Chapter 7

The Relationship Between Current Account Balance and Economic Growth: The Case of MINT Countries[1]

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Abstract

This study examines the relationship between the current account balance and economic growth in MINT countries—Mexico, Indonesia, Nigeria, and Türkiye—using annual panel data for the period 1981–2019. Panel unit root tests indicate that the variables are stationary, allowing for long-run analysis. The existence of a long-run equilibrium relationship is tested using Pedroni, Kao, and Johansen–Fisher panel cointegration methods. Long-run coefficients are estimated through the Fully Modified Ordinary Least Squares (FMOLS) approach, while the direction of causality is analyzed using the Dumitrescu–Hurlin panel causality test. The findings reveal a significant long-run cointegration relationship between economic growth and the current account balance. FMOLS results show that economic growth positively affects the current account balance in the long run, and causality runs unidirectionally from growth to the current account. These results highlight the importance of considering external balance constraints in designing sustainable growth policies for emerging market economies.

Introduction

Globalization, financial liberalization, and the rise in capital mobility have

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made the relationship between countries' growth performance and external balance dynamics more visible. As the current account balance reflects an economy's savings–investment balance and dependence on external financing, the direction and strength of the relationship between the current account and economic growth are of critical importance for sustainable growth. The empirical literature shows that this relationship varies across country groups, time periods, and methodological approaches; therefore, no single, universal conclusion has been reached (Bagnai & Manzocchi, 1998; Chinn & Prasad, 2003; Hepaktan & Çınar, 2012; Çalışkan & Şahin, 2021).

A significant portion of studies on Türkiye reveal a strong relationship between economic growth and current account deficits, which mostly runs from growth to deficit (Erbaykal, 2007; Avcı, 2015; Özkaya & Cinel, 2020; Korkmaz & Yılmaz 2024'den sonra ; Özcan & Özçelik 2024). The import-dependent production structure and the growth model based on domestic demand expansion cause the current account deficit to widen during growth periods, suggesting that the "growth-led current account deficit" hypothesis is valid in the Turkish context. Conversely, some studies have identified a bidirectional or time-varying relationship, emphasizing that the current account–growth linkage is sensitive to the economic cycle and exhibits an asymmetric structure.

In the context of emerging market economies, this debate gained momentum with Jim O'Neill's 2001 work *"Building Better Global Economic BRICs,"* in which Brazil, Russia, India, and China (BRIC) were defined as the new driving forces of global growth (O'Neill, 2001). However, the slowdown in the growth performance of BRICS countries after 2010 increased interest in new emerging economy groups. The MINT group—comprising Mexico, Indonesia, Nigeria, and Türkiye—introduced by O'Neill in 2013, has attracted attention due to its young and growing populations, strategic geographic positions, and production and raw material potentials. According to World Bank data, during the period 2013–2019, the MINT countries experienced continuous population growth but displayed heterogeneity in terms of growth, inflation, unemployment, and current account indicators (World Bank, 2020).

This study aims to contribute to the literature by examining the relationship between the current account balance and economic growth in MINT countries for the period 1981–2019 using a panel data approach. The current account is defined as the ratio of the current account balance to GDP, while economic growth is measured as the annual real growth rate of GDP, thereby allowing the indicators to be compared within a consistent

framework (World Bank, 2020). The use of panel data increases estimation power by simultaneously considering both time-series and cross-sectional dimensions and enables control for country-specific heterogeneity (Baltagi, 2005; Yerdelen Tatoğlu, 2013).

Methodologically, the study first applies panel unit root tests proposed by Levin, Lin, and Chu (2002), Breitung (2000), Im, Pesaran, and Shin (2003), and Maddala and Wu (1999). Then, the long-run relationship is investigated through panel cointegration tests developed by Pedroni (1999, 2004), Kao (1999), and the Johansen–Fisher panel cointegration test. The long-run coefficients are estimated using the Fully Modified Ordinary Least Squares (FMOLS) method (Phillips & Hansen, 1990; Pedroni, 2000), while the causal relationship is tested through the Dumitrescu and Hurlin (2012) panel causality test.

