

# Evidence of Turkey Falling into the Middle Income Trap

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There are now two distinct bodies of study that explain why middle-income nations fall behind high-income countries using political and economic characteristics. It is generally accepted that it is difficult to distinguish between these two categories of literature, even if both produce results that should be treated seriously. Nonetheless, this analysis suggests that MIT's Convergence Hypothesis—one of the main outcomes of the Neo-Classical development model—is not actually achieved in reality, based on the literature that contains economic data. As a departure from the Convergence Hypothesis, an attempt was made to identify the similarities in the economic reasons of MIT through a survey of the literature. Research indicates that the financial and economic liberalisation processes brought forth by globalisation have negative effects on middle-income nations. This study attempts to identify the types of causal interactions that contribute to the Turkish economy's middle-income trap by reviewing relevant literature. With technological developments, differences between countries are deepening. The results of this study showed that the Turkish economy was stuck in the Middle Income Trap because of insufficient capital and was unable to boost the level of national income above a particular threshold. However, this analysis also suggests that technological advancements, alongside strategic capital allocation, could potentially offer a pathway for middle-income nations to overcome the middle-income trap. The study highlights the need for further research into how middle-income nations can leverage technological developments and optimise capital allocation to achieve economic convergence with high-income countries.

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*Keywords:* Middle Income Trap (MIT), Convergence Hypothesis, Capital Movements, Economic Growth.

## 1. INTRODUCTION

Conditions of economic growth have been a phenomenon explored since the inception of economic theory. Particularly during the 18th to 20th centuries, when deterministic thinking prevailed, growth theories were developed based on the assumption of a linear growth process for each country. Although Marxism had a different systematic approach, it too did not object to a linear economic growth/development process and foresaw deterministic outcomes. The Socialist countries that emerged with the 1917

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Bolshevik Revolution experienced economic growth processes to an extent unforeseen by their adversaries, drawing the attention of mainstream economics. Thus, in the mid-20th century, under the title of “Development Economics,” while implicitly acknowledging that economic growth processes were not linear, suggestions began to be made, especially for developing country categories, on how they could achieve linear growth processes implicitly. One of the most well-known of these suggestions is presented in Rostow’s work titled “Stages of Economic Growth.” This work, self-described as “non-socialist,” focused on providing a roadmap for developing countries to achieve the growth process. During this period, a highly intensive working environment emerged in development economics, and views on how developing countries could rise to the category of developed countries were put forward, provided they did not conflict with liberal economics.

Under this “non-conflicting” condition, Development and Growth Theories reached their peak from the beginning to the end of the third quarter of the 20th century. The most well-known Development Theories and Growth Theories emerged during this period. On one hand, Rostow (1960) attempted to explain the stages of economic growth and how economies showing non-linear (or interrupted) growth could capture the linear process; on the other hand, Solow (1956) presented the Neo-Classical Growth model, which provides the strongest explanation for the linear process of economic growth.

The common feature of these two studies (and indeed this period of thought) is their acknowledgment, whether explicit or implicit, that “growth processes may not be linear.” Two points of Solow’s Growth Theory are noteworthy. Firstly, the assumption it relies on regarding the historical contingency of technological progress, and secondly, the Convergence Hypothesis as a result of the theory. The assumption of contingency had completely disappeared from the agenda by the last quarter of the 20th century, with the acceptance through Internal Growth Theories that technological progress is predictable and even a variable that can be directed.

The Convergence Hypothesis, however, still maintains its place at the center of theoretical debates. This is because economic growth processes that still do not resemble each other are observed in practice. Although neo-classical explanations are attempted for these, the debates continue. In this study, attention is drawn to the contradiction/discrepancy between the convergence hypothesis and the middle-income trap phenomenon, attempting to critically examine both concepts.

This paper focuses on a critical examination of the “convergence hypothesis” in economic growth theory. The convergence hypothesis suggests that developing economies, under certain conditions, will eventually catch up to the economic level of developed economies. The authors challenge this notion by analysing the concept of the “middle-income trap,” a phenomenon where developing countries stall in their growth and struggle to transition to a developed state. By investigating the contradiction between these two seemingly opposing ideas, the article aims to contribute to the ongoing debate on the applicability of linear growth models to developing economies. The research is particularly relevant to policymakers and development economists seeking to understand the complexities of economic growth in different contexts.

