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THE MIDDLE INCOME TRAP: THE CASE OF TURKEY (1980-2018)

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ABSTRACT

THE MIDDLE INCOME TRAP: THE CASE OF TURKEY (1980-2018)

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In recent research, middle income countries remain in the same income group for many years and cannot rise to an upper income group. This problem faced by middle income countries has brought the concept of middle income trap to the agenda. The middle income trap is defined as the fact that countries have been stuck at the middle income level for many years as a result of declining growth rates of their economies and their inability to transition to the higher income level. This situation causes the income disparities between developed countries and developing countries to increase more and more. This has led to more discussion of the middle income trap.

The aim of this study is to examine and investigate the theoretical background of the middle income trap concept and to present the risk of middle income trap for Turkey in terms of 1980-2018 period and to present some policy proposals for Turkey's economy to grow faster. In the study, GDP per capita values at fixed prices for 2011 are used annually. Based on the approach of Robertson and Ye (2013), econometric analyses were conducted through unit root tests that allowed conventional and structural breakage. ADF (Augmented Dickey Fuller), Zivot-Andrews (1992), which allows one structural fracture, Narayan and Popp (2010), which allows two structural fractures and Carrion-i-Silvestre et al. (2009), which allows up to five fractures, tests are used. According to the results of unit root tests, Turkey is not in the middle income trap.

The concept of income groups, income traps and middle income traps is explained in the first part of the study. In the second part, studies about the middle income trap in the international literature are mentioned. In the last chapter, the third chapter, econometric studies have been carried out to determine whether Turkey is entering the

middle income spiral and some policy proposals have been presented to enable the Turkish economy to grow faster.

Keywords: Middle Income Trap, Turkish Economy, Income Groups, Unit Root Test, Empirical Analysis

ÖZ

THE MIDDLE INCOME TRAP: THE CASE OF TURKEY (1980-2018)

KARDELEN ÇAĞLAYAN

Son yıllarda yapılan araştırmalarda, orta gelirli ülkelerin aynı gelir grubunda uzun yıllar kalarak bir üst gelir grubuna çıkamadığını görülmektedir. Orta gelirli ülkelerin karşı karşıya kaldığı bu sorun orta gelir tuzağı kavramını gündeme getirmiştir. Orta gelir tuzağı, ülke ekonomilerinin büyüme hızlarının düşmesi sonucu ülkelerin uzun yıllar orta gelir düzeyinde takılıp kalmaları ve yüksek gelir düzeyine geçiş yapamamaları olarak tanımlanmaktadır. Bu durum gelişmiş ülkeler ile gelişmekte olan ülkeler arasında gelir farklılıklarının gittikçe daha da artmasına sebep olmaktadır. Bu durum orta gelir tuzağının daha çok tartışılmasına sebep olmuştur.

Bu çalışmanın amacı orta gelir tuzağı kavramının teorik alt yapısını incelemek, araştırmak ve bunun yanında Türkiye'nin 1980-2018 dönemi için orta gelir tuzağı açısından riskini ortaya koymayı buna bağlı olarak da Türkiye ekonomisinin daha hızlı büyüyebilmesine yönelik olarak bazı politika önerileri sunmaktır. Çalışmada 2011 yılı sabit fiyatlarla kişi başı GSYH değerleri yıllık olarak kullanılmıştır. Robertson ve Ye'nin (2013) yaklaşımından hareketle geleneksel ve yapısal kırılmaya izin veren birim kök testleri vasıtasıyla ekonometrik analizler yapılmıştır. ADF (Augmented Dickey Fuller), bir yapısal kırılmaya izin veren Zivot-Andrews (1992), iki yapısal kırılmaya izin veren Narayan and Popp (2010) ve en fazla beş kırılmaya izin veren Carrion-i-Silvestre vd. (2009) testleri kullanılmıştır. Birim kök testleri sonuçlarına göre Türkiye orta gelir tuzağında değildir.

Çalışmanın ilk bölümünde gelir grupları, gelir tuzakları ve orta gelir tuzağı kavramı açıklanmıştır. İkinci kısımda ise uluslararası literatürde yer alan orta gelir tuzağı ile ilgili olan çalışmalara değinilmiş ve tuzakta olan ülkelerin genel özelliklerinin

üzerinde durulmuştur. Ayrıca bu tuzağın nedenlerinden ve bu tuzaktan çıkmak için politika önerilerinden de bahsedilmiştir. Üçüncü bölüm olan son bölümde ise Türkiye'nin orta gelir sarmalına girip girmediğini belirlemek için ekonometrik çalışmalar yapılmış ve Türkiye ekonomisinin daha hızlı büyüyebilmesine yönelik olarak bazı politika önerileri sunulmuştur.

Anahtar kelimeler: Orta Gelir Tuzağı, Türkiye Ekonomisi, Gelir Grupları, Birim Kök Testi, Ampirik Analiz

ÖNSÖZ

Tez çalışmamın her aşamasında katkılarını ve desteklerini esirgemeyen herkese duyduğum minneti ifade etmeyi borç bilirim. Öncelikle tüm kurul hocalarımıza harcadıkları zaman, sahip oldukları sabır ve yaptıkları öneriler için içtenlikle teşekkür ederim.

Danışmanım Prof. Dr. Mehmet Kutluğhan Savaş ÖKTE' ye olan içten şükranlarımı belirtmek isterim. Kendisini tanımaktan ve birlikte çalışmaktan büyük onur duyduğum değerli hocam, tavsiyeleri ve sabrı ile tüm tez sürecimde bana yardımcı oldular. Araştırma ve yazma sürecinde değerli vaktini bana ayırarak desteğini esirgemeyerek çalışmamın ilerlemesine katkıda bulundular.

Benim bugünlere ulaşmamda en büyük paya sahip olan ve emeklerinin karşılığını hiçbir şekilde ödeyemeyeceğim sevgili anneme, babama, ve abime sonsuz teşekkürlerimi sunarım.

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ABBREVIATIONS

ADF:	**:** Augmented Dickey- Fuller
CUI	**:** Catch - Up Indeks
GDP	**:** Gross Domestic Product
GNI	**:** Gross National Income
MIT	**:** Middle Income Trap
R&D	**:** Research and Development
UMI	**:** Upper Middle Income
US	**:** United States
WLD	**:** World
ZA	**:** Zivot-Andrews

INTRODUCTION

When we look at world economy, income distinctions between countries have always been important for the science of Economics and have aroused curiosity. There are many studies on why some countries are richer or poorer than others.

The concept of the middle income trap (MIT) was first expressed by Gill and Kharas (2007). The report states that countries in the middle income class grow more slowly than countries in the low and high income class. The definition of the MIT defined in this report published by the World Bank has been accepted in the literature and has started to be widely used. MIT is described as the inability of the economy to pass to an upper income group after attaining a specific income range, and GDP per capita to remain at a specific threshold for many years. The concept of MIT is intertwined with the industrialization, growth trend, socio-cultural and political structure of countries.

Based on the Atlas method, which is considered a threshold for the determination of MIT, Turkey can be said to have passed into the category of lower middle income countries in 1955. Following 50 years in this income group, upper middle income countries category was passed in 2005. With Turkey's entry inside the higher middle income group in 2005, the level of GDP per capita increased significantly. However, when the development process of the Turkish economy is examined, it is seen that the income distinction between high-income countries is seen to continue. As the duration of rapid growth in the Turkish economy began to decline with the 2008 crisis, discussions about whether Turkey should be at MIT have started (MUSIAD Report, 2012; Sak, 2013; Yeldan et al., 2012).

When the income classification which is made by the World bank is examined, Turkey is situated in the middle income group for 65 years. Continuity of economic growth is essential to exit the MIT. Because sustainable economic growth raises income by rising investment, manifacture and job opportunities. Therefore, a long stay in the MIT means that society's well-being will decline. (Yılmaz, 2019:1)

The MIT is not a concept openly laid out in the science of Economics. Although it does not have a specific definition, it is particularly relevant to developing countries. It is a concept that has started to be addressed since 2007 and is increasingly accepted. The MIT, though recently heard, is a subject that economists are familiar with the concepts of growth slowdown, growth fatigue, stable growth (Karatepe, 2019:1).

This work is split into three divisions. In the initial division, the fundamental concepts related to economic growth such as national income are discussed. The concept of income groups and income traps is given so as to better explain MIT. Income grouping is carried out considering the Atlas method of the World Bank. Income traps can occur at the middle-income range, as well as at the low income range or at the high income range. Later, theoretical and empirical studies were mentioned in the international literature. In the third chapter, the national and international studies involving Turkey on the subject of MIT are mentioned. In the last part of the study, the measures to be taken and the policies to be made in order to increase Turkey's high income level by evaluating Turkey's MIT position through classification and calculation of the concept of MIT were examined. Then an empirical study was conducted on whether Turkey was at MIT. The Augmented Dickey Fuller (ADF), Zivot-Andrews (ZA) and Lee-Strazicich (LM) unit root tests were used in this study, which covers between 1980 and 2018. In this context, the aim of the econometrics section of the study is to evaluate Turkey's position in MIT on the basis of World Bank data for the duration 1980-2018.

The most fundamental problem in countries that fall to MIT is that the continued pace of growth cannot be sustained. By providing sustainable growth and focusing on long-term structural reforms, it enables the progress of countries and the transition to a high income group.

CHAPTER ONE
INCOME GROUPS, INCOME TRAPS AND MIDDLE INCOME TRAP

MIT phenomenon, which is included in the issues of growth and development, is becoming more and more important today. Because, when we look at the world economy, very few of the countries in the middle-income group have reached the category of high-income countries. Many countries have been jammed on middle income ranges for too long.

Understanding the MIT, which is related to the performance of countries around the world, is one of the conditions for being a developed country as well as providing income increase alone. MIT emphasizes the need for different economic policies in order for Turkey to reach with advanced economies. Thus, MIT is engaged in the research of economists both on a global scale and in Turkey.

MIT is an approach that studies the stagnation of per capita income after an absolute level in any economy. This is why certain concepts need to be well known. In this part of the study, MIT-related concepts such as income groups and income traps will be discussed.

1.1. Conceptual Framework

Economic growth is one of the most significant topics that economists have discussed the most in every period of time and it is one of the most significant topics that both developed and developing countries have focused on today. It is the distinctions in growth rates that make countries more advanced and stronger than each other in the long term. Economic growth can be measured by gross national income (GNI), gross domestic product (GDP), GDP per capita or GNI per capita. GNI is the totality of the value of the whole goods and services produced via the citizens of a country in a specific duration for a certain currency. The concept of citizenship is emphasized because it is distinct from GDP. GDP includes the final goods and services produced via foreign nationals working in that country. When a country's gross national product is shared the population of that country, GNI per capita is found. Likewise, when a country's gross domestic product is divided by the population of that country, GDP per capita is achieved. In addition, the purchasing power parity should also be mentioned. Purchasing power parity (PPP) is defined as a rate of adapt that equalize the purchasing power of dissimilar currencies, remove price level distinctions between countries. In this study, these concepts will be used to compare the income ranges of the countries.

1.2. Income Groups

Throughout the history economies have been following a process from low income to middle income and from middle income to high income. In the early stages of development, countries are generally in an economic development stage based on agriculture. In this stage countries continue to grow at the lowest levels of productivity. Productivity is gradually increasing with mechanization, increased capital accumulation and the shift of Labor to industrial areas. As a result, all sectors in the economy pay higher wages, increasing country income per capita. Thus, when a country increases its per capita income level at a sufficient level, it falls from the “low income” group to the “low middle income” group, then into the “high middle income” group and finally into the “high income” group. However, as in the case of many countries, it is observed that some countries remain stuck in any of the income groups for many years in the development process. (Felipe et al.,2012:6-7).

The World Bank gathers today's economies in three groups in terms of their level of development. In making this classification, the World Bank takes into account the countries' GDP per capita levels and makes its calculations using the “Atlas method”. This method is based on the expression of GNI figures per person calculated in national currency in US dollars using the exchange rate averages of the last three years. In this way, the effects of fluctuations in exchange rates on GNI levels per capita are tried to be reduced to a certain extent (World Bank, 2019).

Table 1.1: Criteria for Determining Income Classes of Countries

Threshold	July 2019/$ (new)	July 2018/$ (old)
Low income	< 1,025	< 995
Lower-middle income	1,026 - 3,995	996 - 3,895
Upper-middle income	3,996 - 12,375	3,896 - 12,055
High income	> 12,376	> 12,056

Source: World Bank (2019)

Considering 2018 information from the Atlas method, 31 countries are seen to be in the low-income group. 47 countries are in the lower-middle income group, 60 countries are in the upper-middle income group and 80 countries are in the high income group. Turkey is a country in the upper-middle income group with a GDP per capita of $ 9,311 (World Bank, 2019).

Countries with a GDP per capita of $ 1,025 and below are in the low income class. These include countries such as Yemen, Mozambique, Uganda (see **Table 1.2**).

Low-middle-income countries are between $ 1,026 - $ 3,995 of GDP per capita. These include countries such as Bolivia, Ghana, Nigeria and Zimbabwe (see **Table 1.3).**

The upper-middle income group is countries with GDP per capita between $ 3,996 and $ 12,375. These include countries such as Brazil, China, Iraq, Turkey and Venezuela (see **Table 1.4**).

Countries in the higher income group are those with a per capita GDP of $ 12,375 and more. These include countries such as Finland, Germany, Norway and Uruguay (see **Table 1.5**).

Given the World Bank's income classification in 2019, Comoros, Senegal and Zimbabwe have proceeded from low income to low middle income. Georgia, Kosovo and Sri Lanka have proceeded from lower-middle income to upper-middle income. However, Argentina has dropped from high income to upper-middle income (see **Table 1.6**).

The lower middle income countries in the World Bank's classification on July, which are Georgia, Kosovo and Sri Lanka, have succeeded in making the change to the group of high-middle income countries in 2018. At the same time, Argentina in the high income group fell to the upper middle income group (see **Table 1.7).**

Table 1.2: Different Views Used in Income Groups Classification

Sources	Lower Middle Income Economies	Upper Middle Income Economies	Notes
World Bank	$ 1,026 -$ 4,035	$4,036 - $12,475	Fixed prices in US dollars
Felipe et al. (2012)	2.000$-7,250 $	7.251$-11.750 $	According to the PPP in 1990
Eichengreen et al. (2012)	GDP per capita < $17,000		According to the PPP in 2005
Woo (2012)	GDP per capita= 20-55% of the United States		According to the PPP in 1990
Robertsen and Ye (2013)	GDP per capita= 8-36 % of the United States		According to the PPP in 2005
Gill and Kharas (2009)	Countries with"GDP per capita" in the range of $ 1,000 to $ 10,000		

Sources: Kaya et al. (2015)

1.3. Definition of Income Traps

In general the concept of trap is used to describe a stable state of economic equilibrium that cannot be changed by short-term external factors. In other words, the concept of trap reveals the positive effects of the factors which help GDP per capita increase, and as a result of including these restrictive factors, GDP per capita returns to its former level again (Cai, 2012: 51).

Income trap is usually called as MIT, although the expression of income trap is valid for all income groups. This concept which is based on the data of GDP per capita and which measures the GDP per capita in terms of dollar according to purchasing power parity points to a vicious circle in which a country is trapped in a certain level of income. Therefore, income traps can occur at the middle income level, as well as at low and high income groups. Income trapped countries remain at this level for a very long time and do not move to a higher income group. For example, Japan's average growth in the last two decades has been below 1%. Also, countries such as Thailand and Malaysia that have risen from low income to middle income have not been able to rise from their last income level to high income level for nearly 30 years (Karahan et al. 2012: 96-98).

If define the word trap, it is the problem of slowing down, stalling or regressing the course due to the setbacks in the course of the economy while the level of income per capita is increasing. (Bulut and Koçak, 2014: 167).

While a country in the low income group is rising to the middle income group, its growth is rapid, but it becomes harder for it to enter the status of a top group, the high income countries. This is explained by the income trap and means that there is no sustainable growth (Yeldan et al. 2012: 31).

The main goal of a country is the growth and that growth should be constantly increasing. If a country continuously increases its income, it does not become trapped within a certain level of income and thus does not enter a vicious circle. A country cannot grow consistently and will go into a vicious cycle if it stays plugged in a fixed income range. Entering this cycle is called the income trap.

The best indicator of setting income traps is thought to be the sustainable growth rates. Indeed, the concept of MIT means that the countries that have reached a certain income level are stuck in this level. In other words, it leads to question the existence of the rates of sustainable growth performances of these countries. The reason for this is that over time a low-income economy which grows steadily will become middle-income economy, and a middle income economy which grows steadily will become high income economy. However, this process is not a process that progresses spontaneously depending on time (Yaşar and Gezer, 2014:127). In other words, effective policies are needed to maintain stability. However, although some countries have shown high growth performance for a certain period of time, they may lose their performance over time and face the risk of not being able to get out of their income level.

From this point of view low income countries can have a chance to compete in international markets with low labor cost and low cost labor-intensive products which are produced with simple technologies they transfer from abroad. The fact that labor and capital factors shift from the agriculture sector, where productivity is low, to the manufacturing sector, where productivity is higher, will increase the productivity level of the country thereby increasing the income level. Naturally low-income countries with such advantages can achieve a rapid growth performance and get rid of the low-income category in a short time. However, after reaching the middle income level, the increase in the wage level due to the increases in the employment level causes the cost advantages to disappear gradually. The loss of competitive advantages due to costs in international markets causes growth performances to decrease. Countries facing such situations have to take steps to regain the advantages they have lost (for example, developing technology and increasing resource efficiency, innovation etc.) without wasting any time. Countries that are late in taking these steps and performing the necessary structural transformations have to consent to their low growth performance and have difficulty in promoting to a higher income group due to the ongoing growth rates at modest rates. As the transition process to a higher income group prolongs, countries can find themselves in a problem called the MIT (Öz, 2012: 2).

1.4 Middle Income Trap

Income differences between countries have led to the effort of underdeveloped countries to rise to higher income levels. However, in this period, when production is very sophisticated, where technology is rapidly increasing, it has become very difficult for underdeveloped countries to emulate the production structure of developed countries, and to rise to the level of developed countries has become a major problem for underdeveloped countries. The World Bank expressed this challenge in a 2007 report, which it called a MIT (World Bank, 2016).

Countries with low income levels can increase from low income to middle income level by including the labor factor, which is inert in agriculture in the first stage of development. However, it is not as easy as the first stage for the countries that have reached the middle income level to exceed this level. In order for the country to reach a high income level, it must produce products that are more technology-intensive and that include R&D and innovative processes. Countries that fail to do so continue to produce technology-standardized products. These countries, which continue to produce products with standard technology, are subject to competition with the countries that follow them and have lower income and wages. Middle-income countries are unable to compete on price with these backward countries that are starting to compete with them. As a result, middle-income countries are losing their existing markets to low-income countries. This result causes countries to be stuck in the middle income level to get worse.

It is a big problem for many countries that those who are in the MIT get confused at this income level and cannot reach high income level. For this reason, it is very important to determine the factors that affect the MIT or not to get trapped. When the studies in the literature are examined, it is determined that R&D, Education expenditures and Foreign Direct Investments are important factors for countries not to fall into the MIT or to get rid of this trap.

The concept of the MIT was first introduced in the 2007 study *"An East Asian Renaissance: Ideas for Economic Growth"* by Gill and Kharas, who were experts in the World Bank. The study points out that many middle-income countries have a hard time keeping up with the economic changes and transformations which take place in today's world, and therefore show more modest growth performance compared to rich countries. According to the study, the common characteristics of such countries, which have been stuck at the middle income level for many years, are that on the one hand they cannot compete against poor countries in low-wage standard manufacturing industry products, while on the other hand they have difficulty in catching rich countries that are growing on the basis of innovation (Gill and Kharas, 2007: 4-5). The report highlights middle-income countries being trapped between high-income countries and low-income countries, and the countries that are in this situation generally described as those that are stuck in the MIT(Bozkurt, Bedir, Özdemir and Çakmak, 2014: 24).

