pakistan most of the

pharmaceutical companies are using the Make in-house activity in business. The companies' major motive behind making is cost-efficiency. The results of the correlation show that there is a significant influence of resource-based view, especially on cost reduction of companies. Cost is a prominent factor that has a significant impact on the company's manufacturing under rule 1948 of Pakistan. The pharmaceutical industry also prefers making because they have all resources.

In the end, the results show that these financial benefits, Resource-based view, and cost reduction have a highly significant positive relationship with making criteria.

As the respondent also told that the core part includes all types of medicine that should be made by the Albert pharmaceutical industry. It is also a government requirement because a report of medicine which chemical and drug users and what are its effect should be submitted to the Drug Regulatory authority of Pakistan (DRAP). All medicine that is made required a specific temperature and environment that's why the core part is also made. Non-core parts which are packing material, Logistics, bottles for syrup, and logo prints are outsourced. After the approval of the government, medicine should be made and sale to the consumer. Regression analysis shows that Resource-based review has a high impact on "making" criteria. As we conclude while taking the make and buy decision the resource-based view is an important factor. In light of the above fact, pharmaceutical companies give a positive impact of Resource-based review on decision-making criteria and Efficiency increases. In the end, the results concluded that due to several reasons as The Albert pharmaceutical industry prefers making criteria. ON their resources base they prefer to make because they have all resources needed for making medicine as well as it is cost-effective in Pakistan.

### **Limitations and future research direction**

Our research is limited to the Albert Pharmaceutical industry due to shortage of time we have limited data for finding so all this research is according to one pharmaceutical industry. As a student or due to a pandemic we could not have approached other pharmaceutical industries. Another limitation is the sample size this research is also conducted by increasing the sample size. Future research can be done by increasing the number of pharmaceutical industries and any other industries.

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# İkili Ticari İlişkilerin İhracat ve İthalat Yoğunluk Endeksi ile İncelenmesi: Azerbaycan ve Kırgızistan Örneğinde (2010-2019)

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## Özet

Bu çalışmanın temel amacı, iki kardeş Türk Cumhuriyeti olan Azerbaycan ve Kırgızistan Azerbaycan ile Kırgızistan arasındaki ikili ticari ilişkilerin gücünü analiz etmek için bir girişimde bulunulmuştur ve Azerbaycan'ın Kırgızistan ile 2010-2019 yılları arasındaki ikili ticari ilişkilerinin incelenmesi için ihracat ve ithalat yoğunluk endeksi kullanılmıştır. Azerbaycan ve Kırgızistan arasındaki ticaret yoğunlaşmasının dünya ortalamasından az (çok) olup olmadığı ithalat ve ihracat yoğunluğu endeksi kullanarak araştırılmıştır. İhracat ve ithalat hacminde genellikle azalma kayıt edilmesine rağmen, yapılan çalışma sonucunda, Azerbaycan ile Kırgızistan arasında iki taraflı ticaret ilişkilerinin yaklaşık dünya ortalaması üzerinde gerçekleştiği tespit edilmiştir.

**Anahtar Kelimeler:** İkili ticaret yoğunluğu, Azerbaycan ile Kırgızistan arasındaki ticari ilişkiler, İhracat yoğunluk endeksi, İthalat yoğunluk endeksi

**JEL Kodu:** B1, F1

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## **Investigation of Bilateral Trade Relations with Export and Import Intensity Index: In the Case of Azerbaijan and Kyrgyzstan (2010-2019)**

### **Abstract**

The main purpose of this study is to determine which level of bilateral trade relationships between two brotherly Turkish republics, Azerbaijan and Kyrgyzstan. In this study, an attempt was made to analyze the strength of bilateral trade relations between Azerbaijan and Kyrgyzstan, and the export and import intensity index was used to investigate the bilateral trade relationships of Azerbaijan with Kyrgyzstan between 2010-2019. Thus, the trade intensity between Azerbaijan and Kyrgyzstan was examined by means of the import and export intensity index, which is not less than the world average. Although the volume of exports and imports has generally decreased, as a result of the study, bilateral trade relations between Azerbaijan and Kyrgyzstan have been realized above the world average.

**Keywords:** Bilateral Trade Intensity, trade relation between Azerbaijan and Kyrgyzstan, Export intensity Index, Import intensity Index,

**JEL Code:** B1, F1

## Giriş

Azerbaycan ve Kırgızistan aynı dil ve din ile birleşen eski tarihe, köke, kültürel ilişkilere ve geleneklere sahiptirler. Her iki ülke de Rusya İmparatorluğu ve Sovyetler Birliği döneminde tek merkezden yönetilmekle müttefik cumhuriyetler olmuş ve aynı zamanda aralarında ekonomik ve kültürel bağlar kurulmuştur. SSCB'nin çöküşünden ve Sovyet sonrası alanda bağımsız devletlerin kurulmasından sonra, bu ilişkiler daha da gelişmeye başlamıştır. Şu anda Kırgızistan'da 1930'larda Bolşevikler tarafından baskılara maruz bırakılarak Azerbaycan'dan sürülmüş aydınlar ve onların torunları olan 20.000'den fazla Azerbaycanlı yaşıyor. (Turan 2019: 11). Bağımsızlık sonrası Azerbaycan ve Kırgızistanın birlikde katıldığı iki ve çok taraflı anlaşmaları, aynı zamanda farklı örgütlerde ortak üyelik ve çalışmaları vardır. 21 Aralık 1991'de Bağımsız Devletler Topluluğu'nun (BDT)'nin kurulmasına ilişkin anlaşmaya göre, Azerbaycan, Ermenistan, Kazakistan, Kırgızistan, Moldova, Tacikistan, Türkmenistan ve Özbekistan olmak üzere 8 ülkenin katılımı ile topluluk kuruldu (Hesenli 2015: 12). Azerbaycan, 1993 yılında Bağımsız Devletler Topluluğu (BDT) ile bir Serbest Ticaret Anlaşması imzalamış ve Rusya, Ukrayna, Kazakistan ve Kırgızistan dâhil 5 ülke ile belirli gümrük tarifeleri dâhilinde ticari ilişkileri sürdürmektedir (Berxudarlı 2015: 4-5).

Türk halkları ve ülkeleri arasındaki kültürel bağları genişletmek, halkların kültür ve sanatını korumak, canlandırmak ve geliştirmek amacını hedefleyen Azerbaycan ve Türkiye siyasi liderliğinin ve iradesinin gösterdiği faaliyetler sonucunda, 12 Temmuz 1993 tarihinde Azerbaycan, Kazakistan, Kırgızistan, Kıbrıs, Türkmenistan, Türkiye ve Özbekistan Kültür Bakanları 8 maddeden oluşan "Türksoy Yapısı ve Esasları Anlaşması"nı imzalanması ile uluslararası kültürel işbirliği örgütü olan TÜRKSOY kuruldu (Huseynova 2007: 12).

1991'de Sovyet Sosyalist Cumhuriyetleri Birliği'nin (SSCB) çöküşünden sonra, Avrupa Birliği yeni, bağımsız devletlerle çalışmak, demokratik reformlar gerçekleştirmek, bir piyasa ekonomisinin altyapısını oluşturmak, uluslararası ticareti, taşımacılığı, gümrükleri ve geçişi geliştirmek için özel bir TACIS programı geliştirmiş ve finanse etmiştir. Bu program çerçevesinde "Avrupa-Kafkasya-Asya Transkafkasya" ve Avrupa Birliği'nin girişimiyle 1993 yılında Brüksel'de toplantı gerçekleşti. Azerbaycan, Gürcistan, Kazakistan, Kırgızistan, Özbekistan, Türkmenistan ve Tacikistan temsilcilerinin katılımıyla "Ulaşım Koridoru" projesi (TRACECA) başlatıldı. Görüşmeler sonucunda "Brüksel Deklarasyonu" başlıklı iki resmi belge imzalandı ve eski Doğu-Batı "İpek Yolu" koridorunun yeni koşullarda restore edilerek ulaşım ve iletişim altyapısının yeniden yapılandırılmasına ve geliştirilmesine karar verildi (Huseynova 2007: 32). Orta Asya bölgesinde, Azerbaycan'ın Kırgızistan ile ikili diplomatik ilişkileri 19 Ocak 1993'te kuruldu. Haydar Aliyev,

Ağustos 1995'te, Türkçe konuşan devlet başkanlarının üçüncü zirvesine katılmak üzere Kırgızistan'ı ziyaret etti ve Kırgızistan Cumhurbaşkanı Askar Akayev'in Azerbaycan'ı üç kez ziyaret etmesi ile ikili ilişkiler gelişmeye başladı ve bu görüşler sırasında ikili, bölgesel ve uluslararası konular görüşüldü. "Azerbaycan Cumhuriyeti ile Kırgız Cumhuriyeti Dostluk ve İşbirliği Anlaşması" dâhil olmak üzere 14 belge imzalandı. Ayrıca, zamanla iki ülkenin devlet kurumları ve işletmeleri arasında 38 farklı anlaşman, sözleşme ve diğer yasal ve düzenleyici belgeler imzalandı (Hesenov 2005: 499-501).

İki ülke arasında ilişkiler derinleştikçe konsolosluk ve büyükelçilikler yaradıldı. 2002 yılında Kırgızistan Cumhuriyeti Azerbaycan Fahri Konsolosluğu kuruldu. 2005 yılında Azerbaycan Cumhuriyeti Milli Meclisinin kararı ile Azerbaycan-Kırgızistan parlamentolar arası ilişkileri konusunda bir çalışma grubu oluşturulmuştur. 2007 yılında Azerbaycan Cumhuriyeti'nin Kırgızistan Cumhuriyetinde Azerbaycan Büyükelçiliği açıldı ve bununla da iki ülke arasında diplomatik ilişkilerin gelişmesi yönünde çalışmalara başlandı (Sadayoğlu, 2014: 15). Zamanla Azerbaycan ile Kırgızistan arasında gelişen ilişkiler BDT, Türk Keneşi, TÜRKSOY, TürkPA çerçevesinde siyasi, ekonomik ve kültürel ilişkiler içinde devam etse de, iki taraflı ilişkilerin derinleşmesi için her iki ülke büyük potansiyele sahiptir. 2017 yılında Orta Asya ülkelerini Büyük İpek Yolu'nun batı uzantısı olarak Avrupa'ya bağlayan Bakü-Tiflis-Kars demiryolunun resmi açılışının gerçekleşmiş olması Azerbaycan'ın Kazakistan, Türkmenistan ve Özbekistan gibi Kırgızistan ile olan ilişkileri açısından da önemli bir gelişmedir (Özsoy, 2019: 750-753).

## **2. Literatür Taraması**

Literatürü çalışması yaparken ihracat yoğunluk endeksi ve ithalat yoğunluk endeksi ile yapılmış çalışmaları incelenecektir. Ülkeler arasındaki ikili ticaretin yoğunluğunu ölçen ithalat ve ihracat yoğunluk endeksi birçok uluslararası çalışmalarda kullanılmıştır. Literatürde çalışılacak iki indeks üzere yapılmış çalışmalar ve bu çalışmaların bu indeks ile yapılma nedenleri ve sonuçları gösterilecektir.

Aliğ Bagirov 2019 yılında Azerbaycan ile Polonya arasındaki ikili ticaretin yoğunluğunu incelediğinde, 2003-2016 yılları arasında iki ülke arasındaki ticaretin yoğunluğunu analiz etmek için İthalat ve İhracat Yoğunluğu endekslerini kullandı (Bagirov 2019: 223). Fuad Salamov (2002) çalışmasında Türk Cumhuriyetleri arasında muhtemel işbirliği örgütünün kurulmasını incelemiş, ülkelerin ekonomik ve sosyal potansiyeli hakkında bilgi vermiştir. Çalışma sonucunda Türk Cumhuriyetleri arasında başlangıçta ikili ilişkiler düzeyinde ekonomik işbirliği, daha sonra ise örgüt düzeyinde birlik oluşturulabileceği kanaatine varılmıştır (Salamov 2002: 32). Nevzat Şimşek ve

diğerlerinin yaptıđı alıřmanın amacı, 1992-2010 yılları arasında iki lke arasındaki ikili ticareti Trkiye ile Rusya arasındaki sektr bazlı ticaret verilerini kullanarak analiz etmiřtir (řimřek vd. 2017: 1-26). Anurag Anand ve Krishna Garg tarafından 2016 yılında yapılan bir arařtırma, Hindistan'ın BAE ile 1991 ve 2014 yılları arasındaki ticaret yođunluđunu analiz ettiř ve ticaret bađlarının yođunluđunu incelemiřtir. Bu alıřmada, Hindistan'ın BAE ile ticaretinin dnya ortalamasından az ya da ok olup olmadıđını analiz edilmiřtir (Anand vd. 2016: 22-28). Sabaruddinand ve Nugrahaningsi, Endonezya-řili arasında ikili ticaret yođunluđunu incelemiř ve bunu 1989-2012 dnemi ticaret yođunluđu endeksini kullanarak analiz etmiřtir (Sabaruddinand vd. 2013: 49). Lisandra Patrice Colley, ticaret potansiyelini nicel olarak deđerlendirmek iin 2004-2013-c iller arasında Karib Birliyi (CARICOM) ve in arasında ticaret intensivliyi indekslerinden istifade edrk ikitrfli ticaretin tkamln arařdırmıřdır. (Colley 2015: 104-119). Bhattacharyay ve Mukhopadhyay tarafından 2015 yılında yapmıř olduđu bir arařtırmada, Hindistan ile Japonya arasındaki ticaretin yođunluđunu 1990-2009 dnemi ticaret yođunluđu endeksini kullanarak analiz etmiřtir (Bhattacharyay vd. 2015: 97). 2001 - 2011 yıllarda Hindistan ile Japonya arasındaki ikili ticaret ve ticaret yođunluđu endeksleri kullanılarak iki lke arasındaki ticaret yođunluđunu lmřtler. İki lke arasındaki ikili ticaret iliřkileri, lkelerin birbirleriyle ne kadar yođun ticaret yaptıđını gsteren yođunluk endeksleri ile aıklanmaktadır (Sundar vd. 2014: 1-28). Bu alıřma, Trkiye'nin İsrail ile ticaretinin dnya ortalamasının altında olup olmadıđı bu ideksler kullaarak analiz etmektedir. alıřma, 1995-2014 dnemi ticaret yođunluđu endeksi deđerleri kullanılarak Trkiye ile İsrail arasındaki ikili ticaretin geliřme eđilimini incelemeyi amalamaktadır (Yazıcı 2016: 103-115). Hseyin Altay ve diđerleri, Trkiye'deki dıř ticaretin kresel yođunlařması zerine yaptıkları bir alıřmada, Trkiye ile ticaretin yođunluđunu 68 lkenin istatistiklerine dayanarak analiz etmiřlerdir (Altay vd. 2010: 2). Baghirov, İbrahimov ve Ashimova alıřmasında Azerbaycan ile Polonya arasındaki ikili ticaretin yođunluđunu incelemiř, 2003-2016 yılları arasında iki lke arasındaki ticaretin yođunluđunu analiz etmek iin İthalat ve İhracat Yođunluđu endekslerini kullanmıřtır (Baghirov vd. 2019: 223).