The findings indicate the existence of a long-run cointegration relationship between GDP and the current account balance in MINT countries. Economic growth positively affects the current account balance in the long term, and there exists a unidirectional causality running from growth to the current account. These results highlight the necessity of considering the external balance constraint in designing growth policies for emerging market economies.

1. Historical Development of MINT Countries

In the 2000s, Brazil, Russia, India, and China emerged as prominent rising economies. These countries were first grouped together as BRIC by Jim O'Neill, the chief economist of Goldman Sachs, in 2001. In his influential report titled "Building Better Global Economic BRICs," O'Neill emphasized that the global economy required such dynamic countries for sustained growth (Goldman Sachs, 2001; Haibin, 2012). The BRIC countries held their first summit in Russia in 2009, and with the inclusion of South Africa in 2011, the group became known as BRICS (ATAUM, 2011). However, following 2010, the slowdown in BRICS countries' growth performance led to the emergence of new discussions around other rising markets.

At the end of 2013, O'Neill proposed the acronym MINT to describe Mexico, Indonesia, Nigeria, and Türkiye — countries he considered to be the future engines of the global economy (O'Neill, 2013; Akın, 2018; Aydın & Bashimov, 2018; Financial Times, 2013). The common features of the MINT countries include young and growing populations, strategic geographic locations, and strong production and raw material potentials

(BBC, 2014; Tıraşoğlu, 2018; Çakmak & Salar, 2019). Mexico's proximity to the United States, Indonesia's closeness to China, Nigeria's position as one of Africa's key economic hubs, and Türkiye's location near the European Union make these countries prominent actors at both regional and global levels (Şenel Uzunkaya, 2019; Hayaloğlu, 2015).

In 2013, based on nominal GDP rankings, Mexico was the 14th largest economy, Indonesia 16th, Türkiye 17th, and Nigeria 37th in the world. Additionally, all but Nigeria recorded budget surpluses, reinforcing the rationale for the MINT classification (Yılmaz, 2015). Mexico's petroleum investments, Nigeria's agricultural development efforts, Indonesia's industrial strengthening alongside raw material exports, and Türkiye's export-oriented growth and efforts to reduce the current account deficit positioned these countries firmly as emerging market economies (Yılmaz, 2015; Şenel Uzunkaya, 2019). The inability of BRICS economies to sustain their earlier success after 2010, coupled with the youthful demographics and strategic locations of these four nations, provided fertile ground for recognizing MINT countries as a new group of emerging economies (Şenel Uzunkaya, 2019; Hayaloğlu, 2015).

## 1.1. Demographic and Economic Indicators of MINT Countries

The MINT countries—comprising Mexico, Indonesia, Nigeria, and Türkiye—hold a significant place in the literature as a group of nations characterized by large and youthful populations alongside emerging economic potential. This section presents a comparative analysis of the demographic dynamics, economic growth trends, price stability, labor market indicators, and external balance performance of the MINT countries for the period 2013–2019. All data have been obtained from the World Bank database.

Figure 1. Population Change in MINT Countries (2013–2019)
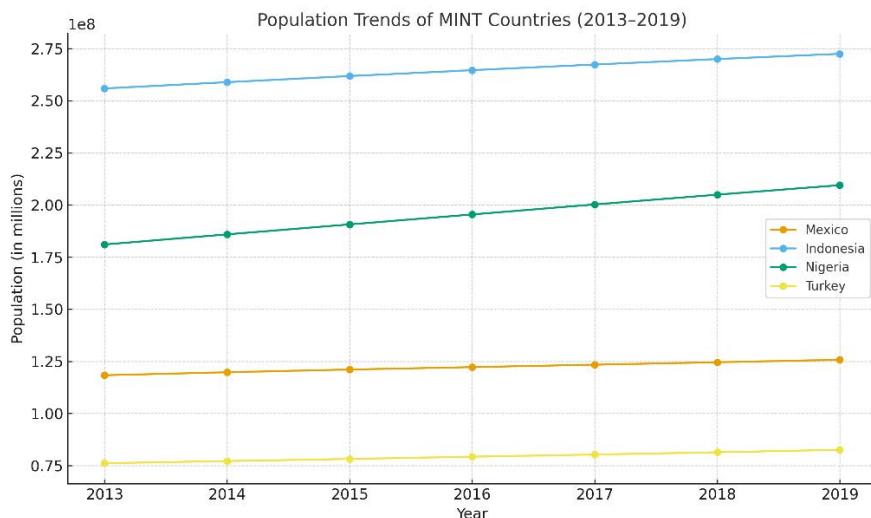
**Source:** Created by the authors based on World Bank data.