The MIT is a concept that applies mainly to developing countries. In the first stages of growth, countries proceed from agricultural production to light consumer goods production, and growth gains relative momentum during this period. After changing to the manufacture of light consumer goods, the surplus of employment in the agricultural sector tends towards new industries, while capital increases due to high profits. Nevertheless, as countries approach the middle-income group, growth begins to slow, high profits begin to decline, and technology obsolescence emerges. In this case, the sources of growth are replaced by productivity, not production, and factors such as qualified human capital and research and development activities begin to come to the fore. The difficulties and obstacles that the economies of the country have experienced in coming out of this situation are called MIT (Alçın and Güner 2015:30).

The continuity of growth disappears in the MIT, and the growth becomes stable in the middle income. The increase of the growth becomes difficult after reaching the middle income coming from the low income. The speed of reaching from lower middle income to the upper middle income occurs in a higher level than the speed of reaching the high income from the middle income. (Estrada, vd., 2018, 1209).

There are many studies on the MIT and on the reasons which are addressed from different perspectives. In general, the MIT is defined as the truth that countries in the middle-income range cannot stay in this income for long term and cannot pass to the higher income range.

"Avoiding Middle Income Growth Trap" published by the World Bank in 2012 highlights that many countries have succeeded in getting rid of low income levels and reaching middle income levels thanks to their rapid and steady growth performance since the 1950s. However, it has been stated that very few of the countries that reach the middle income level manage to move to the group of high income countries, while others are trapped in the so-called MIT (Agenor, Canuto and Jelenic, 2012: 1). Agenor et al. (2012) stated that an economy will be caught in MIT after certain stages and the MIT consists of a five-stage process. The process works like this:

- In the first phase, as an economy rises from low income to middle income, it shifts from agriculture to low-cost labor-intensive production, resulting in international competitiveness.
- In the second stage, productivity increase is achieved with the imported technology.

- In the third stage, the unskilled labor transferred from agriculture to the manufacturing industry over time becomes excessive and the related labor becomes non-absorbable.
- In the fourth stage, when the country reaches its middle income status, real wages increase in the urban manufacturing sector, and the efficiency of imported technology begins to disappear over time.
- In the fifth phase, productivity growth ceases, the country's international competitiveness decreases, output and growth slows down, and the economy is now captured and cannot rise to a higher level of income (ibid., p.3).

After these studies published by the World Bank, the growth problems experienced by middle income countries and the MIT phenomenon, which is addressed as a consequence of these problems, attracted the attention of economists. In general, there is no definite definition of the concept of MIT which concerns developing countries. The concept of the MIT has been tried to be explained in the literature with various studies prepared both theoretically and empirically. In the next section, prominent theoretical and empirical approaches to the concept of the MIT will be examined.

CHAPTER TWO

LITERATURE REVIEW

It is seen that the studies about the concept of MIT have intensified since 2007. In general the concept of MIT, causes of falling, and the things to be done to get out of the trap are investigated based on various countries. In the national and international literature studies in the field of MIT are mostly carried out using descriptive analysis method. Econometric researchers are not so many to group in this field. In this part of the thesis studies in the world will be discussed.

According to Gill and Kharas (2007), middle income economies have major transformations to undergo. These transformations are needed to have comparative advantages in production, to change the nature of investments as innovative and to improve the education system in order to train qualified labor.

Ohno (2009) discusses the industrial development processes of East Asian countries and approaches the concept of MIT in terms of development phases. There are five stages in Ohno's approach to development phases. Ohno describes the situation that prevents the change from the next phase of development to the third phase, which he describes as MIT, with the concept of “glass ceiling effect”.

Fung (2009), who examines the MIT in terms of financial development with the conditional convergence analysis, is determined that there is a strong conditional convergence between financial development and economic growth, but as the development level of the countries increases, the convergence effect decreases. Financial development in low-income countries accelerates their convergence to middle-income, while decreasing the rate at which middle-income countries converge to high-income. In order to increase the convergence rate of middle income to high income, it is necessary to use high technology products in financial markets.

Gill and Kharas (2009) emphasizes that countries need to increase their physical and human capital levels, implement competitive policies, reduce corruption, export high-tech products and ensure fairness in income distribution in order to avoid the MIT.

Paus (2009) highlights two main problems for middle income countries. First, countries that reach middle income levels will no longer be able to compete in the international market with countries that export with cheap labour due to wage increases resulting from increased skilled labour. Second, because their production capacity and levels are not based on knowledge-intensive production, they cannot compete with high-added value products based on knowledge-intensive labor in the international market.

Kharas and Kohli (2011) explain the reasons why countries fall into MIT and they explore what can be done to get out of the trap. They identify three critical processes for Latin American and East Asian countries to get out of the MIT. These processes are specialization, growth based on total factor productivity and institutions centralization.

Lin and Treichel (2012) examine Latin America, the Caribbean and China. They state the reason why countries fall to MIT is their inability to make the transition from low value added production to high value-added production in a healthy way. They argue that the reason why countries fall to MIT is because they do not prioritize products with high added value over products with low added value.

Felipe et al. (2012) created GDP per capita series by using Maddison (2010) data covering the period of 1950-2010 from 124 countries. Countries are then categorized according to income groups by using GDP per capita. Countries with low GDP per capita less than \$ 2,000 in this group are low income group, countries with GDP per capita between \$ 2,000 - \$ 7,250 low-middle income group, with GDP per capita between \$ 7,250 - \$ 11,750 upper-middle income group and countries with GDP per capita greater than \$ 11,750 are identified in the high income group.

Woo (2012) calculates the convergence of the countries for the duration of 1960-2008 with the help of the Catch-Up Index (CUI). This is calculated by comparing the GDP per capita of countries to the GDP per capita of the USA. The countries are classified according to the CUI as follows: if CUI>55% the country is a high-income country, if CUI<55% the country is a middle-income country, if CUI<20% the country is a low-income country.

Jitsuchon (2012) examines Thailand in the MIT, the shortage of qualified workforce, the insufficiency of the education system, the low level of R&D activities, growth due to natural resource consumption, the triad in maintaining macroeconomic stability, the inadequacy of the financial structure, the existence of monopoly powers, He indicates that there are reasons such as limited number of large companies and a large number of small and medium sized companies in the markets. At the same time, he emphasized that the implementation of active policies for innovation, improvement of human capital and physical capital, and incentive systems should be done correctly in order to get out of the trap.

In the study of Im and Rosenblatt (2013), transformation matrices are created using the income data per capita of 125 countries from the 1950-2008 period. Countries' revenues are calculated based on the per capita income of the USA. In the approach called "relative income classification", the middle income group for countries is divided into three lower income groups and threshold values are determined for each lower income group. Unlike other income group classification, a new middle-lower income group is created and named as "middle-middle income countries group". According to this, it consists of three lower income groups as low middle income countries, middle-middle income countries and high middle income countries. The threshold values determined according to the relative income classification for each sub-income group are given as in the following;

- GDP per capita = 0.15-0.30 of the US (Low Middle Income Economies)
- GDP per capita = 0.30-0.45 of the US (Middle Income Economies)
- GDP per capita = 0.45-0.60 of the US (Upper Middle Income Economies)

(According to the Purchasing Power Parity of 1990)

Robertson and Ye (2013) emphasize that countries in the middle income group are determined by reference countries. They use GDP per capita values analyzed by unit root tests. If a country's GDP per capita is between 8% and 36% of the US's GDP per capita, that country is in the category of middle-income countries.

Tho(2013) states that the economy has three basic stages of development. It is stated that in order for the country to achieve the high income group coming from the middle income group, the productivity of labor should be increased and the developments in the industrial structure should develop in a way that affects the growth positively.

Egawa (2013) studies the connection among disparity in income distribution and the MIT. It is emphasized that disparity in income distribution indirectly affects MIT by affecting its growth rate.

Phongpaichit and Benyaapikul (2013), who deal with the MIT within the framework of income distribution, discuss the Thai economy in their studies. In Thailand, the rate of unskilled labor is high, the labor wage is low, so there is unfair distribution of income. The unfair distribution of income both prevents economic growth and causes political instability. At the same time, the authors state that Thailand is exploited in terms of its natural resources and is at MIT due to its oligarchic management structure. The authors emphasize that in order for Thailand to exit MIT, it is necessary to provide justice in income distribution, to increase human capital, to shift from an oligarchic management structure to a democratic management structure, to research bio-energy resources and to develop innovation policies.

Aiyar (2013) analyzes Asian and Latin American countries using probit regression and least squares method using GDP per capita, demography, infrastructure, production and trade structure variables from 1955-2009 and determines that sudden reductions in capital inflows and low export diversity would result in MIT.

Bulman et al. (2014) stresses that exit from MIT would be achieved thanks to low inflation, high export share, economic structure and especially faster conversion from agriculture to industry, and reductions in disparity and dependency ratios.

Kanchoochat and Intarakumnerd (2014) attribute the causes of the MIT to insufficient institutions and education levels, insufficient capacity to produce and export high technology, and the inadequate role of the state. In addition, in order to get rid of the trap, to invest more in R&D and education, it is necessary to provide the right incentive systems, support the industries in which the country has a comparative advantage, and take care of increasing the industrial targets.

Chen and Dai (2014) interprets MIT in terms of political economics rather than economic reasons such as lack of Technology, rise in wages, structural transformation. There is a conflict of interest between social welfare and political practice. Once an economy has achieved a significant growth performance, policymakers are turning to the effort to have a rant in the economy by producing skewed policies. They emphasize that these policies lead to a decline in social welfare and the country's capture of MIT.

Paus (2014) completes a study on selected Latin American countries in the 2000s finds that institutional and structural experiences are needed to be gained in order to avoid the MIT.

Rudengreen et al. (2014) emphasizes that precautionary policies are vital to prevent the MIT. In this context, factors related to state administration, institutions, inclusive growth and education play an essential role in determining success or failure in continuing economic growth. For this reason, the reforms that should be carried out in order to get rid of the MIT and democracy is the basic element for the continuation of structural change at a further level. Therefore, the study argues that a democratic government can serve as a useful representative for many of these elements. In other words, emphasis is placed on democratic management as a way to avoid or get out of the MIT.

Hout (2014), on the other hand, divides 124 countries into income groups by considering their per capita income for the period of 1970-2010. In determining the threshold values for income groups, Felipe et al. (2012) adopting the approach of the author, determines different income thresholds other than the threshold values reached in his study.

Kasenda (2014) argues that the policies implemented by South Korea, which successfully surpassed the middle income threshold, serve as guidelines for many countries in the same group. It has been concluded that Thailand, Philippines and Indonesia countries can get rid of the MIT if they apply the relevant policies.

According to the studies of Vivarelli (2014); Vivarelli (2016), and Glawe and Wagner (2016), when the MIT is defined as the situation where GDP per capita cannot exceed a certain level, then the way of increasing the GDP per capita is the way to boost total factor productivity. Human capital, R & D, technology, entrepreneurship, high value-added products production, increasing the export of high technology products in export products by increasing total factor productivity will lead to an increase of GDP per capita, and will allow the countries which are in the middle income trap to become a developed country. The reason why Asian countries such as South Korea, Taiwan, Japan, Singapore and are catching a high growth trend is because they specialize in producing goods (durable goods) with high demand flexibility.

Islam (2015) examines the MIT within the framework of income disparity and draws attention to the increasing income disparity in China. It has been emphasized that income disparity can turn into a trap and that the income disparity trap can lead to MIT. The Kuznets Curve approach can be used when explaining MIT. The connection between the MIT and income disparity is tried to be explained by the concept of the disparity trap.

According to the study in which the impact of the productivity of Freeman (2015) on the growth is evaluated within the scope of scientific articles and patents, it is concluded that the main contribution between the variables of population, scientific articles and patents and GDP is scientific articles and patents. In this sense, education, research and development is the best way to overcome the MIT.

Feng and Yao (2015) identify two different reference countries in determining the middle income range. These countries are South Korea and the United States. Entering the development process in the early 1960s, South Korea's GDP per capita corresponds to 7% of the United States per capita and 44% when the World Bank considers it a high-income country. Based on these thresholds, countries with GDP per capita between 7% and 44% of the US per capita are middle-income countries.

According to the studies of Pruchnik and Toborowicz (2015) investigating whether Poland is in the MIT, Poland switched to free market economy in 1990 and joined the European Union in 2012. These have accelerated Poland's transformation process, but Poland imports advanced technology, know-how, innovation. This situation creates the risk of an economic slowdown. As a matter of fact, according to the World Economic Forum, Poland is in the 23rd place in the competition ranking of 27 European Union member countries. The authors state that in order for Poland to sustain growth, it is necessary to increase R&D investments, integrate labor into the R&D process, and increase patent applications.

Raiser (2016) compares Turkey and Poland in the MIT framework. He states that Poland has higher growth than Turkey and that Poland's economic structure is better positioned than Turkey's economic structure. It has been mentioned that macroeconomic imbalances in Turkey are greater than those in Poland.

Estrada et al. (2018) state that increasing R&D expenditures, technological progress and innovation are also necessary.

Wang et al. (2018) examine the MIT in terms of human capital. Human capital increase is one of the basic dynamics that enable developing countries to become developed countries. Therefore, human capital should be increased in order not to get caught in the MIT. The study examines the relationship between human capital and MIT in China. There is a gap in access to education between rural and urban population in China, and since the quality of education is low, it is in the upper middle income group.

Medina (2018) supports the view that R&D investments and integration of labor into the R&D process accelerate growth with examples of East Asia and Latin America. Accordingly, R&D expenditures are necessary but not sufficient for economic growth, and human capital that can use technology must be created (technology internalization).

Hartwell (2018), on the other hand, states that in the BRICS countries, in addition to these, accelerating the development of the manufacturing industry, increasing the investment and capital level, democratization and macroeconomic stability will not fall into the MIT.

Mueller (2018) explains that the size of the public's share in the economy is an obstacle to achieve high income in line with the opinion of the Australian school because the size of the public sector in the economy decreases the economic growth as a result of corruption and wrong distribution of resources. In order to increase growth, it is necessary to increase competition and advance technologically. The way to ensure this is that the MIT will not be fallen into the trap by reducing the share of the public in the economy and by transitioning to a free market economy with privatization.

Abiad et al. (2018) interpretes the MIT within the framework of infrastructure investments. According to the study which examines the relationship between growth and infrastructure investments in low and middle income countries low income countries make mainly basic infrastructure investments, while middle income countries make advanced infrastructure investments. Advanced infrastructure investments can be made to reach medium income from low income, but the way to reach the high income group depends on the investments in the field of information and communication technologies.

Ha and Lee (2018) propose the demographic approach to MIT. The relationship between working age population, fertility rate and GDP has been examined. The increase in the working age population increases the GDP while the decrease in fertility increases the GDP in the short and medium term and causes the GDP to be stable as it decreases the working age population in the long term. In the analysis period, China and Thailand were at the risk of being caught in the middle-income trap due to reduced fertility while Japan, Korea, Hong Kong and Singapore, although they were in the high-income group, tended to encounter a similar trap due to low fertility and stagnant growth.

Zhou et al. (2018) confirms with the analysis conducted in developed and developing countries for the products exported in international trade that developing countries should include high-tech products in export products in order not to be caught in the MIT.

2.1. Theoretical Literature

Some of the studies on MIT have been theoretical and some have been empirical. In this part of the study, theoretical approaches to MIT will be discussed.

2.1.1. Kharas and Gill’s Approach

The concept of the MIT was first used in the report *An East Asian Renaissance: Ideas for Economic Growth* by Gill and Kharas, published by the World Bank in 2007. This concept was then taken up in different dimensions by different researchers and institutions. The World Bank (2007) defines the MIT as the inability of middle income countries to reach an upper income level, i.e. higher income group, by staying at this income level for a long time. In other words, countries caught in the MIT both lose their comparative advantage in industrial products versus low-income countries where wages are relatively low, and cannot compete with high-income countries that grow and export high value-added products based on innovation.

Kharas and Gill (2007) emphasize that middle-income countries are unable to keep up with economic changes of the 20th century. They point out that middle-income countries have failed in their growth policies because they do not care about R & D or technological activities. Middle-income countries could not contest with underdeveloped countries where wages are low. In addition, it does not contribute to the class of developed countries. To put it differently, middle income economies are jammed among these two income groups. This condition involving middle income economies is named the MIT in the World Bank report. It has been stressed that these countries need to increase their rate of technological innovation to escape the trap.

The authors list three basic transformations that middle-income countries should realize based on the example of East Asian countries;

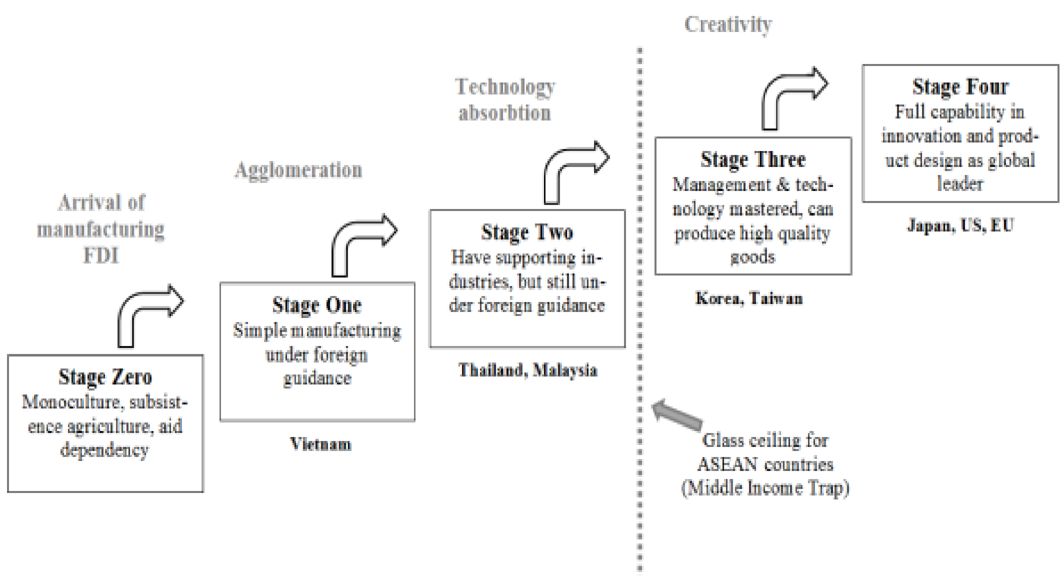
- Transition to specialization instead of displacement in production,
- Importance of investments that bring innovation to the fore,
- Reorganization of the education system in order to raise producers with the ability to develop new products and processes (Gill, Kharas, 2007: 69).

The authors state that the reason why Latin America and the Middle East countries cannot increase from middle income to high income ranges is explained above.

2.1.2. Ohno's Approach

Ohno (2009), taking into account the industrial development processes of East Asian countries, discusses the concept of MIT within the framework of development stages approach. According to Ohno, there are five stages of development that a country must go through in order to become a leader in the production of innovative products in global markets. The mentioned development stages, the characteristics of the stages and the conditions required for the transition from each of these stages to the next are shown with the help of Figure 2.1 below.

