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Escaping the middle-income trap: A study on a developing economy

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Abstract: Middle-Income Trap (MIT) is a phenomenon wherein a nation finds itself unable to progress from a middle-income status to a high-income economy. Despite Bangladesh's rapid economic growth as a developing economy following its transition to the lower-middle-income category, the country faces various economic challenges that may impede its advancement to higher-income tiers. Consequently, this study delves into whether Bangladesh can successfully navigate its way out of the lower-middle-income and upper-middle-income traps. To assess this, the study initially employed a time threshold method known as the "Number of Years Method." It determined that Bangladesh is poised to break free from the lower-middle-income and upper-middle-income traps by 2029 and 2041, provided the nation can sustain a per capita Gross National Income (GNI) growth rate of 9.69%. To further evaluate the sustainability of this income growth, the study utilized three quantitative approaches: Catch-up Growth, Growth Report, and Growth Acceleration. Interestingly, these methods yielded contrasting results. The insights generated by this study hold significance for economists and policymakers in Bangladesh and other developing economies facing similar challenges. These findings enable them to assess the likelihood of becoming ensnared in the middle-income trap and, as a result, formulate appropriate strategies to overcome it.

Subjects: Economics and Development; Economics; International Relations

Keywords: middle-income trap; economic transition; sustainable development; income growth; Bangladesh

1. Introduction

In the post-World War II period, several nations transitioned into the middle-income status but failed to become high-income economies. The researchers call this extended stay in the middle-income range a trap, which is popularly known as a middle-income trap (MIT). Although MIT is a widely popular concept used for explaining economic stagnation, there has yet to be a consensus among economists and scholars about its definition. According to Pruchnik and Zowczak (2017), 60.2 percent of all nations are caught in the MIT by at least one definition.

For the developing economies and emerging markets, MIT has been a crucial phenomenon since the research shows that only 12.87% (13 out of 101) middle-income countries could become high-income countries over the 1960–2008 period (Development Research Center of the State Council

and The World Bank, 2012). Many middle-income countries like Malaysia and Thailand attempted to lift the value chains and develop markets for innovative and knowledge-based goods and services to avoid the trap. However, success has yet to be achieved (Collier & Page, 2009).

As an emerging market, the growth trajectory of Bangladesh is nothing short of a miracle. In about five decades of independence, Bangladesh grew its GDP from just USD 8.752 billion in 1971 to a whopping 274.039 billion in 2018 (The World Bank, 2019). In the same World Bank report, Bangladesh ranked second among the fastest-growing South Asian economies. The report predicts that Bangladesh will rank first among all South Asian nations in 2021, with a projected growth rate of 7.3 percent. In another report by the World Bank (2022), Bangladesh experienced an average real GDP growth rate of six percent since 2000, making it one of the fastest-growing world economies.

Over the last three decades, Bangladesh has also made significant progress in life expectancy, literacy, and poverty alleviation, evident from the consistent progress in the Human Development Index (HDI) score. Between 1990 and 2019, the HDI score of Bangladesh increased from 0.388 to 0.644 (United Nations Development Programme, 2019).

On 1 July 2015, Bangladesh crossed a significant threshold toward economic development when it graduated from a lower-income country (LIC) to a lower-middle-income country (LMIC) (The World Bank, 2015a). According to the Bangladesh government's provisional figures, its per capita GNI rose to $1,314 in FY 2014–15. Bangladesh is also on track to graduate from the UN's Least Developed Countries (LDC) list for the first time by 2024, as it has met all three eligibility criteria in 2018 (United Nations, 2018). In another forecast by the Centre for Economics and Business Research (2019), Bangladesh is anticipated to become the world's 25th-largest economy by 2034.

Bangladesh aspires to become a high-income country (HIC) by 2041 and has maintained a sustained per capita income growth rate of six percent over the last decade. This tremendous pace of income growth is far above the average growth of most middle-income countries within the same period. However, the widening gap between the poor and rich doubts Bangladesh's progress. The HDI value in 2019 fell to just 0.465 when adjusted for inequality (United Nations Development Programme, 2019). According to a New York-based research firm, Wealth-X (2018), Bangladesh will experience the third-fastest growth globally in the high net-worth population over the next five years (2020–2024). The nation faces formidable challenges as 39 million residents live below the national poverty line (The World Bank, 2021c).

In addition to the problems discussed, the COVID-19 outbreak may intensify the challenges to economic progress. The pandemic has triggered the worst economic recession since the Great Recession of the 1930s and caused unprecedented disruptions to international trade, business, remittance inflow, and human lives. Due to the COVID-19 outbreak and request from the Government of Bangladesh (GoB), the LDC graduation has already been deferred by two years (Bhattacharya, 2021). Since export earnings and remittance from migrants mainly fuel the economic growth of Bangladesh, the country may also experience a setback in its pursuit to become an upper-middle-income country (UMC) or a high-income country (HIC).

Although the concept of MIT has garnered significant attention in the economic literature, there exists a significant lacuna of research on developing economies, especially in Bangladesh. Despite the commendable growth of Bangladesh since transitioning to the lower-middle-income group, the country faces several economic challenges that may impede its graduation to the subsequent income strata. The widening inequality of income distribution and over-reliance on readymade garments (RMG) export and remittance inflows for economic growth pose some of the major threats to escaping this trap. Once Bangladesh graduates from the LDC category, it will lose the preferential trade benefits and face heightened competition from its regional counterparts. In a report by the United Nations Conference on Trade and Development (UNCTAD, 2022), Bangladesh

is likely to lose 14.28 percent of annual export earnings or US$5.73 billion after LDC graduation. Therefore, this research is motivated by the imperative to delve into whether Bangladesh can successfully navigate the obstacles of both lower- and upper-middle-income traps. In this pursuit, the study aims to answer the following research questions:

RQ1: Can Bangladesh successfully break free from the lower middle-income trap?