As shown in Figure 1, the MINT countries experienced a continuously increasing population structure between 2013 and 2019. Indonesia and Nigeria are the two countries with the highest population levels within the group. Nigeria's population is considered not only one of the fastest-growing during the observed period but also one of the most rapidly expanding populations globally in the coming decades. Türkiye and Mexico, on the other hand, exhibit slower but stable population growth. Overall, the demographic structure of the MINT countries provides a favorable advantage for economic growth by ensuring a high labor supply and a large domestic market potential.

Figure 2. GDP Trend in MINT Countries (2013–2019)
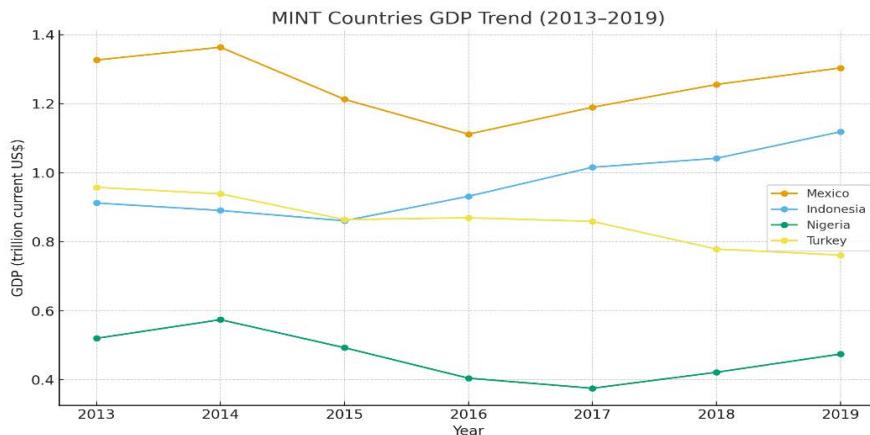
Source: Created by the authors based on World Bank data.

Figure 2 reveals notable differences in the economic growth performance of MINT countries. While Türkiye and Mexico display relatively stable GDP values, Nigeria experienced a sharp contraction after 2014, largely associated with declining oil prices and structural vulnerabilities. Indonesia, by contrast, maintained the most stable growth profile throughout the period and exhibited a clear upward trend after 2016. This improvement reflects the success of the country's domestic demand–oriented growth strategy and the gradual enhancement of its investment environment.

Figure 3. Inflation Rates in MINT Countries (2013–2019)
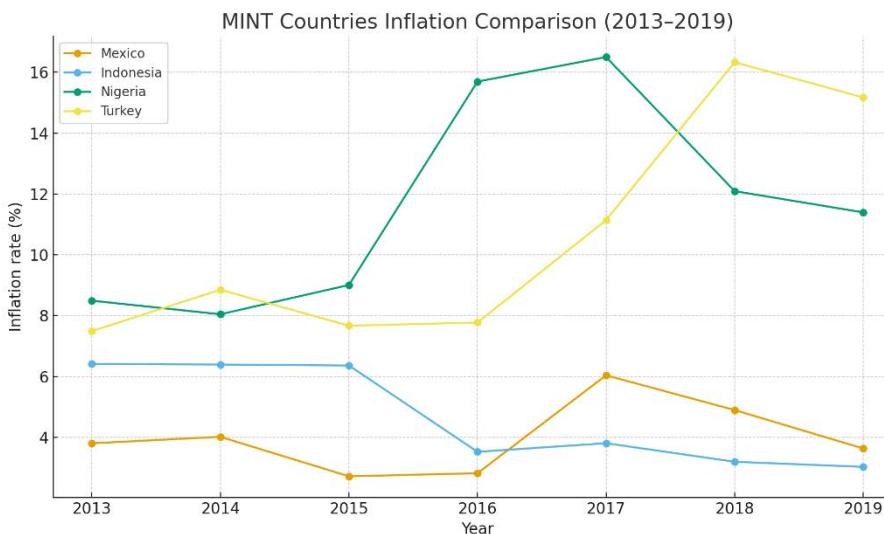
Source: Created by the authors based on World Bank data.