Figure 2.1. Phases of the Catching Up Process



Source: Ohno (2009)

- Often characterized by political turmoil, socialist planning, and poor economic management, low-income countries have a fragile economic structure. Economic activities in these countries are limited to extraction of natural resources, export of a single type of agricultural product and subsistence farming activities. There is an excessive dependence on foreign aid, and the intrinsic value from economic activities is very small. This stage is called the initial stage of development in terms of economies (Ohno, 2009: 26)
- The transition from the initial stage to the first stage starts with the arrival of foreign capital investments in the country. These companies produce light industrial goods such as clothing, food, and electronic parts in their host countries. In this first stage, design, technology, production and marketing are managed by foreign companies and the basic raw materials and parts used in production are imported. While the country at this stage contributes to production with its unskilled labor and industrial land, the poor jobs and income are created for segments. However, the intrinsic value created at this stage is still low. As in the

case of Vietnam, the basis used in industrial production, a significant portion of raw materials and intermediate goods are imported (ibid,27)

- With the increase of direct foreign capital inflow and production expansion, the second stage of development is started and domestic production begins to increase. At this stage, as installer companies become relatively more competitive, industries begin to produce physical inputs internally in the production process and the intrinsic value created increases moderately. However, since foreigners still dominate the production processes at this stage, wages and incomes in the economy are not at the desired level. Ohno explains the situation that prevents the transition from the second to the third stage of development, and he describes a MIT with the concept of "glass ceiling". As can be seen from the figure, the glass ceiling effect represented by this dashed line, which makes the transition from the second stage to the third stage of development difficult, represents an invisible obstacle that prevents countries from reaching a higher income level, namely the MIT.
- The third stage of development is started with the country's internalization of its knowledge and skills as well as the accumulation of human capital. At this stage, domestic manufacturers replace foreign companies in all stages of production such as quality control, marketing, logistics, design, technology and management, and foreign dependence on the country's economy is reduced. Therefore, the intrinsic value created begins to increase rapidly. At this stage, the country increases its share in global markets by becoming an exporter of high quality goods that can compete with its competitors in developed countries (ibid, p. 27-28).
- In the fourth and final stage of development, the country directs the industrial markets with the design, quality and technology of the products it produces. These countries which are called industrial innovators are competitive countries that lead trends in industrial markets. Some member states of the USA, Japan and the European Union are called industrial innovative countries (ibid, p.28).

In this approach developed by Ohno, every phase of development is not certain for every country. In other words, from the initial stage of development, every country may not be able to become a leader in global markets by successfully completing these five stages. For example; it is known that most of the countries cannot attract enough direct foreign investment in the first stage of development.

2.1.3. Kharas and Kohli's Approach

One of the main causes of MIT is related to income distribution and macroeconomic growth. As the economic models show, deterioration in income distribution slows down domestic demand and tends to decrease in domestic product, which also means stagnation and the debt burden on middle and lower income groups increases in the relevant period. When the process is prolonged, the level of debt becomes unbearable and extends to financial bankruptcies. Here middle-income countries in Latin America are countries that have experienced this process and ultimately faced the crisis. In addition to income distribution, innovation and product diversification are also among the most needed elements of the market in middle-income countries. Since innovative, higher quality and diversified products mean higher profit margins for companies, these factors are factors that will pave the way for companies in marketing, branding and new product development processes and help them grow. In summary, domestic demand and external demand are factors that can be the engine of growth for middle-income countries (Kharas and Kohli, 2011: 285-286).

While low-income countries are trying to achieve high and rapid growth based on product diversity, they focus on supply-side policies, try to improve the institutional structure by focusing on domestic production, and decisive policy making gains importance. Countries that reach middle income level should focus on demand side policies rather than supply side policies. Although product diversity remains important for middle-income countries, it becomes much more important to specialize in specific products and to produce innovative and knowledge-intensive production (Yaşar and Gezer, 2014:129)

2.1.4 Lin’s Approach

In the study, Lin emphasizes that countries follow two basic strategies in the development process, namely the Comparative Advantage Following Approach (CAF) and the Comparative Advantage Defying (CAD) approach. When the development economy began to take shape in the mid-20th century, developing countries were not in areas where they had their own comparative advantage; It has been driven to adopt an inward CAD strategy, such as heavy industry oriented or import substitution policies. The relative scarcity of capital from factor equipment in developing countries was ignored and capital intensive industries were encouraged to be established, as in developed countries. It was thought that development would accelerate if developing countries skipped the labor intensive and resource intensive development phase. However, concentration on industry / technology where an economy has a comparative advantage is more important in terms of convergence to developed countries and accelerating economic growth. If a developing economy uses its own comparative advantage factor hardware, it minimizes the cost of imitation and can continue to develop its industrial structure. CAD strategy is very inefficient and costly. Four countries are called Asian Tigers which are Taiwan, Hong Kong, South Korea, and Singapore. Taiwan, South Korea and Singapore are examples of countries that have implemented the CAF strategy and succeeded. Taiwan, South Korea, and Singapore first adopted the import-substitution CAD strategy, then gave up because they could not develop heavy industry. Instead, it specialized in its own factor equipment, developed labor-intensive industries, encouraged exports, and expanded outward-looking economies. Asian Tigers, which increased competitiveness by focusing on areas where they are comparatively superior, achieved rapid capital accumulation and succeeded (Lin, 2001:21, 22, 23).

2.1.5 Aoki’s Approach

Aoki (2011) analyzes the MIT phenomenon in population axis using the economic development stages approach. The author states that economic development consists of five stages, taking into account the countries of China, Japan and Korea. Accordingly, the five stages of economic development are as follows (Aoki, 2011: 1): M Phase (Malthusian), G Phase (Government Leadership), K Phase (Kuznets), Phase H (Human Capital Based) and PD Phase (Post-Demographic Transformation) (Aoki, 2011:18).

Using the official data of three countries, Aoki calculates the demographic-economic change in the total employment / total population ratio, structural change and per capita income change values in sector I for each country separately by determining in which period of economic development each country is.

Malthusian Phase: In countries at this stage, per capita income is very low and has a stagnant appearance over the years. In addition, the share of agricultural employment in these countries is above 80%. The Chinese economy went through the Malthusian phase of economic development between 1870-1938.

Post-Malthusian Phase: This phase consists of the G-phase and the K-phase. In the G phase, a moderate per capita income is accompanied by a moderate structural transformation process. There is also intense state intervention in the industrialization process. The Chinese economy went through this phase between 1952-1977 and the Japanese economy experienced it between 1880-1956. Even though the Korean economy developed similar to the characteristics of this phase between 1911-1963, the author does not make a clear definition about this phase for Korea (Aoki, 2011: 6). In the K-phase, a rapid structural change is experienced in the economy and per capita income tends to increase. At this stage, demographic factors, that is, the increase in the share of the labor force in total output and the shift in employment from sector A to sector I contribute to the increase in per capita income between 1/4 and 1/2. The Chinese economy was in this phase between 1977 and 1986. While the Japanese economy lived between 1955 and 1969, Korea had an integrated G-phase between 1963 and 1989 (Aoki, 2011: 6-7).

H-phase: Sustainability of per capita income increases depends on the increase in per capita income in sector I. However, total factor productivity and human capital investments must also increase. A country's economy that fulfills these conditions transitions to a human capital-based growth process (H-phase). Japan successfully transformed into a human capital-driven growth process in the 1970s and 1980s, but failed to sustain per capita income increases for the next 10 years. On the other hand, Korea realized this transformation in the period of 1989-2008 by achieving high per capita income in the I sector (Aoki, 2011: 8).

PD Phase: As a result of the low fertility rates seen in the H-stage of economic development, life expectancy increases due to improved health care and quality of life. The fact that the population between the ages of 15-65 is faced with a decrease has manifested itself in Japan in the 2000s and left negative effects on income. Similarly, the potential workforce in the Chinese economy has shown a decreasing trend in the last 10 years. Despite these demographic changes, if the decline in birth rates reverses and labor force participation increases and total factor productivity continues to increase, per capita income may still continue to increase in these economies. Especially for East Asian countries, a new phase of economic development (PD phase) represented by aging of the population, decrease in labor force participation and low fertility rates is mentioned. The author states that although it is not certain, Japan is in this phase of economic development (Aoki, 2011: 9).

This approach of Aoki is an approach of economic development phases based on sectoral mobility of population and employment. In his analysis based on the historical experiences and macro-economic data of only three countries, Aoki tried to determine the periods in which the countries were involved in which economic development phase according to the various variables he used. It would not be the right approach to make a definitive judgment about the stages of economic development based on the data from only three countries. However, it is important for the literature in that the author has brought a different approach to the MIT in this context. Although the author does not mention it explicitly in his work, he sees the transition from the K-phase to the H phase as an exit from the MIT. That is, a country in phase K has reached the middle income level and must meet the conditions of the H-phase in order to move up to the next level.

Table 2.1: Phases and the corresponding time periods for China, Japan, and Korea.

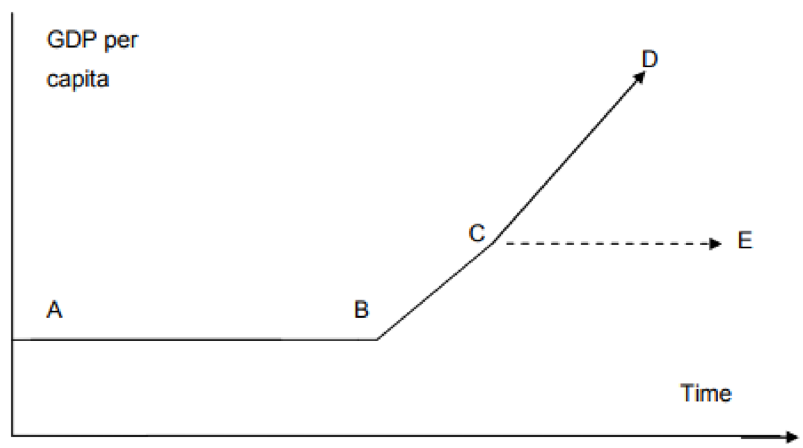
Country	M-Phase	G-Phase	K-Phase	H-Phase	PD-Phase
China	Late Qing Dyn-asty 1870–1938	1952–1977	1977–1989	1990–2008 beginning tran-sition for coastal China	
Japan	Late Tokugawa period	1880–1956	1955–1969	1970s–1980s turnaround 2000s	[1999–2008]
Korea	Late Chosŏn Dynasty	1970–1989		1989–2008	

Source:Aoki (2011)

2.1.6 Tho's Approach

Tho (2013) emphasizes the MIT with the approach of development stages of the economy. Tho (2013) interprets the MIT in the study on MIT as follows;

Figure 2.2: Development Stages of the Economies



Source: Tho (2013)

As the growth stages are shown, each point corresponds to an income level, and point B represents the low income group, point C represents the middle income group and point D shows the high income group, where the three income groups are included.

A-B → Agriculture society, low production and consumption, low income level with high fertility

B-C → With the transition to the industrial society, the middle income level, where the level of production increases, income increases, and birth rates decrease relatively

C-E → MIT where income is stable for a long time in the middle income group

C-D → The transition from the industrial society to the information society represents the high level of income where the scientific and technical knowledge level increases and continuous growth is achieved.

Point C is called the glass ceiling because point C is at a critical point between middle income, MIT and high income. At point C, MIT or high income group can be reached. In order to reach the high income group, it is necessary to increase the total factor productivity by increasing scientific and technological knowledge (Tho, 2013, 4-5).

According to this approach, there are three main reasons for the MIT (Ibid, 109-110):

The first one is the increase in real wages in factor markets due to the shift from the excess of labor supply in the economy to the shortage of labor supply. The process of change in question is called the turning point and this turning point corresponds to point C in the figure. From this point of view, increases in labor productivity must be equal to the increases in real wages for growth to continue.

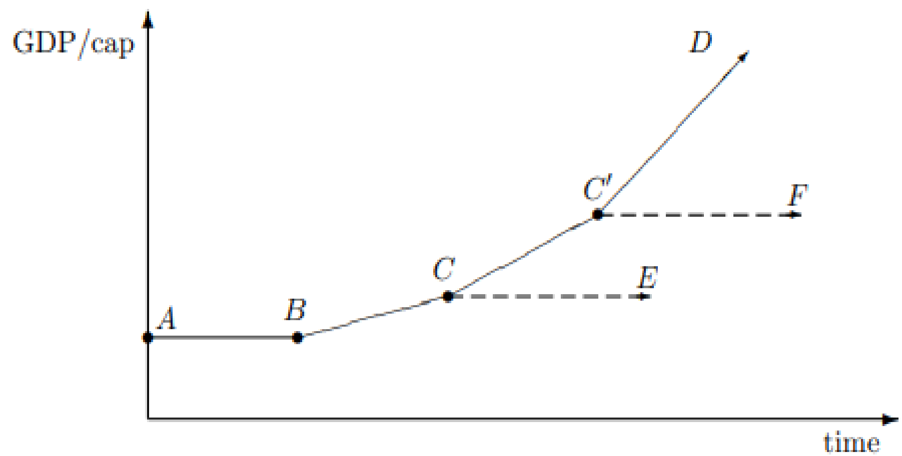
Secondly, in the first stage of economic development, there is no input-based economy that requires intensive use of labor and capital because while labor is excessive at this stage, capital is a relatively scarce production factor. However, technology is quite lagging and the economy needs increasing investments in infrastructure and industry at this stage. In order for the economy to reach a high income level by achieving a sustainable growth trend, it must have technology, managerial resources and effective use of capital.

Thirdly, comparative advantages are lost. Countries reaching middle income levels lose their comparative advantage in labor-intensive industries with rising wages. Middle-income countries are expected to include highly skilled workforce and high technology in their production processes in parallel with the economic growth process. However, it is very difficult for countries that do not change their comparative advantage structure in line with this transformation to reach the upper income group.

2.1.5 Dewitte's Approach

While Dewitte (2014) handles the MIT with the economic development stages approach, he develops the economic development stages approach of Tho (2013) with an emphasis on technological capabilities. The main idea in this approach is that in the later stages of economic development, the main source of growth is technological skills and creativity. This approach developed by Dewitte is shown in Figure 2.3. Dewitte has stated that the main source of growth is technological capabilities and creativity.

Figure 2.3: Development Stages of Economies



Source: Dewitte (2014)

There are four stages of economic development. The country, which has the technological capacity to continue simple manufacturing activities in the first stage (A-B range), is faced with the poverty trap. The country, which started to develop its technological capabilities by getting out of the poverty trap, moves to the second stage of development (B-C range). At this stage, the country tries to increase its investments by purchasing or imitating foreign technologies. Also at this stage, there is a surplus of labor in the country, which is still at the beginning of economic development.

In order to move to the next stage of economic development (C-C 'interval), structural transformations must be carried out in the country. At this stage, the country needs a qualified workforce that can use imported technologies, as well as talents with advanced engineering knowledge.

If the country fails to accomplish this structural transformation process successfully, it gets trapped (C-E range). The country that realizes the transformation in question moves to a higher economic development stage. In economies moving to this stage, technological capabilities are needed to produce more sophisticated high-tech goods to be able to move to the last stage of economic development (C'-D interval). Also, innovative talents based on formal R&D activities are needed. However, countries that do not have these innovative capabilities will face a third trap (C'-F interval). On the contrary, countries with these innovative abilities will be able to continue their growth as being the countries that shape the market and set technological trends. Determining the difference between being a high-income country (C'-D range) and being trapped (C'-F range) depends on managing and directing market trends with the ability to create new products.

Dewitte divides the sustainable growth process in Tho's approach into two sub-stages. These are shown in the figure with the C-C 'range and the C'-F range. Although the first of these two sub-stages is compatible with Tho's approach, the second sub-stage differently emphasizes innovation, creativity and technological capabilities. In addition, the author explicitly states that although he does not use the concept of MIT for the C-E range, he adopts Tho's approach. Therefore, this range in the figure represents the MIT (Dewitte 2014:32).

2.2. Empirical Literature

In this part, empirical approaches for identifying the MIT will be discussed.

2.2.1 Growth Slowdown Approach

The slowdown in growth approach is one of the main approaches regarding the MIT. The basic idea of the slowdown in growth approach is to determine the factors affecting the slowdown in the economic growth process of the countries within the framework of predetermined criteria. In the studies of Eichengreen et al. (2012) and Aiyar et al. (2013), this approach is frequently used in determining MIT.

2.2.1.1 Eichengreen et al.'s Approach

In the studies of Eichengreen, Park and Shin (2012) they define the phenomenon of MIT as the slowdown in economic growth performance of countries with low income levels after reaching the middle income level. In other words, MIT can be expressed as a slowdown in the growth momentum of a country with a low income level after reaching the middle income level. In this context, countries with low income face the risk of MIT in the face of a slowdown or stagnation in growth after reaching the middle income level. The authors argue for the MIT in their studies. They find that an important indicator is GDP per capita data which is calculated according to the US economy.

Eichengreen, Park, and Shin (2012) analyze why economies with rapid growth started to grow slowly within this framework, and in line with Penn World Tables 6.3 (between 1950-2007) data, according to 2005 PPP of some selected countries covering the period 1957-2007. They have taken into account GDP per capita levels. The authors first calculate the 7-year average growth rates of the countries and calculated the breaking years when the difference between the two periods is greater than 2% and the growth before the period of slowdown is greater than 3.5%. Again, the authors find that while countries have an average growth rate of 5.6% for 7 years, the average growth rate for the next 7 years falls approximately to 2.1%. At the same time, they argue that 85% of the slowdown in the economy is due to the total factor productivity. Within the framework of the findings obtained from the results of the analysis, it is determined that the growth rates of countries with low income levels decrease by 2% on average after reaching the middle income level, and this slowdown in growth occur when the per capita GDP is around $ 17,000. In addition, when the per capita GDP of the country reaches 58% of the per capita GDP of the leading country USA, growth slows down. According to the authors, in order to determine the slowdown of growth, in other words, whether countries are within MIT or not, the following three conditions must be fulfilled together (Eichengreen et al., 2012: 45-46; Eichengreen et al., 2013: 1-2; Yavuz, 2017: 86):

$$g_{t,t-n} \geq 0{,}035 \qquad (1)$$

$$g_{t,t+n} - g_{t,t-n} \geq 0{,}02 \qquad (2)$$

$$y_t > 10.000 \qquad (3)$$

In the above equations, yt represents GDP per capita with 2005 prices; $gt,\ t+n$ average growth rate between t and t + n years; $gt,\ t-n$ denotes the average growth rates between t and t-n years. Following this, Hausmann, Prichett and Rodrik, express Equation (1) as n = 7, states that the 7-year average growth rate in GDP per capita should be 3.5% or more before the slowdown occurs. The second condition, represented by equation (2), is that in the seven-year period after the slowdown in growth occurs, there must be a decline of at least 2% in the growth rate compared to the seven-year period before the slowdown occurs. According to the third condition represented by Equation (3), GDP per capita with 2005 fixed prices should be more than $ 10,000 according to PPP.

Eichengreen et al. (2012) also find that the probability of a growth slowdown is highest in three cases. They find that in the case of these findings, economies experience a breakdown (slowdown). Accordingly, these findings show that (Eichengreen et al., 2012: 79; Mert, 2014: 96);

- If the per capita GDP of the country is $ 16,740 with constant prices for 2005,
- If the per capita GDP of the country reaches 58% of the per capita GDP of the USA,
- It occurs when the share of the workforce employed in the manufacturing industry in the total workforce reaches 23%.

Based on these findings, it can be determined that the country will not be caught by MIT if it increases the per capita GDP value of the country and increases the share of manufacturing industry employment in total employment.

Eichengreen, Park and Shin (2013), in their study, try to identify the years when the economies of countries with a GDP per capita exceeding $ 10,000 slow down according to 2005 PPP with Penn World Tables 7.1 (between 1950-2010) data. In these studies, they find that some countries experience a slowdown in GDP per capita, not at one threshold, but at two different thresholds. While the per capita GDP of the first threshold (according to 2005 PPP) is around 15.000-16.000 $; the second threshold (according to 2005 PPP) is determined to be around $ 10,000-11,000. The authors highlights that high-quality human capital is an important factor in avoiding slowdowns in growth from low-quality human capital, and state that the slowdown in per capita GDP growth decreases as the share of high school and university education and high-tech products in exports increases. The factors that are determined to increase the possibility of slowdown in economic growth are the lack of a sound structure in the economy, financial crises and political instability (Eichengreen et al., 2013: 2; Öztürk, 2019: 5).