### **3. Metodoloji**

Bu blmde alıřmada kullanılan ihra ve ithal yođunluđu indeklerinin teorik altyapısı sunulmaktadır. EII, bir lkenin ortak lke ile yaptıđı ihracatın dnya ortalamasından daha yksek olup olmadıđını hesaplayan endekstir. Bu endeks, ortalama olarak iki veya daha fazla lke arasındaki ihracatın yođunluđunu ve seviyesini lmek iin kullanılmaktadır.

Çalışmada Azerbaycan ile Kırgızistan arasındaki ihracat yoğunluğunu ölçmek için ihracat yoğunluk endeksinin matematiksel tanımı aşağıda sunulmuştur (Altay vd. 2010: 3):

$$EII_{ai} = \frac{(X_{ai} / X_{at})}{(M_{it} - M_{ia}) / (M_{dt} - M_{at})}$$

$EII_{ai}$  - Azerbaycan ile Kırgızistan arasındaki ihracat yoğunluğu endeksi

X – İhracat

M - İthalat

$X_{ai}$  - Azerbaycan'ın Kırgızistana İhracatı

$X_{at}$  - Azerbaycan'ın Toplam İhracatı

$M_{it}$  - Kırgızistan'ın Toplam İthalatı

$M_{ia}$  - Kırgızistan'ın Azerbaycan'dan ithalatı

$M_{dt}$  - Dünyanın Toplam İthalatı

$M_{at}$  - Azerbaycan'ın Toplam İthalatı

İhracat yoğunluk endeksinin değeri  $0 < EII$  arasında değişir. Eğer değer  $EII = 1$  ve ya 1-e yakın olursa, Azerbaycan ile Kırgızistan arasında dünya ortalamasında dengeli bir ihracat olduğu söylenebilir (Altay vd. 2010:3). İhracat yoğunluk endeksi değeri ( $EII > 1$ ) 1'den büyük olduğu durumunda “a” ülkesinin “i” ülkesine dünya ortalaması üzerinde bir ihracat gerçekleştirildiğini, yani Azerbaycan'ın Kırgızistan ile dünya ortalamasının üzerinde bir ihracat gerçekleştirdiği kanısına varılabilir. Endeks değerinin “1”den küçük olması halinde ise ihracat ilişkisinin dünya ortalamasına göre daha düşük olduğu söylenmektedir. (Anand vd. 2016: 26)

MII, bir ülkenin ortak ülke ile yaptığı ithalatın dünya ortalamasından yüksek olup olmadığını hesaplayan endekstir. Bu endeks, iki veya daha fazla ülke arasındaki ithalatın dünya ortalaması yoğunluğunu ve seviyesini ölçmek için kullanılmaktadır.

Azerbaycan ile Kırgızistan arasındaki ithalat yoğunluğunu ölçmek için ithalat yoğunluk endeksi şu şekilde tanımlanır:

$$MII_{at} = \frac{(M_{ai} / M_{at})}{(X_{it} - X_{ia}) / (X_{dt} - X_{it})}$$

$MII_{ai}$  - Azerbaycan ve Kırgızistan arasındaki ithalat yoğunluğu endeksi

X – İhracat,

M - İthalat

$M_{ai}$  - Azerbaycan'ın Kırgızistan'dan ithalatı

$M_{ai}$  - Azerbaycanın dünyadan ithalatı

$X_{it}$  - Kırgızistanın toplam ihracatı

$X_{ji}$  - Kırgızistan'ın Azerbaycan'a ihracatı

$X_{dt}$  - Toplam dünya ihracatı

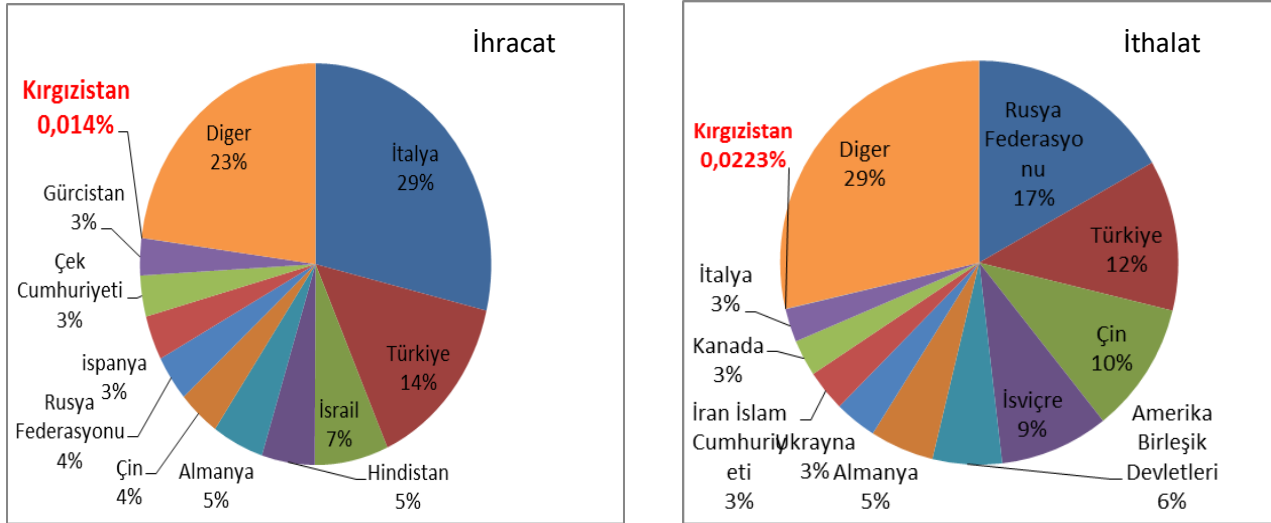
$X_{it}$  – Azerbaycanın toplam ihracatı

İthalat yoğunluk endeksi değeri  $0 < MII$  arasında gerçekleşir. Eğer bu değer  $EII = 1$  veya 1'e yakın olursa, Azerbaycan ve Kırgızistan arasında gerçekleşen ithalın dünya ortalamasında dengeli olduğunu gösterir. (Altay vd., 2010:3). Eğer İthalat yoğunlaşması indeksinin değeri ( $EII > 1$ ) 1'den büyük olduğu durumunda "a" ülkesinin "i" ölkesinden dünya ortalaması üzerinde bir ithalat gerçekleştirdiğini, yani Azerbaycan'ın Kırgızistan'la dünya ortalamasının üzerinde bir ithalat gerçekleştirdiği, endeks değerinin "1"den küçük olması halinde ise ithalın dünya ortalamasına göre daha az gerçekleştiği söylenmektedir (Anand vd. 2016: 26)

#### 4. Azerbaycan- Kırgızistan Dış Ticaret İlişkilerine Genel Bakış

Bu bölümde Azerbaycan ile Kırgızistan arasındaki toplam ithalat, ihracat, ticaret hacmi ve denge incelenecektir. Grafikler ve analizler aracılığıyla iki ülke arasındaki mevcut durum ve fırsatların gelişimi gösterilecektir. 2019 yılında Azerbaycanın toplam ihracat ve ithalat haciminde yer alan ilk 10 ülkenin ve Kırgızistanın payı aşağıdaki grafikte yüzdeler olarak gösterilmiştir.

**Grafik 1. Azerbaycan'ın ithalat ve ihracat payına göre ilk 10 ülke (%)**



Kaynak: [www.stat.gov.az](http://www.stat.gov.az), (Erişim Tarihi: 01.09.2020)

Grafik 1'e göre 2019 yılında Azerbaycan'ın ihracat haciminde yer alan ilk 10 ülke: İtalya, Türkiye, İsrail, Hindistan, Almanya, Çin, Rusya Federasyonu, İspanya, Çekya ve Gürcistan olmuştur. Toplam ihracatta %29 ile İtalya liderlik etmekte, %14 ve %7 ile sırasıyla Türkiye ve İsrayıl ikinci ve üçüncü sırada yer almaktadır. Kırgızistan Azerbaycan'ın toplam ihracat hacimi içerisinde %0,014 ile 54'cü sırada yer almaktadır. Azerbaycan ithalat hacmine göre ilk 10 ülke ise Rusya

Federasyonu, Türkiye, Çin, İsviçre, Amerika Birleşik Devletleri, Almanya, Ukrayna, İran İslam Cumhuriyeti, Kanada ve İtalya olmuştur. 2019 yılında Azerbaycan ithalatı; %17, %12 ve %10 olmakla sırası ile Rusya Federasyonu, Türkiye ve Çin'den gerçekleştirmiştir. Kırgızistan'dan ithalat hacmi oldukça düşük % 0,022 oranda olmakla, Azerbaycan'ın ithalat sıralamasında 78'ci sırada yer almıştır. İki ülke arasındaki dış ticaret hacmi oldukça zayıf olmaktadır. 2010-2019 yıllarında Azerbaycan ile Kırgızistan arasındaki ithalat ve ihracat hacmi aşağıdaki tabloda gösterilmektedir.

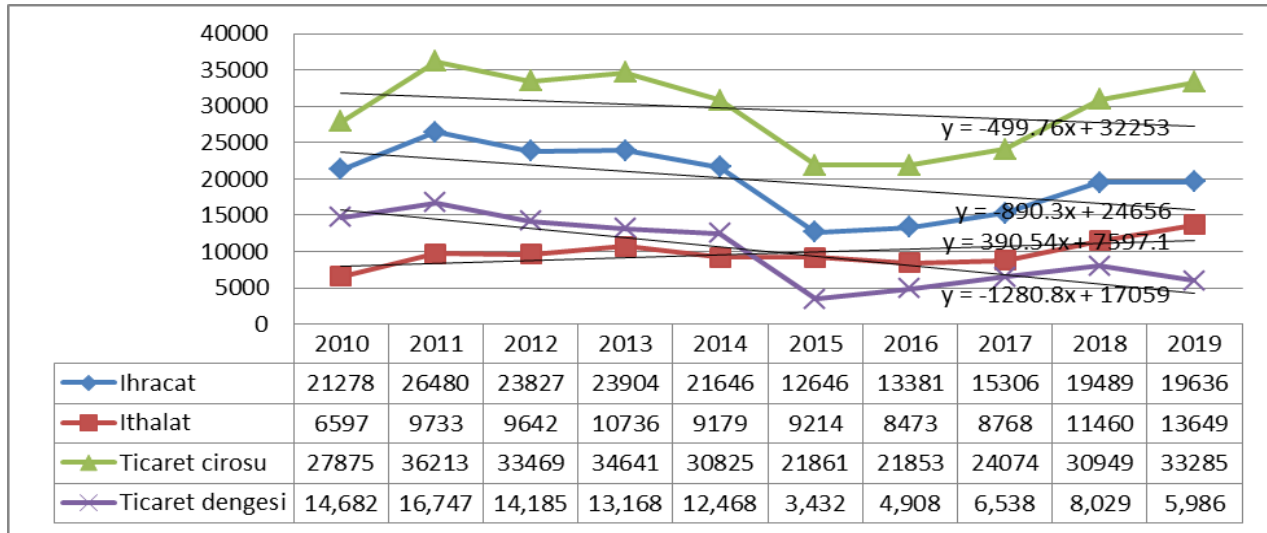
**Tablo 1: Kırgızistan'ın Azerbaycan ticaret hacmi içinde sırası (2010-2019)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
İthalat	72	76	72	73	72	72	78	78	74	75
İhracat	33	36	38	41	40	42	46	60	49	51

Kaynak: [www.stat.gov.az](http://www.stat.gov.az), (Erişim Tarihi: 01.09.2020)

Tablo 1'den görüldüğü gibi, 2010-2019 yıllar arasında Azerbaycan ve Kırgızistan arasındaki iki taraflı ticaret hacmi çok düşük olmuş ve Azerbaycan'ın dış ticaretinde Kırgızistan son sıralarda yer almıştır. Tablo 2'de, Azerbaycan'ın 2010-2019 arasındaki toplam ihracatı, ithalatı, ticaret cirosu ve ticaret dengesini göstermektedir.

**Tablo 2: Azerbaycan'ın Toplam Dış Ticaret Hacmi (milyon ABD \$)**



Kaynak: [www.trademap.org](http://www.trademap.org), (Erişim Tarihi: 01.09.2020)

Tablo 2'ye göre 2010-2019 tarihleri arasında Azerbaycan'ın toplam ihracat hacminde azalma izlenilmiştir. Bu yıllar arasında ihracat hacminde dalgalı hareketlik izlenilmiş, 2011 yılında ihracat hacmi 21.278 \$'dan 2015 yılında 12.646 \$'a düşmüş ve 2013 yılından başlayarak yeniden yükselme izlenerek, 2019 yılında 19.636 \$ olmuştur. Tablo 2 verilerine göre ithalat hacmi trendinde bu yıllar

arasında artış olduğu söylenebilmektedir. Ticaret cirosu ve dengesi ihracat hacmindeki hareketliliğe paralel olarak değişmiş ve genel olarak bu yıllar arasında azalma izlenilmiştir. Ticaret dengesi 2010 yılı ile kıyasla 15.682 \$'dan 2019 yılında 5.986 \$'a düşmüştür ve her zaman artı değerde olmuştur. Bu durumda, Azerbaycan'ın toplam ihracat hacminde düşüş izlenirken, ithalat hacminde artış görülmüştür. Azerbaycan'ın 2010-2019 yılları arasında ithalat ve ihracat hacmini oluşturan ilk 10 ürünün listesi Tablo 3'te gösterilmektedir.