In this paper breaks new ground by bringing together the convergence hypothesis and the middle-income trap for a critical analysis. This approach allows for a deeper understanding of the limitations of linear growth models in explaining real-world economic

development. The article's innovation lies in its attempt to reconcile these seemingly contradictory concepts and shed light on the factors that might hinder developing economies from achieving sustained growth. By examining this tension, the article offers valuable insights for developing more nuanced and realistic theories of economic growth. It highlights the need to consider historical contingencies and path dependencies that may prevent a one-size-fits-all approach to development.

## **2. CONVERGENCE HYPOTHESIS**

The Convergence Hypothesis, which originated with Solow (1956) and was further developed by Cass (1965) and Kopmans (1965), postulates that, in neo-classical growth models, the rate of growth per capita tends to be inversely proportional to the initial level of output or income. As a result, poorer economies grow faster than richer economies when economic preferences are similar (Barro & Sala-i-Martin, 1992). This is one of the fundamental conclusions of Solow's Economic Growth Theory. This hypothesis, which predicts that the rapid growth of economies defined as poor will lead to the closing of the gap with rich countries over time, is defined as the Convergence Hypothesis (Abramovitz, 1986). The conditions for the convergence of income inequalities between economies constitute the main focus of the Convergence literature, depending on factors such as openness, whether there is mutual interaction in income inequality between developed and developing economies, and externalities in economic growth processes (Sala-i-Martin, 1996).

The first empirical study on the hypothesis was conducted by Baumol (1986), who concluded that there was a strong convergence relationship. However, empirical studies have begun to increase since the 1980s, and these studies reveal different results and causal relationships. Alongside studies providing evidence that the hypothesis is consistent and successful (Staehr, 2015; Barro, & Sala-i-Martin, 1992; Barro, 2016; Krause, & Szymanski, 2019; Lee, 2019; Roy, Kessler, & Subramanian, 2016, etc.), there are also studies presenting evidence that the hypothesis fails to deliver the expected results (Korotayev, & Zinkina, 2014; Staehr, 2015; Ha, & Lee, 2016; Ito, 2017; Jankowska, Nagengast, & Perea, 2012, etc.). Moreover, each empirical group is essentially seeking the reasons for success or failure in the unique conditions of country examples. Empirical studies belonging to both groups of views converge on the common ground that some countries are successful while others are not. Therefore, the success or failure of any economy gains meaning within the specific conditions of that country. Nevertheless, failure also shows some common reasons. For example, Lee (2019) shows that "convergence successes" typically have high levels of working-age population, strong human capital, an efficient legal system, inexpensive investment products, and a propensity to safeguard large levels of high-tech patents and exports.

A brief review of the literature highlights empirical findings attempting to explain success and/or failure in the convergence hypothesis: Trade structure (Aiyar et al., 2013); Demographic structural deficiencies (Ha & Lee, 2016); Structural reforms (Ito, 2017); Manufacturing industry (Krause & Szymanski, 2019) and effects of factor productivity (Jankowska, Nagengast, & Perea, 2012); Role of human capital (Lee, 2019); Competence regarding competition conditions (Krause & Szymanski, 2019); Role of institutions (Aiyar, et al. 2013), etc.

Additionally, studies that demonstrate the tendency of income gaps between high- and middle-income countries to narrow also show a number of contradictory findings about convergence, such as widening income gaps between low- and middle-income countries (Korotayev & Zinkina, 2014).

In conclusion, suggestions are made for certain theoretical adjustments regarding the convergence hypothesis and particularly for better understanding low-income countries (Korotayev & Zinkina, 2014). Because of deficiencies in the definition and theoretical framework construction, studies covering different countries and combinations of different country groups can often produce very different results about the validity of the hypothesis. Contributions to the theoretical structure of the hypothesis should enhance its explanatory power between high-middle income countries and middle-low income countries.

### 3. MIDDLE-INCOME TRAP

By the 1980s, some common points began to emerge in studies on economic growth and Convergence. Although some developing countries experienced some economic growth (or entered the process of economic growth), evidence started to emerge indicating that this process got stuck at a certain point. These economies, although they could achieve high growth rates as predicted by the convergence hypothesis, were observed to get trapped at a critical income level, a phenomenon known as the Middle-Income Trap (Aiyar, et al. 2013).