Table 2.2 shows the countries that have slowed down in their economic growth in different periods of time according to the results of the study.

As can be seen in Table 2.2, Argentina and Uruguay have the lowest average growth rates before the slowdown, while Japan and Saudi Arabia have the highest average growth rates before the slowdown. At the same time, Saudi Arabia stands out as the country with the highest per capita income.

2.2.1.2 Aiyar's Approach

Aiyar et al. (2013) try to determine the threshold value for the MIT by identifying the growth declines being similar to the approach of Eichengreen et al. (2012). In this approach which focuses on total factor productivity the MIT or growth declines are characterized by decreases in total factor productivity.

The data on the growth rate of per capita income which is used in the study, is calculated as five-year averages (in 2005 constant prices) covering the period of 1955-2009 (11 periods) for 138 countries. The condition determined using the residual (res) value for determining the growth declines is as follows:

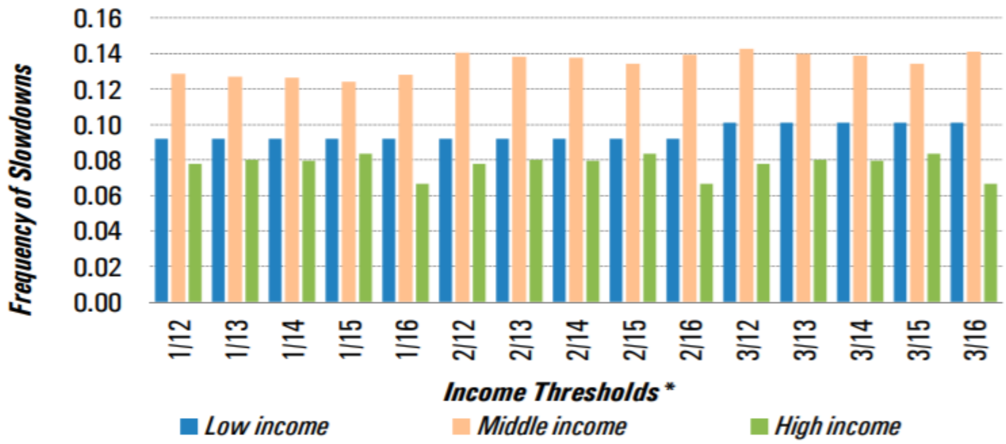
$$res_t^i - res_{t-1}^i < p(0.20)$$

$$res_{t+1}^i - res_{t-1}^i < \ p(0.20)$$

Residual means the difference between the actual growth rates and estimated growth values. If the residues have a positive value, the country will grow faster than expected. Conversely if the residues take a negative value, it means that the country has displayed a slower growth performance than expected. The expression of p (0.20) in the above condition indicates that the rate of 20% is taken into account in the distribution of differences between residues in the transition from one period to another. According to the first condition between t-1 and t periods, the residues start to become smaller. So, the country's performance performs worse than expected. According to the second condition, some situations are eliminated by taking into account the difference in residuals between t1 and t + 1 period because it has been stated that when the sustainable growth decreases, healthier results will be achieved.

Growth decline years are determined in accordance with the above conditions. That is, it is tried to determine how many times the countries experience a growth decline in the specified period. In addition, the threshold value approach developed by Felipe et al. (2012) is used to determine which countries have middle income status. Accordingly, t1, i <t2, i being; t1 represents the threshold value that separates low income from middle income level, and t2 represents the threshold value separating middle income level from high income level. Three thresholds ($ 1,000, $ 2,000, and $ 3,000) are determined for t1, which separates low income from middle income level, and the threshold value range ($ 12,000-$ 16,000) for t2, which separates middle income from high income level. In figure 2.4, it is shown how many times growth deceleration is experienced in the specified threshold value ranges according to the income groups of the countries.

Figure 2.4: Identifying the MIT



Source: IMF staff calculations.
[1] 1/12 refers to a low income threshold of US$1000 and a high income threshold of US$12000 in PPP terms.
[2] Frequencies are calculated as the ratio of slowdown episodes to the total number of observations per income class.

Source: Aiyar et.al. (2013)

The figure 2.4 shows the frequency of growth slowdowns on the vertical axis and income threshold on the horizontal axis. The frequency of growth slowdowns is obtained by dividing the total number of observations in per capita income groups to (number) of the slowdown cases. 1/12, 1/13, 1/14… 3/16 on the horizontal axis indicate income thresholds. For example the threshold of 1/12 represents the range of low income of $ 1,000 to high income threshold of $ 12,000. The results show that the growth declines in middle income countries display an uneven pattern and that the growth declines in the middle income group are more frequent than the other two income groups. In addition, they determine the threshold value that separates middle income from low income as 2/15. So countries with per capita income between $ 2,000 and $ 15,000 are in middle-income status and are more likely to experience a growth slowdown.

2.2.2 Felipe et al.'s Approach

Felipe, Abdon, and Kumar (2012) investigate the conditions under which it would be possible to avoid MIT by examining 124 countries from the MIT point of view in line with the 1950-2010 data. They try to explain the phenomenon of MIT by dividing it into two as "lower-MIT" and "upper-MIT" and present a different definition for each trap phenomenon. The authors conduct studies on 124 countries for the period of 1950-2010, taking GDP values per capita which were calculated according to PPP as a criterion of 1990 prices. They divide these 124 countries into four groups by determining threshold values in terms of income levels. According to this, countries with a GDP per capita below $ 2,000 are low-income countries; countries in the $ 2,000-$ 7,250 range are lower-middle-income countries; countries in the range of $ 7,250-$ 11,750 are grouped as upper-middle-income countries and countries with high income levels above $ 11,750.

According to this classification in the study, it is determined that 82 countries are in the low-income country category, 39 countries are in the middle-income country category, and 3 countries are in the high-income country category. In 2010 it was determined that 40 countries were low-income countries, out of 52 countries 38 countries were low-middle-income, and 14 of them were upper-middle-income countries). 32 countries were in the category of high-income countries. Felipe et al. (2012) evaluate these 124 countries, which they divide into different groups according to their income levels and in terms of their growth performances for the period of 1950-2010 and the temporal changes of these performances and they reach the following results (Felipe et al., 2012: 25-26; Bozkurt et al. , 2014: 28):

- If a country survives the low-income category and reaches the lower income category for 28 years or more, it can be concluded that this country is caught in the lower-MIT.
- At the same time, after a country gets rid of the low-income category and reaches the lower-middle-income category, it must keep the annual GDP growth rate per capita at least 4.7% in order not to be caught in the lower-MIT.

- If a country gets out of the lower-middle income category and reaches the upper-middle income category, it can be concluded that it has been caught in the upper-MIT if it remains in this category for 14 years or more.
- At the same time, a country can get rid of the lower-middle income category and after reaching the income category, it must keep the annual GDP growth rate per capita at least 3.5% in order not to be caught in the upper-MIT.

To sum up, countries with lower-middle income level should have at least 4.7% per capita income per year to avoid the lower-MIT; Countries that have reached the upper-middle income group, on the other hand, need to achieve a GDP per capita increase of at least 3.5% in order to avoid the upper-MIT. At the same time in order for countries to avoid these traps, they must jump up from the lower-middle income category within a maximum of 28 years, and from the upper-middle income category within a maximum of 14 years. Countries that do not develop in this period of time are considered to be caught by MIT.

When the per capita income in Turkey between the years 1950 and 2014 is analyzed according to the approach in the study of Felipe et al. (2012), it is seen that Turkey reached the low-middle income level with its per capita of 2.093 $ and this trend continued until 2005 at %2.6 growth rate on annual average. It achieved its transition from low-middle income level to upper-middle income level in a period of 50 years. Turkey still maintains its place in the upper-middle income level (The World Bank, (2017). As of 2020, it has completed 15 years at upper-middle income level. According to the authors, in order for a country to escape from the upper-MIT, the per capita income growth rate should be at least 3.5% on average. Turkey between the years 2005-2014 the average per capita income growth of 2.6 % 's, remained. Felipe et al. (2012), while Thailand was in the low-middle-income country group in 1976, it was included in the high-middle-income group in 2004 with an average annual growth rate of 4.7% per capita after 28 years. China, on the other hand, was a low-middle-income country in 1992, but after a 17-year period, it rose to the class of high middle-income countries with an average annual growth rate of 7.5% per capita. (Felipe et al., 2012: 26; Bal et al., 2016: 350).

Table 2.3*:* Economies that became lower middle income after 1950

Country	Region	Year country turned LM (Y_{LM})	Year country turned UM (Y_{UM})	No. of years as LM	Ave. GDP per capita growth rate (%) (Y_{LM} to Y_{UM})
China	Asia	1992	2009	17	7.5
Malaysia	Asia	1969	1996	27	5.1
Rep. of Korea	Asia	1969	1988	19	7.2
Taipei, China	Asia	1967	1986	19	7.0
Thailand	Asia	1976	2004	28	4.7
Bulgaria	Europe	1953	2006	53	2.5
Turkey	Europe	1955*	2005	50	2.6
Costa Rica	Latin America	1952*	2006	54	2.4
Oman	Middle East	1968	2001**	33	2.7

*This refers to the second time Turkey and Costa Rica attained lower-middle-income status. Turkey became lower-middle-income in 1953, but slipped back to low-income in 1954; Costa Rica became lower-middle-income in 1947, but slipped back to low-income in 1950.
**This refers to the second time Oman attained upper-middle-income status. It became upper-middle-income in 1997, but fell back to lower-middle-income in 1998.

Source: Felipe (2012)

According to Felipe et al. (2012) nine countries among which there is also Turkey passed from the lower income group to the higher income group after 1950. As can be seen in Table 2.2, which includes the data of these countries, the time periods that the countries spend in the lower-middle income category differ significantly from each other. While China provides this transition in the shortest time (17 years), Taiwan and South Korea, following this country, succeeds in jumping from the lower-middle income category to the upper-middle income category by completing it in 19 years. In contrast, Costa Rica for 54 years, Bulgaria for 53 years and Turkey for 50 years are the countries that have stayed in the lower-middle-income category the longest. Thailand, Bulgaria, Turkey, Costa Rica and Oman are examples of lower-MIT countries that have experienced this phenomenon.

On the other hand, Table 2.3. reflects the data of countries that make the transition from upper-middle income category to high income category. As can be seen, countries such as Hong Kong, South Korea, and Taiwan have moved into the group of high-income economies in a very short period of time (7-8 years on average). These countries, also known as Asian tigers, showed an annual average growth performance of over 5% (higher than the minimum growth performance predicted at 3.5%) during the transition to the high income group. In short, these countries have managed to move to the higher income category, which is an upper income category, without getting caught in the upper-MIT. According to Table 2.3, Denmark, Finland, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Argentina and Israel are examples of countries that have experienced the upper-MIT (Felipe et al., 2012: 32).

2.2.3. Catch-Up Index (CUI) Approach

Woo's (2012) study is conducted around the question of why China caught up with MIT. In this study, the author created an index called the capture index (CUI) that defines the per capita GDP value of each country with reference to the per capita GDP of the United States. The capture index is obtained by proportioning the per capita income of the country in question to the per capita income of the USA. The author points out that the reason why the per capita income of the countries is proportioned to the per capita income of the USA is that this country has been accepted as the economic leader of the world since the 1920s. In the study, by using per capita GDP data of some countries to cover the 1960-2008 period, the countries' ability to catch up with the USA is tried to be determined. In the study, countries are classified in terms of their income levels with the help of a capture index as follows (Woo, 2012: 314; Yavuz, 2017: 86):

- CUI> 55 % if a country has high income,
- A country middle income if 55% > CUI > 20 %,
- A country is low income if CUI < 20 %.

$$\text{Catch-Up Index (CUI)} = \frac{\text{GDP per capita of Relevant Country}}{\text{GDP per capita of US}}$$

Accordingly countries with an index value between 20% and 55% between 1960 and 2008 are considered to be in the trap as well as being at the middle income level. According to the results of the study on China, India, Indonesia, the Philippines, Thailand and Malaysia, a group of developing Asian countries using this approach, the CUI index of Asian countries other than the Philippines included in the study is in the range of 7% to 16% in terms of the 1962-2006 period. It is concluded that they performed well on sailing. Another finding reached in the study is that according to the CUI index, five Latin American countries, including Argentina, Brazil, Chile, Mexico and Venezuela, have not converged to the living standard of the USA for the last 50 years and these countries have fallen to MIT.

In the same period, it is emphasized that especially Thailand, China and Malaysia have achieved a high growth momentum in terms of convergence with countries with high income levels, and Thailand and Malaysia are the most important countries of the group by achieving an average growth rate of 4%. According to this evaluation, while Brazil, Chile, Argentina, Mexico, Thailand and Malaysia were in OGT, China could only reach the middle income level in the 2007-2008 time period (Woo, 2012: 315-317).

2.2.4. Robertson and Ye's Approach

Robertson and Ye (2013), in their study, aim to determine whether a country is caught by MIT or not by applying some econometric tests. In their studies, they have developed an econometric approach to determine whether the countries are included in the MIT by taking the USA, which has shown a stable growth performance of 1.8% on average over a 125-year period, as the base country. In the study, per capita GDP values are analyzed by unit root tests. Within the scope of the econometric approach they discuss, Robertson and Ye obtain a difference series by subtracting the natural logarithmic values of the US GDP from the natural logarithmic values of the relevant country's GDP while testing whether a country is included in the MIT, and subject this series to the stationary analysis.

$$x_t = lnGDP_{A,t} - lnGDP_{US,t}$$

If the series obtained as a result of this analysis is stable, it is determined that the examined country is in the MIT and does not have a tendency to converge into the countries with high income (Robertson and Ye, 2013: 3)

In Robertson and Ye’s (2013) study in which the data of gross domestic product and the 2005 prices based on the purchasing power parity of 46 countries in 1950 and 2010 are used, 46 countries in middle income group including Turkey were subjected to three different tests. Robertson and Ye (2013) use ADF and structurally fractured Zivot – Andrews (ZA) and Lumsdaine-Papell (LP) unit root tests for the 1950-2010 duration to test whether 46 countries are in the MIT. Turkey, being one of these countries, is seen in MIT according to the ADF test, while Turkey is not in the MIT according to ZA and LP tests (Bulut and Koçak , 2014). The authors carry out the stationarity analysis of the series obtained by using unit root tests that do not take into account structural breaks and take structural breaks into account. According to the results, 23 of 46 middle-income countries are included in MIT according to at least one unit root test result. Whereas Turkey doesn’t take place in the MIT according to the results which consider the structural fractures, it is in the MIT with Botswana and Lebanon according to the unit root test which ignores the structural fractures. (Robertson and Ye, 2013: 13; Kocak and Cloud, 2014: 12).

2.2.5 Egawa’s Approach

Economist Akio Egawa has highlighted the relationship between the MIT and the unfair distribution of income with a study which he put forward in 2013 by examining middle-income countries in Asia. In this study, which approaches the subject from a different perspective, it is stated that the fact that the distribution of income is not distributed in an equitable manner is not the only responsible for the slowdown in growth, although it disturbs social peace. However, it is emphasized that the priority target of a country reaching the middle income level should be making analyses regarding the inequality in income distribution and the damages of this inequality to the economic growth. Egawa argues that these analyses can be made with the Kuznets hypothesis. According to this hypothesis, as economic growth increases, inequality in income distribution will increase, but at a certain point of growth, growth increases will affect income inequality in a decreasing way. Egawa argues that the elimination of income inequality is an important method in order to get rid of the MIT, and in this context, income gaps between rural and urban areas should be reduced and low income groups should be supported (Ünlü and Yıldız, 2017: 92-93).

2.2.6 Carnovale's Approach

In his study on the MIT, Carnovale analyzes the transitions between income groups of economies in four categories (Carnovale, 2012: 21):

- Economies that have successfully achieved the status of high-income countries by escaping the MIT.
- Economies that have been in the upper middle income group for 30 years or more and eventually become high-income countries.
- Economies included in the group of upper middle-income countries (countries at the beginning of the transition) for 10 years or less.
- Economies over 10 years (Economies caught in MIT).

Carnovale (2012) examines the impact of ethnic-religious fragmentation and also the unfair income distribution on middle income transition. He states that ethnic-religious fragmentation and unfair income distribution would lead to insufficient social capital.

Carnovale says this would have an effect on getting stuck at MIT (Bozkurt et al. 2014:27-28).

Table 2.5: Economies Relative to Middle-Income Transition

		Economy
Successfully Transitioned	**29 years or less**	Hong Kong, China Japan Republic of Korea Malta Singapore
	30 years or more	Portugal Trinidad and Tobago
Beginning of Transition Period		Colombia Dominican Republic Peru Tunisia
Stuck in Middle-Income Trap		Argentina Belize Botswana Brazil Chile Costa Rica Gabon Malaysia Mauritius Panama Uruguay

Source: Carnovale (2012)

In Table 2.4, 22 countries between 1960 and 2010 are analyzed according to the criteria mentioned above. According to the results of the analysis, 11 countries are in the MIT (Argentina, Chile etc.)

2.3 Common Characteristics of Middle Income Trap Countries

Low-income countries can compete in international markets with labor-intensive products that they produce with the advantage of low labor cost and simple technology transferred from abroad. While the productivity of labor and capital shifts from the low-agriculture sector to the manufacturing sector with higher productivity, the productivity level of the country and thus the income level increases (Öz, 2012: 2). The production structure based on the increasing profitability of the capital, and the abundance of labor and natural resources moves the countries to the middle income level (Ünlü and Yıldız, 2017: 88). However, as economies approach middle-income levels, relatively easy sources of growth is now based on the transfer of labor from agriculture to the city and high profits which stimulated by capital investments lose their stimulating power, which means technologies are getting old and mature. As a result of the declines in the profitability of the capital, it is inevitable that the simple technology capital accumulation based on the use of unqualified labor and natural resources will lose the momentum (Yeldan et al., 2013: 1). After a certain period of time, these new classes of cities fall to the middle income level, to the pool of low-wage workers, and wage levels will gradually rise. However, it becomes difficult to increase per capita income at some point. Therefore, the original cost advantage is eroded and relative competitiveness decreases as time passes (Aslan, 2014: 2).

Eğilmez (2012) lists the characteristics of the economies caught in MIT as follows; savings and investments remain low; development slows down in the manufacturing industry and product diversification in the industry remains limited. In addition, it is known that macroeconomic instability may arise in countries falling under MIT and this will lead to political instability (Özsağır, 2015: 112).

In middle-income countries, individuals and firms frequently encounter obstacles (outdated and usually under the auspices of certain credit institutions, the dominance of large firms in the sector, high barriers to entry and exit) when engaging in innovation. On the other hand, the incentive mechanism is not sufficient for communication between universities, research institutions and the business world (Ünlü and Yıldız, 2017: 90).

In this context, if the natural resources of an economy are adult, if its population is large and rapidly increasing, if there is no open door to new inventions in the industry, it is an inevitable consequence that it will fall to the OGT (Bolat, 2016: 3). Countries caught by OGT both lose their comparative advantage in industrial products against low-income countries with low wages, and do not compete with high-income countries that produce and export innovation-based and high value-added products (Ünlü and Yıldız, 2017: 88).

2.4 Causes of Middle Income Trap

It is known that there is not a single cause that leads to MIT, and there are many reasons for getting captured in MIT. Before discussing the factors in more detail that led to MIT, there was a consensus on the reasons for these growth slowdowns and what policies could be implemented to promote productivity gains, although the main cause of MIT was a consensus on the slowdown in growth caused by falling productivity (Agenor, 2017: 776).