**Tablo 3: Azerbaycan'ın dış ticaretinde etkili olan ilk 10 ürün (Milyon ABD \$)**

Kod	İhracat	Toplam (2010-2019)	%
	Tüm ürünler	197699419	
'27	Mineral yakıtlar, mineral yağlar ve bunların damıtılmasından elde edilen ürünler; bitümlü maddeler; mineral	182868900	92.50%
'08	Yenilebilir meyve ve sert kabuklu yemişler; narenciye veya kavun kabuğu	2283863	1.16%
'07	Yenilebilir sebzeler ve bazı kökler ve yumrular	1260170	0.64%
'39	Plastikler ve bunlardan eşya	1206854	0.61%
'76	Alüminyum ve alüminyumdan eşya	822062	0.42%
'29	Organik kimyasallar	512108	0.26%
'52	Pamuk	468819	0.24%
'71	Doğal veya kültür incileri, değerli veya yarı kıymetli taşlar, değerli metaller, kaplama metaller ...	453336	0.23%
'72	Demir ve çelik	449339	0.23%
'84	Makineler, mekanik cihazlar, nükleer reaktörler, kazanlar; parçaları	330290	0.17%
	Diğer	7043678	3.56%
Kod	İthalat	Toplam (2010-2019)	%
	Tüm ürünler	97477557	
'84	Makineler, mekanik cihazlar, nükleer reaktörler, kazanlar; parçaları	17276065	17.72%
'73	Demir veya çelikten eşya	7668415	7.87%
'85	Elektrikli makine ve teçhizat ve bunların parçaları; ses kaydediciler ve çoğaltıcılar, televizyon ...	7234428	7.42%
'87	Demiryolu veya tramvay vagonları dışındaki araçlar ve bunların parça ve aksesuarları	6740507	6.91%
'71	Doğal veya kültür incileri, değerli veya yarı kıymetli taşlar, değerli metaller, kaplama metaller ...	4338540	4.45%
'72	Demir ve çelik	3573543	3.67%
'10	Hububat	3417801	3.51%
'27	Mineral yakıtlar, mineral yağlar ve bunların damıtılmasından elde edilen ürünler; bitümlü maddeler; mineral ...	3057341	3.14%
'39	Plastikler ve bunlardan eşya	2927955	3.00%
'24	Tütün ve işlenmiş tütün ikameleri	2418838	2.48%
	Diğer	38824124	39.83%

Kaynak: [www.trademapp.org](http://www.trademapp.org), (Erişim Tarihi: 02.09.2020)

2010-2019 tarihleri arasında en çok ihraç edilen 10 ürün toplam ihracatın % 96,5'ini oluşturmuştur. Azerbaycan'ın toplam ihracatının büyük kısmını petrol ve doğal gaz ürünleri oluşturması nedeni ile bu ürünler ülke ekonomisinde önemli rol oynamakta ve mineral yakıtlar, mineral yağlar ve bunların damıtılmasından elde edilen ürünler, bitümlü ve mineral maddeler toplam ihracatın %92,5'ini



kapsamaktadır. 2010-2019 yılları arasında toplam 182.869 milyon \$ değerinde petrol ve bitümlü minerallerden elde edilen yağlar, ham petrol, 10.392 milyon \$ değerinde petrol gazı ve diğer gaz halindeki hidrokarbonlar, 9.191 milyon \$ değerinde bitümlü minerallerden elde edilen petrol yağları ve sıvı yağlar (ham petrol hariç), 375 milyon \$ değerinde elektrik enerjisi, 189 milyon \$ değerinde yüksek sıcaklıkta kömür katranının damıtılmasından elde edilen yağlar ve diğer ürünler; benzer ürünler ve 184 milyon \$ değerinde petrol kok, petrol bitüm ve petrol yağının veya bunlardan elde edilen diğer yağ kalıntıları ihrac edilmiştir. Petrol gazı ve diğer gaz halindeki hidrokarbonlar toplam ihracatın % 5,26'sını oluşturmuş ve 2019 yılında (2.379 milyon \$), 2010 yılı ile (303.918 milyon \$) kıyasla 7,8 kat artım olmuştur. Bitümlü minerallerden elde edilen petrol yağları ve sıvı yağlar (ham petrol hariç), içeren müstahzarlar ürününde ise 2019 yılında (463 milyon \$) 2010 yılına (1.284 milyon\$) kıyasla 2,8 kat düşüş izlenilmiştir. Son zamanlar ihracatta artımı izlenen elektrik enerjisi 5 kat artmış ve 2019 yılında elektrik enerjisinin en önemli ithalçısı Gürcistan (%82,20) olmuştur. Diğer ithalatçı ülkeler, Rusya Federasyonu (% 11,88), Türkiye (% 4,72) ve İran İslam Cumhuriyeti (% 1,20) olmuştur.

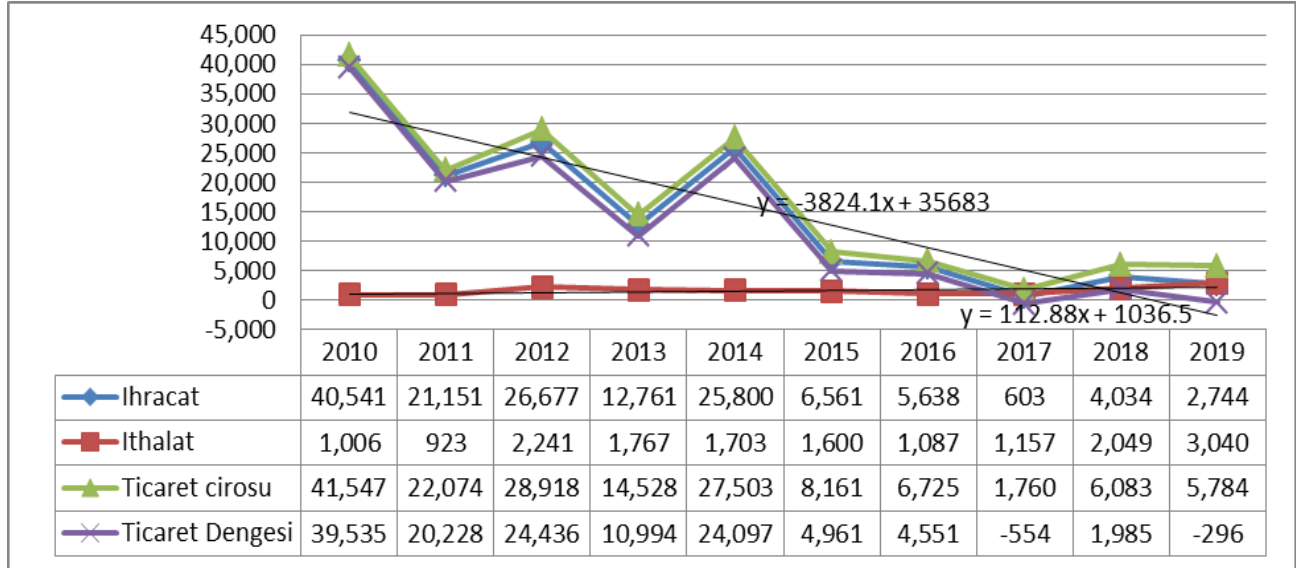
2019 yılında Azerbaycan ihracatında ikinci yeri yenilebilir meyve ve sert kabuklu yemişler, narenciye veya kavun kabuğu tutmuştur. Bu ürünlerin esas alıcısı olan ilk 5 ülke ise Rusya Federasyonu (%77), İtalya (%9), Almanya (%6), Ukrayna (%4) ve Gürcistan (%1) olmuştur. Azerbaycan Cumhurbaşkanı İlham Aliyev'in emri ile uygulamaya konulan petrol dışı sektörün gelişmesine yönelik destek politikaları ile petrol dışı sektör gelişmeye başlamıştır. Petrol dışı sektörde ilk yeri tutan yenilebilir meyve ve sert kabuklu yemişler, narenciye veya kavun kabuğu son yıllar ihracatındaki payı hızla artmakta ve 2019 yılında (363 milyon \$) 2010 yılına kıyasla (112 milyon \$) 3.2 kat artmıştır. Son yıllar önemli şekilde pamuk üretimi devlet desteği programı ile daha da artmaya başlamıştır. 11 Mayıs 2010 tarihinde kabul edilen "Pamuk Yetiştiriciliği Hakkında" 1012-IIIQ sayılı Azerbaycan Cumhuriyeti Kanunu pamuk ve pamuk ürünlerinin cirosu ile ilgili ilişkilerin düzenlenmesinde pamuk yetiştiriciliğinin yasal, organizasyonel ve ekonomik temellerinin tanımlanmasında önemli bir adım oldu (Azerbaycan Cumhuriyeti Cumhurbaşkanı Kararı, 14 iyul 2010-cu il). Bununla birlikte, resmi istatistiklere göre, pamuk üretimi yapılan tarım alanları 1990-2015 yılları arasında azalmıştır. 2015 yılında pamuk üretimi yapılan tarım alanı 18,7 bin hektar, üretim 35,2 bin ton olmuştur. "Azerbaycan Cumhuriyetinde 2017-2022 Pamuk Yetiştiriciliğinin Geliştirilmesi Devlet Programı" nın onaylanması, pamuk üretiminin gelişiminde yeni devrin başlanmasına neden oldu. 2015 yılından itibaren pamuk üretimi ve ihracatında sürekli artış izlendi. Pamuk ihracında 2014 yılında (14 milyon \$) 2019 yılına (158 milyon \$) kıyasla 11 kat artış olmuştur. Devlet Programının uygulanması sonucunda 2022 yılında ham pamuk üretiminin

500.000 tona ulaşması hedeflenmiştir (Azerbaycan Cumhuriyeti Cumhurbaşkanı Kararı, 13 Temmuz 2017). Azerbaycan'ın gıda güvenliği her zaman devlet denetimiyle gerçekleştirilmektedir. Bu açıdan bakıldığında, "2008-2015 Azerbaycan Cumhuriyeti Nüfusunun Güvenilir Gıda Tedariği Devlet Programı" büyük görevler sunmaktadır. (Azerbaycan Cumhuriyeti Cumhurbaşkanı Kararı, 25 agustos 2008). 2006-2008'de Gence CTS-Agro LLC yağ-piy Fabrikası ile sözleşme imzaladı ve faaliyetlerine yeniden başladı ve bununlada pamuğun işlenmesinin gelişmesinde yüksek ilerleme sağlandı (Bədəlov, 2010: s. 5). 2010-2019 yılları arasında ihracat edilen ürünlerden bazısında artış, bazısında azalmalar izlenmiştir.

2010-2019 yılları arasında en çok ithal edilen 10 ürün toplam ithalatın yaklaşık olarak %60'ını oluşturmuştur. Makineler, mekanik cihazlar, nükleer reaktörler, kazanlar ve parçaları, demir veya çelikten eşya, elektrikli makine ve teçhizat ve bunların yedek parçaları; ses kaydediciler ve çoğaltıcılar, televizyon, demiryolu veya tramvay vagonları dışındaki araçlar ve bunların parça ve aksesuarları toplam ithalatın %40'ını oluşturmaktadır. Yıllara göre ve ürün çeşitlerine göre ithalat hacmi de değişiklik izlenilmiştir.

Tablo 4, Azerbaycan'ın 2009-2018 yılları arasında Kırgızistan'a yaptığı ihracat, ithalat, ticaret cirosu ve ticaret dengesini göstermektedir.

**Tablo 4: Azerbaycan'ın Kırgızistan ile Dış Ticaret Hacmi (milyon ABD \$)**



Kaynak: [www.trademap.org](http://www.trademap.org), (Erişim Tarihi: 03.09.2020)

Tablo 4'ten, 2010-2019 yılları arasında Azerbaycan'dan Kırgızistan'a yapılan ihracat hacminde dalgalı düşüş olduğu izlenmektedir. 2010 yılında Azerbaycan'ın Kırgızistan'a ihracat hacmi 40 milyon ABD doları idi, 2019 yılında bu rakam 2.7 milyon ABD dolarına düşmüştür. Azerbaycan'ın Kırgızistan'dan ithalatı ise oldukça düşük düzeyde olmuş ve 3 milyon ABD

dollarının az üzerinde gerçekleşmiştir. Bu rakamlara bakıldığında, iki ülke arasındaki dış ticaret göze çarpmayacak kadar düşük olduğu söylenebilmektedir. Azerbaycan'ın Kazakistan ile ticaret cirosunda da ithal ve ihracat düzeylerinde olduğu gibi düşüş izlenilmiştir. İki ülke arasında ticaret dengesi ise 2017 ve 2019 yılları dışında diğer yıllarda artı yönde olmuştur.

Azerbaycan'ın 2010-2019 yılları arasında Kırgızistan ile yaptığı ithalat ve ihracat hacmini oluşturan ilk 10 ürünün listesi Tablo 5`te gösterilmektedir.