Historical studies even confirmed that there were numerous examples of countries that had successfully transitioned from the “developing country” category to the “developed country” category. Barro (2016) lists economies that have shown this success as Chile, Hong Kong, Ireland, Malaysia, Poland, Singapore, South Korea, and Taiwan. The “failed economies,” on the other hand, have fallen into the Middle-Income Trap, creating a new category of economies (Lee, 2019).

The term Middle-Income Trap was first coined by Gill & Kharas (2007). In this pioneering work, three stages of middle-income countries are identified. According to this, “As countries specialise in production and employment, diversification will slow down and then reverse; second, the importance of investment will diminish, and innovation will accelerate; third, education systems will shift from equipping workers with skills to adapt to new technologies to preparing them to shape new products and processes. These will be observable outcomes associated with successful strategic changes as countries move towards middle-income status.” Thus, a process moving towards the importance of human capital alongside economic variables is identified.

According to the World Bank classification based on income levels, per capita income levels that form the basis for the classification of countries according to their income levels are determined as follows. It should be noted that these classifications are flexible and may vary from year to year. Because the income level limitations for each year are determined according to the per capita income level of the USA. When determining the middle income level, 20 percent of the US national income per capita is accepted as the middle income limit.

Table 1

*Classification of Countries According to Income Levels by the World Bank*

|      | Low Income       | Low-Middle Income   | Middle Income        | High Income        |
|------|------------------|---------------------|----------------------|--------------------|
| 2022 | 1.085 lower than | 1.086-4.255 between | 4.256-13.205 between | 13.205 Higher than |
| 2023 | 1.135 lower than | 1.136-4.465 between | 4.466-13.845 between | 13.845 Higher than |

*Source:* World Bank (2023). *Note.* Values are in US Dollars.

Empirical studies are often limited to models constructed among a limited number of variables, and as such, they can only identify the effects of the variables they contain and their causality. Moreover, choices of countries and country groups also influence the results. Indeed, economies in the developing country category contain natural drawbacks in many areas compared to advanced economies. There are inadequacies in variables for economics as well as non-economic factors such as education, democracy, legal infrastructure, government depth, separation of powers, and entrepreneurial confidence; capital accumulation, savings capacity, stability in macroeconomic policies, inconsistencies in economic policy preferences are among them. Furthermore, Fernandez, Ley, & Steel (2001) emphasise the inadequacy of statistical and econometric methods used in research and indicate the need for new approaches.

The literature on the middle-income trap can primarily be divided into two main categories: those that approach the concept politically and those that approach it economically. Indeed, there are even studies that prefer to treat the concept solely as a political one. However, in this study, works that consider the concept as a political one have been excluded, and the framework has been focused solely on economic perspective studies.

Within this main framework, results obtained from empirical studies reveal a wide range of different reasons for the Middle-Income Trap. However, when empirical studies are considered, it can be said that the empirical results are clustered in some clusters. Accordingly, the causes of the middle-income trap are:

Dollarisation created by the disorder in the trade composition (Rose, 2000, Engel & Rose, 2000, Frankel & Rose, 2002, Alesina, et al. 2002, Tenreyro & Barro, 2002); Technological, R&D deficiencies, innovation failures, and human capital deficiencies (Agenor, Canuto, & Jelenic, 2012; Caldentey, 2012; Cherif, & Hasanov, 2019; Doner, & Schneider, 2016; Eichengreen, Park, & Shin, 2013; Klingler-Vidra, & Wade, 2020; Krause, & Szymanski, 2019), and education policies sustained as the cause of human capital deficiencies (Wang, Li, Abbey, & Rozelle, 2018); Slowdown in growth accompanied by a decrease in productivity (Agenor, 2017); Macro-economic policy failures and structural problems as both a cause and a consequence of this (Hartwell, 2013). The vulnerability to economic and financial crises created by these structural problems (Cerra, & Saxena, 2008; Staehr, 2015); Failure to institutionalise and infrastructure deficiencies (Pruchnik & Zowezak, 2017; Aghion & Bircan, 2017; Staehr, 2015); Insufficiency of necessary government interventions due to political reasons and adoption of demand-focused growth policies (Barendra, 2019; Cai, 2012b; Doner, & Schneider, 2019; Easterly, & Levine, 1997; Lin, 2017), and the reconsideration of the current growth strategy (Bulman, Eden, & Nguyen, 2017); Failure of manufacturing competitiveness (Bresser-Pereira & Araújo, & Costa-Peres, 2020; Andreoni & Tregenna, 2020; Larson, Loayza, & Woolcock, 2016;