When the growth rate decreases without reaching a high income level, the MIT risk appears (Ito, 2016). The slowdown in growth in developing countries can be explained by two main factors (Hartwell, 2013: 8):

i. Growth policy failures, including basic macroeconomic stability and protectionism,

ii. Deeper structural flaws and particularly the role of prime economic institutions lead countries to a slowdown in growth.

According to Eichengreen et al. (2012), all developing countries have problems with growth and each country's sensitivity is different. It seems inevitable that growth will slow down after a certain income level. However, slowing down of growth and falling to MIT is not an inevitable fate. It is possible to overcome the slowdown in growth in countries where the education level of the workforce is relatively higher and high technology products are exported (Gürak, 2015: 143). However, there are strong inconsistencies among the main reasons for the slow growth of productivity.

Pruchnik and Zowczak (2017: 14), (Engel, 2017: 124) draw attention to the following factors in countries allegedly falling into MIT: institutions, income distribution, production structure, export structure, trade profile, infrastructure, access to finance, education, macro and microeconomic factors related to the labor market, demographic information, public policy implemented and the quality of institutions.

A strong institutional structure is one of the most important factors affecting the countries in MIT. This structure can be achieved through the history of institutions, protection of contracts and property rights, elimination of bureaucratic obstacles, and minimization of corruption and informality. It is also important to increase the share of advanced technology products in the export of countries in MIT. In order to ensure an efficient labor market, higher and vocational education can be provided by making them effective. The innovation level is low in developing countries. With R&D and technological investments, these countries can become innovative. It is one of the most important factors affecting growth in disruptions in the financial system. Establishing a fully functioning financial structure only depends on a strongly implemented legal system.

The reason why many Asian countries are at MIT is attributed to the poor economic infrastructure. Especially the 1997 Asian financial crisis resulted from insufficient infrastructures. Almost all Asian countries, including South Korea, were severely affected by the crisis, but only South Korea transitioned to higher income while others remain a middle-income country. This situation reveals that South Korea's effort to build a solid infrastructure is effective and successful in dealing with its problems. It has helped South Korea to reach a high income level without getting stuck in MIT with its high sustainable growth rates (Kasenda, 2015: 4).

Whichever theory is explained, OGT is the result of countries' inability to develop innovation over time. The underdevelopment of innovation ability depends on three important factors (Eichengreen et al., 2013: 14-16):

I. Human capital cannot be reached to a sufficient level,

ii. High technology in exports due to human capital insufficiency

Failure to increase the share of products,

iii. Low domestic savings rate.

Considering Pamuk, among the major problems of the countries at MIT are low investment rates, slow growth in the production of finished goods, and insufficient diversification of the production of finished goods (Pamuk, 2012: 348-353).

Chen and Dain (2014) emphasize that the cause for MIT is technology. At the beginning of development underdeveloped countries entered a process of growth by imitating technology or transferring it from outside, and then when the economy achieves a specific grade of development, it is stated that they had to produce innovation. It is hard for the country that transfers technology to produce innovation and countries are jammed in the MIT.

2.5 Exit Policies from the Middle Income Trap

In order for the economies of the country to emerge from MIT, economists have come up with a variety of opinions.

The transition of middle-income countries to the high-income group will be possible with the design and stable execution of appropriate policies that take into account the factors that develop MIT. Policy priorities and tools will be determined according to the conditions of the country and the characteristics of the economic structure. First of all, it should be given importance to domestic technology that will reduce foreign dependency. These technologies will stabilize foreign exchange revenues by improving the export of high value-added products and competitive ability (Paus, 2017: 1).

MIT is not an inevitable phenomenon (Vivarelli (2014: 5), it is associated with the same sustainability gap and depth and change. The problem is what needs to be done to achieve the economy's dengue when growth slows down (Agenor, 2017: 782).

Paus states that OGT is based on two approaches:

I. The first approach is mainly based on neoclassical economic theory, where the composition of production and export is not important.

ii. The second approach is based on the nature of the production structure and structural and evolutionary economics, which is important for learning and international competitiveness (2017: 3).

Middle-income countries may experience slow growth in either approach. However, the analytical framework for understanding growth slowdown is different, and so the policy prescriptions can also be different.

Gill and Kharas list three basic transformations that middle-income countries should realize based on the example of East Asian countries (2007: 69):

I. From diversification to specialization in production,

ii. Bringing innovation to the forefront in investments,

iii. Ensuring the transition from basic education to higher education

Considering Pamuk's ideas, the following steps should be taken (Pamuk, 2012: 348-353):

- Infrastructure must be improved.
- Large investments should be made in education to increase the quality of human capital. Qualified and highly skilled workforce should be trained.
- Science and technology must also reach to the advanced levels with new breakthroughs. Domestic savings rates should be increased and investment rates should be raised.
- The manufacturing industry should be strengthened and switched to high value-added products. The problem of weakening the transition from the agricultural economy, where labour produces lower productivity, to the urban economy, which produces higher productivity, should be overcome with high efficiency employment policies.

Considering Carnovale's study, the following steps should be considered for exit from MIT (Carnovale, 2012: 26):

- Knowledge-based economics must be adopted.
- The education and training system must be reconsidered.
- Innovation should be encouraged and R & D efforts should be intensified.
- The information infrastructure must be developed rapidly.
- Knowledge-based economic initiatives should be provided with easier financing.

Gürak highlights four factors for middle income countries to exit MIT (Gürak, 2015: 145):

- The workforce must have the appropriate qualifications to be able to use high technologies effectively.
- Creative mental labor must be encouraged and supported for the development of technological innovations.
- Ownership of technology should be considered and disruptions in global technology markets should be minimized.
- An accurate and effective institutional infrastructure must be established.

For sustainable economic growth, countries like South Korea have made significant breakthroughs in science, technology and industry by investing in R&D since the 1990s, and have managed to increase their per capita income to the level of high-income countries by increasing their exports. However, middle-income countries that have difficulty in getting out of MIT and are faced with low economic growth problems should also give importance to issues such as qualified education, R&D and innovation, and produce products with high added value and make their growth rate sustainable (Göçer, 2013: 217-218.).

It is necessary to solve the production-oriented problems that prevent middle-income countries from competing with low and high-income countries, and to revise their economic policies and include institutional and political elements in the process (Ünlü and Yıldız, 2017: 90). It can help middle-income countries to exit MIT by applying the policies of high-income countries (Kesgingöz and Dilek, 2016: 658).

Ways to escape from MIT include adopting a knowledge-based economy, increasing innovation and R & D efforts, strengthening the education system, raising qualified human capital, increasing savings rates and strengthening the manufacturing industry and producing products with high added value. These ingredients are included in almost every study (Yavuz, 2016).

Policies and strategies that will contribute to exit from MIT, if implemented, can be listed as follows: increasing the national savings rate, R&D investments and increasing innovation capacity. In addition, it is necessary to improve human capital, to plan the manpower in line with the needs of the industry and to increase the level of education. (Yıldız, 2015: 158)

In an economy, the production of knowledge-intensive products with high added value, the emergence of entrepreneurship and innovative ideas, the ability to conduct R&D activities and the emergence of new technologies, and ultimately to create an effective and efficient production structure is only possible with the presence of qualified human elements (Aykırı, 2017: 684)

CHAPTER THREE

TURKISH ECONOMY AND MIDDLE INCOME TRAP

3.1 Evaluation Of The Middle Income Trap From Turkey's Point Of View

In the 1980s, Turkey has started to implement export-oriented industrial policies with the January 24th Decisions. In this period, the adaptation mechanism to global markets could not be fully achieved and despite the partial recovery in the economic field, the economy did not make enough progress in this decade. In the 1990s, with the increasing public debt and interest expenditures and economic instability due to high inflation, Turkey entered a period open to crises, and the necessary intervention in the economy was not fully realized and resulted in a crisis in the 2001.

For the above reasons, Turkey had been in the low income trap for a long time. The “Transition to a Strong Economy” program was successfully implemented through the process of change and innovation that took place after the 2001 crisis. But in this period, many of the macroeconomic indicators began to put on a successful path. The successes in the industrial transition and productivity reduced the public debt of the economy, which exhibits a rapid and stable economic growth performance. Besides, high inflation, which was around 70%, went down to single digits. Consequently, at the end of the 2001 crisis, the per capita national income level in Turkey, which was $ 3,000, was increased up to $ 10,000, which was determined as the middle income level in 2005. Thus, Turkey is able to emerge from the low income trap that it has been trapped in for years. (Karahan, 2012: 100).

Turkey has continued its economic growth continuously since 2005 when it reached the level of middle-income countries, and with the effects of the global crisis that took place in the last period of 2008, the economy entered a recession. In this context, Turkey's GDP per capita for the period 1980-2018 is shown in Figure 3.1.

There was a steady increase in GDP per capita in the period 2004-2008. However, after the 2008 crisis, GDP per capita went on a slowing trend and a significant decline occurred in 2009. This decline was not sustained and GDP per capita rose steadily from 2010 to 2015. However, it appears that the GDP, which has been declining again since 2015, is on a new course (Figure 3.1).

Figure 3.1: Turkey's GDP Per Capita in the 1980-2018 duration

Source: World Bank (2019)

According to GDP annual growth rate, Turkey had grown above its own income group to the higher middle income group by 2017. Turkey's growth rate remained below the high middle income group and world average in 2018 (**Table** 3.1).

Table 3.1 : GDP Growth Rates (Annual %)

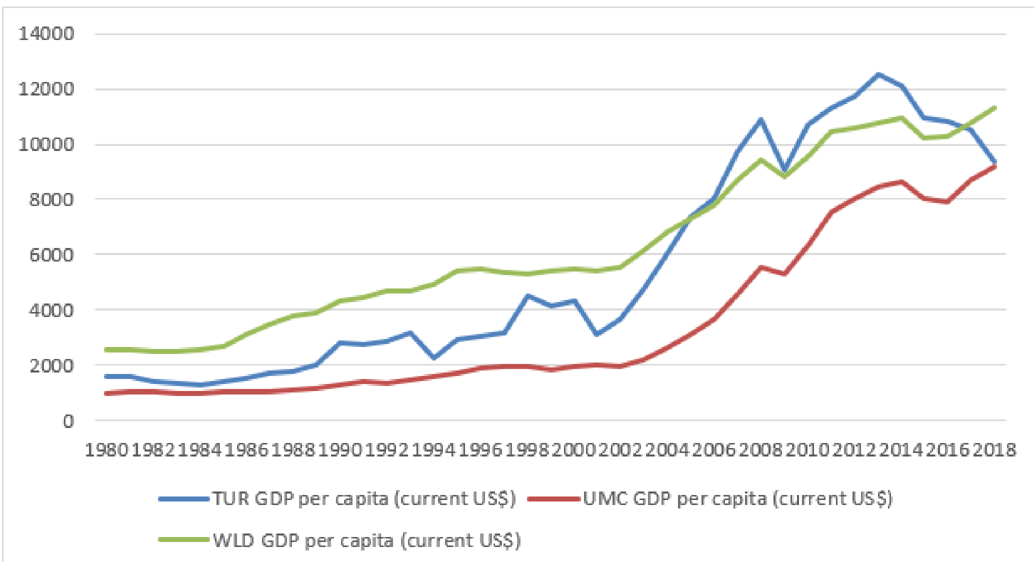
Country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Turkey	9.0	7.1	5.0	0.8	-4.7	8.5	11.1	4.8	8.5	5.2	6.1	3.2	7.5	2.8
UMI	7.1	8.2	8.9	5.9	1.5	7.5	6.2	5.1	5.0	4.0	3.2	3.5	4.3	4.0
World	3.9	4.4	4.3	1.9	-1.7	4.3	3.1	2.5	2.7	2.8	2.8	2.5	3.1	3.0

Source: World Bank(2019)

To objectively interpret Turkey's economic growth performance, one must look at GDP per capita performance globally. Figure 3.2 shows GDP per capita worldwide.

Overall, upper middle income countries (UMC), the world average and Turkey's GDP per capita appear to be on the same trend. Average GDP per capita movements in Turkey and the world coincided between 2005 and 2006. After that, GDP per capita in Turkey continued to be above the world average per capita GDP. The increase in the GDP per capita gap between Turkey and the world leads to the emergence of MIT. Turkey's GDP per capita, which entered the upper middle income group in 2005, continues to exceed the GDP per capita of upper middle income countries. However, in 2017, UMC and the world average GDP per capita increased, while Turkey was in decline.

Figure 3.2: GDP Per Capita Worldwide (Current $)



Source: World Bank (2019)

In studies on MIT, some researchers claim that the Turkish economy has not fallen to MIT, while others claim that it has fallen to MIT. In this context, in order to determine whether Turkey is in MIT, it would be useful to conduct a descriptive review of Turkey by the methods used to determine MIT. One of the methods developed to determine MIT is mathematical measurement. According to the mathematical measure, MIT is defined as the per capita income level of the remaining economies at 20% of the per capita income level of the United States. In this respect, the mathematical calculation of MIT on Turkey is shown in Table 3.2.

Table 3.2: Mathematical Calculation of MIT on Turkey (Current US$- %)

Years	Turkey	United States	TUR/US *100
1980	1564,25	12574,79	12,44
1981	1579,07	13976,11	11,30
1982	1402,41	14433,79	9,72
1983	1310,26	15543,89	8,43
1984	1246,82	17121,23	7,28
1985	1368,40	18236,83	7,50
1986	1510,68	19071,23	7,92
1987	1705,89	20038,94	8,51
1988	1745,36	21417,01	8,15
1989	2021,86	22857,15	8,85
1990	2794,35	23888,60	11,70
1991	2735,71	24342,26	11,24
1992	2842,37	25418,99	11,18
1993	3180,19	26387,29	12,05
1994	2270,34	27694,85	8,20
1995	2897,87	28690,88	10,10
1996	3053,95	29967,71	10,19
1997	3144,39	31459,14	10,00
1998	4496,50	32853,68	13,69
1999	4108,12	34513,56	11,90
2000	4316,55	36334,91	11,88
2001	3119,57	37133,24	8,40
2002	3659,94	38023,16	9,63
2003	4718,20	39496,49	11,95
2004	6040,61	41712,80	14,48
2005	7384,25	44114,75	16,74
2006	8035,38	46298,73	17,36
2007	9711,87	47975,97	20,24
2008	10854,17	48382,56	22,43
2009	9038,52	47099,98	19,19
2010	10672,39	48467,52	22,02
2011	11335,51	49886,82	22,72
2012	11707,26	51610,61	22,68
2013	12519,39	53117,67	23,57
2014	12095,85	55047,73	21,97
2015	10948,72	56822,52	19,27
2016	10820,63	57927,52	18,68
2017	10513,65	59957,73	17,54
2018	9370,18	62996,66	14,87

Source: World Bank (2019)

The TR / US per capita income ratio, which peaked at over 20 % in 2010, peaked at 23.75 % in 2013. However, there have been severe declines in rates as a result of the decline in GDP per capita after 2013, and the rate has again fallen below 20 % in the past five years (Table 3.2).

Table 3.2 values can also be evaluated under the CUI approach of Woo (2012). Woo has positioned middle-income countries with income levels in the range of 55 % > CUI > 20 % by per capita income ratio (Woo, 2012: 314). In this regard, when the Turkish economy is evaluated within the scope of CUI, it can be seen that for the first time Turkey increased the TR/US per capita income ratio to over 20 % in 2007-2008 and joined the middle income group. It is not wrong to say that Turkish economy has fallen below 20%, the lower limit, for the past two years.

Table 3.3: Turkey's Domestic Savings, Domestic Investments, Manufacturing Industry Rate (% GDP)

Years	Domestic Savings / GDP	Domestic Investments / GDP	Manufacturing Industry / GDP	Years	Domestic Savings / GDP	Domestic Investments / GDP	Manufacturing Industry / GDP
1980	27,30	15,90	17,09	2000	20,70	22,30	18,75
1981	30,93	15,13	19,44	2001	21,89	18,07	17,75
1982	30,63	15,12	20,00	2002	22,70	19,61	16,91
1983	28,33	14,75	19,10	2003	21,36	20,85	17,12
1984	28,59	14,40	18,06	2004	22,59	25,42	16,94
1985	34,28	15,26	18,25	2005	23,63	26,65	16,91
1986	38,45	17,14	22,2	2006	24,71	28,69	17,07
1987	23,90	24,75	21,84	2007	23,86	28,10	16,82
1988	28,89	26,11	22,96	2008	24,68	26,85	16,29
1989	25,05	22,80	23,12	2009	22,23	22,37	15,16
1990	20,46	22,87	21,96	2010	21,97	24,87	15,1
1991	16,98	23,69	22,17	2011	23,13	28,07	16,48
1992	17,54	23,00	21,64	2012	23,39	27,32	15,88
1993	18,01	25,52	20,81	2013	23,97	28,52	16,24
1994	18,38	24,46	22,06	2014	25,15	28,89	16,79
1995	18,90	23,84	22,57	2015	25,75	29,71	16,71
1996	21,16	25,09	21,4	2016	25,34	29,31	16,6
1997	19,70	26,42	21,57	2017	26,46	30,00	17,56
1998	24,72	23,45	22,31				
1999	21,10	19,91	20,07	2018	28,01	29,67	19,06

Source: World Bank, Turkey Statistical Institute (2020)

In addition to the decline in growth rate, economies faced with the middle income trap have various symptoms. The first is that savings and investments are low. Second, it is the slowdown of development in the manufacturing industry (Eğilmez, 2012). These features in terms of Turkey's middle income trap to fall subject is evaluated using the data in Table 3.3.

Considering the ratio of domestic savings and investments to GDP, the ratio of domestic savings to GDP is below the rate of investment due to the crisis experienced in 2008. Due to insufficient domestic savings in 2008, foreign savings were used in financing investments. The foreign trade deficit increased by intermediate goods and Turkey have become dependent on energy imports, increased share of foreign savings. Looking at the share of the manufacturing industry in GDP, there was a decrease in the 2000s. It has fallen below 20% after the 2000s.

3.2. Literature Review

Many studies have been done about whether Turkey is in the MIT or not. In this literature survey, the studies about Turkey will be discussed.

Yeldan (2012) states that the growth rate in MIT countries slows down due to the decreasing return of labor and capital, so that countries cannot keep up with technological progress and cannot improve the quality of education. In the study, regional distinctions are examined in the Turkish economy in terms of the MIT. As a solution, the MIT problem is proposed to be approached from a regional perspective.

Sak (2012) argues that Turkey is at MIT in the research. In the study, this situation is linked to Turkey being among the 15 highest countries in manufacturing industry production between 1990 and 2000, but not entering the top 15 in 2010. It is emphasized that the contribution of manufacturing industry to growth in our country in 2000-2010 was 6.3% and that this ratio was 18% in high income countries.

Eğilmez (2012) emphasizes the MIT threshold for a country is 20 percent of GDP per capita in the US. To put differently, according to the measurements in recent years, considering that GDP per capita is roughly 50,000 dollars in the USA, 20 percent of the corresponding figure corresponds to 10,000 dollars and the middle income range is calculated as 10,000 dollars per year. It is emphasized that Turkey is in the risk of MIT.

Gürsel and Soybilgen (2013) examine GDP, average labor productivity, working-age population and employment rates for the period of 2005-2013. Turkey is in the MIT. If it does not make permanent reforms, it may stay in the MIT for a long term.

Dalgıç et al. (2014) examine 56 countries, including Turkey, for the years 1990-2013 and test the effects of technology variables and macroeconomic factors on exit from MIT. As a result, it is emphasized that increasing exports of technology and innovative products is important for Turkey's economy to achieve the level of developed countries' economies.

Çaşkurlu and Arslan (2014) emphasize that sector selection is important when exiting MIT. It states that the sector to be selected should be integrated into the global structure. Accordingly, it is identified that the railway sector for Turkey is the sector that needs to be developed to exit from the MIT.