**Tablo 5: Azerbaycan ve Kırgızistan'ın ithal ve ihracat ettiği ilk 10 ürün (Milyon ABD \$)**

Kod	İhracat	Toplam (2010-2019)	%
	Tüm ürünler	146510	
'17	Şekerler ve şekerlemeler	52105	35.6%
'30	Eczacılıkla ilgili ürünler	40314	27.5%
'27	Mineral yakıtlar, mineral yağlar ve bunların damıtılmasından elde edilen ürünler; bitümlü maddeler; mineral	36691	25.0%
'39	Plastikler ve ürünleri	5583	3.8%
'84	Makineler, mekanik cihazlar, nükleer reaktörler, kazanlar; parçaları	2157	1.5%
'15	Hayvansal veya bitkisel katı ve sıvı yağlar ve bunların parçalanma ürünleri; hazırlanmış yenilebilir yağlar; hayvan ...	1819	1.2%
'73	Demir veya çelikten eşya	1672	1.1%
'18	Kakao ve kakao müstahzarları	1367	0.9%
'32	Tabaklama veya boyama özleri; tanenler ve bunların türevleri; boyalar, pigmentler ve diğer renklendiriciler ...	1341	0.9%
'22	İçecekler, alkollü içkiler ve sirke	647	0.4%
	Diğer	2814	1.9%
Kod	İthalat	Toplam (2010-2019)	%
	Tüm ürünler	16573	
'85	Elektrikli makine ve teçhizat ve bunların parçaları; ses kaydediciler ve çoğaltıcılar, televizyon ...	8233	49.7%
'07	Yenilebilir sebzeler ve bazı kökler ve yumrular	2367	14.3%
'30	Eczacılıkla ilgili ürünler	1707	10.3%
'84	Makineler, mekanik cihazlar, nükleer reaktörler, kazanlar; parçaları	1603	9.7%
'12	Yağlı tohumlar ve yağlı meyveler; çeşitli tahıllar, tohumlar ve meyveler; endüstriyel veya tıbbi ...	1000	6.0%
'08	Yenilebilir meyve ve sert kabuklu yemişler; narenciye veya kavun kabuğu	691	4.2%
'76	Alüminyum ve alüminyumdan eşya	221	1.3%
'39	Plastikler ve bunlardan eşya	171	1.0%
'06	Canlı ağaçlar ve diğer bitkiler; soğanlar, kökler ve benzerleri; kesme çiçekler ve süs yaprakları	153	0.9%
'48	Kağıt ve karton; kağıt hamurundan, kağıttan veya kartondan eşya	81	0.5%
	Diğer	346	2.1%

Kaynak: [www.trademapp.org](http://www.trademapp.org), (Erişim Tarihi:: 04.09.2020)

2010-2019 yılları arasında Azerbaycan'ın Kırgızistan'a ihraç ettiği ilk 10 ürün toplam ihracatın %98'ni oluşturmuş ve bu ürünler büyük farkla yıllara göre değişim göstermiştir. Kırgızistan'a ihraç edilen en önemli 3 ürün: Şekerler ve şekerlemeler, eczacılıkla ilgili ürünler ve mineral ve bunlardan elde edilen ürünler olmuştur. Bu ürünler toplam ihracatın %88'ni oluşturmuştur. Genel olarak Azerbaycan'ın Kırgızistan'a ihracatı oldukça düşük olmuştur. İthalatta ise ilk 10 ürün toplam ithalatın yaklaşık olarak %98 oluşturmuştur. Kırgızistan'dan ithal edilen malların yaklaşık %50'sini elektrikli makine ve teçhizat ve bunların parçaları, ses kaydediciler ve çoğaltıcılar, televizyon gibi ürünler oluşturmuştur.

### **5. İthal ve İhraç Verilerinin İstatistiği ve Bulgular**

Bu çalışmada, 2010-2019 yıllarda Azerbaycan ile Kırgızistan arasındaki iki taraflı ticaret ilişkileri incelenmektedir. Analizin gerçekleştirilmesi için veriler, Azerbaycan Devlet İstatistik Komitesi'nin ve UNCOMTRADE istatistik veri tabanlarından ve uluslararası ticaretin gelişmesine yönelik ticaret istatistiklerinden elde edilmiştir. Araştırmada, Azerbaycan ile Kırgızistan arasındaki ikili ticaret ilişkilerini analiz etmek için ihracat yoğunluk endeksi ve ithalat yoğunluk endeksleri kullanılmıştır. Azerbaycan ve Kırgızistan arasındaki ithalat ve ihracat yoğunluk endekslerini analiz etmek için 2010-2019 yılları arasında çalışmada kullanılan veriler aşağıdaki tabloda gösterilmektedir.

**Tablo 6: Azerbaycan ile Kırgızistan Arasındaki İkili Ticaret Hacmi (Milyon ABD \$)**

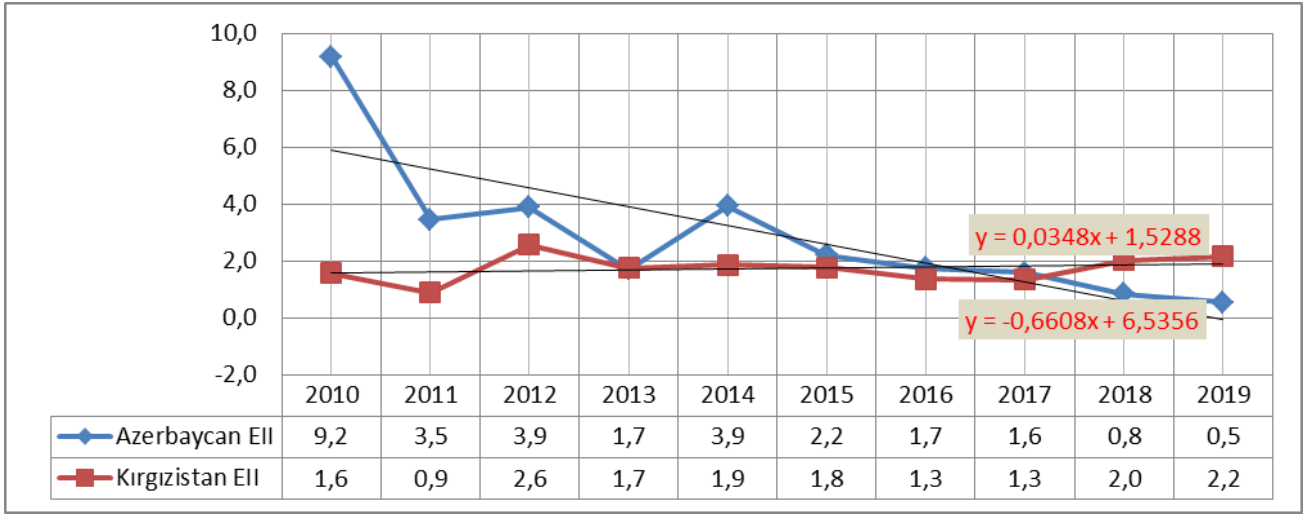
	Azerbaycan`da n Kırgızistana İhracı	Azerbaycan`ın Kırgızistan`da n İthalı	Azerbaycan`ı n Dünya`ya İhracı	Azerbaycan`ı n Dünya`dan İthalı	Kırgızistan`ı n Dünya`ya İhracı	Kırgızistan`ı n Dünya`dan İthalı	Dünya`nın İhracı	Dünya`nın İthalı
2010	40,541	1,006	21,278,420	6,596,797	1,488,401	3,222,635	15,094,271,000	15,318,589,456
2011	21,151	0,923	26,480,189	9,732,869	1,978,932	4,260,687	18,103,446,701	18,335,689,468
2012	26,677	2,241	23,827,186	9,641,724	1,683,237	5,373,176	18,396,798,774	18,498,876,987
2013	12,761	1,767	23,904,108	10,763,392	1,773,228	5,983,024	18,875,061,792	18,876,800,171
2014	25,800	1,703	21,751,737	9,178,588	1,883,733	5,734,704	18,843,963,034	18,892,710,056
2015	6,561	1,600	12,646,294	9,214,281	1,646,443	3,937,726	16,530,691,171	16,676,011,438
2016	5,638	1,087	13,380,819	8,472,500	1,543,532	3,919,082	16,033,127,095	16,176,532,807
2017	0,603	1,157	15,306,018	8,767,799	1,790,758	4,481,291	17,694,951,675	17,918,821,418
2018	4,034	2,049	19,489,068	11,460,338	1,764,613	4,907,400	19,460,171,128	19,815,054,653
2019	2,744	3,040	19,635,580	13,649,269	1,965,502	4,903,813	18,754,622,224	19,065,267,787

Kaynak: [www.trademap.org](http://www.trademap.org), (Erişim Tarihi: 05.09.2020)

### 5.1. İhracat Yoğunluk Endeksi (EII)

2010-2019 yıllarında Azerbaycan ve Kırgızistan arasında ihrac yoğunluğu, ihrac yoğunluğu endeksi ile hesaplanmış ve analiz sonuçları tablol 7`de sunulmuştur.

**Tablo 7: Azerbaycan ve Kırgızistan arasında İhracat Yoğunluk Endeksi (2010-2019)**



**Kaynak:** İhracat Yoğunluğu Endeksi hesaplarına göre tarafımdan oluşturulmuştur.

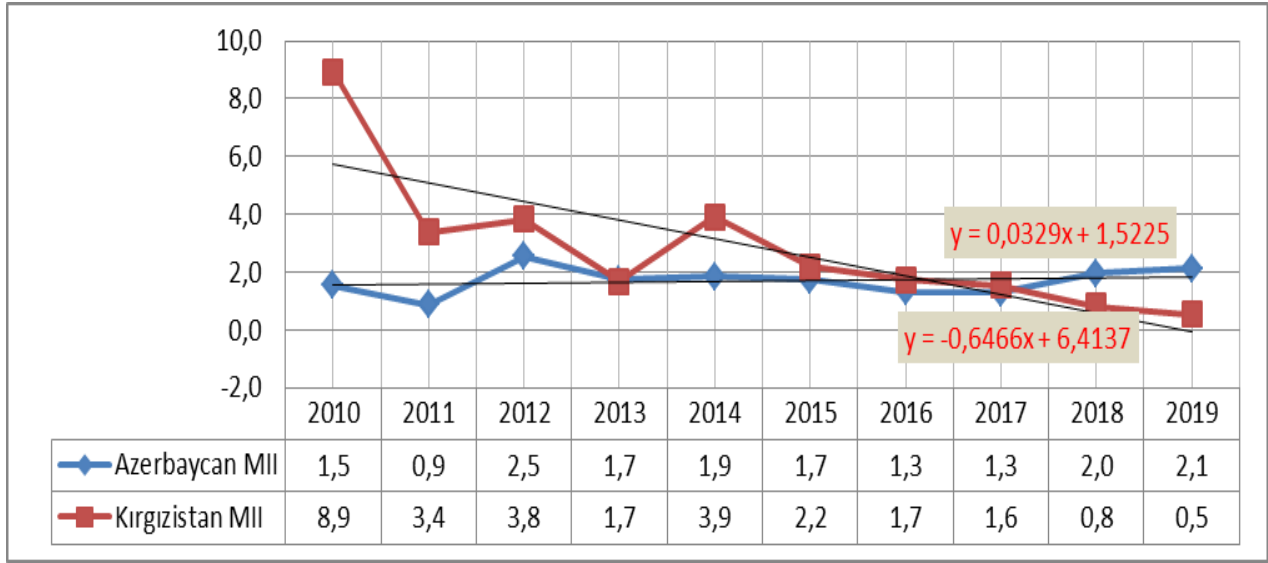
Tablo 7'ye göre 2010-2019 yılları arasında Azerbaycan'ın Kırgızistan ile ihracat yoğunlaşma endeksi 9,2-0,5 arasında bir değer aldığı görülmektedir. 2010 yılında Azerbaycan'ın Kırgızistan'a ihracat yoğunlaşma endeksi 9,2 ile dünya ortalama ihracat hacminden yüksek olmuş, 2019 yılında endeks 0,5'e inmiş ve dünya ortalama ihracat hacminin altında gerçekleşmiştir. 2010 yılından başlayarak 2019 yılına doğru iki ülke arasındaki ihracat yoğunluğunun azaldığı gözlemlenmiştir. Genel olarak iki ülke arasında ticaret yoğunlaşması 2010-2017 yılları arasında dünya ihracat hacmi üzerinde gerçekleşmiştir. 2018-2019 yılları arasında ise ihracat hacmi düşmüş ve dünya ihracat oranının altında gerçekleşmiştir.

Tablo 7'e göre 2010-2019 yılları arasında Kırgızistan'ın Azerbaycan ile ihracat yoğunlaşma endeksi 2011 yılı hariç, diğer yıllarda 1'in üzerinde gerçekleşmiş ve bu yıllar arasında değişik trend izlenilmiştir. Analiz sonucuna göre Kırgızistan'ın Azerbaycan ile ihracat yoğunluğu dünya ortalamasının üzerinde olduğu tespit edilmiştir. Trend eğrisi 2010-2019 yıllarında Kırgızistan'ın Azerbaycan'a ihracat yoğunlaşması aşağı düzeyde genel artış izlenilmiştir.

## 5.2. İthalat Yoğunluk Endeksi (MII)

2010-2019 yıllarında Azerbaycan ve Kırgızistan arasında ithal yoğunluğu ithal yoğunluğu endeksi ile hesaplanmış ve analiz sonuçları Tablo 8'de sunulmuştur.

**Tablo 8: Azerbaycan – Kırgızistan arasında İthalat Yoğunluk Endeksi (2010 - 2019)**



**Kaynak:** İthalat Yoğunluğu Endeksi hesaplarına göre tarafımdan oluşturulmuştur.

Tablo 8 sonuçlarına göre 2010-2019 yılları arasında Azerbaycan'ın Kırgızistan ile ithalat yoğunlaşma indeksi 2009 yılı hariç diğer yıllarda 1'den büyük olmuştur. Analiz sonucuna göre Azerbaycan'ın Kırgızistan ile ithalat yoğunlaşması dünya ithalat ortalaması üzerinde gerçekleştiği görülmektedir. Azerbaycan'ın Kırgızistan ile en yüksek ihracat yoğunluğu 2019 yılında 2,1, en düşük ise 2009 yılında 0,9 olmuştur. Genel olarak, Azerbaycan'ın Kırgızistan'a ihracat yoğunluk trend eğrisinde 2010-2019 yılları arasında kademeli oranla artış izlenilmiştir. Kırgızistan'ın Azerbaycana ithalat yoğunlaşma indeksi 2010-2019 yılları arasında trend eğrisinde ise azalma gözlenmektedir. İthalat yoğunlaşma indeksi 2010 yılında 8,9 iken 2019 yılında 0,5 olmuştur. Genel bakıldığında Kırgızistan'ın Azerbaycan'a ihracatının ilk yıllarda dünya ortalamasının üzerinde gerçekleşmiş olduğu, sonraki yıllarda ise hızlı bir düşüş gerçekleştiği görülmektedir.