RQ2: Can Bangladesh successfully break free from the upper middle-income trap?

The rest of the paper is followed by a literature review in section 2 and methodology in section 3. Section 4 and Section 5 will discuss the data analysis, findings, and conclusions.

2. Literature review

In recent years, the middle-income trap has turned out to be a thought-provoking issue for all the upper-middle-income, lower-middle-income, and low-income countries. Garrett (2004) first coined the term "middle-income trap" indirectly when he presumed that due to the incapacity of some middle-income countries to compete with the low-income countries and the high-income economies, the per capita income of these countries could not experience sustained growth for more than 20 years. Later, Gill and Kharas (2007) defined "MIT" for the first time with an interpretation that middle-income countries suffer due to the domination of low-income countries in the full-grown industries and high-income countries in the technologically updated industries. Since then, the term has been researched in many academic papers (Egawa, 2013; Eichengreen et al., 2013; Islam, 2014; Kharas & Kohli, 2011; Kohli & Mukherjee, 2011; Vivarelli, 2014; Yilmaz, 2014; Yiping et al., 2014; Zhou et al., 2018). The concept of MIT has a variety of definitions, and different researchers provide different interpretations of this concept.

Following Glawe and Wagner (2016), the definitions of MIT can be divided into two groups—theoretical and empirical. The theoretical definitions primarily concentrate on the essential political and institutional adaptations needed as a nation progresses into the middle-income bracket (Garrett, 2004; Gill & Kharas, 2007; Kharas & Kohli, 2011). Unlike the second group, these definitions do not facilitate a clear-cut determination regarding whether a country falls within an MIT or not. On the other hand, the empirical definitions become more precise by utilizing specific thresholds for both the upper and lower limits within the middle-income range to define the term "middle-income". Glawe and Wagner (2016) further subdivide the empirical definitions into two groups—absolute and relative. While absolute definitions rely on fixed middle-income thresholds (Aiyar et al., 2013; Felipe et al., 2012), relative definitions typically involve per capita income relative to that of the US or any other developed country (Woo et al., 2012; Ye & Robertson, 2016).

In line with Pruchnik and Zowczak (2017), the current interpretations of MIT can be classified into five categories—nonempirical interpretations (Gill & Kharas, 2007; Kharas & Kohli, 2011; Ohno, 2009), fixed income levels (Aiyar et al., 2013; Eichengreen et al., 2013; Spence, 2011), relative income levels (Agénor & Canuto, 2012; Development Research Center of the State Council and The World Bank, 2012; Im & Rosenblatt, 2013; Ye & Robertson, 2016), time thresholds (Felipe et al., 2012), and indices (Hawksworth, 2014; Woo et al., 2012).

In the first category, MIT has been defined as a state where a country fails to compete with the high-income countries that are quality competitive and the low-income countries that are specialized due to their low wages. In this category, the trap is not dependent on a specific index or income or relative income level, etc. Based on this definition, results from an analysis of GDP per capita at USD, PPP current prices reveal that both the People's Republic of China and Poland have been in the trap (Pruchnik & Zowczak, 2017).

In the second category, researchers provide fixed thresholds of income to identify the trap. Spence (2011) pioneered a fixed income threshold, proposing that a country with per capita (PPP) income between 5,000 USD and 10,000 USD faces challenges in moving towards a high-income level. After that, Eichengreen et al. (2013) identified two ranges between which a country may probably experience growth slowdowns—between 15,000 and 16,000 USD per capita (PPP, constant) and between 10,000 and 11,000 USD per capita (PPP, constant 2005 prices). Later that year, Aiyar et al. (2013) proposed two thresholds where growth slowdowns are expected, leading to MIT —for middle-income countries at 15,000 USD per capita (PPP, constant 2005 prices) and for low-income countries at 2,000 USD per capita (PPP, constant 2005 prices).

In the third category, researchers apply a catch-up standard country for thresholds of relative income. The US was used in these papers as the standard country since it is a technologically sound, high-income country with longstanding balanced economic growth (Choi et al., 2020; Jones, 2002). For instance, the Development Research Center of the State Council and The World Bank (2012) identified based on this category that out of a total of 101 middle-income countries in 1960, only 13 countries were able to be high-income countries by 2008 – Taiwan, Equatorial Guinea, Greece, Ireland, Hong Kong, Israel, Spain, Japan, Singapore, Mauritius, Republic of Korea, Portugal, and Puerto Rico. In their research, Glawe and Wagner (2020) consider both absolute and relative income levels and infer that China is unlikely to be caught in an MIT unless its growth declines to the range of 3–4%.

The fourth research category identifies MIT depending on the duration a country requires to shift from one income level to the next. For example, Felipe et al. (2012) presented based on this category that in 2010, a total of 30 countries were stuck in the lower-middle-income trap out of 38 lower-middle-income countries, and a total of 5 countries were stuck in the upper-middle-income trap out of 14 upper-middle-income countries. This study is explicitly based on this category.

In the last category, researchers used actual indices to identify the trap. Here, the Catch-Up Index (Woo et al., 2012) and the ESCAPE Index (Hawksworth, 2014) are two commonly used indices. For instance, Hawksworth (2014) researched based on this category that five countries will be stuck in the MIT (Turkey, Brazil, South Africa, Indonesia, and India) and four countries will be able to escape the trap (Saudi Arabia, Chile, Malaysia and People's Republic of China).

However, the MIT concept has also been criticized for insufficient theoretical bases and solid empirical evidence. Im and Rosenblatt (2013) mentioned that though MIT is beneficial for country-wide policy-making, its existence is not properly backed by adequate statistical data. On the other hand, an obsession with continuous income growth may catalyze unsustainable policy-making.