Wade, 2016); Structural government regulations aimed at reforming labour markets and protecting property rights (Agenor & Cauntio 2012); Inequalities created by organisational deficiencies in labour markets by dividing social groups (Doner & Schneider, 2016); Increasing total factor productivity, expanding human capital accumulation, deepening system and government function reforms (Cai, 2012a); Failure of government initiatives due to the insufficiency of broad-based improvements in industries and the inability to focus on vertical industry policies that encourage innovation and knowledge (Caldentey, 2012); Improvement of education and research capacity, liberalisation of the financial system, and establishment of a more transparent and accountable political system (Huang, 2016); Inability to achieve broad-based innovation due to the lack of domestic productivity capabilities, exacerbation of domestic innovation difficulties over time due to the interaction of international factors with local factors, and inadequacy of collaboration between the government and private sector actors in innovation capabilities (Kang & Paus, 2019); Over-reliance on foreign capital and investments due to capital insufficiency (Raj-Reichert, 2019); Macroeconomic stability and financial development issues (Han & Wei, 2017).

It can be seen that the selected literature summarises the reasons for the middle-income trap in four main frames: 1. Human capital; 2. Government failures; 3. Sectoral and competition deficiencies; 4. Capital and savings deficiencies. In short, falling into the middle-income trap is a deviation from the assumed linear growth process and can be considered as evidence of the inadequacy of the convergence hypothesis.

#### **4. THE MIDDLE-INCOME TRAP AND TURKEY**

In the literature on the middle-income trap, studies related to Turkey have been conducted parallel to the findings provided above. However, it cannot be said that there are enough studies on Turkey. Although there are no comparative studies, empirical studies conducted specifically on a single country, taking the chronic problems of that country as independent variables, can provide a strong explanatory series of results. For instance, when the Turkish economy is considered, it is necessary to focus on the relationship between the chronic problem of the trade deficit and the middle-income trap. Unfortunately, only one study could be identified in this regard (Sarigül, Apak & Koyuncu, 2021). When the YÖK database is examined, there are only 19 doctoral theses addressing the middle-income trap, with the first thesis completed in 2014 and 10 doctoral theses completed between 2021-2023. Looking at the variable selections of doctoral theses, it is observed that only one doctoral thesis has been completed focusing on Human Capital, Innovation, R&D, and High Technology issues each. In short, it can be said that there are very limited studies on Turkey and even more limited studies investigating the relationships with the chronic problems mentioned above.

This study has limitations in addressing general or specific variables. Therefore, a different form of indicator is being attempted. The global total GDP of the world economy; the GDP of the United States and Turkey; and their per capita levels are considered for these three variables. The current and proportional differences between these 6 variables are also calculated. The variables are in US Dollars and cover annual data from 1960 to 2022. The dataset was obtained from the World Bank Data system and has been organised for this study, and necessary calculations have been made.

**Data Source:** The data was obtained from the World Bank Data system (2023). The World Bank Open Data (2023) is a repository of economic, social, and demographic data. It provides free and open access to information about countries, indicators, and topics. **Data Type:** The data is numerical and includes the following variables: Global total GDP of the world economy; GDP of the United States and Turkey; Per capita GDP levels for these three countries.

**Data Format:** The data is likely in a tabular format, with rows representing years and columns representing the different variables.

**Data Size:** The data covers annual data from 1960 to 2022, which means there are 63 data points for each variable.

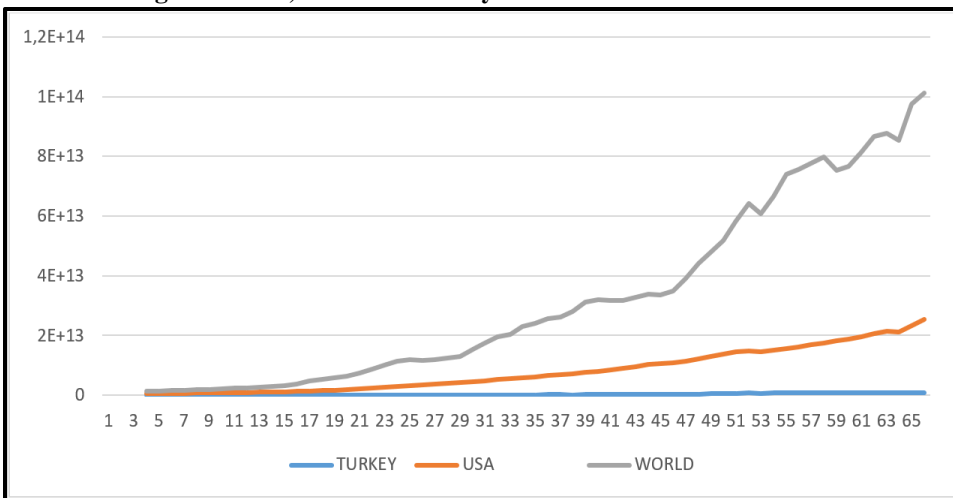
**Data Preprocessing:** The data was likely cleaned and organised for this study. This may have involved handling missing values, ensuring consistency in units, and calculating additional variables such as current and proportional differences.