As illustrated in Figure 3, the inflation series reveal that the MINT countries exhibit markedly different structures in terms of price stability. Nigeria recorded the highest and most volatile inflation rates throughout the period. In particular, the sharp rise of inflation to double-digit levels after 2016 was associated with currency depreciation, supply-side shocks, and security-related disruptions. In Türkiye, inflation also increased rapidly after 2017, reaching levels comparable to Nigeria's during 2018–2019. In contrast, inflation rates in Mexico and Indonesia remained relatively moderate, presenting a more balanced outlook in terms of long-term price stability.

Figure 4. Unemployment Rates in MINT Countries (2013–2019)
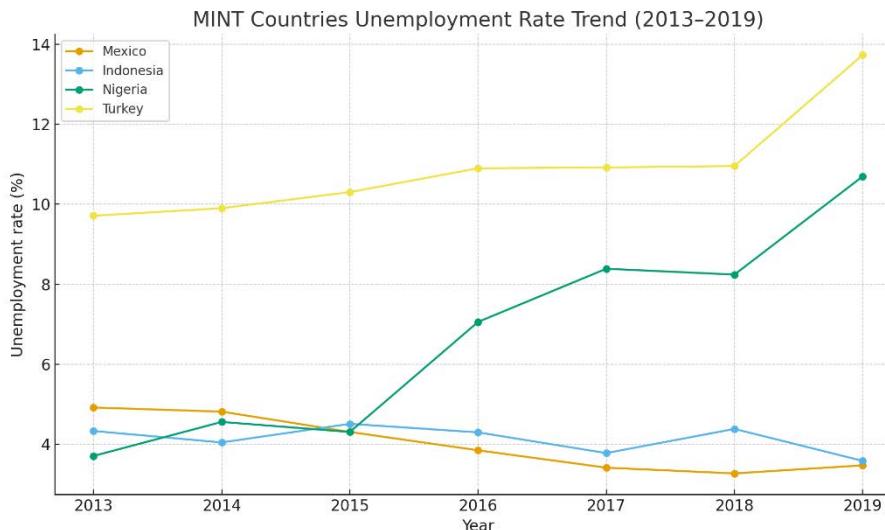
Source: Created by the authors based on World Bank data.

Figure 4 shows that unemployment rates vary significantly across MINT countries. Türkiye had the highest unemployment rate at the end of the observed period, which can be attributed to rising labor force participation and the reflection of growth fluctuations in the labor market (World Bank, 2024d). In Nigeria, unemployment rates increased sharply after 2016. In contrast, Indonesia and Mexico maintained relatively lower and more stable unemployment levels. The greater flexibility of their labor markets can be considered one of the main factors underlying this stability.

Figure 5. Comparison of Current Account Balances
(% of GDP) in MINT Countries (2013–2019)
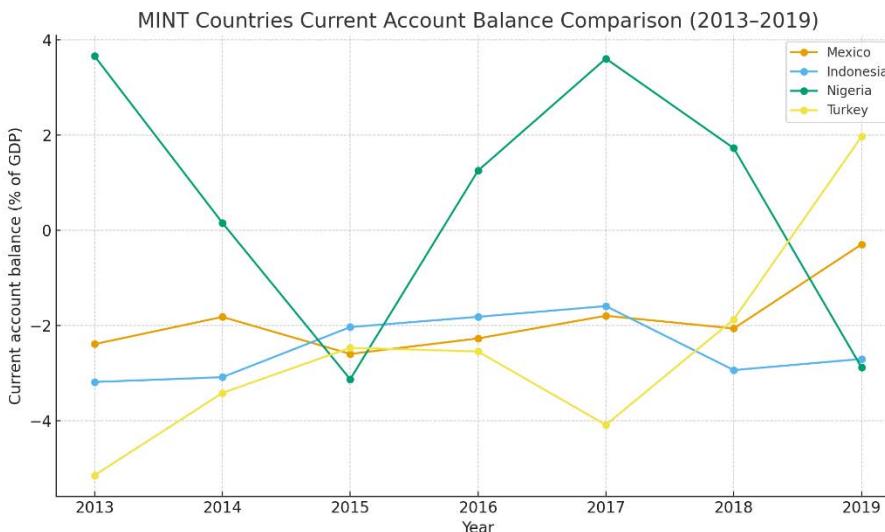
Source: Created by the authors based on World Bank data.