Several studies (Aiyar et al., 2013; Bulman et al., 2017; Development Research Center of the State Council and The World Bank, 2012; Eichengreen et al., 2014; Felipe et al., 2017; Glawe & Wagner, 2016; Melguizo et al., 2017; Woo et al., 2012; Ye & Robertson, 2016; Yilanci et al., 2023; Zhuang et al., 2012) have identified countries that have experienced prolonged periods in the MIT from 1950 to 2015. These studies largely highlight the regions most affected by the MIT, namely the Middle East, East Asia, North Africa, and Latin America. Specific countries frequently cited as persistently situated within the middle-income bracket include Malaysia, Brazil, Argentina, Thailand, Mexico, Turkey, Peru, Iran, and El Salvador. According to the World Bank's (2022)-23 country classification by income level (GNI per capita in US$ Atlas method), these nations continue to fall within the middle-income category. Lessons drawn from these studies emphasize the challenges faced by these nations in macroeconomic management, shifts in growth strategies, income inequality, demographic shifts (Bulman et al., 2017), as well as concerns surrounding unsustainable capital accumulation and undervalued exchange rates (Eichengreen et al., 2014). Moreover, Melguizo et al. (2017) underscores the critical factors contributing to these countries' entrapment, citing insufficient and low-quality investments in infrastructure, institutions, governance, and the lack of progress in productivity.

While exploring developing economies that successfully evaded the middle-income trap, studies notably reference nations like Japan, Republic of Korea, Singapore, Spain, Greece, Ireland, and Hong Kong, exemplifying their ascension to high-income status. In their research, Felipe et al. (2017) mention five economies—Australia, New Zealand, Switzerland, Canada, and United States—that achieved upper-middle income status by 1950 or earlier and graduated to high-income status, while identifying 25 others that made the leap after 1950. On the other hand, Zhuang et al. (2012) highlight 31 high-income countries − 17 transitioned from middle to high-income before 1965 and 14 others after 1965. They specifically pinpointed 4 factors that assisted these countries in avoiding the trap − 1. stable macroeconomic, political, and social conditions, 2. substantial public investments in infrastructure and human capital, 3. efficient market systems, and 4. focused industrial policies. Besides, Bulman et al. (2017) emphasize the importance of factors such as improved and consistent total factor productivity growth, accelerated structural shifts from agriculture to industry, greater emphasis on exports, reduced inflation and external debt, as well as declines in inequality and dependency ratios. Ye and Robertson (2016) additionally discuss diversified economies, institutional reforms, global economic integration, utilization of natural resources, and the development of tourism and service sectors as pivotal in preventing these countries from falling into the middle-income trap. Besides, countries such as Singapore and South Korea successfully evaded the middle-income trap by harnessing foreign direct investment, advancing industrialization, and prioritizing the export of services (Galvan et al., 2022).

Researchers worldwide believe proper countrywide policy-making can assist a country to escape such a trap. A significant volume of literature has attempted to identify the factors related to MIT. Based on previous research, Pruchnik and Zowczak (2017) identified a total of seven factors that may influence a country to fall in the MIT—unfavorable demographics (Aiyar et al., 2013; Bloom & Canning, 2004), less economic diversification (Eichengreen et al., 2013; Felipe et al., 2012; Jankowska et al., 2012), unproductive financial market (Agénor & Canuto, 2017), inadequate advanced infrastructure (Agénor & Canuto, 2012; Aiyar et al., 2013), less innovation (Agénor & Canuto, 2017), incompetent institutions (Agénor & Canuto, 2012; Aiyar et al., 2013; Felipe et al., 2012) and ineffective labor market (Agénor & Canuto, 2012). Using probit regression analysis, Lee (2020) observes that middle-income countries transitioning to a high-income status or experiencing swift convergence tend to uphold robust human capital, a high ratio of working-age population, effective adherence to the rule of law, affordable investment goods, and increased levels of high-tech exports and patents. Besides, Akbas and Sancar (2021) employ panel methods and conclude that enhancing economic growth relies significantly on export sophistication, export product concentration, and export market diversification.

The World Bank recognized Bangladesh as a lower middle-income country in 2015, and like many other countries, it may get stuck in this trap. However, only a few studies have discussed this overarching issue of MIT for Bangladesh. While Islam (2016) investigated the impact of foreign aid in avoiding the middle-income trap of Bangladesh, Rahman and Bari (2016) examined the factors leading countries to MIT and predicted factors that may help Bangladesh avoid such a trap. On the other hand, Traverso (2016) identified four factors that contributed to the economic growth of Bangladesh and used qualitative analysis and estimation to explain those factors' contribution. Besides, Akanda (2022) evaluated the Bangladesh government's "Vision 2041" based projections in understanding the country's MIT condition.

Since there has been no research paper forecasting the time Bangladesh may take to move to the next income level and whether it will face the middle-income trap, a research gap can conspicuously be identified here. Hence, this paper aims to detect whether Bangladesh can successfully escape the lower-middle-income and upper-middle-income traps. Besides, the study also measures the sustainability of income growth in Bangladesh, a key assumption for the functioning of the time threshold method used in this research. The study differs from the previous ones applied in other countries, combining three quantitative techniques with the time threshold

method to measure the likelihood of Bangladesh's escape from the lower-middle-income and upper-middle-income traps.

Bangladesh's emancipation from the middle-income traps holds a profound influence on its economic development as it is directly linked to economic growth, poverty alleviation, and global competitiveness. A successful escape from MIT can lead to enhanced productivity and higher income levels, thereby contributing to the overall well-being of its residents. Achieving this will require substantial investment in education, research, and infrastructure. A successful evasion from MIT also enhances the global competitiveness of Bangladesh, attracting more foreign direct investments (FDI) and solidifying its position as a key player in the global arena. The economic advancement also brings some challenges in terms of reduced preferential trade benefits, which necessitate strengthening international ties and diversification of export items. On a global scale, the success of Bangladesh will challenge the traditional notion of development and will position the country as a role model for other developing nations. Therefore, the findings of this research hold significant importance for the policymakers of Bangladesh and other aspiring developing economies in their pursuit of overcoming the middle-income traps.