Here are some additional details that could be included in the technical passages, depending on the availability of information in the “Data” section of the article: **Specific indicators:** The World Bank Open Data (2023) repository contains a vast amount of data on various topics. The specific indicators used in this study could be mentioned by name or code. For example, the indicator for “Global total GDP” might be “GDP (current US\$)”.

**Currency conversion:** If the original data was in a different currency, it was likely converted to US dollars for this study. The method of conversion (e.g., average exchange rate for each year) could be mentioned.

Firstly, Figure 1 shows the trends of GDP variables for the world, Turkey, and the United States. Despite fluctuations, it can be seen that the world economy, after the first 20 years of the 62-year period considered, especially showed a significant rise, particularly in the 1980s. The US economy is relatively stable and follows a trajectory consistent with the growth trend in the world economy. However, the GDP variable for Turkey does not show a growth associated with both the world and the US. In this regard, it shows a clear deviation from the Convergence Hypothesis.

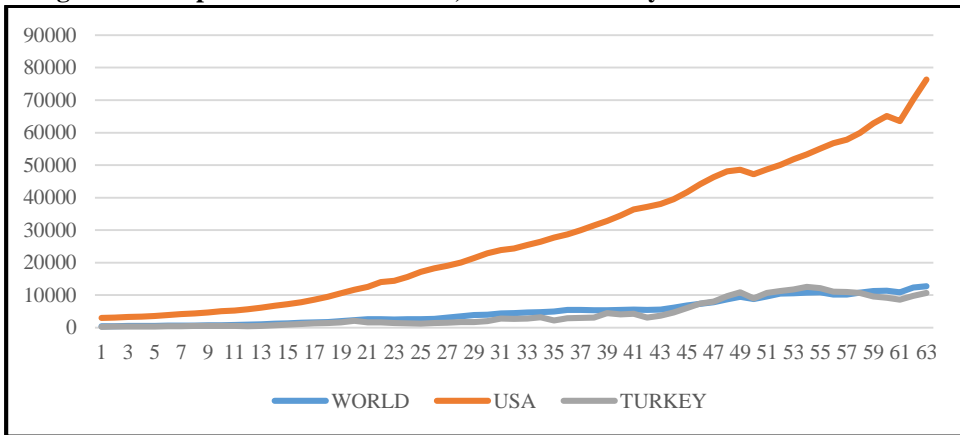
**Fig. 1. World, USA and Turkey GDP in the Period 1960-2022**



Data: World Bank Data (2023).

When looking at Figure 2, it can be observed that the Per Capita GDP (PCGDP) of the Turkish economy is closely related to the global level and follows approximately the same average trajectory. However, the PCGDP value for the United States diverges significantly from both the global and Turkish PCGDP, showing a much larger and distinct difference. The main reason for this divergence can be attributed to the technological advancements centered around US companies contributing to the US economy, particularly since the 1980s.