The external balance performances of the MINT countries are presented comparatively in Figure 5. Türkiye's current account balance shows significant fluctuations, with a strong surplus recorded in 2019. This surplus is mainly associated with demand contraction and a sharp decline in imports. Mexico and Indonesia, on the other hand, generally stand out as countries running persistent current account deficits, primarily due to their import-dependent production structures. Nigeria's current account balance is largely influenced by oil prices; therefore, fluctuations in global energy prices directly affect the country's external balance.

Overall, despite their demographic advantages, the MINT countries do not constitute a homogeneous group in terms of economic indicators. Indonesia demonstrates relatively stable growth and price balance, whereas Nigeria exhibits the most volatile economic performance due to structural fragilities. In Türkiye, particularly after 2017, noticeable deteriorations have been observed in both inflation and unemployment. Mexico, in contrast, differentiates itself from the others with its relatively stable yet moderate growth performance.

These differences indicate that MINT countries require distinct economic policy strategies tailored to their structural characteristics. Although

demographic size represents a common advantage, the sustainability of macroeconomic stability varies considerably across these economies.

2. Literature Review: The Relationship Between Current Account Balance and Economic Growth

When examining the direction and magnitude of the interaction between foreign trade and growth, focusing solely on exports within the concept of foreign trade may lead to vastly different and misleading conclusions. This narrow approach may create the illusion of observing certain causality relationships that, in fact, do not exist or cannot be empirically observed. In other words, analyses that consider only exports while ignoring imports produce biased and incomplete results. Therefore, analyzing the relationships of both exports and imports with economic growth together allows for more realistic and reliable findings (Korkmaz & Aydın, 2015, p. 48).

The dynamic relationship between the trade balance—particularly the current account balance (or deficit)—and economic growth is one of the most frequently examined topics in international economics and macroeconomics literature. This relationship is empirically tested through different hypotheses such as *Export-Led Growth (ELG)*—where exports stimulate economic growth—and *Growth-Led Current Account Deficit (GLCAD)*—where economic growth increases domestic demand, leading to a current account deficit. Empirical findings vary substantially depending on the econometric methods applied, the period covered, and the countries or country groups analyzed. This heterogeneity arises from the complexity of the relationship itself and the influence of external shocks such as global crises, pandemics, and energy price fluctuations.

The relationship between the current account balance and economic growth remains one of the most debated issues in international macroeconomic literature. Due to structural differences among countries, varying levels of financial integration, and methodological diversity, the literature has not reached a consensus on a single, universal conclusion. The following tables summarize key studies on this subject in terms of their scope, country groups, and main findings.

Table 1. Studies Examining the Relationship Between Current Account Balance and Economic Growth in Türkiye			
Author(s)	**Period Covered**	**Country/ Region**	**Main Finding / Relationship**
Şahin (2004)	2000–2004	Türkiye	Increase in trade efficiency is positively related to economic growth.
Karabulut & Çelikel Danışoğlu (2006)	1991–2001	EU-15; Türkiye	Positive relationship between current account deficit and growth in the EU; no significant relationship in Türkiye.
Erbaykal (2007)	1987–2006	Türkiye	Demand growth driven by economic expansion positively affects the current account deficit.
Peker & Hotunluoğlu (2009)	1992–2007	Türkiye	The effect of current account deficit on growth is weak.
Telatar & Terzi (2009)	1991–2005	Türkiye	Growth negatively affects current account balance; no reverse causality detected.
Erdil Şahin (2011)	2001–2011	Türkiye	The current account deficit emerges as a result of domestic demand expansion driven by growth.
Yediparmak (2014)	2003–2012	Türkiye	Increase in economic growth leads to a rise in current account deficit.
Avcı (2015)	1998–2014	Türkiye	Unidirectional causality from growth to current account deficit.
Ayvaz Güven (2016)	1980–2015	Türkiye and Brazil	Bidirectional relationship between growth and current account deficit.
Bağırtan (2018)	1991–2018	Türkiye	Policies that reduce the current account deficit have a positive effect on economic growth.
Bakaç (2019)	1984–2017	Türkiye	Economic growth has a current-account-widening effect.