3. Research methodology

Several quantitative tools have been applied in this study to explore whether Bangladesh can successfully evade the extended stay in the middle-income range. In the beginning, the study applied a time threshold method (Number of Years Method) developed by Felipe et al. (2012) to assess the likelihood of Bangladesh's escape from MIT. The model also helps us to gauge the probable duration of a country's graduation to the subsequent income strata. However, the model assumes that the country will be able to maintain the same growth in its per capita income as it had in the past years. Therefore, this study also attempts to focus on identifying whether Bangladesh will be able to sustain its growth in per capita GNI by applying three methods: the Catch-up Growth and Growth Report method developed by Carnovale (2012) and the Growth Acceleration method developed by Hausmann et al. (2005). The study used Microsoft Excel 2019 to produce the results.

3.1. Number of years method

An intriguing study by Felipe et al. (2012) shed light on identifying countries that are or are likely to be stuck in the middle-income trap (MIT). This time threshold method, also known as the Number of Years method, offers a measurable and operational definition of the middle-income trap. By analyzing empirical data on the income transition of 124 countries, they identified the cut-off period for a country to fall into MIT. According to the authors, a country is in the lower-middle-income trap if it has been a lower-middle-income country for 28 or more years, and it is in the upper-middle-income trap if it has been an upper-middle-income country for 14 or more years. The thresholds are defined as the median periods (expressed in years) of countries that remained in the lower-middle-income/upper-middle-income group before graduation to the following income group. The time required for a country to leap forward in the next income strata is based on the following basic equation:

$$Y_t = Y_o \times (1+g)^t \tag{1}$$

Where,

Y_t = Minimum income threshold for moving to the next income strata,
Y_o = Current income,
g = Growth rate of income,
t = Time period.

Hence, the time required *(t)* to move to the next income group can be derived from the above equation (Eqn.1).

$$t = \frac{In(Y_t/Y_o)}{In(1+g)} \tag{2}$$

However, this study utilized the exact equation (Eqn.3) employed by Felipe et al. (2012, pp. 28–29) to determine the years required to transition to an upper-income group. This equation is used to compare Bangladesh's graduation period with the threshold periods proposed by Felipe et al. (2012). Nevertheless, this study also investigated the graduation time using other relevant variables, such as GNI and real income growth, as inputs for Eqn.3, presented in Table 3.

$$Time\ required\ to\ move\ to\ the\ next\ income\ strata = \frac{\ln\left(\frac{Minimum\ GNI(2020)}{GDP(2020)}\right)}{\ln(1+Ave.Gr.)} \tag{3}$$

Where,

Minimum GNI = The minimum amount (set by The World Bank) of GNI per capita in 2020, Atlas method (Current US$) required to be an upper-middle-income country or a high-income country,

GDP (2020) = The GDP per capita (current US$) in 2020,

Ave. Gr. = The average nominal per capita income growth rate during the last 10 years, i.e., 2011–2020.

Once the number of years required for the income transition of a country has been calculated (using Eqn.3), it is then compared with the threshold of 28 years or more for the identification of a lower-middle-income trap or with the threshold of 14 years or more for the identification of an upper-middle-income trap.

The cut-off periods also enable us to calculate the average growth rate of per capita GNI required to escape the traps. The mathematical formula needed for this calculation is also sourced from the work of Felipe et al. (2012).

$$Average\ GNI\ growth\ rate\ required = \left\{\left(\frac{Minimum\ GNI(2020)}{Country's\ GNI(2020)}\right)^{1/N} - 1\right\} \times 100 \tag{4}$$

Where,

Minimum GNI (2020) = The minimum GNI per capita in 2020 (The World Bank Atlas Method) required to enter the upper-middle-income/high-income group, which is $4,046 for upper-middle-income status and $12,536 for high-income status,

Country's GNI (2020) = Per capita GNI of a country in 2020 reported in USD (The World Bank Atlas Method),

N = Cut-off number of years to evade the MIT, which is 28 for the lower-middle-income trap and 14 for the upper-middle-income trap.

3.2. Catch-up growth method

By considering catch-up growth, Carnovale (2012) devised an alternative approach to describing economic progress. According to his method, developing countries must grow faster than a country symbolizing a growth frontier as an advanced high-income economy to converge in due course. His study used the United States as a proxy for an advanced high-income economy or a growth frontier. Considering the geopolitical differences between Bangladesh and the United States, we have taken Singapore (a country from East Asia) as a proxy for an advanced high-income economy. It took 28 years for Singapore to graduate from the lower-middle income status and another 10 years from the upper-middle income status (Felipe et al., 2017). As one of the few

high-income economies of Asia and a successful evader of MIT, Singapore is a role model for Asian nations that aspire to join the elite league of high-income economies.

According to Carnovale (2012), a country should meet the growth criterion for at least three successive decades to qualify as a sustained, high-growth economy. Hence, the average per capita GNI growth over four decades (1981–1990, 1991–2000, 2001–2010, and 2011–2020) for both Bangladesh and Singapore have been compared to carry out this analysis. The data used for this method were collected from The World Bank (2021a).

3.3. Growth report method

The Growth Report method used by Carnovale (2012) categorizes cases of sustained high-growth economies that have successfully maintained an income growth rate of 7 percent or above over at least 25 years in the post-World War II period. Therefore, the last 47 years (1974–2020) per capita GNI growth data of Bangladesh have been utilized to apply this method and evaluate the country's high-growth sustainability. Due to the unavailability of data, Bangladesh's GNI/capita growth rates before 1974 could not be incorporated into this analysis.