Tuncel (2014) examines Turkey's strategies to exit MIT and the innovation and R & D policies of South Korea and Taiwan that have emerged from this obstacle. It is emphasized that the need for the state to take an active role in order to create effective innovation and R & D.

Mert (2014) draws attention to the demand side dimension by asserting that the MIT problem is caused by the disruptions in supply and demand. It is argued that countries caught in the MIT and trying to get rid of this trap should not ignore the decreases in demand. According to the findings of this study; Countries with higher domestic demand compared to foreign demand can escape the MIT that Turkey has grown rapidly compared to the US average of 0.5217%.

Yaşar and Gezer (2014) analyze the MIT by evaluating the duration of countries ' stay in income groups and their growth rates during that time. It is emphasized that Turkey needs to grow by 5% on average in terms of 2023 targets and not to be caught in the MIT. It is stated that measures such as effective level of advanced technology production, reforms in education, law, infrastructure and political fields and strengthening institutional structures are important to Turkey's exit from the MIT.

Çavuş (2014) has listed the necessary measures in order to ensure sustainable growth in Turkey towards enhancing the national and international competitiveness. It is stated that policy measures should be taken to increase energy efficiency, support SMEs, increase diversity in exports, and increase technology and human capital.

Bozkurt (2014) uses annual data on Turkey's convergence in the study for the duration from 1971 to 2012 and makes autoregressive distributed lag (ARDL) bounds testing approach. Turkey is in close proximity to high-income countries but this is not sufficient in achieving a high income range. Turkey is in the MIT and must eliminate the risk of industrialization and focus on innovation and technology-driven education to get out of the trap.

Koçak and Bulut (2014) use Robertson and Ye (2013)'s approach to test whether the Turkish economy is in a MIT. They use unit root tests which take into account the structural breakage developed by Lee and Strazicich (2003) and Carrion-i-Silvestre et al. (2009). Turkey is not in the MIT based on these results.

Öz and Göde (2015) state that Turkey is in the risk of middle-income trap. Turkey has slowed down the growth rate since 2010. It is emphasized that it is possible to improve the quality of human capital, which is the most effective way to escape from the MIT through education.

Yılmaz (2015) compares the human capital of Turkey to the human capital of certain countries which are not in MIT, and proposes that Turkish education system carries critical importance in overcoming and exiting the MIT. It is emphasized that the MIT can be overcome with the high human capital, innovative and competitive productivity capacity.

Atalay (2015) emphasizes that countries in the MIT should strengthen their human capital in order to realize their economic growth. Strengthening human capital will also entail certain social and economic costs. For this reason, countries in this situation should pursue policies that increase employment while at the same time strengthening their human capital.

Alçın and Güner (2015) examine that the reasons why Turkey is at MIT and exit strategies. It is said that innovation, human capital must be raised, and that implementing technology-intensive economic policies is crucial to getting out of the trap.

Atik (2015) studies South Korea, and Turkey's income ranges, R & D expenditure / GDP ratio and studies how long they stayed in their income ranges for the 2003-2013 duration. Referring to Turkey's growth rate in recent years, it is stressed that it is no longer likely to survive the MIT. It is emphasized that innovative policies appropriate to the information age should be adopted so as to escape the trap.

Ener and Karanfil (2015) emphasize that insufficient total domestic savings will prevent investments and expenditures for the country and cause growth slowdown and development process. It is investigated that the savings deficit Turkey's impact on middle-income trap in terms of GDP per capita during the 1980-2013 duration. Lack of domestic savings prevents Turkey from passing to a higher income group. Turkey is in the MIT.

Erkoç (2015) examines the work on Turkey and the US GDP per capita and how much time they spent in the same income range in the 2000-2012 period. Turkey's GDP per capita is stuck in the 20 percent band of the US'S GDP per capita. Erkoç, highlighting Turkey's technological development and increasing the quality of education has indicated it will exit the trap.

Nişancı et al. (2015) examine Turkey's income range for the 1980-2013 period. He states that for the transition to the upper income group, there should be applications that take into account the term “industrialization equals development” and further develop the ability to produce high value-added products. It is reached that the conclusion that Turkey is involved in MIT.

Şahin et al. (2015) analyze the MIT for the Turkish economy with Johansen Equalization and Granger causality tests. It is used the annual data for the duration 1980 - 2013. It is emphasized that Turkey needs to boost economic growth so as to emerge from the MIT. For this reason, it is said that import dependence should be reduced and exports should be increased.

Altıntaş and Mercan (2015) conduct a panel data analysis on the sampling of the OECD countries they prefer, and analyze the announced change by taking R&D expenditures to explain the economic growth.

Uyanık (2015) emphasizes that while Turkey's GDP per capita should be US $ 16,000 in 2014, it iwas US $ 10,404 according to data from the Turkish Statistical Institute, and that Turkey is in an MIT. It presents the proposals for an exit from the MIT.

Kılıç (2015) examines the situation of Turkey against MIT, interregional income inequalities in terms of internal migration, the relationship of human capital with productivity and education levels.

Bayar (2016) emphasizes that Turkey is not yet in the MIT. In order for a country to become one of the economies of high income countries, it is necessary to ensure a production that adds value with advanced technology. The best way to do this is through a well-trained and qualified workforce. It is said that the quality of education should be improved.

Bal et al. (2016) study Turkey's exports in GDP for the years 1980-2014. It investigates the share of agriculture, the Gini coefficient, age dependency rate and inflation rate. As a result, Turkey is in the risk of MIT and should reach a higher and more stable growth rate.

Çetinkaya (2016) examines the economic structure between 1960 and 2015 and analyzes an MIT hazard from a macroeconomic perspective. If we accept 20% of the USA's per capita income as a criterion for being a middle income country, Turkey entered the group of the middle-income countries by reaching 21.45% of the US GDP per capita in 2008. If the duration of stay is accepted as 14 years, an MIT has not yet been realized.

Keskingöz and Dilek (2016) investigate whether Turkey is caught in the MIT. In addition to Robertson and Ye's approach, they also implement the Philips - Perron (PP) unit Root Test. As a result of their tests, it is seen that Turkey is not caught in the MIT. It is stated that countries need to achieve sustainable economic growth and increase their savings in order to reach the higher income group.

Tasar et al. (2016) analyze whether Turkey is in the MIT using unit root tests for the years 1960-2014 and conclude that Turkey is not in the MIT.

Aykırı (2017) said that MIT has a sustainable growth problem. In order to solve this problem, high value added and competitive power, high technology products, innovative production understanding, R & D and innovation infrastructure development and effective human capital investments need to increase.

Akbulut and Yıldız (2017) evaluate whether the incentive policies implemented in Turkey in 2004, 2006, 2009 and 2012 are effective at the point of exit from MIT. It is emphasized that Turkey needs to develop its policies at regional and sectoral level to get out of the MIT. As long as Turkey implements regional and sectoral policies in a way that combines national policies, it will have a GDP per capita.

Yıldız and Bayraktar (2017) analyze the odds of fragile octet countries falling to MIT in comparison with developed countries. Russia is the least likely country to fall into the MIT, followed by India, Chile and Turkey.

Tiftikçigil and Yaşgül (2018) search about the MIT for E7 countries by using the approach of Robertson and Ye (2013). E7*: means 7 developing countries. These countries are Turkey, China, Brazil, Indonesia, India, Mexico and Russia). That is, the presence of MIT in E7 countries is examined through using the annual data of 1969 and 2015 period. Overall, it is concluded that not all of the E7 countries are in MIT. The same results are reached in Turkey, China, India and Mexico.

Ünlü and Yıldız (2018) aim to identify countries which are at MIT among 71 middle-income countries. While 35 countries are at MIT, 36 countries are not involved in this trap. Turkey is in the group of countries not included in MIT.

Eğilmez (2018) emphasizes Turkey's efforts to exit the MIT after the 2001 crisis. However, aside from the transient decline caused by the global crisis, this exit move continued till 2017. It is also emphasized that the acceleration loss was experienced in 2017 and the loss seemed to accelerate in 2018.

Manga et al. (2019) evaluate whether Turkey is in MIT or not. For this purpose, Carrion-i Silvestre et al. multiple structural unit root test is used. Applied unit root test results show that Turkey is not in the MIT.

Karhan’s (2019) study tries to reveal whether the economies of Brazil, India, Indonesia, South Africa and Turkey, which are called the fragile five in the years between 1968-2017, had fallen into the MIT or not with the help of unit root test. The unit root test shows that fragile economies fell into the MIT at the time.

Öztürk (2019) searches the impact of foreign investments in Turkey and states that the common point of income traps is “the problem of not growing”. The need to reduce income distribution disparity has been advocated.

The majority of the studies on MIT in Turkish economy show that Turkey is not in MIT, but an economy that is on the verge of MIT. The Reasons for the distinction of empirical findings from the studies listed above stem from the preferred econometrical method, the country in question, the data used, differentiation of the analysis process, etc.

Based on Robertson and Ye's (2013) approach, studies using econometric methods are given in the table below.

Table 3.4: Studies Analyzing the Existence of MIT Using Econometric Methods

Koçak and Bulut (2014)	Lee-Strazicich, Carrion-i Silvestre vd.	1950-2010	Turkey is not in the MIT. Tends to close the income gap with the US
Kesgingöz and Dilek (2016)	ADF, PP, Zivot-Andrews, Lumsdaine-Papell	1960-2014	Turkey is not in the MIT.
Ünlü and Yıldız (2018)	ADF, Narayan ve Popp	1950-2014	Turkey is not in the MIT.
Tıraşoğlu and Karasaç (2018)	ADF, PP, Lee-Strazicich, Lumsdaine-Papell	1960-2016	Turkey is not in the MIT. Tends to close the income gap with the US
Tiftikçigil et. al(2018)	ADF, Ng-Perron, KSS, Kruse, Sollis, CHLL	1969-2015	Turkey is not in the MIT.
Manga et.al (2019)	Carrion-i Silvestre et.al	1950-2014	Turkey is not in the MIT. Tends to close the income gap with the US

Source: İlhan and Coşkundeniz (2020)

3.3. Econometric Analysis of Turkey in Terms of Middle Income Trap

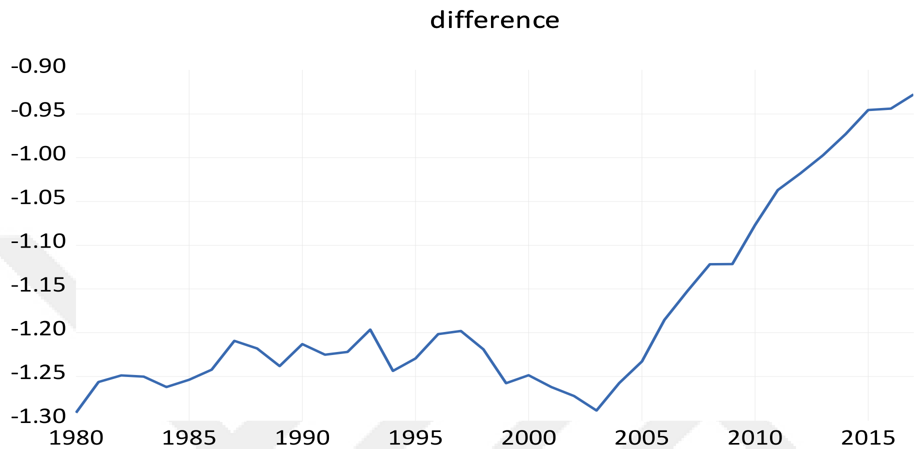
Because of the use of different approaches in the determination of the MIT, it is clear that there is no consensus among the assessments on whether Turkey is in the MIT. In this part of the study, following the approach of Robertson and Ye (2013), unit root tests with structural fracture are implemented with unit root tests that do not account for structural fracture. The Robertson and Ye (2013) study, which is a detailed method to determine whether a country is in MIT or not makes analyses with structural and non-unit root tests.

In the first step, Turkey's natural logarithm of the received series and the reference country per capita income accepted US natural logarithm taken as per capita income range is removed. In the second step, the following unit root tests are applied for the obtained series. Real GDP data for the 1980-2017 period, calculated with 2011 prices, were obtained from Penn World Table 9.1. Since there is no relevant data for 2018, the econometric test is carried out until the time of 2017.

$$x_t = lnGDP_{TUR,t} - lnGDP_{US,t}$$

The graph of the difference series obtained is as follows;

Figure 3.3: Series used to test whether the Turkish Economics at MIT



In Figure 3.3, upward movements indicate that the income gap between the Turkish economy and the US economy is closed, while downward movements indicate that the income gap between them is opened. By considering the fluctuations in the GDP of the Turkish economy between 1980 and 2018, making a definitive inference about whether it is in the middle income trap or not may not yield healthy results. The main reasons for this situation are that the periods mentioned cover a long period of time, that is, the series is a long-term series, and the fundamental changes in the Turkish economy during this period. For example, the presence of structural breaks such as the 1980 military coup, the economic crises in that period, changes in the ruling power, and the policies implemented accordingly, natural disasters, and the economical transformations in that period (fixed exchange rate and floating exchange rate fluctuations affect growth in productivity between sectors and income reduce the level of the reduction periodically) makes the interpretation of this series more difficult. Econometric tests taking into account structural breakdowns should be used to determine whether Turkey is in the MIT due to the reasons listed above.

3.4. Structural Break Unit Root Tests

The reason for static absence in time series is that the population shows changes (structural breaks) in terms of different samples throughout the regression equation. As a result of structural breakdowns in the economy in general, changes in economic policies, changes in the structure of the economy, or changes in a particular industry that have formed a significant development can be considered. If such structural changes or "breakages" in econometrics are evident, but these changes are not taken into account within the framework of a regression model, or if predictions are made by omission, it is clear that the results and preliminary reports based on these results will be systematically deviated (Sevüktekin and Nargelecekenler, 2010). For this purpose, Augmented Dickey Fuller (ADF), Zivot Andrews (1992), Narayan and Popp (2010) and Carrion-i Silvestre et al. (2009) unit root tests will be used in this study.

3.4.1 Augmented Dickey-Fuller (ADF) Unit Root Test

To introduce ADF mathematically, it is a method often used in stationary tests, and it is useful to start from a simple time series regression. Accordingly, the regression of a time series relative to the previous duration can be shown in the following figure;

$$Y_t = \rho Y_{t-1} + u_t$$

Yt is the value that Y takes at t time, Yt-1 is the value that Y takes at t-1 time, and u_t is the error term. If ρ is 1, Y_t can be said to have the unit root. The probability variable Y_t is said to have a unit root if it is found to be $\rho = 1$ in this case. It also means that the series is not stationary and follows a random walking process. The hypotheses tested in this stationarity test are:

If H_0: $\rho=1$, the unit in the series has root/ the series is not stable.

If H_1: $\rho<1$, then the unit in the series has not root/ the series is stable.

ADF testing can be applied in different ways. The equations of these alternative applications are given below:

No constant, no trend: $\Delta Y_t = \delta Y_{t-1} + a_i \sum_{i=1}^{m} \Delta Y_{t-1} + \varepsilon_t$

Constant, no trend: $\Delta Yt = \beta_1 + \delta Y_{t-1} + a_i \sum_{i=1}^{m} \Delta Y_{t-1} + \varepsilon_t$

Constant and trend: $\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + a_i \sum_{i=1}^{m} \Delta Y_{t-1} + \varepsilon_t$

First, the ADF unit root testis applied and the test results are given Table 3.3 and Table 3.4. Only through the fixed model, ADF testing is applied and it is used to determine whether it fall into the MIT.

Table 3.5: ADF Unit Root Test Results – Level/Intercept

Null Hypothesis: DIFFERENCE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.169661	0.9974
Test critical values:	1% level	-3.621023	
	5% level	-2.943427	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Table 3.6: ADF Unit Root Test Results- Level/ Intercept and Trend

Null Hypothesis: DIFFERENCE has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.254612	0.9891
Test critical values:	1% level	-4.226815	
	5% level	-3.536601	
	10% level	-3.200320	

*MacKinnon (1996) one-sided p-values.

Test results of models with constant and trend are as above (Table 3.3 and Table 3.4). The H0 hypothesis is accepted because the test statistic is smaller in absolute value than the critical values. The series contains a unit root, indicating that the series is not stationary. Due to the fact that the data sets are not stable, the relevant test results show that the Turkish economy is in the MIT.

The results of Augmented Dickey-Fuller unit root test shows that the new series is not stationary. However it is stationary in the first and second differences. ADF unit root test results are an application that should be done in determining the countries that are in MIT and in terms of providing preliminary information. However, it is necessary to see the results of unit root tests with structural breakage in order to decide which of the middle-income countries are in the trap.

3.4.2 Zivot-Andrews Unit Root Test

In the Zivot-Andrews (ZA) unit root test, the single fracture is determined internally (Zivot & Andrews, 1992). In the ZA unit root test, three different regression models are established where fracture is constant, trend, and both constant and trend. Parameters are estimated for each breaking point and t-statistics are calculated.

In the below equation, Model A refers to break at constant, Model B refers to break at Trend, and Model C refers to break at both constant and level. ε_t , (t=1,2,…,T) represents the normally distributed error term without autocorrelation. TB is the breaking point and is $\lambda = TB/T$, $\lambda \in [0.15, 0.85]$.

$$Model\ A: \Delta y_t = \mu + \alpha y_{t-1} + \beta t + \theta_1 DU_t(\lambda) + \sum_{i=1}^{k} d_i \Delta y_{t-i} + \varepsilon_t$$

$$Model\ B: \Delta y_t = \mu + \alpha y_{t-1} + \beta t + \vartheta_1 DT_t(\lambda) + \sum_{i=1}^{k} d_i \Delta y_{t-i} + \varepsilon_t$$

$$Model\ C: \Delta y_t = \mu + \alpha y_{t-1} + \beta t + \theta_1 DU_t(\lambda) + \vartheta_1 DT_t(\lambda) + \sum_{i=1}^{k} d_i \Delta y_{t-i} + \varepsilon_t$$

The shadow variables in the equation are defined as follows:

$$DU_t(\lambda)=\begin{cases}1, & t>TB\\ 0, & diğer\ durum\end{cases} \quad \text{ve} \quad DT_t(\lambda)=\begin{cases}t-TB, & t>TB\\ 0, & diğer\ durum\end{cases}$$

Hypotheses in the ZA test are based on the significance of the coefficient α. The basic hypothesis is based on the unit root without the series structural fracture, while the alternative hypothesis is based on the stationary form with the series single fracture. If the t-statistic is greater than the table value, the fundamental hypothesis is rejected. In this case it is concluded that the coefficient α is meaningless, i.e. the series is stationary (Esenyel, 2017:46).

- Ho: “The series has a unit root without structural break.”
- Ha: “The series is stationary with a single break.”

Hypothesis is formed.

Table 3.7: Results of ZA Unit Root Tests

	Zivot-Andrews Test Statistics		
	Model A	Model B	Model C
	-2,239289	-4,442398	-4,597539
Break Point	2006	2004	1999
Critical Values			
1%	-5,34	-4,8	-5,57
5%	-4,93	-4,46	-5,08

The fact that the absolute values of the test statistics are lower than the critical table values at 1% and 5% significance levels indicates that they are not stationary. In other words, these results show that the series in the period examined were subjected to structural change and that they were not stationary at the level with a structural break. The breaking dates are 2006, 2004 and 1999.

The test statistic is less than the critical value, so it reaches the conclusion that Turkey is not MIT.

A single structural break does not have a significant effect on the stationary state of the series. In order to avoid erroneous results arising from the insufficient determination of the number of structural breaks, the stationary states of the relevant series will be investigated by the Narayan and Popp (2010) tests that allow two structural breaks.