Cesur & İrez (2019)	1990–2017	Türkiye	Bidirectional causality between growth and current account deficit; growth negatively affects the current account.
Türkoğlu & Konaç (2020)	1984–2016	Türkiye	Increasing current account deficits positively affect economic growth.
Özkaya & Cinel (2020)	2006–2019	Türkiye	Growth expansion increases the current account deficit.
Güngör vd. (2022)	1990–2021	Türkiye	Bidirectional causality running from growth to current account deficit.
Oğuz & Erdoğan (2023)	2000–2021	Türkiye	Bidirectional and time-varying relationship between current account deficit and economic growth.

Source: Compiled by the authors from various empirical studies on Türkiye.

The studies summarized in Table 1 focus primarily on the Turkish economy and generally indicate a strong and predominantly unidirectional relationship between economic growth and current account deficit. Most of the literature reveals that in Türkiye, economic growth tends to widen the current account deficit due to the country's dependence on imports (Erbaykal, 2007; Avcı, 2015; Özkaya & Cinel, 2020; Korkmaz & Yılmaz, 2024). This situation is closely related to the production structure's reliance on imported intermediate goods and the expansion of domestic demand during growth periods, which leads to a widening trade deficit.

Some studies, however, identify a bidirectional relationship. For instance, Ayvaz and Güven (2016), Güngör et al. (2022), and Oğuz and Erdoğan (2023) show that the relationship between the current account deficit and economic growth may change direction over time and is sensitive to the economic cycle. This finding reflects Türkiye's high vulnerability to external financing conditions and global liquidity fluctuations.

On the other hand, several researchers, such as Telatar and Terzi (2009), find that growth has a negative effect on the current account balance but that there is no significant feedback from the current account to growth. This result supports the argument that the current account deficit in Türkiye primarily stems from trade and demand dynamics driven by growth. Overall, the Turkish literature provides strong empirical support for the "growth-led current account deficit" hypothesis.

Author(s)	Period Covered	Country/ Region	Main Finding / Relationship
Table 2. Studies Examining the Relationship Between Current Account Balance and Economic Growth in Other Countries			
Bagnai & Manzocchi (1998)	1965–1994	49 Countries	Negative relationship between current account deficit and economic growth.
Chinn & Prasad (2000)	1971–1995	18 developed, 71 developing countries	Weak relationship between current account balance and growth.
Kandil & Greene (2002)	1960–2000	United States	Long-term negative relationship between current account balance and growth.
Bussiere, Fratzscher & Müller (2004)	1980–2002; 1995–2002	12 EU-related countries; 21 OECD countries	Weak relationship between current account balance and economic growth.
Winters, McCulloch & McKay (2004)	-	Various countries	Positive relationship between foreign trade and growth.
Malik vd. (2010)	1972–2007	Pakistan	Positive relationship between the tourism sector and economic growth.
Hepaktan & Çınar (2012)	1975–2008	27 OECD countries	In the long run, economic growth leads to a decline in the current account balance.
Erataş & Başcı Nur (2013)	1990–2010	10 emerging market economies	Bidirectional relationship between current account balance and growth.
Songur & Yaman (2013)	1981–2010	10 developing countries	Bidirectional relationship between current account balance and growth.
Oğuz (2018)	1994–2017	BRICS countries	No statistically significant relationship between current account balance and growth.