## Sonuç

Bu makalede, Azerbaycan ile Kırgızistan arasındaki ikili ticaretin yoğunluğunu hesaplamak için 2010-2019 istatistik verileri kullanarak analiz edilmiştir. İhracat yoğunluk indeksi ve ithalat yoğunluk indeksi analizinin ana sonuçları ülkelere ve yıllara göre aşağıdaki tabloda sunulmuştur.

**Tablo 9: Azerbaycan ve Kırgızistan`ın yıllara göre MII ve EII değerleri**

	Azerbaycan EII	Kırgızistan EII	Azerbaycan MII	Kırgızistan MII
2010	9,2	1,6	1,5	8,9
2011	3,5	0,9	0,9	3,4
2012	3,9	2,6	2,5	3,8
2013	1,7	1,7	1,7	1,7
2014	3,9	1,9	1,9	3,9
2015	2,2	1,8	1,7	2,2
2016	1,7	1,3	1,3	1,7
2017	1,6	1,3	1,3	1,6
2018	0,8	2,0	2,0	0,8
2019	0,5	2,2	2,1	0,5
MII,EII<1	2018, 2019	2011	2011	2018, 2019

Kaynak: Araştırmacı Sonuçları

Tablo 9'da sunulmuş analiz değerlerine göre, 2010-2017 yılları arasında Azerbaycan'ın Kırgızistan ile iki taraflı ticaret ilişkilerinin ihracat yoğunluk endeksi 1'den büyük ve 2018-2019 yıllarında ise 1'den küçük olmuştur. Yani 2018-2019 yıllar dışında Azerbaycan'ın Kırgızistan'a toplam ihracat hacmi ortalama dünya ihracat oranının üzerinde gerçekleşmiştir. Genel olarak bakıldığında 2010 yılından 2019 yılına doğru bir düşüş olduğu izlenilmiştir. Aynı zamanda, Kırgızistan'ın Azerbaycan ile iki taraflı ticaret ilişkilerinin ihracat yoğunluk endeksi (2011 yılı hariç) 1'den büyük olmuştur. Yani 2018-2019 yıllar dışında Kırgızistan'ın Azerbaycana toplam ihracat hacmi ortalama dünya ihracat oranının üzerinde gerçekleşmiştir. 2011 yılında ise 0,9 ile ortalama dünya ihracat hacminin altında gerçekleşmiştir.

Tablo 9'da sunulmuş analiz değerlerine göre, 2010-2019 yılları arasında Azerbaycan'ın Kırgızistan ile iki taraflı ticaret ilişkilerinin ithalat yoğunluk endeksi 1'den büyük olmuş ve 2011 yılında ise 1'e yakın deyerle ortalama dünya ithalat hacminin altında gerçekleşmiştir. Genel olarak 2010 yılından



2019 yılına doğru bir düşüş izlenilmiştir. 2010-2017 yılları arasında Kırgızistan'ın Azerbaycan ile iki taraflı ticaret ilişkilerinin ithalat yoğunluk endeksi 1'den büyük olmuş ve ortalama dünya ithalat oranının üzerinde gerçekleşmiştir. 2018-2019 yılları dışında Kırgızistan'ın Azerbaycan'dan toplam ithalat hacmi ortalama dünya ithalat oranının altında gerçekleşmiştir.

Sonuç olarak, gelecekte iki ülke arasındaki ticareti artırmak için büyük fırsat ve potansiyel olduğu görülmektedir. Özellikle ziraat alanında her iki ülkenin ticaret potansiyelinin olması iki ülkenin karşılıklı ticaret hacminin artırılmasına önayak olabilir. Azerbaycan'ın ihracatının büyük bir kısmının petrol ve doğalgaz olması, ekonominin tek yönde gelişmesine yol açmıştır. Dünya piyasalarında petrol ve doğalgaz fiyatlarındaki değişikliklerin Azerbaycan ekonomisi üzerinde net bir etkisi olduğu görülmektedir. Azerbaycan'da petrol dışı sektörün az gelişmiş olması veya ülke Gayri Safi Milli Hasılasına düşük katkı seviyesi, ülkenin sanayi ürünlerine bağımlılığını artırmıştır. Tek bir ürünün üretim ve ihracatından daha ziyade, petrol dışı ürünlerin üretim ve ihracatına geçilmesi yönünde politikaların uygulanması tavsiye edilir.

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# Bilgi ve İletişim Teknolojileri Kullanımı, İstihdam ve Ekonomik Büyüme İlişkisi<sup>1</sup>

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## Özet

Bu çalışmada BİT kullanımı, istihdam ve ekonomik büyüme ilişkisi açıklanmaya çalışılmıştır. Bu doğrultuda 35 OECD ülkesine ait 2010-2019 yılları arasındaki veriler panel veri analizi yöntemi ile incelenmiştir. Çalışmada ekonomik büyüme değişkeni olarak, kişi başına düşen GSYİH oranı, istihdam değişkeni olarak, istidamın nüfusa oranı ve BİT değişkenleri olarak bireysel internet kullanıcıları, sabit geniş bant abonelikleri ve aktif mobil geniş bant abonelikleri baz alınmıştır. Çalışma sonucunda BİT kullanımını ifade eden bireysel internet kullanıcıları, sabit geniş bant abonelikleri değişkenleri istihdam ve ekonomik büyüme üzerine herhangi bir etki yaratmazken, aktif mobil geniş bant abonelikleri değişkeni istihdam ve ekonomik büyüme üzerinde pozitif etki gösterdiği tespit edilmiştir.

**Anahtar Kelimeler:** Bilgi ve İletişim Teknolojisi, İstihdam, Ekonomik Büyüme, Panel Veri Analizi

**JEL Kodları:** O39, E24, O40, C33

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## **The Use of Information and Communication Technologies, The Relationship between Employment and Economic Growth**

### **Abstract**

In this study, the use of ICT has been tried to explain the relationship between employment and economic growth. Accordingly, data of 35 OECD countries between 2010-2019 were examined by panel analysis method. In the study, as variable of economic growth, the ratio of GDP per capita and as a variable of employment, the ratio of employment to the population(+15). As ICT variables, individual internet users, fixed broadband subscriptions and active mobile broadband subscriptions were taken as the basis. As a result of the study, Of the variables expressing the use of ICT, individual internet users and fixed broadband subscriptions do not have any impact on employment and economic growth, but Active mobile broadband subscriptions have been found to have a positive impact on employment and economic growth.

**Keywords:** Information and Communication Technology, Employment, Economic Growth, Panel Data Analysis

**JEL Codes:** O39, E24, O40, C33

## 1. Giriş

Geçmişten günümüze dünya ülkelerinde sosyo-ekonomik gelişimler, teknolojik ilerlemeler ile paralel seyretmektedir. Teknolojik ilerlemelerin küresel hale gelmesi bilgi ve iletişim teknolojileri kullanımları ile kolaylaşmakta ve dolaylı olarak ekonomik yapının, bilgi ekonomisi geçiş-gelişim sürecine katkı sağlamaktadır. Bilginin üretilmesi, toplanması, işlenmesi, depolanması, iletilmesi ve kullanılmasını sağlayan bir sistem bütünü olan BİT'in bu süreci desteklediği görülmektedir (Özkan & Çelik, 2018; Artan, Hayaloğlu, & Baltacı, 2014).

Bilgi ve iletişim teknolojilerinin yaygınlaşması, üretim sürecine dahil edilmesi verimliliği arttıran bir etkidir bu daha kısa sürede ve daha az maliyetle daha fazla çıktı üretilmesinden kaynaklanmaktadır. Ve dolaylı olarak ekonomik büyümeye pozitif yönde katkı sağlayan bir etken olarak görülmesi ile sonuçlanmaktadır.

Aynı zamanda BİT kullanımının yaygınlaşması ve üretim sürecine dahil edilmesi yeni sektörler, pazarlar ve meslekler oluşturduğundan istihdamı arttırıcı bir etki gösterdiğini söyleyebilirken, ürünlerin piyasada sürekli yenilenmesi eski üretim tipine ait sektörlerle, pazarlara ve mesleklere olan ilgiyi ve talebi azalttığından üreticilerin stratejilerini değiştirmelerine sebep olurken, sürece ayak uyduramayan üreticiler özelinde ise istihdamı daraltıcı bir etki gösterdiğini söyleyebiliriz (Appiah-Otoo & Song, 2021; Yangınlar & Köksal, 2022).

Bu çalışmada 35 OECD ülkesinde BİT kullanımının, istihdam ve ekonomik büyüme üzerine etkileri tahmin edilmeye çalışılmıştır. Bu kapsamda çalışmada ilk olarak BİT kullanımının istihdam ve ekonomik büyüme üzerine etkileri ele alınıp, literatür taraması ile desteklenmiştir. Literatür incelendiğinde genel olarak teknolojik gelişme göstergelerinin ekonomik büyümeye etkisi olumlu yönde bazı göstergelerin etkisiz ya da olumsuz etkilediği görülmüştür ve BİT kullanımının istihdama olan etkisi konusunda literatürde herhangi bir fikir birliğine varılmadığı sonucuna ulaşılmaktadır.

Çalışmanın devamında araştırma metodu ve veri seti açıklanmış, çalışma sonucu elde edilen ekonometrik analiz bulguları değerlendirilmiştir ve son olarak literatür ve ekonometrik analiz bulguları ışığında çalışma sonuç kısmı ile sonlandırılmıştır.

## 2. BİT, Ekonomik Büyüme ve İstihdam Üzerine Literatür Taraması

Literatürde yapılan ampirik çalışmalar doğrultusunda teknolojik gelişme göstergesi olarak ele alınan değişkenlerin ekonomik büyümeye pozitif katkı sunduğu söylenebilmektedir, teknolojik gelişmelerin istihdama olan etkisi konusunda fikir birliğine varılmamıştır.

Appiah-Otoo ve Song (2021), 45 gelişmiş, 58 gelişmekte olan ve 20 az gelişmiş ülkeler olmak üzere toplamda 123 ülke üzerinden 2002-2017 yılları arasında Panel analiz yöntemi ile BİT'in ekonomik büyüme üzerine etkileri gelişmiş, gelişmekte olan ve az gelişmiş ülkeler ele alınarak karşılaştırmalı olarak analiz yapılmıştır. Yapılan çalışma sonucunda her ülke grubunda mobil, internet, sabit geniş bant oranlarının ekonomik büyümeye pozitif etki sağladığı görülmüştür.

Koç (2021), Türkiye verileri üzerinden 2001-2018 yılları arasında lineer kesikli-zaman stokastik durum-uzay modelleri kullanılmış olup büyümeyi açıklamak için 9 adet bağımsız değişken (bireysel internet kullanımı, kamu harcamaları, kişi başına düşen cep telefonu abonelikleri, dış ticaret haddi, bilişim teknolojileri dış ticaret haddinin toplam dış ticaret haddine oranı, yatırımlar, net dış varlıklar, özel sektöre bankalar tarafından verilen krediler) baz alınarak model kurulmuştur. Yapılan çalışma sonucunda bireysel internet kullanımı ve cep telefonu aboneliğinin büyümeyi arttırıcı etkisi olduğu görülmektedir.

Tunalı ve Güz (2021), 79 ülkenin verileri üzerinden 2010-2016 yılları arasında Panel analiz yöntemiyle BİT gelişim endeksinin ekonomik büyüme üzerine etkisi incelenmek üzere çalışma yapılmış ve sonuç olarak BİT gelişim endeksinin ekonomik büyümeye pozitif anlamda etkisi olduğu gözlemlenmiştir.

Yeşiltaş ve Artar (2021), çalışmalarında teknolojik gelişmelerin, işgücü ve istihdam üzerine etkileri konusu geniş bir literatür taraması ile desteklemiştir. Çalışma sonucunda literatürde fikir birliğinin olmadığını ve araştırmacıların konuya iyimser veya karamsar yaklaşıtlarını belirtmiştir. Çalışmaya göre iyimser yaklaşan araştırmacıların görüşü, teknolojik gelişmelerin uzun vadede yeni iş alanları yaratarak istihdamı arttıracağı yönündeyken karamsar yaklaşan araştırmacıların görüşü, teknolojik gelişmeler sonucunda üretimde işgücü talebi azalacağından, istihdamda daralma meydana gelecektir. Sonuç olarak iş gücünün nitelik kazanması gerektiği ve işgücüne yapılan yatırımlarının artması gerektiği belirtilmiştir.

Topçu (2021), Türkiye verileri üzerinden 1996-2017 yılları arasında AMG yöntemi kullanılmış olup teknolojik gelişimin istihdam üzerine etkisi sektörel bazda analiz edilmiştir.



Çalışmalarından edinilen sonuçlara göre teknolojik gelişme, tarım sektörü istihdamı üzerine etkisi negatifken, sanayi ve hizmet sektörü istihdamı üzerine etkisi pozitifdir.

Myovella, Karacuka ve Haucap (2020), 41 SSA (Sahra Altı Afrika) ülkesi ve 33 OECD ülkesi olmak üzere toplamda 74 ülke üzerinden 2006-2016 yılları arasında GMM (Genişletilmiş Momentler Metodu), OLS (En Küçük Kareler Yöntemi) modellerini kullanarak dijitalleşmenin ekonomik büyümeye etkisini ele alınan ülkeler bazında karşılaştırmalı olarak analiz yapılmıştır. Çalışmalarından edindikleri sonuçlara göre ekonomik büyümeye mobil teknolojilerin etkisi SSA ülkelerinde fazla iken OECD ülkeleri için bu etki önemli değildir. Bireysel internet kullanım oranı her ülke grubu için ekonomik büyümeye pozitif etki sağlamaktadır ve bununla beraber SSA ülkelerinde internet alt yapılarındaki az gelişmişlik nedeniyle ekonomik büyümeye etkisi düşüktür.