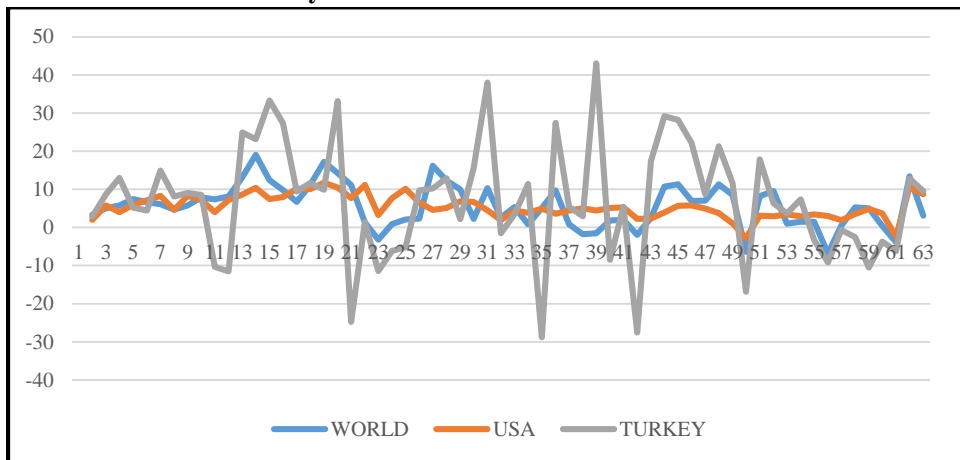
**Fig. 2. Per Capita GDP of the World, USA and Turkey in the Period 1960-2022**



Data: World Bank Data (2023).

Figure 3, which illustrates the series of proportional changes between the years in Per Capita GDP (PCGDP) for the world, the US, and Turkey, suggests that the Turkish economy is much more unstable compared to the other two variables. A similar situation can be observed in the figure created from the series of annual proportional changes in GDP shown in Figure 4.

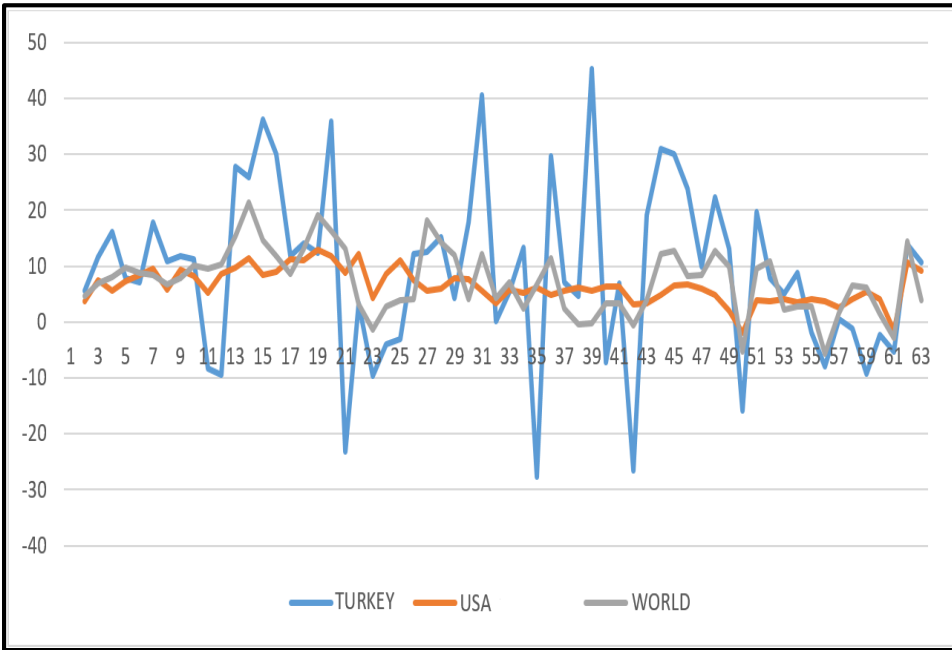
**Fig. 3. Proportional Change in GDP Per Capita in the World, USA and Turkey in the Period 1960-2022**



Data: World Bank Data (2023).



**Fig. 4. Proportional Change in GDP of the World, USA and Türkiye in the Period 1960-2022**



Data: World Bank Data (2023).

The correlation relationships between the variables used in the creation of Figures 1-4 are shown in Table 2 and Table 3.

Table 2

*Correlations of World, USA and Turkey GDP and GDP Proportional Change Variables in the Period of 1960-2022*

|        | GDP      |          | GDP Proportional Change |          |
|--------|----------|----------|-------------------------|----------|
|        | USA      | World    | USA                     | World    |
| Turkey | 0.948672 | 0.972352 | 0.27844                 | 0.486277 |
| USA    |          | 0.992573 |                         | 0.55679  |

Data: World Bank Data (2023).