3.4. Growth acceleration method

In a comprehensive study, Hausmann et al. (2005) focused on rapid acceleration in economic growth that has been sustained for at least eight years. The study covered many economies from different income groups and geographical locations and identified more than 80 cases of rapid acceleration since the 1950s. According to their study, an economy should experience at least one period of growth acceleration in order to achieve sustained high growth. Here, a period of growth acceleration is defined as maintaining at least a 2 percent increment in per capita GDP growth relative to a base period for a minimum of 8 successive years. Moreover, the post-acceleration growth rate must be at least 3.5 percent. Data used for this method were collected from World Development Indicators (The World Bank, 2021b) for a period starting from 1971 and ending in 2020 (i.e., 50 years).

4. Data analysis and findings

4.1. Number of years method

The method propounded by Felipe et al. (2012) has been applied to determine whether Bangladesh will fall prey to lower- and upper-middle-income traps. However, before determining whether Bangladesh will be stuck in the trap, we need to understand how The World Bank classifies countries according to their income levels. Therefore, the thresholds set by The World Bank for the classification of countries as of 1 July 2020, are given in the following table:

To find the number of years required for Bangladesh's transition to an upper-middle-income or high-income economy, per capita GNI data of the last 11 years (i.e., 2010–2020) has been utilized (refer to Table 2).

Using the income and output parameters in Table 2, the number of years required for Bangladesh to become an upper-middle-income economy is 7.7853 (or approximately eight years). Since Bangladesh reached the lower-middle-income status five years ago, the total time required to transition into an upper-middle-income economy will be about 13 years (8 years +5 years). Compared to the threshold of 28 years set by Felipe et al. (2012), the results explicitly reveal that Bangladesh will not get stuck in the lower-middle-income trap. However, it will only hold if the nation can sustain a growth rate in per capita GNI at a rate consistent with the GNI/capita growth achieved between 2011 and 2020 (i.e., 9.69 percent). Besides we have also calculated the minimum growth of per capita GNI required for Bangladesh to earn middle-income status within the cut-off period of 28 years. The outcome gained from applying Eqn.4 suggests that if Bangladesh can at least maintain an average growth of 2.53 percent, it will be able to evade the lower-middle-income trap.

Table 1. The World Bank country classification by income level

Threshold	GNI/Capita (Current US$)
Low-Income	Less than 1,036
Lower-Middle-Income	1,036–4,045
Upper-Middle-Income	4,046–12,535
High-Income	12,536 or above

Source: Serajuddin and Hamadeh (2020).

On the other hand, when $12,536 is considered the Minimum GNI (refer to Table 1) to enter the league of high-income economies, Bangladesh will need 20.008 years (or about 20 years). However, this prediction is subject to the nation's capability to sustain the growth of per capita GNI at a pace consistent with the historical average growth rate achieved from 2011–2020. As per the previous calculation, Bangladesh will graduate from a lower-middle-income to an upper-middle-income economy in about eight years, i.e., by 2029. Hence, about 12 years (20 years − 8 years) will be required for the nation's graduation from upper-middle-income to high-income status. All else being constant, the findings suggest that Bangladesh will enter the league of the high-income economy by 2041. Since the time required is less than the threshold period of 14 years, it can be concluded that Bangladesh will also be able to escape the upper-middle-income trap if the nation can maintain an increment in per capita GNI of 9.69 percent, which is the average GNI growth rate between 2011 and 2020.

All these outcomes suggest that Bangladesh is likely to escape both middle-income traps (lower and upper-middle income). However, the formula developed by Felipe et al. (2012) compares threshold values expressed in per capita GNI with GDP for current activity. This inconsistency may not be significant for most developed economies. However, for a developing economy like Bangladesh, it could be a crucial factor as the country receives a large amount of remittance from migrants. Moreover, the denominator in the original formula (Eqn.3) uses a nominal growth rate in per capita income instead of a real growth rate. These nominal values may not adequately reflect the actual growth potential of an economy. Considering these limitations, the study tested the original equation under different scenarios (Table 3) and found contrasting results.

In scenario 2, the time required to transition to the next income strata (upper-middle-income and high-income) is slightly shorter compared to the original scenario (scenario 1). Therefore, using GNI instead of GDP does not significantly impact the initial study findings. However, when the average real growth rate of per capita income is used (scenarios 3 and 4) instead of the nominal growth rate, the time duration increases sharply in both cases. Since Felipe et al. (2012) defined the time thresholds of 28 years (lower-middle-income trap) and 14 years (upper-middle-income trap) under the assumptions of nominal growth rates, the comparison of these thresholds with the results obtained using real growth rates would be inconsistent and create ambiguity regarding Bangladesh's escape from MIT.

4.2. Condition of sustained growth of Bangladesh economy

Although results from the "Number of Years" method propounded by Felipe et al. (2012) indicated an escape of Bangladesh from MIT, this prediction depends on the nation's ability to sustain a growth rate in per capita GNI at a rate that is consistent with the per capita GNI growth achieved between 2011 and 2020. Therefore, it is essential to observe whether the economy of Bangladesh can expectedly grow in the future by identifying its sustained income growth conditions. For this reason, three methods have been used in this study, and the obtained results are discussed below.

4.2.1. Catch-up growth method

This method compares the per capita GNI growth rate between two nations: a developing economy (Bangladesh in this study) and an advanced high-income economy representing the growth

Table 2. Income and output parameters of Bangladesh

Indicators	Year										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GNI per capita, Atlas method (current US$)	800	890	970	1040	1110	1220	1370	1520	1750	1940	2010
Nominal GNI per capita growth rate, Atlas method (current US$) (%)		11.25	8.99	7.22	6.73	9.91	12.30	10.95	15.13	10.86	3.61
Real GNI per capita growth rate, Atlas method (current US$) (%)		3.39	0.82	0.04	1.06	4.04	−15.56	5.90	9.33	7.20	−0.23
GDP per capita (current US$)											1968.79

Source: The World Bank (2021a), The World Bank (2021b) and Authors' Calculation.