3.4.3 Narayan and Popp Test

A new unit root test with two structural breaks was developed in the study published in 2010 by Kumar Narayan and Stephan Popp. Monte Carlo simulations are used in this Dickey-Fuller type test. The authors reached the following equations with the method of data generation by following Schmidt and Phillips (1992), (Ünlü and Yıldız, 2018:14):

$$yt = dt + ut \tag{1}$$

$$ut = \rho ut-1 + \varepsilon t \tag{2}$$

$$\varepsilon t= \psi^*(L)\ et= A^*(L)^{-}1\beta\ (L)et \tag{3}$$

In the equations above, yt represents the time series, dt represents the deterministic component and ut represents the stochastic component.

The authors identify two different specifications that allow two breaks in level (Model 1 or M1) and allow two breaks in level with a slope (Model 2 or M2). These two model specifications are shown below (Narayan and Popp, 2010, p.1426):

$$dt^{M1} = \alpha + \beta t + \psi^*\ (L)\ (\theta_1 DU'_{1,t} + \theta_2 DU'_{2,t}) \tag{4}$$

$$dt^{M2} = \alpha + \beta t + \psi^*\ (L)\ (\theta_1 DU'_{1,t} + \theta_2 DU'_{2,t} + \gamma_1\ DT'_{1,t} + \ \ \gamma_2\ DT'_{2,t} \tag{5}$$

$$DU'_{i,t} = 1(t > T'_{B,i}) \quad DT'_{i,t}1(t > T'_{B,i})\ (t\text{-}\ T'_{B,i})$$

Here, T'B indicates two break dates, i, i = 1, 2. The parameters i and θi show the magnitude of the break in slope and level. Adding the term ψ * (L) to the above equations makes the breaks slower over time. That means the series react to shocks.

The derivation of structural models that will allow testing the unit root hypothesis for M1 and M2 is created by combining equations (1) and (5). Test equations for M1 and M2 are as follows (Ünlü and Yıldız, 2018:14):

$$Yt^{M1}=PY_{t-1}+\alpha_1+\beta^*t+\theta_1 D(T'_\beta)_{1,t}+\theta_2 D(T'_\beta)_{2,t}+\delta_1 DU'_{1,t-1}+\delta 2DU'_{2,t-1}+\sum_{j=1}^{k}\beta j\Delta Yt-j+et \quad (7)$$

$$Yt^{M2}=PY_{t-1}+\alpha_1+\beta^*t+\kappa_1 D(T'_\beta)_{1,t}+\kappa_2 D(T'_\beta)_{2,t}+\delta^*_1 DU'_{1,t-1}+\delta^*_2 DU'_{2,t-1}+\gamma^*_1 DT'_{1,t-1}+\gamma^*_2 DU'_{2,t-1}+\sum_{j=1}^{k}\beta j\Delta Yt-j+et \quad (8)$$

$$\kappa_i=(\theta_i+\gamma_i),\ \delta^*_i=(\gamma_i-\phi\,\theta_i) \text{ ve } \gamma^*_i=-\phi\,\theta_i \qquad i=1,2$$

The t statistics (tp) expressed in equations (7) and (8) are used to test the existence of the unit root in which the null hypothesis is p = 1 and the alternative hypothesis is p <1. Since it is assumed that the breaking dates are not known (T', i) in equations (7) and (8), i = 1, 2, break dates can also be selected using grid search methods. Hence, test regressions are created for combinations of each potential breakpoint and F-statistics are used (Ünlü and Yıldız, 2018:14):

$$(\hat{T}_{B,1},\hat{T}_{B,2})=\begin{cases}\arg\max\limits_{T_{B,1},T_{B,2}} F_{\hat{\theta}_1,\hat{\theta}_2}(T_{B,1},T_{B,2}), & \text{for M1}\\ \arg\max\limits_{T_{B,1},T_{B,2}} F_{\hat{\kappa}_1,\hat{\kappa}_2}(T_{B,1},T_{B,2}), & \text{for M2}\end{cases}$$

Alternatively, the authors use the sequential method comparable to Kopetanios (2005). In the first step, the fracture is determined according to the maximum absolute t-values of the diffraction dummy coefficients θ1 for M1 and κ1 for M2 is investigated.

When θ2 = δ2 = 0 for M1 and κ2 = δ * 2 = γ * 2 = 0 for M2, the following maximization is achieved (Ünlü and Yıldız, 2018:14):

$$\hat{T}_{B,1} = \begin{cases} \arg\max_{T_{B,1}} |t_{\hat{\theta}_1}(T_{B,1})|, & \text{for M1} \\ \arg\max_{T_{B,1}} |t_{\hat{\kappa}_1}(T_{B,1})|, & \text{for M2} \end{cases}$$

If the first break in test regression is given as T′β,1, the second break date is estimated as T′β,2. If the t-value is maximized again, with θ2 for M1 and κ2 for M2, the following results are obtained (Ünlü and Yıldız, 2018:14):

$$\hat{T}_{B,2} = \begin{cases} \arg\max_{T_{B,2}} |t_{\hat{\theta}_2}(\hat{T}_{B,1}, T_{B,2})|, & \text{for M1} \\ \arg\max_{T_{B,2}} |t_{\hat{\kappa}_2}(\hat{T}_{B,1}, T_{B,2})|, & \text{for M2} \end{cases}$$

Since the results of the simultaneous and sequential methods are similar, the sequential method is preferred. This test, which was developed by Narayan and Popp (2010) and gave two previously unknown breaking dates, is relatively new and has higher empirical power among the existing structural break unit root tests.

Tablo 3.8: Narayan ve Popp (2010) Unit Root Test Results

	M1			M2			
Variable	Test Statistics	Optimum Lag Length	Break	Test Statistics	Optimum Lag Length	Break	Results
lnTur-lnUs	-2.466	4	1993;1998	-4.276	1	1993;2005	Unit Root
	M1 Critical Values			M2 Critical Values			
T	1%	5%	10%	1%	5%	10%	
50	−5.259	−4.514	−4.143	−5.949	−5.181	−4.789	

*p<0.01; **p<0.05; ***p<0.10
**M1, constant; M2, constant and trend

Based on the results of the unit root test, Narayan and Popp (2010) concludes that the model is not stable, as the test statistic values obtained from M1 model and M2 model are smaller than the critical values. According to these results, it is determined that Turkey is not in MIT. According to the test results, break points are 1993, 1998 and 2005.

3.4.4 Carrion-i-Silvestre, Kim, and Perron (2009) Unit Root Tests

The Carrion-i-Silvestre (2009) test is a test that allows a maximum of five August breaks and determines them internally at the breaking point. Breakpoints are determined using the algorithm of Bai and Perron (2003) and the Quasi-GLS (Generalized Least Squares) method, in which the sum of error residues is minimized. Effective results can be obtained in small samples in this test technique. The stochastic data generation process used in the test is as follows (Bulut and Koçak,2014:15):

$$y_t = d_t + u_t \tag{1}$$

$$u_t = \alpha\, u_{t-1} + v_t \qquad t = 0,1,2, \ldots, T \tag{2}$$

Carrion-i-Silvestre (2009) develops five different test statistics to test the stationarity of the series obtained through this process (Bulut and Koçak,2014:15):

$$P_T\,(\lambda^0) = \frac{[\,S\,(\bar{c},\lambda^0) - \bar{c}\,S\,(1,\lambda^0)]}{S^2\,(\lambda^0)} \tag{3}$$

$$MP_T\,(\lambda^0) = \frac{[\,\bar{c}^{-2}\,T^{-2}\sum_{t=1}^{T}\hat{y}_{t-1}^2 + (1-\bar{c})T^{-1}\,\hat{y}_T^2}{s(\lambda^0)^2} \tag{4}$$

$$MZ_\alpha(\lambda^0) = (T^{-1}\hat{y}_T^2 - s(\lambda^0)^2)(2T^{-2}\sum_{t=1}^{T}\hat{y}_{t-1}^2)^{-1} \tag{5}$$

$$MSB(\lambda^0) = (s(\lambda^0)^{-2}T^{-2}\sum_{t=1}^{T}\hat{y}_{t-1}^2)^{1/2} \tag{6}$$

$$MZ_t(\lambda^0) = (T^{-1}\hat{y}_T^2 - s(\lambda^0)^2)(4s\,(\lambda^0)^2T^{-2}\sum_{t=1}^{T}\hat{y}_{t-1}^2)^{1/2} \tag{7}$$

The test's hypotheses:

H0: There is unit root under structural breaks.

H1: There is no unit root under structural breaks.

Asymptotic critical values required to test these hypotheses can be generated with bootstrap. When the calculated test statistic is less than the critical value, the H0 hypothesis is rejected and in the presence of structural breaks in the series, it is concluded that there is no unit root, that is, the series is stationary. The results and critical values obtained from the Carrion-i-Silvestre (2009) test are given in Table 3.7

Carrion-i Silvestre et al. (2009)'s multi-structural unit root test is a useful test especially in the analysis of series with short-term observations and in solving the problems encountered by unit root tests under structural breaks. Unlike other unit root tests, it is advantageous in that it provides solutions to symmetrical problems and allows the series to be corrected by directly giving the breaking dates. Unit root statistics values are obtained by refreshing the bootstrap approach. When the test statistics calculated as a result of the test are smaller than the critical values, the Ho hypothesis is rejected and it is concluded that there is no unit root under the structural breaks in the series.

Table 3.9: Carrion-i Silvestre et al. (2009) Unit Root Test Results

	Constant			Constant and Trend		
	Test Statistics	Critical Value 5%	Break Date	Test Statistics	Critical Value 5%	Break Date
PT	12.74	6.216	1997	19.58	7.946	1993
MPT Test	11.96	6.216	2003	18.22	7.946	2001
MZA Test	-16.89	-31.66	2011	-15.39	-34.86	2008
MSB Test	0.1716	0.1271		0.1769	0.1193	
MZT Test	-2.899	-3.971		-2.723	-4.161	

*It is stationary at p <0.5 significance level.
Dipnot: Critical values are obtained with 1000 bootstrap iterations.

The test itself reveals critical values and test statistics. According to the results of the test, the test statistics obtained in this test, which took into account five structural fractures, are greater than the critical values. Thus it is concluded that the variable studied has a unit root and is not stationary. Thus, it has been determined that Turkey is not in the MIT.

Break points are 1993, 1997, 2001, 2003, 2008 and 2011. The fracture in 1993 stems from the fact that it is the previous year of 1994 crisis. When the background of fractures are examined, 1994 Turkish crisis, 2001 Turkish crisis, 1998 Russian crisis, 1997 Asian crisis and 2008 mortgage crises are thought to cause structural changes. The economic burden caused by the 1997 Asian Crisis, the 1998 Russian Crisis and the 1999 Marmara Earthquake and the subsequent structural economic problems formed the pioneering dynamics of the 2001 crisis.

In the wake of theses crises that Turkey had undergone, it started “The Program of Transition to a Strong Economy”. With implementing the important structural reforms and securing the trust in economy, Turkish economy begins to expand by the positive ongoing of international markets which allow capital entrance. Strict money and finance strategies which are implemented in this period don’t restrict the expansion; on the contrary, they have a positive effect through allowing getting strong in public power balances and firmness in prices (Şiriner and Yılmaz, 2008: 207) .

When the process of Turkish economy after 2005 is considered, three prominent events can be mentioned. These are the removal of six zeros in Turkish money, the 2008 USA crisis and European debt crisis in 2010. On the other hand, the date 2008 marks the period of the global financial crisis, whose effects were felt all over the world. Finally, the year 2011 indicates the period after the global financial crisis in which global capital movements accelerated.

CONCLUSION

The MIT can be defined as the inability of middle income economies to rise to the level of higher income economies by exceeding a certain threshold income over a long period of time. In the world economy, only some middle-income economies have been able to raise their income up to the level of high-income economies. Therefore, the existence of an MIT and exit strategies for developing countries' economies are among the major research topics in the economics literature.

In this context, the subject of this thesis is the middle income trap and the Turkish economy (1980-2018). The concepts of income groups, income traps and MIT are explained in the first part of the study.

In the second part, studies about the MIT in the international literature are reviewed. Since the MIT has the potential of a major economic problem that threatens the economies of developing countries, many researchers have developed various approaches and scrutinized the concept of MIT and developed models for testing its existence econometrically. The main reasons behind the MIT and strategies for exiting the MIT are studied in this part.

In the third section, the Turkish economy is examined in terms of the MIT for the period of 1980-2018. According to the definitions of the World Bank, Turkey has been classified as low-income in 1967-1974, low-middle income in 1975-2003 and upper - middle income in 2004-2018. According to these findings, Turkey remained in the low-middle income classification for 29 years and in the upper middle income classification for 15 years.

According to Felipe et al. (2012), Turkey was in the lower-middle income classification in 1990-2005 and upper-middle income classification in 2006-2018. According to these findings, Turkey remained 16 years in the lower-middle income classification and 13 years in the upper-middle income classification. In this context, it is concluded that if Turkey remains in the upper-middle income classification by the end of 2020, it would enter the upper-MIT.

In addition, in the third section, an empirical study is conducted to determine whether Turkey is falling into the MIT or not. In Robertson and Ye (2013) approach, whether a country is in a MIT is econometrically tested using structural and non-structural unit root tests. According to this approach, it is concluded that the country being tested is in the MIT if the difference series in question is static and the MIT is not a unit root.

Robertson and Ye (2013) apply the comparative approximation model, ADF unit Root Test, Zivot-Andrews, Narayan and Popp, and Carrion-i Silvester et.al. structural fracture unit root tests are used. According to these findings, it is concluded that Turkey is not in the MIT. It can be said that the Turkish economy tends to close the income gap between its and the US economy. On the other hand, whether this trend continues in the long term or how long the deficit will be closed depends on the growth performance of the Turkish economy in the following periods. On the other hand, as mentioned earlier, there has been a recent slowdown in the growth rate of the Turkish economy (Table 3.2). In this context, many policy proposals are made in order to protect Turkey from the risk of the MIT.

It is clear that macroeconomic elements that will increase the quality and efficiency of human capital and may have a driving effect for economic growth and development should be mobilized, and measures to increase the efficiency of financial markets should be taken. Furthermore, policies that ensure sectoral-based efficiency and ensure diversity in the basket of exported products and that prevent the country's economy from being dependent on the trade of limited numbers of goods should be encouraged. At the same time, technological and innovation-based developments that support energy efficiency need to be supported within the country. It is expected that the Turkish economy will be largely protected from the risk of the middle income trap by the long-term macroeconomic stability that will be ensured by the arrangements to be made. (Ballı, Güreşçi and Manga, 2019).

Bulut and Koçak (2014) outlined in three headings the elements that should be considered in the policy proposal so that Turkey does not face the risk of a trap in its growth process. First, policies should be developed in Turkey and strengthen the quality of human resources, especially human resources should be supported by R & D investment, and this policy should be long-term. In this regard, public policies play a key role in increasing the skills of the workforce and supporting R&D activities. Especially, increases in schooling rates should be provided, all educational levels, including vocational and technical, should be strengthened, and all opportunities should be maximized to improve the skills of the society. In terms of R&D activities, the state should provide various supports to the private sector through commercial and financial policies. In addition, applied and basic research activities should be supported by establishing various institutes in the fields of science and technology, and existing supports should be expanded. Having implemented similar policies in the recent past, South Korea has become an important country that produces new products and provides power in global trade by protecting these products through patents.

Second, Turkey will develop a dynamic corporate structure and policies should be applied to relevant legal regulations must be constantly updated. Especially, a more democratic, free structure where intellectual property rights are guaranteed should be established and this structure should be continuously developed. Continuous improvement of this structure will play an important role in the development of the economy by providing significant positive externalities. Furthermore, this structure will increase the efficiency of real and financial markets and thus these markets will form an important mechanism for the allocation and use of resources (Ballı, Güreşçi and Manga, 2019:18).

Third, macroeconomic stability, moderate inflation, and fiscal sustainability policies are to increase savings in the future periods and should be emphasized to ensure the stability of these variables. Continuity in the stability of these variables will reduce the need for external savings in the Turkish economy, provide significant increases in private sector savings and thus provide important contributions to the economic growth process (Ballı, Güreşçi and Manga, 2019:19)

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APPENDIX

Table 1.3: Low Income Economıes ($1,025 Or Less)

Afghanistan	Guinea-Bissau	Sierra Leone
Benin	Haiti	Somalia
Burkina Faso	Korea, Dem. People's Rep.	South Sudan
Burundi	Liberia	Syrian Arab Republic
Central African Republic	Madagascar	Tajikistan
Chad	Malawi	Tanzania
Congo, Dem. Rep	Mali	Togo
Eritrea	Mozambique	Uganda
Ethiopia	Nepal	Yemen, Rep.
Gambia, The	Niger	
Guinea	Rwanda	

Source: World Bank (2019)

Table 1.4: Lower Mıddle Income Economıes ($1,026 To $ 3,995)

Angola	India	Papua New Guinea
Bangladesh	Indonesia	Philippines
Bhutan	Kenya	São Tomé and Principe
Bolivia	Kiribati	**Senegal**
Cabo Verde	Kyrgyz Republic	Solomon Islands
Cambodia	Lao PDR	Sudan
Cameroon	Lesotho	Timor-Leste
Comoros	Mauritania	Tunisia
Congo, Rep.	Micronesia, Fed. Sts.	Ukraine
Côte d'Ivoire	Moldova	Uzbekistan
Djibouti	Mongolia	Vanuatu
Egypt, Arab Rep.	Morocco	Vietnam
El Salvador	Myanmar	West Bank and Gaza
Eswatini	Nicaragua	Zambia
Ghana	Nigeria	**Zimbabwe**
Honduras	Pakistan	

Source : World Bank (2019)

Table 1.5 : Upper Middle Income Economies ($ 3,996 to $ 12,375)

Albania	Fiji	Namibia
Algeria	Gabon	Nauru
American Samoa	**Georgia**	North Macedonia
Argentina	Grenada	Paraguay
Armenia	Guatemala	Peru
Azerbaijan	Guyana	Romania
Belarus	Iran, Islamic Rep.	Russian Federation
Belize	Iraq	Samoa
Bosnia and Herzegovina	Jamaica	Serbia
Botswana	Jordan	**Sri Lanka**
Brazil	Kazakhstan	South Africa
Bulgaria	**Kosovo**	St. Lucia
China	Lebanon	St. Vincent and the Grenadines
Colombia	Libya	Suriname
Costa Rica	Malaysia	Thailand
Cuba	Maldives	Tonga
Dominica	Marshall Islands	Turkey
Dominican Republic	Mauritius	Turkmenistan
Equatorial Guinea	Mexico	Tuvalu
Ecuador	Montenegro	Venezuela, RB

Source : World Bank (2019)

Tablo 1.6: High Income Economies ($ 12,376 or more)

Andorra	Gibraltar	Palau
Antigua and Barbuda	Greece	Panama
Aruba	Greenland	Poland
Australia	Guam	Portugal
Austria	Hong Kong SAR, China	Puerto Rico
Bahamas, The	Hungary	Qatar
Bahrain	Iceland	San Marino
Barbados	Ireland	Saudi Arabia
Belgium	Isle of Man	Seychelles
Bermuda	Israel	Singapore
British Virgin Islands	Italy	Sint Maarten (Dutch part)
Brunei Darussalam	Japan	Slovak Republic
Canada	Korea, Rep.	Slovenia
Cayman Islands	Kuwait	Spain
Channel Islands	Latvia	St. Kitts and Nevis
Chile	Liechtenstein	St. Martin (French part)
Croatia	Lithuania	Sweden
Curaçao	Luxembourg	Switzerland
Cyprus	Macao SAR, China	Taiwan, China
Czech Republic	Malta	Trinidad and Tobago
Denmark	Monaco	Turks and Caicos Islands
Estonia	Netherlands	United Arab Emirates
Faroe Islands	New Caledonia	United Kingdom
Finland	New Zealand	United States
France	Northern Mariana Islands	Uruguay
French Polynesia	Norway	Virgin Islands (U.S.)
Germany	Oman	

Source: World Bank (2019)