Table 3

*Correlations of Per Capita GDP and Per Capita GDP Proportional Change Variables in the World, USA and Turkey in the Period of 1960-2022*

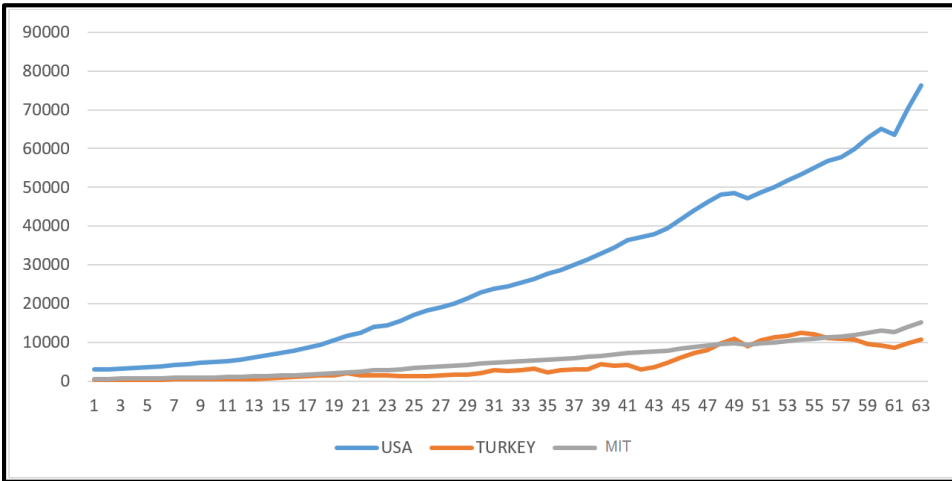
|        | GDP      |          | GDP Proportional Change |          |
|--------|----------|----------|-------------------------|----------|
|        | USA      | World    | USA                     | World    |
| Turkey | 0.931393 | 0.961601 | 0.257115                | 0.481432 |
| USA    |          | 0.990445 |                         | 0.535418 |

Data: World Bank Data (2023).

In Table 2, there is a stronger correlation between the Turkey GDP variable and the World GDP variable (0.972352) compared to the correlation with the USA GDP variable (0.948672). The correlation between USA and World (0.992573) is much stronger than Turkey's correlation relationships. However, in the Proportional Change columns shown in Table 2, it can be observed that Turkey has a very weak correlation (0.27844) with USA. The correlation between World GDP and USA GDP is very strong (0.9487) and positive, indicating that these economies tend to move in the same direction. This is likely due to factors like globalisation and international trade. When the global economy expands, it creates opportunities for export-oriented economies like the US to grow. Conversely, a contraction in the global economy can dampen US growth. The correlation between World GDP Proportional Change and USA GDP Proportional Change is moderate (0.2784) and positive. While there is a tendency for changes in world GDP to be reflected in the US, the association is weaker than for GDP levels themselves. This suggests that US GDP growth can be influenced by factors beyond just global economic conditions. These factors might include domestic policies, technological advancements, and resource availability. The correlation between USA GDP Proportional Change and itself (0.5568) is likely high, indicating a positive association between past and present growth rates in the US economy. In other words, periods of strong economic growth tend to be followed by continued growth, and periods of weak growth tend to be followed by sluggish economic performance. This persistence can be due to factors like consumer and business confidence, which can influence investment and spending decisions.

Table 3, which shows the calculated values for the variables of Per Capita GDP, demonstrates similar levels of correlation relationships, albeit with minor differences. The correlation between World Per Capita GDP and USA Per Capita GDP is very strong (0.9314) and positive, indicating that these economies tend to move in the same direction when it comes to individual wealth. This suggests a potential for convergence in living standards across developed nations through factors like international trade and knowledge transfer. The correlation between World Per Capita GDP Proportional Change and USA Per Capita GDP Proportional Change is moderate (0.2571) and positive. Similar to Table 2, while changes in world per capita income tend to be reflected in the US, the association is weaker than for per capita GDP levels themselves. This suggests that factors specific to the US economy, like domestic policies and productivity changes, can also influence US per capita income growth. The correlation between USA Per Capita GDP Proportional Change and itself (0.5354) is likely high, indicating a positive association between past and present growth rates in US per capita income. In other words, periods of strong economic growth that translate to rising per capita income tend to be followed by continued growth, and periods of weak growth tend to be followed by sluggish gains in per capita income. This persistence can be due to factors like consumer and business confidence, which can influence investment and spending decisions that ultimately affect productivity and growth.