Hekim Yılmaz ve Kırışkan (2020), Türkiye verileri üzerinden 1980-2015 yılları arasında birim kök testleri ve eş bütünlüşme testleri ile telekomünikasyon alt yapısının ekonomik büyüme üzerine etkileri analiz edilmiştir ve sonuç olarak telekomünikasyon alt yapısının gelişmesi, ekonomik büyümeyi arttırıcı etkiye sahiptir.

Farhadi ve Fooladi (2020), 142 ülkenin verileri üzerinden 2006-2015 yılları arasında GMM (Genişletilmiş Momentler Metodu) modellerini kullanarak BİT erişiminin ekonomik büyüme üzerine etkisi analiz edilmiştir. Çalışmalarından edindikleri sonuçlara göre ekonomik büyümeye BİT'in etkisi yüksek gelirli ülkelerde daha fazla olmasına karşın her ülkede arttırıcı etkiye sahip olmaktadır.

Alper (2018), 24 ülke üzerinden 1996-2016 yılları arasında Panel veri yöntemi kullanılarak iki model oluşturulmuş ve BİT'in, ekonomik büyüme ve işsizlik ilişkisini analiz etmiştir. Çalışmadan edindikleri sonuçlara göre BİT, ekonomik büyümeyi arttırır ve işsizliği azaltır.

Niebel (2018), 59 ülke üzerinden 1995-2010 yılları arasında regresyon analizi yapılarak BİT ve ekonomik büyüme ilişkisini ülke gruplarına göre (gelişmiş ülke, gelişmekte olan ülke ve gelişmemiş ülke) açıklanmaya çalışılmıştır. Çalışma sonuçlarına göre BİT, ekonomik büyümeye katkıda bulunmaktadır. (Niebel, 2018)

Algan, Özmen ve Karlılar (2017), 2000-2014 yılları arasında G-20 ülkeleri (7 Gelişmiş ve 13 Gelişmekte Olan) üzerinden BİT ve ekonomik büyüme ilişkisi panel veri yöntemi ile analiz edilmiştir. Çalışmadan edinilen sonuçlara göre gelişmiş ülkelerde pozitif bir etki söz

konusuyken, geliřmekte olan ÷lkelerde ve G-20 ÷lkelerinin tamamında negatif bir etki söz konusudur.

Piva ve Vivarelli (2017), 11 Avrupa ÷lkesi verileri üzerinden 1998-2011 yılları arasında Sistem Genelleřtirilmiř Momentler yöntemi kullanılarak istihdam ve teknolojik deęiřme iliřkisi ele alınmıřtır. Çalıřmada elde edilen bulgular sonucunda, teknolojik geliřme parametresi olarak ele alınan AR-GE harcamalarının orta ve yüksek teknoloji sektörlerine etki ettięi görülürken, düşük teknoloji sektörlerine etki etmedięi gör÷lmüřtür.

Mike ve Laleh (2016), G-20 ÷lkelerinin (7 Geliřmiř ve 13 Geliřmekte Olan) verileri üzerinden 1991-2012 yılları arasında Panel veri yöntemi kullanılarak analiz yapılmıřtır. Çalıřmalarından edindikleri sonuçlara göre BİT ve istihdam iliřkisi geliřmiř ÷lkelerde, 1991-1999 yılları arasında pozitif ve anlamlı iken 2000-2012 yılları arasında negatif ve anlamlıdır. Geliřmekte olan ÷lkelerde ise, 1991-1999 yılları arasında etkisizken, 2000-2012 yılları arasında pozitif ve anlamlı bir iliřki vardır.

Türedi (2013), 23 Geliřmiř, 30 Geliřmekte olan ÷lkeler olmak üzere 53 ÷lke üzerinden 1995-2008 yılları arasında Sabit ve Tesadüfi Etkiler Panel veri yöntemi ile analiz yapmıřtır ve çalıřma sonucunda BİT'nin ekonomik büyüme üzerinde geliřmiř ÷lkelerde, geliřmekte olan ÷lkelere göre daha yüksek olmasına karřın tüm ÷lkelerde arttırıcı etkiye sahip olmasındır.

Ahmed ve Ridzuan (2013), 8 ÷lkeye (Çin, Endonezya, Japonya, Singapur, Kore, Filipinler, Malezya, Tayland) ait veriler üzerinden 1975-2006 yılları arasında Panel Tahmini yaklařımı ile analiz yapmıřlardır. Çalıřma sonucunda BİT'in ekonomi büyüme üzerinde etkisinin olumlu olduęu sonucuna ulařılmıřtır.

Matei ve Savulescu (2012), AB üye ÷lkelerinin verileri üzerinden 2006-2010 yılları arasında ampirik analiz yapılmıřtır. Çalıřma sonucunda BİT'in GSYİH'a olan katkısı rekabet gücünü de arttıracaktır.

Farhadi, Ismail ve Fooladi (2012), 159 ÷lkenin verileri üzerinden 2000-2009 yılları arasında GMM (Geniřletilmiř Momentler Metodu) modellerini kullanarak analiz yapmıřlardır. Çalıřmalarından edindikleri sonuçlara göre ekonomik büyümeye BİT'in yüksek gelirli ÷lkelerde daha fazla olmasına karřın her ÷lkede arttırıcı etkiye sahip olmasındır.

### 3. Ekonometrik Yöntem, Veri Seti ve Kaynağı

2010-2019 yılları arasında 35 OECD ülkesine ait BİT kullanımını ifade eden göstergeler, istihdam ve ekonomik büyüme arasındaki ilişki panel veri analizi yöntemiyle 2 Model kurularak çözümlenmeye çalışılmıştır. Yapılacak analizde 1. Modelde BİT kullanım göstergeleri, ekonomik büyüme ilişkisini, 2. Modelde BİT kullanım göstergeleri, istihdam ilişkisi kapsamında uygulanacak ekonometrik modeller aşağıdaki denklemlerde verilmiştir.

$$\text{Log}(GSYIH_{it}) = \alpha_{it} + \beta_{1i,t}\text{Log}(BI_{it}) + \beta_{2i,t}\text{Log}(SGB_{it}) + \beta_{3i,t}\text{Log}(MGB_{it}) + \varepsilon_{it} \quad (1)$$

$$\text{Log}(IST_{it}) = \alpha_{it} + \beta_{1i,t}\text{Log}(BI_{it}) + \beta_{2i,t}\text{Log}(SGB_{it}) + \beta_{3i,t}\text{Log}(MGB_{it}) + \varepsilon_{it} \quad (2)$$

Denklemlerde yer alan  $i$  panel verinin birim boyutunu,  $t$  zaman boyutunu ifade eder.  $\beta_i$  ( $i=1, 2, 3$ ) bağımsız değişkenlerin (BI, MGB, SGB) bağımlı değişkenler (IST ve GSYIH) üzerindeki etkilerinin tahminini ifade eden tahmin parametrelerini,  $\alpha$  sabit terimi,  $\varepsilon$  ise denklem hata terimlerini ifade etmektedir.

Çalışmada ele alınan her iki model için bağımlı değişkenler ekonomik büyüme ve istihdam iken bağımsız değişken olarak kullanılan BİT kullanımını üç parametre ile açıklanmıştır. Kullanılan veriler, kaynakları ve çalışmada ele alınan ülkeler Tablo 1,2’de verilmiştir.

**Tablo 1.** Model 1ve 2’ye Ait Veri Seti - Kaynağı

Değişken	Açıklama	Kaynak
GSYİH	Kişi başına GSYİH (ABD doları)	World Bank
IST	İstihdamın nüfusa oranı, (15+, toplam (%))	World Bank
BI	Bireysel internet kullanıcıları (%)	ITU
SGB	Sabit geniş bant abonelikleri (100 kişi başına)	ITU
MGB	Aktif mobil geniş bant abonelikleri (100 kişi başına)	ITU

**Tablo 3.** Çalışmada Ele Alınan Ülkeler

Almanya	Finlandiya	Kosta Rika	Polonya	İrlanda
ABD	Fransa	Letonya	Portekiz	İspanya
Avusturya	Güney Kore	Litvanya	Slovak Cumhuriyeti	İsrail
Belçika	Hollanda	Lüksemburg	Slovenya	İsveç
Birleşik Krallık	Japonya	Macaristan	Türkiye	İsviçre
Danimarka	Kanada	Meksika	Yunanistan	İtalya
Estonya	Kolombiya	Norveç	Çek Cumhuriyeti	İzlanda

#### 4. Bulguların Değerlendirilmesi

Bu çalışmada, 35 adet OECD ülkesi için 2010 ile 2019 yıllarını kapsayan veri seti oluşturulmuştur. Panel veri modelinde birim etkisinin olması bu etkinin sabit etki veya tesadüfi etki olma durumuna göre farklılık göstermektedir. Tahmin yönteminde farklılıkların anlaşılabilmesi için önce birim etkisinin olup olmadığını incelemek gerekmektedir, eğer ki birim etkisi varsa sonrasında sabit ve rastsal etki modellerinin tanımlanması yapılmalıdır (Tatoğlu, 2012).

Birim etkisinin incelenmesi amacıyla yapılan Breusch-Pagan (1980) Lagrange test ististiği sonucunda her iki model içinde birim etkilerinin görüldüğü söylenebilmektedir. Breusch-Pagan (1980) Lagrange test istatistiği sonucu Tablo 4'te verilmiştir.

**Tablo 4.** Breusch-Pagan (1980) Lagrange Birim Etkisi Testi

	Model 1		Model 2		
	$\sigma_u^2$	$\sigma_u$	$\sigma_u^2$	$\sigma_u$	
<b>Log(GSYIH)</b>	0.4726513	0.6874964	<b>Log(IST)</b>	0.0136249	0.1167258
$\varepsilon$	0.00979	0.0989442	<b>E</b>	0.0008198	0.0286327
$\mu$	0.1423325	0.3772698	<b><math>\mu</math></b>	0.0087396	0.0934857
	$X^{2(01)}= 952.71^{***}$	<b>Sig.=0.000</b>	$X^{2(01)}= 1026.37^{***}$	<b>Sig.=0.000</b>	

Not: \*\*\*(%1) anlamlılık düzeyinde  $H_0$  hipotezi reddedilmiştir,  $x^2$ : Ki-Kare test istatistiğini,  $\sigma_u^2$ : Birim Etki Varyansını,  $\sqrt{\sigma_u^2} = \sigma_u$ : Standart Hatayı,  $\varepsilon$ : Hata Terimini ve  $\mu$ : Birim Etkisini ifade eder.

Her iki modelde hesaplanan test istatistiği anlamlılık değerleri incelendiğinde modeller için %1 anlamlılık düzeyinde birim etkisinin sıfır olduğu yönündeki sıfır hipotezlerinin reddedildiği görülmektedir. ( $x^{2(01)} = 952.71$  ve  $x^{2(01)} = 1026.37$  Sig.<0.01).

Bunun üzerine modellerdeki birim etkilerinin modellere tutarlı bir şekilde yansıtılmak üzere kullanılması gereken panel tahmin yöntemini seçmek için Hausman (1978) testi istatistiği uygulanmıştır. Hausman testi birim etkilerinin sabit mi yoksa tesadüfi etki olup olmadığını test etmektedir. Hausman test istatistiği sonucunda sabit etkiler tahmincilerinin geçerli olduğu görülmektedir. Hausman test istatistiği sonuçları Tablo 5'te verilmiştir.

**Tablo 5.** Hausman Test İstatistiği

Değişken	Model 1			Model 2		
	SE(b)	TE(B)	Fark (b-B)	SE(b)	TE(B)	Fark (b-B)
Log(BI)	-0.05881	-0.01067	-0.04814	-0.07115	-0.08817	0.01702
Log(SGB)	0.08628	-0.17672	0.26300	0.05062	0.05733	-0.00671
Log(MGB)	0.04548	0.08916	-0.04368	0.03979	0.04095	-0.00116
<b>Test</b>	X <sup>2(03)</sup> = 189.23***		<b>Sig</b> =0.001	X <sup>2(03)</sup> = 14.24***		<b>Sig</b> =0.003

Not: \*\*\*(%1) anlamlılık düzeyini, X<sup>2</sup>: Ki-Kare test istatistiğini, \*Parantez içi serbestlik derecesini gösterir, b: Sabit Etkileri B: Tesadüfi Etkileri , (b-B) etkiler arası farkı ifade eder.

Modeller için hesaplanan katsayılara ve katsayılar arasındaki farklara bakıldığında söz konusu farkların yüksek olduğu görülürken, test istatistiği anlamlılık değerleri incelendiğinde %1 anlamlılık düzeyi için her iki model için de tesadüfi etkiler tahmincisinin data tutarlı bir tahminci olduğu yönündeki sıfır hipotezinin reddedildiği, sabit etkiler tahmincilerinin daha tutarlı olduğu yönündeki alternatif hipotezlerin ise kabul edildiği görülmektedir. (x<sup>2(01)</sup>=189.23 ve x<sup>2(01)</sup>=14.24, Sig.<0.01)

Breusch-Pagan (1980) Lagrange testi ile tespit edilen birim etkilerinin, Hausman (1978) testi bulguları doğrultusunda sabit etkiler modelinin tutarlılığı konusundaki kararlar sonucu modelin sabit etkiler modeli tahmini ve temel varsayım sınamaları ile açıklanmaya çalışılmış ve Tablo 6'da verilmiştir.