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Table 3. Number of years method in different scenarios

Scenarios	[1] Original Equation (Eqn.3)	[2] Using GNI instead of GDP in Eqn.3	[3] Using Real Growth Rate instead of Nominal Growth Rate in Eqn.3	[4] Using both GNI and Real Growth Rate in Eqn.3
Equation Used	$\frac{\ln\left(\frac{Minimum\ GNI(2020)}{GDP(2020)}\right)}{\ln(1+Ave.Gr.)}$	$\frac{\ln\left(\frac{Minimum\ GNI(2020)}{GNI(2020)}\right)}{\ln(1+Ave.Gr.)}$	$\frac{\ln\left(\frac{Minimum\ GNI(2020)}{GDP(2020)}\right)}{\ln(1+Ave.RealGr.)}$	$\frac{\ln\left(\frac{Minimum\ GNI(2020)}{GNI(2020)}\right)}{\ln(1+Ave.RealGr.)}$
Time required to become an upper-middle-income economy	7.7853 years	7.5614 years	45.3974 years	44.0919 years
Time required to become a high-income economy	20.0081 years	19.7842 years	116.6708 years	115.3653 years

Source: Authors' Calculation.

frontier (Singapore in this study). Therefore, the average per capita GNI growth rate during the last four decades has been reported in Table 4.

A comparison of the data presented in Table 4 reveals that Bangladesh's average nominal and real GNI/capita growth rate has exceeded that of Singapore only in the last decade (i.e., 2011–2020). Bangladesh lagged behind Singapore in per capita income growth in all three previous decades. Although the difference was slight during the first decade of the 21st century, it was significant in the last two decades of the 20th century. In 1988, Singapore secured its place among the high-income economies (Felipe et al., 2017), and since then, its pace of income growth has shown a declining trend. A closer observation of the income trends indicates that where Bangladesh stands right now, Singapore was just there three decades before. If Singapore's past indicates Bangladesh's future, the country is likely to experience a fall in income growth.

As Bangladesh has been unsuccessful in maintaining an average income growth above that of Singapore in three out of four decades, it can be concluded that the country has not qualified to have a sustained, high-growth economy according to the method of Carnovale (2012).

4.2.2. Growth report method

According to this method, a country's high-growth sustainability depends on its ability to maintain a 7 percent or higher growth rate in per capita GNI over at least 25 years post-World War II. Hence, Bangladesh's per capita GNI growth rates from 1974 to 2020 (47 years) are depicted in Figure 1.

Table 4. Catch-up growth method of sustained high growth

Decades	Average Nominal GNI/Capita Growth Rate		Average Real GNI/Capita Growth Rate	
	Singapore	Bangladesh	Singapore	Bangladesh
1981–1990	9.32%	3.58%	−0.31%	−6.06%
1991–2000	7.99%	3.30%	2.85%	−1.84%
2001–2010	6.88%	6.23%	1.25%	0.61%
2011–2020	2.13%	9.69%	−5.96%	1.60%

Source: Authors' Calculation.

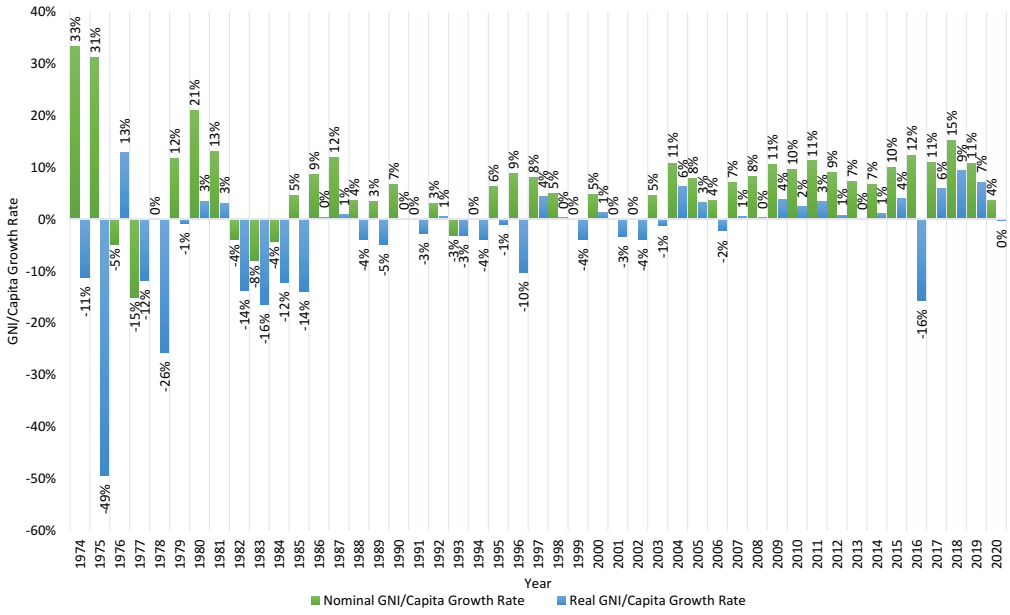

Figure 1. Nominal and real GNI/Capita growth rates of Bangladesh (source: The World Bank, 2021a).