**Fig. 5. GDP and MIT per capita in the USA and Turkey in the period 1960-2022**

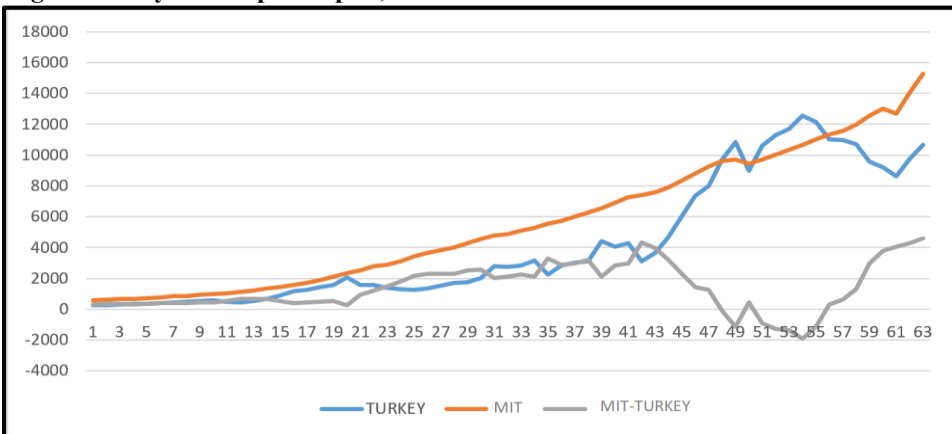


Data: World Bank Data (2023).

By definition, the Middle-Income Trap (MIT) is defined as 20 percent of the USA per capita GDP value. Figure 5, which shows the MIT series calculated based on these 20 percent values over the years along with the Turkey and USA per capita GDP variables, indicates that Turkey is in the Middle-Income Trap. Moreover, there is no Convergence; on the contrary, there is a Divergence, and the USA and Turkey per capita GDP variables are significantly diverging from each other.

Figure 6 presents the series of proportional changes in the MIT variable. The residual proportional to the MIT boundary continues steadily. However, in 2007, it exceeded the MIT boundary, and with the 2008 Global Financial Crisis, although it fell below the MIT boundary again, it exceeded the MIT boundary again starting from 2010 until 2016. However, in the recent period after 2016, it has fallen below the MIT boundary again.

**Fig. 6. Turkey’s GDP per Capita, MIT and MIT Difference in the Period 1960-2022**



Data: World Bank Data (2023).

## 5. CONCLUSION

In conclusion, the persistent struggle of the Turkish economy to surpass the middle-income trap (MIT) exposes a complex challenge. While the 2007-2016 period offered a glimpse of potential, achieving sustained economic growth requires a multifaceted approach that goes beyond simply replicating past development models. The global economic landscape has shifted dramatically, and the dominance of technology companies among the world's largest firms in 2023 underscores this reality. This trend signifies a rapidly rising "MIT boundary," making it increasingly difficult for middle-income countries to leapfrog without significant investments in research and development (R&D), human capital development, and fostering a domestic environment that nurtures technological innovation.

The path forward for Turkey demands a strategic two-pronged approach:

- (1) **Strategic Capital Allocation:** This necessitates a shift from generalised capital allocation towards targeted investments in high-technology sectors and critically, in domestic production capabilities for technological consumer goods. Public-private partnerships, along with supportive policies that incentivise R&D and domestic production, are crucial for success. Additionally, investments in infrastructure that facilitates technological advancements, such as high-speed internet and robust data security systems, should be prioritised.
- (2) **Human Capital Development:** A move away from a generalised education system towards a targeted approach that prioritises high-quality education and training programmes specifically tailored to the needs of a technology-driven economy is essential. This includes a strong focus on Science, Technology, Engineering, and Mathematics (STEM) fields, fostering a culture of lifelong learning, and encouraging critical thinking and problem-solving skills. Additionally, promoting collaboration between academia and industry can ensure that educational programmes remain aligned with the evolving demands of the job market.

The benefits of successfully navigating this path are substantial. By strategically allocating capital to fuel domestic technological capabilities and nurturing a highly skilled workforce, Turkey can unlock its true potential. This approach will not only position the country to break through the MIT boundary but also achieve sustainable economic growth fueled by a competitive, knowledge-based economy. Furthermore, fostering a domestic environment that encourages innovation can attract foreign investment and create high-value jobs, leading to a more prosperous and equitable society.

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