**Tablo 6.** Model Tahminleri

Değişken	Model 1				Model 2			
	$\beta$	S.H <sup>Cluster</sup>	Z	Sig.	$\beta$	S.H <sup>Cluster</sup>	z	Sig.
Log(BI)	-0.0107	0.2258	-0.05	0.963	-0.0882	0.0532	-1.66	0.107
Log(SGB)	-0.1767	0.1630	-1.08	0.286	0.0573	0.0488	1.17	0.248
Log(MGB)	0.0892	0.0403	2.21**	0.034	0.0410	0.0150**	2.74	0.010
Sabit	10.5912	0.8697	12.18***	0.000	4.0330	0.1784***	22.61	0.000
<b>Tanısal İstatistikler</b>								
<b>F Test</b>	F(3,34)=3.23**				F(3,34)=6.79***			
	Sig.=0.034				Sig.=0.001			
<b>Pesaran Test</b>	$\chi^2(10)=26.153***$				$\chi^2(10)=10.193***$			
	Sig.=0.000				Sig.=0.000			
<b>LBI</b>	0.87024				0.79393			
<b>D.W.</b>	0.59125				0.38446			
<b>Modifiye Walt Test</b>	$\chi^2(35)=402.020***$				$\chi^2(35)=15298.320***$			
	Sig.=0.000				Sig.=0.000			
<b>Determinasyon</b>	<b>Grupsuz</b>	R <sup>2</sup> =0.0725		<b>Grupsuz</b>	R <sup>2</sup> =0.3192			
	<b>Gruplar Arası</b>	R <sup>2</sup> =0.3398		<b>Gruplar Arası</b>	R <sup>2</sup> =0.0120			
	<b>Tüm</b>	R <sup>2</sup> =0.2545		<b>Tüm</b>	R <sup>2</sup> =0.0345			

Not: \*\*\*(%1), \*\*(%5), \*(%10) anlamlılık düzeylerini, F: F Test istatistiğini,  $\chi^2$ : Ki-Kare test istatistiğini, \*Parantez içi serbestlik derecesini, Cluster: Arellano, Froot ve Rogers kümelmiş standart hataları ifade etmektedir.

Model 1 ve 2 için Tablo 6 incelendiğinde, Pesaran testi bulguları sonucunda modellerde yer alan birimler ve hata terimleri arasındaki ilişki %1 anlamlılık düzeyinde istatistiksel olarak önemlidir, farklı bir ifade ile modelde yatay kesit bağımlılığı görülmektedir. (Model 1:  $\chi^2(10)=26.153$ , Sig.<0.01), (Model 2:  $\chi^2(10)=10.193.153$ , Sig.<0.01).

LBI ve D.W testi bulguları incelendiğinde her iki modelde değer 2'den küçük olduğu görülmektedir ve iki modelde otokorelasyon varlığı söz konusudur. Modelde sabit varyans varsayımını sınavan Modifiye edilmiş Wald testi istatistikleri incelendiğinde ise %1 anlamlılık düzeyinde istatistiksel olarak önemli bir değişen varyans sorunu olduğu dikkat çekmektedir. (Model 1:  $\chi^2(35)=402.020$ , Sig.<0.01), (Model 2:  $\chi^2(35)=15298.320$ , Sig.<0.01)

Modellerde görülen yatay kesit bağımlılığı sebebiyle kullanılan Cluster (kümelenmiş) Arellano, Froot ve Rogers kümelenmiş standart hataların yatay kesit ile birlikte otokorelasyon ve /veya değişen varyans sorunlarına karşı da dirençli olduğu bilindiğinden Cluster standart hatalar ile yapılan tahminin etkin olduğu varsayılmaktadır.

Model 1 parametrelerinin toplu anlamlılık test olan F testi istatistiklerine göre tahmin edilen model, %5 anlamlılık düzeyinde istatistiksel olarak anlamlı bir modeldir. (F(3,34)=3.23, Sig.<0.05),

Model 2 parametrelerinin toplu anlamlılık test olan F testi istatistiklerine göre tahmin edilen model, %1 anlamlılık düzeyinde istatistiksel olarak anlamlı bir modeldir. (F(3,34)=6.79, Sig.<0.01)

Bireysel internet kullanıcıları Log(BI) değişkeninin, ekonomik büyüme ve istihdam üzerine önemli bir etkisinin olmadığı görülmektedir. (Model 1:  $\beta=-0.0107$ , Sig.>0.10), (Model 2:  $\beta=-0.0107$ , Sig.>0.10)

Sabit geniş bant abonelikleri Log(SGB) değişkeninin, ekonomik büyüme ve istihdam üzerine önemli bir etkisinin olmadığı görülmektedir. (Model 1:  $\beta=-0.1767$ , Sig.>0.10), (Model 2:  $\beta=0.0532$ , Sig.>0.10)

Aktif mobil geniş bant abonelikleri Log(MGB) değişkeninin ise ekonomik büyüme ve istihdam üzerine önemli ve pozitif bir etkisinin olduğu görülmektedir. (Model 1:  $\beta=-0.1767$ , Sig.<0.05), (Model 2:  $\beta=0.1784$ , Sig.<0.05)

## 5. Sonuç

35 OECD ülkesine ait 2010 ile 2019 yılları arasında ele alınan BİT kullanım değişkenleri ile istihdam, ekonomik büyüme ilişkisi çalışma kapsamında incelenmiştir. Ekonomik büyüme kişi başına düşen GSYİH (ABD doları cinsinden) ile, istihdam oranı (İstihdamın nüfusa oranı, (15+, toplam %)) ile ve BİT kullanımı literatürle paralel olarak, bireysel internet kullanıcıları (%), sabit geniş bant abonelikleri (100 kişi başına) ve aktif mobil geniş bant abonelikleri (100 kişi başına) parametreleri ile iki ekonometrik model kurularak açıklanmıştır ve panel analiz yöntemi ile analiz edilmiştir.

Analiz sonuçlarına göre 2 Modelde de bağımlı değişkenler ve bağımsız değişkenler arasında anlamlı bir ilişki vardır. Ve BİT kullanım parametrelerinden bireysel internet kullanıcıları (%) ve 100 kişi başına sabit geniş bant abonelikleri değişkenleri istihdam ve ekonomik büyüme

üzerinde istatistiksel olarak önemli bir etki yaratmazken, 100 kişi başına aktif mobil geniş bant abonelikleri değişkeni istihdam ve ekonomik büyüme üzerinde pozitif bir etki yaratmaktadır.

100 kişi başına sabit geniş bant aboneliklerinin analiz sonuçlarına göre istihdam ve ekonomik büyüme ile ilişkisinin etkisiz çıkmasının sebebi özellikle son yıllarda 100 kişi başına aktif mobil geniş bantların, 100 kişi başına sabit geniş bantlara göre daha fazla talep edilmesi ve yatırım almasından kaynaklı olduğu düşünülmektedir.

Çalışmada elde edilen bulgular literatür ile paralel olmakla beraber ve BİT kullanımının, istihdam ve ekonomik büyüme ilişkisi anlamlı sonuçlanmıştır.

Sonuç olarak, literatürden de elde edilen edinimlere göre, günümüzde sosyal ve ekonomik yapının gelişmesi için temel faktörlerden birinin bilgi olduğu görülmektedir. Bilginin işlenmesini sağlan BİT araçları ise bu gelişime destek sağlamaktadır. BİT kullanımının arttırılması ve teşvik edilmesi, BİT erişimi altyapılarının güçlendirilmesi, BİT yatırımlarının ve BİT üretiminin arttırılması ekonomik göstergeleri iyileştirmekte ve ülkelerin bu yönde gelişimleri küresel rekabet ortamında varlıklarını devam ettirebilmeleri için önem arz etmektedir.



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# Capital Structure And Financial Crisis: Evidence From Turkey

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## Abstract

The Financial crisis (FC) displayed a crucial impact on the financial markets, incredibly decreasing security issuance by companies. A standout amongst the outcome of the interruption of the capital furthermore lending markets created by financial crisis might have been enhancing the level of debt in firm capital structures. Therefore, this paper uses Dynamic Panel Data (GMM) Estimator in order to investigate the impact financial crisis on capital structure over a sample of 15 cement firms that are recorded on Istanbul Stock Exchange from 2005 to 2017. Financial debt is utilized as evaluation of dependent variables (DV) while, Size, Growth, Tangibility and Profitability are used in assessment of independent variables (IV). The results indicate that there is connection between firm's capital structure and financial crisis. Furthermore; the results express that firm size, tan, growth are positive associated with leverage while profitability, NDTS, CR, Crisis and leverage are negatively related.

**Keywords:** Capital Structure, Leverage, Liquidity, Financial Crisis, and Cement Companies.

**JEL Codes:** G30, G01, G32, L61

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## **1. Introduction**

Choosing the suitable capital structure may be the critical choice of the financial management. As a result, it is almost recognized the corporate value. Furthermore, the structure of capital states that all the kind of securities and also the amounts of proportion that create capitalization. This is the mixture of various sources of long-term sources for example, such that equity, share, preference share, debentures, long -term credits also retained earnings. To start with talk regarding the capital structure, Modigliani and Mill (1958) expressed that the capital structure of organizations does not impact on the corporation's value. Besides, according to Modigliani and Miller's contention will be in light of a few presumptions for example, there will be a perfect capital market, there are no retained earnings and corporate taxes, the investors' gesture rationally, the dividend payout ratio may be hundred percent and the business comprises of the same level of firm risk (Paramasivan and Subramanian, 2009).

The term crisis in finance is named as an interruption to financial markets in which unfavorable choice furthermore, moral risk issues get extensively unpleasant, thus, financial markets can incapable to proficiently channel fund with the persons that gain the best fruitful fund chances (Mishkin, 2001:2). A financial crisis thus brings about disappointment or failure of financial markets to work efficiently, which prompts a sharp contraction in economic action. Researchers are attempting to understand the effect of the crisis in finance on the capital structure of company.

Did the financial crisis effect on Capital Structure in Turkey Cement companies or not? In order to find the answer for this question, this study researches the impact of the crisis in finance on the capital structure of Cement companies in Turkey for the period of 2005-2015. The research is arranged into five categories. The first one as introduction, the second section as literature reviews while methodology is discussed in the third one. Finally; section four focuses on the results and section five highlights the study conclusion.

## 2. Literature Review

### 2.1 Theories of Capital Structure

Capital structure is defined by Brigham and Ehrhardt (2013) as the firm's mixture of debt and equity hence a considerable studies have been carried out highlighting diverse parts of the capital structure theories for companies. anyhow this quest began with Modigliani and Miller (1958) at they provided for their theory of irrelevency: capital structure is unimportant of the firm's worth done impeccable market with symmetric information when there would no agency costs, bankruptcy costs and taxes. Modigliani and Miller (1963) included corporate taxes in their model furthermore found that the firm worth build or grow at the leverage raise because the tax-deductibility of debt.

Miller (1977) himself included personel taxes also pointed that the income from debt, which will be by interest, may be, is taxed concerning personal income, same time the income from stocks is taxed during a lower rate and the tax of capital gains might deferred until the stock may be sold thus he closed that the deductibility of interest favors the utilization of debt financing, yet supporting a better successful tax treatment of revenue from stock favors the utilization of equity financing.

In the static trade-off theory, a company's optimal capital structure is arrived at when a trade off costs and benefit to borrowing, at the margin eventually by cost of financial distress as stated by Myers (1984).

He demonstrates an additional theory (1984) organizations prefer toward with pecking order, i.e. organizations like internal finance (retained earnings) by reinvesting its profit furthermore selling its marketable securities.

Jensen and Meckling (1976) state that the agency theory might be a demonstration to transform the capital structure and it portrays the separation between principal and agent

In signaling theory, MM accepted that investors have the same information something like a business's prospects likewise managers. This may be called symmetric information. However, managers frequently have better information over outside investors. This may be titled asymmetric information. Asymmetric information has crucial influence on the optimal capital structure (Brigham and Houston, 2003).

## 2.2 Capital Structure Determinants

Size, growth, tangibility, profitability, non-debt tax shield and liquidity are the major factors that determine capital structure. Size of the firm impacts the capital structure. Huge numbers of researchers have various conclusions over the correlation between size and capital structure. For example, Rajan and Zingales (1995), consider capital structure and factors affecting capital structure for a test of G7 countries. They found debt and size are positively related for all G-7 countries and just to Germany showed up for a chance to be negative. Titman and Wessels (1988) presume that firm size and capital structure are connected.

In the findings of Wald (1999) to study size and leverage, a positive relationship was found for organizations in the USA, UK, France and Japan however a negative relationship was recorded for German Organizations.

On the different hand, there are other researchers with an additional conclusion for example Tong and Green, (2005), presume that size and also capital structure are negatively linked.

Growth likewise impacts the capital structure. As indicated by the theory of pecking order theory, initial preference to finance a new investment is with internal funds; therefore, according to Titman and Wessels (1988) show that growth and leverage are negatively connected.

According to Green et al. (2001) trust that this negative association between leverage and growth will be that organizations don't differentiate long term and short-term obligation.

Researchers have demonstrated opposing outcomes in regards profitability furthermore leverage for their investigations. Pecking order theory proposes that profitability and leverage are negatively related. Anyway trade-off theory asserts concerning illustration the organizations would profitability hence they might want to keep their internal funds and might access to outside funds with particular finance their investment.

A few investigations by researchers have demonstrated a negative association the between profitability and leverage according to Chen, 2004; Tong and Green, 2005 which helps to the pecking order theory. Similarly, the forecasts done by pecking order theory show that a firm's profitability tends to employ less debt financing as they are show ability to accumulate profit in large amounts (Jermias and Yigit, 2019).

As stated by Myers and Majluf (1984), tangibility and leverage are relied upon with bring a sure positive association. They stated that organizations by issuing secured debt might have the ability to reduce information asymmetries generally it might a chance to be costly for them similarly as different investors have information over it.

On contrast, Titman and Wessle (1988) argue that this association might be negative as exactly managers might devour more than the optimal level they are permitted.

Non-debt tax shield will be appropriate to the organizations if company's profit is reliably turning into low or it is negative.

DeAngelo and Masulis (1980) state that one alternative to tax shield on debt financing is NDTs.

Studies have demonstrated truly blended outcomes in regards to the association between NDTs and leverage. Bradley et al. (1984) have demonstrated positive relationship the between of the NDTs and leverage however Wald (1999) have indicated a negative relationship between of NDTs and leverage.