An overview of the data presented in Figure 1 illustrates that Bangladesh's nominal and real GNI/capita growth rates ranged from −15% to 33% and from −49% to 13% respectively. Of the 47 years under observation, Bangladesh experienced negative growth in nominal and real GNI/capita for 6 years and 22 years respectively. However, Bangladesh was able to maintain a 7% or higher growth in nominal and real income 23 times and 3 times respectively during the last 47 years. Therefore, it can be stated that Bangladesh has failed to fulfil the criteria of the Growth Report method. But the finding is incomprehensive as it could not cover the entire post-World War II period and thereby casts doubt on the fact that Bangladesh does not have a strong prospect of sustained growth.

4.2.3. Growth acceleration method

According to the method developed by Hausmann et al. (2005), the economy of a country must experience at least one period of growth acceleration, which is defined as sustaining at least a 2 percent increment in per capita GDP for a minimum of 8 successive years, to achieve sustained high growth. Additionally, the post-acceleration growth rate should be at least 3.5 percent. Therefore, the per capita GDP growth of Bangladesh for the last 50 years has been portrayed in Figure 2.

The data presented in Figure 2 shows that the nominal growth rate of GDP/capita in Bangladesh was quite volatile before 1989, which then became more stable and increased steadily over time. Although Bangladesh experienced a sharp fall in per capita nominal GDP growth just after its liberation in 1971, the growth hardly fell into the negative territory after 1988. Between 2005 and 2012 (i.e., eight consecutive years), the nominal growth rate was above 2 percent. Furthermore, the post-acceleration (from 2013 to 2020) nominal growth rate ranged between 6.1 percent and 14 percent, which is well above the threshold of 3.5 percent. Since the two criteria of this method have been satisfied based on the nominal GDP/capita growth rate, it can be deduced that Bangladesh has a sustained growth prospect. However, this finding shows inconsistency with the results based on the real GDP/capita growth rate.

5. Discussion

Despite the lack of consensus among researchers, the middle-income trap (MIT) is a widespread phenomenon among developing nations. In a study of 186 countries, 48.4 percent were found to be stuck in MIT by at least one definition (The World Bank, 2015b). In 2015, Bangladesh entered

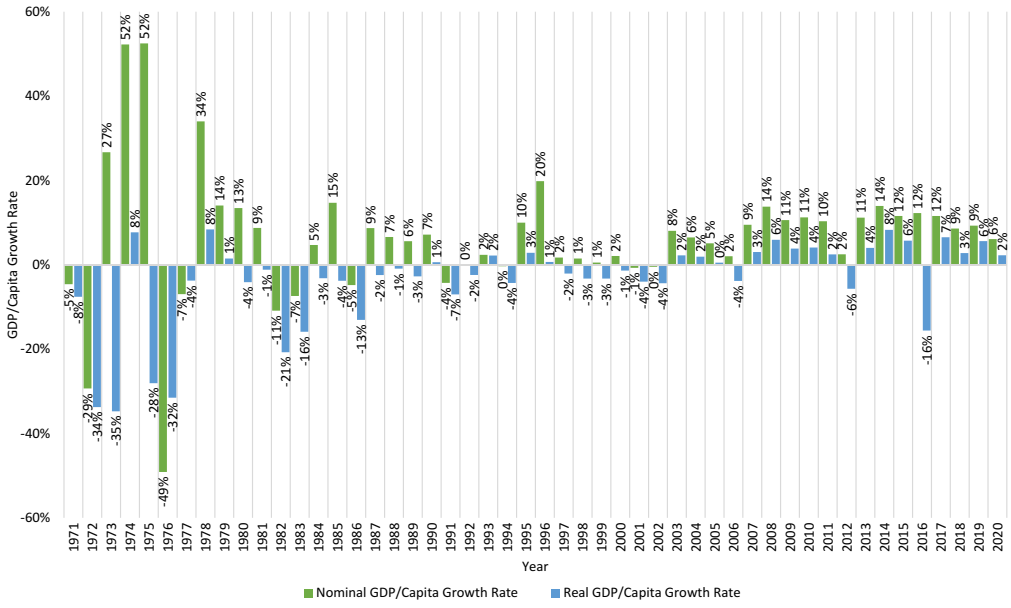

Figure 2. Nominal and real GDP/ Capita growth rates of Bangladesh (source: The World Bank, 2021b).

the middle-income group as a lower-middle-income country (LMIC); therefore, it may also be subject to the same trap. Hence, in this study, we have ventured into answering the research questions of whether Bangladesh will escape the lower-middle-income and upper-middle-income traps using a time threshold method developed by Felipe et al. (2012). Although it is possible to find the number of years required to transition to a higher income group using a different set of variables in Eqn.2, this study employed the identical equation used by Felipe et al. (2012) to ensure consistency and comparability with the cut-off periods proposed in their study.

The study has found that Bangladesh will be able to successfully escape both lower-middle and upper-middle income traps. The results suggest that by the year 2029, Bangladesh will move to the following income strata (i.e., upper-middle income or UMC), which is significantly earlier than the cut-off period of 28 years for a country's graduation specified in the Number of Years method by Felipe et al. (2012). This finding resembles that of Akanda (2022).

Regarding Bangladesh's graduation to a high-income economy, the study has found that the nation will take another 12 years to earn this status and become a high-income economy by 2041 which is, however, inconsistent with the findings of Akanda (2022). It is interesting to note that our findings also resemble the "Vision 2041" of the Government of Bangladesh (GoB), which sets a target of becoming a high-income country (HIC) within the same time frame. However, all these predictions are based on the assumption that Bangladesh will be able to sustain the same growth rate in GNI/capita that it has averaged in the last 10 years (i.e., 9.69%).