Table 1.7: Changes in Classification

	New group	Old group	GNI/Capita/$ (2018) as of July 1, 2019	GNI/Capita/$ (2017) as of July 1, 2018
Comoros	Lower-middle income	Low income	1,320	760
Georgia	Upper-middle income	Lower-middle income	4,130	3,790
Kosovo	Upper-middle income	Lower-middle income	4,230	3,890
Senegal	Lower-middle income	Low income	1,410	950
Sri Lanka	Upper-middle income	Lower-middle income	4,060	3,840
Zimbabwe	Lower-middle income	Low income	1,790	910
Argentina	Upper-middle income	High income	12,370	13,040

Source: World Bank (2019)

Table 2.2: Growth Slowdown in Some Selected Countries

Country	Year	Growth before slowdown (t-7 through t)(%)	Growth after slowdown (t through t+7) (%)	Difference in growth	Per capita GDP at t ($)
Argentina	1970	3.6	1.5	-2.2	10,927
	1997	4.3	-0.1	-4.5	12,778
	1998	3.7	0,5	-3.2	13,132
Italy	1974	4.4	2.3	-2.1	15,629
Japan	1967	8.7	6.5	-2.2	10,041
	1968	8.7	5.0	-3.7	11,277
	1969	9.2	3.8	-5.3	12,565
	1970	9.5	2.9	-6.6	13,856
	1971	8.4	3.1	-5.3	14,263
	1972	8.8	2.8	-6.0	15,263
	1973	8.4	2.0	-6.4	16,326
	1974	6.5	2.8	-3.7	15,806
	1975	5.0	2.9	-2.1	15,965
	1990	4.2	1.2	-3.1	26,385
	1991	4.3	0.3	-4.0	27,184
	1992	3.7	0.2	-3.5	27,250
France	1973	4.5	2.2	-2.3	16,904
	1974	4.4	1.6	-2.8	17,473
Malaysia	1994	6.7	3.4	-3.3	10,987
	1995	6.8	2.9	-4.0	11,835
	1996	6.9	2.4	-4.5	12,741
	1997	6.5	2.5	-4.0	13,297
Puerto Rico	1969	5.7	2.1	-3.6	10,094
	1970	5.8	2.0	-3.8	10,687
	1971	5.5	2.1	-3.4	11,205
	1972	5.3	1.4	-3.9	11,715
	1973	4.3	1.4	-2.9	11,556
	1988	4.7	2.2	-2.5	16,901
	1989	5.8	1.9	-4.0	17,795
	1990	5.0	2.4	-2.6	18,245
	1991	5.1	2.9	-2.3	18,588
	2000	4.1	0.1	-4.0	25,955
Saudi Arabia	1977	9.4	-8.8	-18.2	43,032
	1978	5.5	-8.3	-13.8	37,541
	1979	3.7	-9.7	-13.4	40,696
Uruguay	1996	3.6	-2.0	-5.6	11,044
	1997	4.3	-1.2	-5.5	11,559
	1998	4.4	-1.2	-5.6	12,097
Venezuela	1974	3.9	-2.2	-6.1	13,869

Source: Eichengreen et.al. (2012)

Table 2.4: Economies that became upper middle income after 1950

Country	Region	Year country turned UM (Y_{UM})	Year country turned H (Y_H)	No. of years as UM	Ave. GDP Per capita growth rate (%) (Y_{UM} to Y_H)
Hong Kong, China	Asia	1976	1983	7	5.9
Japan	Asia	1968	1977	9	4.7
Rep. of Korea	Asia	1988	1995	7	6.5
Singapore	Asia	1978	1988	10	5.1
Taipei, China	Asia	1986	1993	7	6.9
Austria	Europe	1964	1976	12	4.1
Belgium	Europe	1961	1973	12	4.4
Denmark	Europe	1953	1968	15	3.3
Finland	Europe	1964	1979	15	3.6
France	Europe	1960	1971	11	4.4
Germany	Europe	1960	1973	13	3.4
Greece	Europe	1972	2000	28	1.8
Ireland	Europe	1975	1990	15	3.2
Italy	Europe	1963	1978	15	3.4
Netherlands	Europe	1955	1970	15	3.3
Norway	Europe	1961	1975	14	3.5
Portugal	Europe	1978	1996	18	2.8
Spain	Europe	1973	1990	17	2.7
Sweden	Europe	1954	1968	14	3.6
Argentina	Latin America	1970	2010	40	1.2
Chile	Latin America	1992	2005	13	3.7
Israel	Middle East	1969	1986	17	2.6
Mauritius	Sub-Saharan Africa	1991	2003	12	4.0

Source: Felipe et al. (2012)

Eviews Outputs

Unit root: level/Intercept

Null Hypothesis: DIFFERENCE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.169661	0.9974
Test critical values:	1% level	-3.621023	
	5% level	-2.943427	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DIFFERENCE)
Method: Least Squares
Date: 08/21/20 Time: 19:15
Sample (adjusted): 1981 2017
Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DIFFERENCE(-1)	0.044107	0.037709	1.169661	0.2500
C	0.142890	0.103167	1.385043	0.1748

R-squared	0.037618	Mean dependent var	0.022638
Adjusted R-squared	0.010122	S.D. dependent var	0.052466
S.E. of regression	0.052200	Akaike info criterion	-3.014924
Sum squared resid	0.095370	Schwarz criterion	-2.927848
Log likelihood	57.77610	Hannan-Quinn criter.	-2.984226
F-statistic	1.368106	Durbin-Watson stat	1.673728
Prob(F-statistic)	0.250041		

Unit root: level/Trend and Intercept

Null Hypothesis: DIFFERENCE has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.254612	0.9891
Test critical values:	1% level	-4.226815	
	5% level	-3.536601	
	10% level	-3.200320	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DIFFERENCE)
Method: Least Squares
Date: 08/21/20 Time: 19:17
Sample (adjusted): 1981 2017
Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DIFFERENCE(-1)	-0.014684	0.057672	-0.254612	0.8006
C	-0.048608	0.175905	-0.276329	0.7840
@TREND("1980")	0.001643	0.001229	1.336402	0.1903

R-squared	0.085648	Mean dependent var	0.022638
Adjusted R-squared	0.031862	S.D. dependent var	0.052466
S.E. of regression	0.051624	Akaike info criterion	-3.012066
Sum squared resid	0.090610	Schwarz criterion	-2.881451
Log likelihood	58.72321	Hannan-Quinn criter.	-2.966018
F-statistic	1.592399	Durbin-Watson stat	1.659381
Prob(F-statistic)	0.218237		

Unit root: 1st level/Intercept

Null Hypothesis: D(DIFFERENCE) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.781689	0.0004
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DIFFERENCE,2)
Method: Least Squares
Date: 08/21/20 Time: 19:17
Sample (adjusted): 1982 2017
Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DIFFERENCE(-1))	-0.787199	0.164628	-4.781689	0.0000
C	0.016285	0.009372	1.737576	0.0913

R-squared	0.402088	Mean dependent var	-0.001218
Adjusted R-squared	0.384502	S.D. dependent var	0.065985
S.E. of regression	0.051768	Akaike info criterion	-3.030151
Sum squared resid	0.091116	Schwarz criterion	-2.942178
Log likelihood	56.54273	Hannan-Quinn criter.	-2.999446
F-statistic	22.86455	Durbin-Watson stat	2.003994
Prob(F-statistic)	0.000033		

Unit root: 1st level/ Trend and Intercept

Null Hypothesis: D(DIFFERENCE) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.327631	0.0006
Test critical values:	1% level	-4.234972	
	5% level	-3.540328	
	10% level	-3.202445	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DIFFERENCE,2)
Method: Least Squares
Date: 08/21/20 Time: 19:18
Sample (adjusted): 1982 2017
Included observations: 36 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DIFFERENCE(-1))	-0.880284	0.165230	-5.327631	0.0000
C	-0.013395	0.017664	-0.758336	0.4536
@TREND("1980")	0.001628	0.000834	1.953266	0.0593

R-squared	0.464051	Mean dependent var	-0.001218
Adjusted R-squared	0.431569	S.D. dependent var	0.065985
S.E. of regression	0.049749	Akaike info criterion	-3.084000
Sum squared resid	0.081674	Schwarz criterion	-2.952040
Log likelihood	58.51201	Hannan-Quinn criter.	-3.037943
F-statistic	14.28651	Durbin-Watson stat	2.031976
Prob(F-statistic)	0.000034		

Unit root: 2 nd level/ Trend and Intercept

Null Hypothesis: D(DIFFERENCE,2) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.962652	0.0000
Test critical values:	1% level	-4.252879	
	5% level	-3.548490	
	10% level	-3.207094	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DIFFERENCE,3)
Method: Least Squares
Date: 08/21/20 Time: 19:18
Sample (adjusted): 1984 2017
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DIFFERENCE(-1),2)	-1.971220	0.283113	-6.962652	0.0000
D(DIFFERENCE(-1),3)	0.370255	0.168007	2.203811	0.0354
C	-0.001033	0.023260	-0.044399	0.9649
@TREND("1980")	8.70E-05	0.001024	0.085031	0.9328

R-squared	0.760188	Mean dependent var	0.001601
Adjusted R-squared	0.736207	S.D. dependent var	0.113651
S.E. of regression	0.058372	Akaike info criterion	-2.733828
Sum squared resid	0.102219	Schwarz criterion	-2.554256
Log likelihood	50.47508	Hannan-Quinn criter.	-2.672589
F-statistic	31.69942	Durbin-Watson stat	2.198785
Prob(F-statistic)	0.000000		

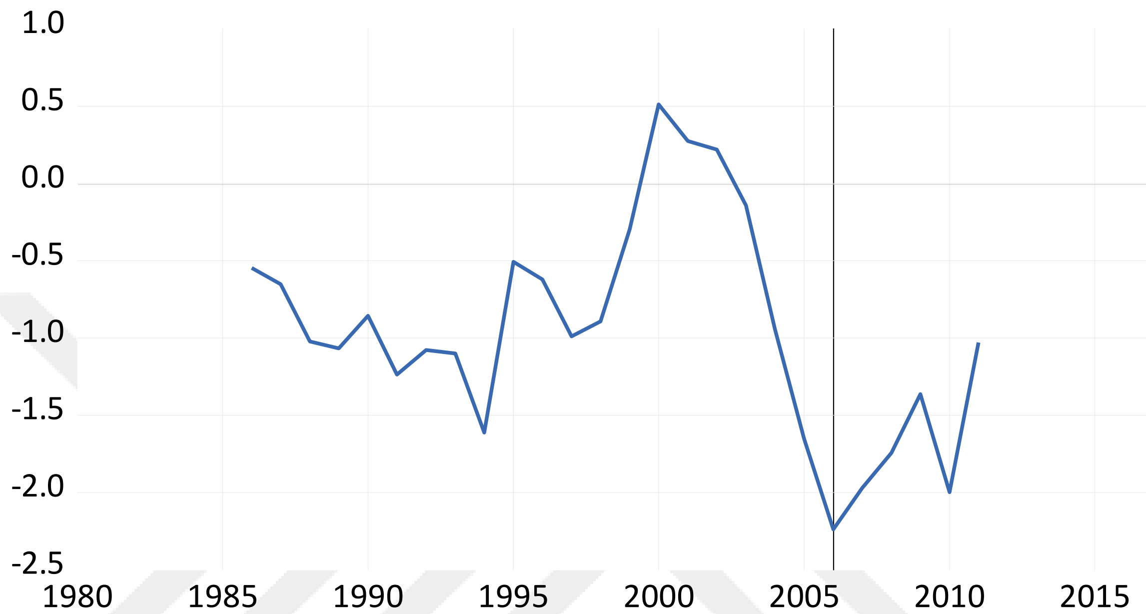
Zivot-Andrews Intercept

Zivot-Andrews Unit Root Test
Date: 08/23/20 Time: 14:08
Sample: 1980 2017
Included observations: 38
Null Hypothesis: DIFFERENCE has a unit root with a structural break in the intercept
Chosen lag length: 0 (maximum lags: 4)
Chosen break point: 2006

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-2.239289	0.003406
1% critical value:	-5.34	
5% critical value:	-4.93	
10% critical value:	-4.58	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

Zivot-Andrew Breakpoints

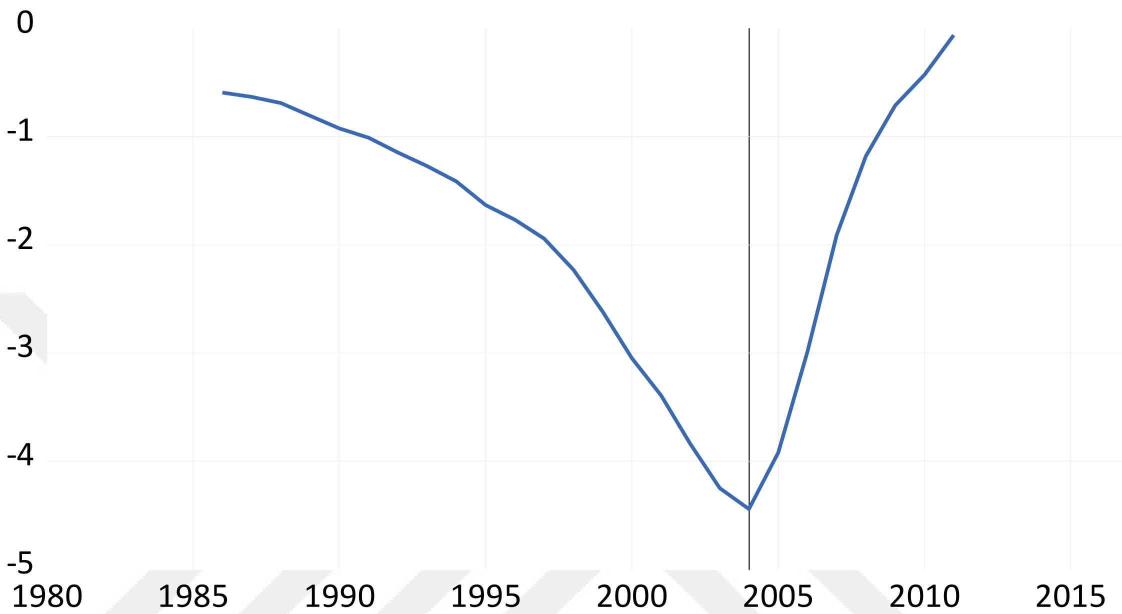


Zivot-Andrews Unit Root Test
Date: 08/23/20 Time: 15:08
Sample: 1980 2017
Included observations: 38
Null Hypothesis: DIFFERENCE has a unit root with a structural break in the trend
Chosen lag length: 0 (maximum lags: 4)
Chosen break point: 2004

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-4.442398	5.56E-05
1% critical value:	-4.80	
5% critical value:	-4.46	
10% critical value:	-4.11	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

Zivot-Andrew Breakpoints

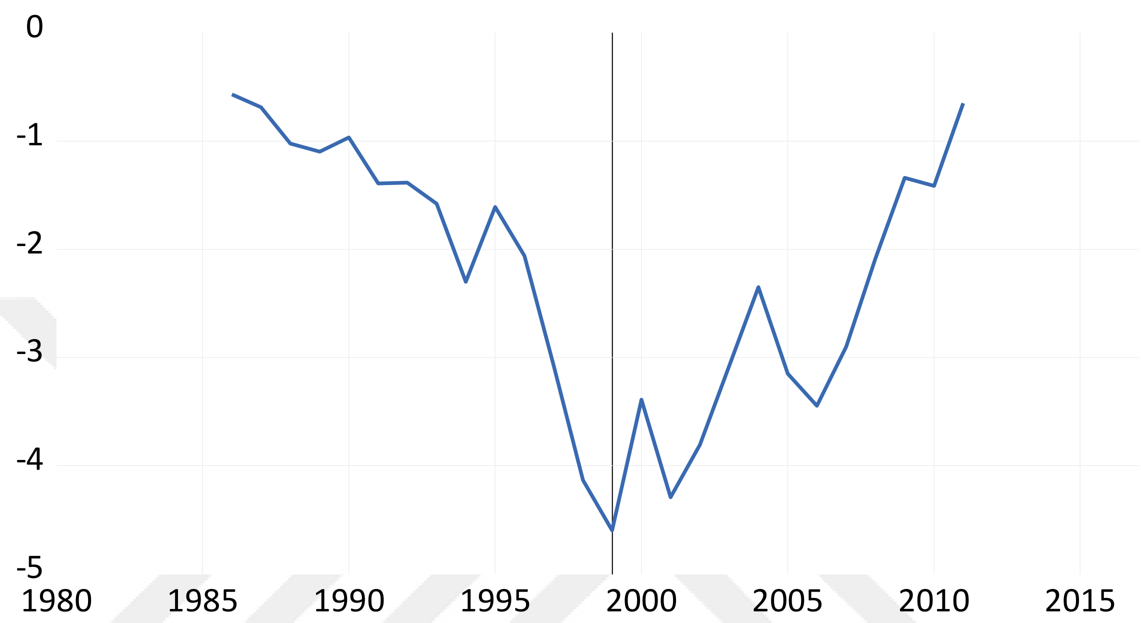


Zivot-Andrews Unit Root Test
Date: 08/23/20 Time: 14:08
Sample: 1980 2017
Included observations: 38
Null Hypothesis: DIFFERENCE has a unit root with a structural break in both the intercept and trend
Chosen lag length: 0 (maximum lags: 4)
Chosen break point: 1999

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-4.597539	0.005140
1% critical value:	-5.57	
5% critical value:	-5.08	
10% critical value:	-4.82	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

Zivot-Andrew Breakpoints



-difference Intercept

Zivot-Andrews Unit Root Test
Date: 08/23/20 Time: 14:08
Sample: 1980 2017
Included observations: 38
Null Hypothesis: DDIFFERENCE has a unit root with a structural break in the intercept
Chosen lag length: 0 (maximum lags: 4)
Chosen break point: 2004

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-7.675340	0.000256
1% critical value:	-5.34	
5% critical value:	-4.93	
10% critical value:	-4.58	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

1.farkı alınmış Trend

Zivot-Andrews Unit Root Test
Date: 08/23/20 Time: 14:08
Sample: 1980 2017
Included observations: 38
Null Hypothesis: DDIFFERENCE has a unit root with a structural break in the trend
Chosen lag length: 0 (maximum lags: 4)
Chosen break point: 1999

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-5.596361	0.143461
1% critical value:	-4.80	
5% critical value:	-4.42	
10% critical value:	-4.11	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

1.farkı alınmış Both

Zivot-Andrews Unit Root Test
Date: 08/23/20 Time: 14:08
Sample: 1980 2017
Included observations: 38
Null Hypothesis: DDIFFERENCE has a unit root with a structural break in both the intercept and trend
Chosen lag length: 0 (maximum lags: 4)
Chosen break point: 2004

	t-Statistic	Prob. *
Zivot-Andrews test statistic	-7.454316	0.000421
1% critical value:	-5.57	
5% critical value:	-5.08	
10% critical value:	-4.82	

* Probability values are calculated from a standard t-distribution and do not take into account the breakpoint selection process

Carrion-i Silvstre et.al

the null hypothesis: unit root

BREAKS İN LEVEL AND SLOPE OF TİME TREND

Test statistics and critical values (5% levelof significance)

PT test 19.58 cv(5%): 7.946

MPT test 18.22 cv(5%): 7.946

MZA test -15.39 cv(5%): -34.86

MSB test 0.1769 cv(5%): 0.1193

MZT test -2.723 cv(5%): -4.161

BREAKS İN SLOPE OF TİME TREND

Test statistics and critical values (5% levelof significance)

PT test 12.74 cv(5%): 6.216

MPT test 11.96 cv(5%): 6.216

MZA test -16.89 cv(5%): -31.66

MSB test 0.1716 cv(5%): 0.1271

MZT test -2.899 cv(5%): -3.971