Antoniou (2008) and Mazur (2007) specified that leverage and liquidity are negatively linked, something like that organizations having more liquid might issue less debt and utilize their internal return rather to perform their organizations. Abdullah (2005) communicated that short term debt and liquidity show a critical negative relationship.

### **2.3. Capital Structure and Financial Crisis in Prior studies**

Gocmen and Sahin (2014) studied the determinants of bank capital structure and the Global financial crisis of Turkish commercial banks for a period 2004-2011. They figured out that profitability of commercial banks in Turkey and leverage ratios were significant negatively related. With highly fluctuating operating income, Turkish commercial banks prefer to use less leverage before and after the crisis. Also, the results reveal that larger banks with higher potential for growth utilize more leverage.

Proenca et al., (2014) investigates the determinants of capital structure and the 2008 financial crisis of SMEs in Portuguese for period 2007-2010. Results indicate that the most essential factors of capital structure are liquidity, asset structure, and profitability. The findings point to a declining trend in company debt ratios during the financial crisis.

Zhang and Mirza (2015) looked in to the determinants of capital structure of firms in financial crisis with sample 897 Chinese listed non-financial firms during the period between 2003-2012. The investigator reached to the conclusion that liquidity has remained unchanged in both pre and post financial crisis periods, although tax, non-debt tax shield, tangibility, economic development and inflation have all witnessed an extremely significant.

### **3. Research Methodology**

The financial crisis results in the failure of financial markets to function efficiently, significantly lending by financial intermediaries or/ and reducing issuance of security. However, one of the outcomes of the interruption of capital and lending markets created by a crisis in finance is a result of an increment in the amount of debt. So in this study, we find out the impact of recent crises in finance on the capital structure of 15 Cement companies in Listed ISE in Turkey for period between 2005 and 2017. The effect of the crisis in the finance company's capital structure is inspected through panel data regression models. Panel data sets would for the most part portrayed toward a test about units observed over a number for periods permitting analysts or researchers should apply complex models over the ones utilized within cross-sectional or time series analysis.

#### **3.1. Sample and Data**

Though ISE Trading Index list seventeen (17) cement firms, a sample of only of fifteen (15) companies are chosen. These 15 companies are shown below: -

-ADANA ÇİMENTO SANAYİ T AŞ

-AFYON ÇİMENTO SANAYİ T. AŞ.

-ÜNİYE ÇİMENTO SANAYİ VE TİCARET A.Ş.

-ASLAN ÇİMENTO AŞ.

-NUH ÇİMENTO SANAYİ A.Ş.

-GÖLTAŞ GÖLLER BÖLGESİ ÇİMENTO SANAYİ VE TİCARET A.Ş.

-MARDİN ÇİMENTO SANAYİİ VE TİCARET A.Ş.

-BURSA ÇİMENTO FABRİKASI A.Ş.



- BATISÖKE SÖKE ÇİMENTO SANAYİİ T.A.Ş.
- ÇİMENTAŞ İZMİR ÇİMENTO FABRİKASI T.A.Ş.
- KONYA ÇİMENTO SANAYİİ A.Ş.
- BOLU ÇİMENTO SANAYİİ A.Ş.
- BATIÇİM BATI ANADOLU ÇİMENTO SANAYİİ A.Ş.
- AKÇANSA ÇİMENTO SANAYİ VE TİCARET AŞ
- ÇİMSA ÇİMENTO SANAYİ VE TİCARET A.Ş.

Data used in the study is mainly secondary data. It is obtained from the cement firms listed on ISE public disclosure platform ([www.kap.gov.tr](http://www.kap.gov.tr)) for the period 2005-2017. The data was analyzed using STATA software package GMM to create a model that was used to achieve the objective of the study.

### **3.2. Measurement of Variables**

#### **3.2.1. Dependent Variable (DV)**

The study uses three dependent variables to measure the financial debt (Leverage), i.e. the capital structure, are:

1. Total debt ratio (TD) is a proxy measure of the firm's capital. TD is measured as the following  
Debt ratio= Total debt/ Total asset.
2. Short-term debt ratio (STD) is a proxy measure of a firm's capital structure, measured by  
Short term debt ratio= total short term debt / Total assets.
3. Long term debt ratio (LTD) is dependent variable. It is proxy of the capital structure of the corporation, measured by  
Long term debt ratio= Total long term liabilities / Total assets.

#### **3.2.2. Independent Variable (IV)**

To investigate the effect financial crisis on capital structure the researcher uses the following variables and formulas:

1. **Size:** it was used as independent variables and the formula to calculate it is as the following:

The Natural Logarithm of Total Assets

**2. Growth:** it was used as independent variable and the formula to calculate growth is calculated as the following:

$$[(\text{Sales}_t - \text{Sales}_{t-1}) / \text{Sales}_{t-1}]$$

**3. Tangibility:** it was employed as independent variable and Tangibility is calculated as following:

$$\text{Tangibility} = \text{Fixed asset} / \text{Total asset}$$

**4. Profitability:** return on asset (ROA) is the independent variables, it is proxy of the firm's profitability and it computed as the following:

$$\text{Return on Asset} = \text{Net sales} / \text{total asset}$$

**5. Non Debt Tax Shield (NDTS):** NDTS calculated as shown below was the independent variable.

$$\text{Depreciation Ratio} = \text{Depreciation} / \text{total assets}$$

**6. Liquidity:** in this study, current ratio (CR) is independent variables, it is proxy of the firm's liquidity and it calculates as;

$$\text{Current Ratio} = \text{current assets} / \text{current liabilities}$$

Dummy Crisis: this study assumes that crisis occurred in 2008-2010 and takes value of 1 for mentioned period, while it accepts that no crisis in finance happed in these years 2005, 2006, and 2007, 2011-2017 and takes value of 0.

Table below is indicating all variables of the study.

**Table 1: Variables**

Variables	Measurement	Abbreviation
<b>Dependent variable</b>		
Leverage	Debt ratio= Total debt/ Total asset.	Lev
<b>Independent variables</b>		
Size	The Natural Logarithm of Total Assets	Size
Growth	$[(Sales_t - Sales_{t-1}) / Sales_{t-1}]$	Growth
Profitability	ROA = Net Income / Total Assets.	ROA
Tangibility	Tangibility= Fixed asset/ Total asset	Tan
Non Debt Tax Shield	Depreciation Ratio =Depreciation /total assets	NDTS
Debt Ratio	DR= Total Debt / Total Assets.	DR
Liquidity	Current Ratio= current assets /current liabilities	CR

We can generalize equation (1) to write a dynamic panel model as (Flannery and Hankins, 2013):

$$y_{it} = \alpha + \rho y_{i,t-1} + \beta X_{it} + (v_i + u_{it})$$

The study utilizes the below model:

$$Lev_{it} = \beta_0 + \beta_1 Tang_{it} + \beta_2 ROA_{it} + \beta_3 CR_{it} + \beta_4 NDTS_{it} + \beta_5 Growth_{it} + \beta_6 Size_{it} + \beta_7 Crisis_{it} + \epsilon_{it}$$

## 4. Results

The outcomes of the dissection like the impacts of financial crisis on capital structure are introduced below. The section including Lev, Tang, ROA, Growth, Size, CR, NDTS, and Crisis may be comprised of three parts as Descriptive Statistics, Correlation, and Dynamic Panel Data (GMM) Estimator.

### 4.1 Descriptive Statistics

**Table 2: Descriptive Statistics**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Lev	195	.01	.74	.2537	.14030
Tang	195	.00	5.06	.6577	.41275
ROA	195	-.03	1.27	.5552	.27643
Growth	195	-.30	1.76	.1117	.20231
Size	195	13.43	21.90	19.5659	1.68615
CR	195	.15	12.27	3.3055	2.19092
NDTS	195	.00	.07	.0374	.01092
Crisis	195	.00	1.00	.2308	.42241
Valid N (listwise)	195				

For a total of 195 observations in the time period of study from 2005 to 2017, the analysis has been summarized above table. The findings of the analysis show that leverage have a lowest of 0.01 and a highest of 0.74. The average of the sample is 0.2537 with standard deviation of 0.14030. The mean tangibility is 0.6577 with a standard deviation of 0.41275 minimum of 0.0 and maximum 5.06. It is found that return on assets has a mean value of 0.5552 with standard deviation of 0.27643. The growth ranges (-0.30 – 1.76) with the mean of 0.1117 with standard deviation of 0.20231. The size ranges from 13.43 to 21.90, the average of 19.57 with standard deviation of 1.68615. Current Ratio gave the highest value of standard deviation at 2.19092, indicating a wide variation in leverage among cement companies. At the same time CR provided the minimum value of 0.15 and the maximum 12.27, the average value of 3.3055. The NDTS

ranges from 0.00 to 0.07 with the average of 0.0374 with standard deviation of 0.01092. The crisis ranges from 0-1 and has a mean value 0.2308 with standard deviation of 0.42241.

#### 4.2 Correlation Analysis

Table 3 shows the relationships for the greater part based on the computation of financial statements of 15 companies for the period of 2005-2017. It indicates that capital structure is associated with financial crisis for all variables under this study namely, Lev, Tang, ROA, Growth, Size, CR, NDTS and Crisis.

**Table 3: Correlations**

		Lev	Tang	ROA	Growth	Size	CR	NDTS	Crisis
<b>Lev</b>		1	.019	-.336**	.140	.095	-.651**	-.223**	-.206**
			.796	.000	.052	.187	.000	.002	.004
<b>Tang</b>			1	-.013	.076	-.041	-.024	-.121	.061
				.862	.293	.569	.743	.092	.401
<b>ROA</b>				1	.035	-.076	.206**	.396**	.125
					.625	.290	.004	.000	.081
<b>Growth</b>					1	-.014	-.112	-.022	-.289**
						.849	.119	.762	.000
<b>Size</b>						1	-.010	-.075	-.063
							.891	.299	.384
<b>CR</b>							1	.032	.138
								.656	.054
<b>NDTS</b>								1	.121
									.092
<b>Crisis</b>									1

The findings indicate that companies' capital structure does not have significantly altogether through financial crisis. Additionally; the relationships between leverage and, CR, NDTS, ROA, Crisis are negative correlated due to significant links are seen among the dependent variables, while Size, Tang, Growth, and leverage have a positive correlation, as evaluated.

### **4.3. Dynamic Panel Data (GMM) Estimator**

We utilize the dynamic panel approach or GMM model for the estimation of factors that may determine NPL over time as proposed by Holt-Eakin et al (1988) Arellano and Bond (1991). Using a series of instrument variables produced by lagged variables, we were able to solve the endogeneity problem in the independent variables.

GMM is a common method used in econometric theory to estimate parameters of economical and statistical models using an alternative technique instead of normal least square or maximum likelihood. First introduced in 1982 by Lars Hansen, it has found many applications in analysis of economic and financial data.

Advantages of GMM:

- GMM controls for endogeneity issue of lagged dependent variable using instrumental variables (IV): internal and external instruments
- Addresses the unobserved panel heterogeneity (individual effects)
- Reduces omitted variable bias in addition to the impact of measurement errors.

Limitations of GMM:

- More complicated compared to other panel models
- Possibility for manipulation
- Does not account for cross-sectional dependence (contemporaneous correlation). So, include time dummy into the model.
- Depends on the assumption that N is large. Not for long T panels. Use  $N > 20$ .

Dependent variable: LEV (LEV i,t)	
	System GMM
NDTS, it	-2.175** (-2.08)
TANG, it	0.00399 (1.48)
ROA, it	-0.0837** (-2.52)
Growth, it	0.0235 (0.70)
SIZE, it	0.00779* (1.79)
CR, it	-0.0355*** (-7.53)
CRISIS	-0.00527 (-0.29)
cons	0.342*** (3.62)
Observations	195
Number of group	17
No. of instrument	13
AR(1): p-value	0.197
AR(2): p-value	0.619
Hansen test: p-value	0.492
Sargan test: p-value	0.106

The result of the GMM estimation is shown in table above. The table 4 indicates the findings of two-step system GMM. Our result indicates that the number of instrument variables is 13 against 17 groups, making our instrument valid. As a result of the AR (2) test given in table 4, null hypothesis is accepted due to p-value of AR (2) greater than 5 percent as well as there is no autocorrelation problem in the model. Hence when the result of Sargan test is examined; high p-value of sargan test ( $p=0.106 > 0.05$ ) indicates that the instrumental variables are valid, in other words over identifying restrictions are valid in the model. Thus, the sargan test with a p-value above 5 percent fails to reject the null hypothesis.

## 5. Conclusion

This paper contributes to the existing literature by examining the financial leverage, i.e. the capital structure of cement firms in Turkey around financial crisis. The study evaluated a period of 2005 -2017 which is segregated as it accepts that crisis occurred in 2008-2010, same time there is no any financial crisis happened over these years 2005, 2006, 2007, 2011-2017. According to descriptive analysis, the leverage of the sample companies range from 1 % to 74%, with the average of about 25.37% with standard deviation 14.03%. Tangibility (Tan) shows a statistically positive and insignificant effect on leverage. With a coefficient of 0.00399, it indicates that one percent increase or decrease in Tan will lead to 3.99 percent increase or decrease in leverage of Cement companies. Leverage and ROA show negative correlation. A one-unit increase in ROA will reduce leverage by -0.0837. Bank's liquidity measured current asset divide current liability a statistically negative and significant relationship with leverage. Similarly, a one –unit increase in liquidity will decrease the leverage by -0.0355. Our results also indicate a statistically positive effect growth on leverage. With a coefficient of 0.0235, it means that when growth increases by 1 percent, it will result in 2.35 percent increase in leverage. The present study suggests that if firm size increase by one unit, it will lead to increase to leverage by 0.7 percent. The result suggests a significant negative relationship between NDTs and Leverage. This means a unit increase in NDTs will decrease leverage by -2.175.

Also, the results express that firm size, growth, and Tang are positive associated with leverage while profitability, liquidity, NDTs, financial crisis and leverage are negatively connected. Lastly, the findings point to a declining trend in company debt ratios during the financial crisis. Hence, firms need to make some adjustments to the leverage of the firm to meet their need for equity and debt financing.



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