Nevertheless, the past may not always be an excellent guide to the future. With the increment in income level, maintaining an average growth rate of 9.69 percent is a daunting task. Contingencies like natural calamities, the spread of contagious diseases like COVID-19, economic depression, political unrest, war, and a vast array of other factors can impede the development cycle. Besides, as a country achieves middle-income status, it becomes difficult to compete with low-income nations in manufactured exports because of their cheap labor and with high-income nations in high-skill innovations because of their technological advancements (Kohli et al., 2011). As a result, the shift of a country from resource-driven growth to productivity-driven growth turns out to be a lengthy as well as a challenging process. Besides, the factors leading to growth at low-income levels differ from those at high-income levels (Bulman et al., 2017). If countries face difficulty transitioning from growth strategies that work

at low-income levels to strategies that are effective at high-income levels, they may become stagnant in a specific middle-income phase. The findings of Bulman et al. (2017) also indicate that the escapees of MIT have improved macroeconomic management, low inflation, higher income equality, rapid industrialization, and strong export orientation.

Therefore, the study also applied three methods (Catch-up Growth, Growth Report, and Growth Acceleration Method) to evaluate the growth sustainability of Bangladesh. The results obtained from Catch-up Growth Method and Growth Report Method indicate that Bangladesh is likely to become unsuccessful in sustaining high growth in its per capita nominal and real GNI. Meanwhile, we have to accept the outcome of the Growth Report Method with a grain of salt as the study could not cover the entire post-World War II period. However, although the third method (Growth Acceleration Method) suggests based on the nominal GDP/capita growth rate that the economy will be successful in sustaining the growth achieved in the past decade, it paints a contrasting picture while using real GDP/capita growth rate. These contradictory outcomes cast doubt on the likelihood of Bangladesh's escape from the trap.

These findings, thus, emphasize the need to identify drivers that ensure the sustainability of income growth. While Islam (2016) found that foreign aid positively affects the GDP growth of Bangladesh, Traverso (2016) has identified four factors (a rise in agricultural production, a decrease in fertility rate, an increase in remittances, and the development of the garments industry) contributing to the economic growth of Bangladesh over 1974–2011. On the other hand, Rahman and Bari (2016) highlighted better governance, impactful institutional policies, strong application of law, accountability and transparency, and decentralization of the economy for the smooth transition to the next income levels.

The findings from this research will be significant for both economists and policymakers. The results will motivate them to be more alert about the sustainability of income growth. This study's results will inspire economists to conduct further research on identifying more critical variables to ensure such sustainability. Additionally, the findings of this research can assist policymakers in formulating more timely policies and keeping better track of the project timelines to avoid the trap.

Bangladesh's path to escaping MIT requires adapting robust and strategic policies internationally and domestically. The economic growth of Bangladesh has been fuelled mostly by the RMG sector, which is likely to face some setbacks due to the loss of preferential trade benefits once the country graduates from the LDC category in 2026. Therefore, policymakers need to promote trade liberalization, participate in more Free Trade Agreements (FTAs), attract more Foreign Direct Investments (FDI), integrate into Global Value Chains (GVCs), and seek international financial support. On the domestic front, Bangladesh needs to invest substantially in infrastructure, prioritizing the development of human capital through quality education, diversifying the economy beyond the RMG sector, and supporting Micro, Small, and Medium-sized Enterprises (MSMEs) through favourable policies and access to credit.

6. Conclusion

This study examines the potential for Bangladesh to escape the middle-income trap and achieve higher income levels. Using a time threshold method, the study predicts that Bangladesh will escape the lower-middle-income trap by 2029 and take another 12 years to become a high-income economy by 2041 with a condition of maintaining a 9.69% growth in GNI/capita. These findings align with the government's vision of achieving high-income status. However, the study acknowledges the uncertainties and risks involved in sustaining a high growth rate, such as natural disasters, disease outbreaks, economic downturns, and political instability. Transitioning from resource-driven to productivity-driven growth is also a complex process, and factors contributing to growth at low-income levels may not be effective at high-income levels. The study, therefore, applies different evaluation methods to assess the sustainability of Bangladesh's income growth. While the Growth Acceleration Method suggests success, the Catch-up Growth and Growth Report methods raise doubts.

These contradictory outcomes question the likelihood of Bangladesh's escape from the middle-income trap, calling for an emphasis on the factors that will ensure the sustainability of the country's income growth.

6.1. Limitations and scope for future research

The findings of this study could be the outset to understanding the economic progress of Bangladesh and its likelihood of successfully evading both the lower-middle-income and upper-middle-income traps. The concept of MIT is still at a nascent stage and lacks agreement among researchers regarding a collective definition. Although this study applied a few quantitative methods for investigating the research question, future studies can include more methods focusing on nonempirical interpretations, fixed income levels, relative income levels, and indices to enhance the robustness of the study.

Besides, most of these methods are quantitative in nature and rely on past data, which may not always be a good guide to the future. Therefore, future research can also investigate the matter using qualitative approaches. As national policymakers and field experts have significant involvement and knowledge of the prospect of an economy, researchers can also conduct interviews to get their first-hand opinions on the subject matter.

Moreover, some of the methods applied in this study suggested using income and output data from the post-World War II period, which was not possible for Bangladesh as the nation became independent on December 16, 1971. Therefore, the study constrained its focus to the economic data available after Bangladesh's liberation. Furthermore, the economic data used for this study covered the period until June 2020, which is less than three months after the first coronavirus case was recorded in Bangladesh. Hence, the impact of the COVID-19 pandemic on Bangladesh's graduation to higher-income strata could not be adequately captured in this research, which can be an interesting subject for future researchers.

In addition to the above-mentioned, this study restrained its focus only on Bangladesh; hence, future researchers can apply this study to multiple nations and conduct a cross-country analysis. Furthermore, the study used quantitative methods developed by multifarious international researchers. As a result, these methods might not properly reflect the economic prospects and unique features of Bangladesh, which may weaken the findings of this research. To address this issue, further research can also work on developing a method that adequately incorporates the unique strengths and weaknesses of a developing country like Bangladesh.

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Correction
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