Balmumcu & Bozkurt (2020)	1980–2016	22 developing countries	Current account deficit and economic growth move together.
Aydın vd. (2021)	2000–2019	G7 countries	Current account balance has an asymmetric and weak effect on growth.
Çalışkan & Şahin (2021)	2005–2020	10 developing countries	Trade deficit negatively affects growth in the medium and long term.
Kouamé & Egbendewe (2022)	2000–2020	Sub-Saharan African (SSA) countries	Sustainability of the current account deficit positively influences growth.
Korkmaz & Yılmaz (2024)	2010–2022	Selected emerging markets	Unidirectional effect from growth to current account deficit (growth-led CA hypothesis).

Source: Compiled by the authors from international empirical studies.

The studies presented in Table 2 were conducted across various country groups and indicate a heterogeneous relationship between current account balance and economic growth. Some studies suggest that current account deficits constrain growth (Bagnai & Manzocchi, 1998; Hepaktan & Çınar, 2012; Çalışkan & Şahin, 2021), while others argue that deficits can stimulate growth by encouraging capital inflows (Türkoğlu & Konaç, 2020; Kouamé & Egbendewe, 2022).

Research focusing on developed countries generally finds weaker or statistically insignificant relationships. For example, Chinn & Prasad (2000), in their analysis covering 89 countries, found that fluctuations in the current account balance have a very limited effect on growth. Similarly, Oğuz (2018) found no significant relationship in BRICS economies, a result that may stem from the substantial structural differences among these countries.

In emerging market economies, however, the relationship tends to be bidirectional or asymmetric (Songur & Yaman, 2013; Kouamé & Egbendewe, 2022). This pattern indicates that in economies with high sensitivity to capital flows, current account balance and growth are mutually interactive and dynamically linked variables.

The main reasons for the differences observed in the literature include import dependency of the production structure, degree of financial openness,

sensitivity to global shocks, external borrowing capacity, and exchange rate regime, among other macroeconomic factors.

The MINT countries—characterized by high growth potential, domestic demand-driven expansion, strong dependence on foreign capital, and rapidly increasing financial integration—represent a unique case within the emerging markets. Therefore, examining the current account–growth nexus specifically for MINT economies contributes to reassessing the contradictory findings in the literature in light of the structural features of emerging market economies.

3. Econometric Methodology and Summary of Empirical Findings

This study investigates the relationship between current account balance and economic growth in MINT countries—Mexico, Indonesia, Nigeria, and Türkiye—using annual data for the period 1981–2019 and employing panel data analysis. The current account variable is defined as the percentage change in the ratio of the current account balance to GDP, while the economic growth variable is defined as the percentage change in GDP. Hence, both growth performance and external balance dynamics are analyzed through relative and comparable ratios (World Bank, 2020).

Given that the MINT panel includes a small cross-section dimension (N = 4) but a long time dimension (T = 39), panel data methods that jointly evaluate both cross-sectional and time-series dimensions are considered appropriate. The use of panel data not only increases the number of observations, thereby improving estimation efficiency, but also allows control for unobserved country-specific heterogeneity (Baltagi, 2005; Güriş, 2015; Yerdelen Tatoğlu, 2013).

For this reason, the panel data framework was adopted as the core analytical approach, and all estimations were carried out using EViews 9 econometric software.

The general panel model is specified as follows:

$$CD_{it} = \alpha_i + \beta GSYH_{it} + \mu_{it} \quad i=1,...,N; \ t=1,...,T$$

Here:

- ✓ CD_{it} : Represents the current account balance indicator.
- ✓ $GSYH_{it}$: Represents the economic growth indicator.
- ✓ α_i : Denotes country-specific fixed effects.
- ✓ β: Refers to the long-run coefficient.

✓ μ_{it} : Denotes the error term.

The model covers the period 1981–2019 for the MINT countries (Mexico, Indonesia, Nigeria, and Türkiye).

3.1. Panel Unit Root Tests

In panel data analyses, stationarity is a prerequisite for the reliable testing of cointegration relationships. Including non-stationary series in the model may lead to the spurious regression problem (Granger & Newbold, 1974; Çifçi, et al., 2018a; Adam, 2024); therefore, it is essential to correctly determine the order of integration of the variables. Accordingly, in this study, panel unit root analyses were conducted using the tests developed by Levin, Lin, and Chu (2002), Breitung (2000), Im, Pesaran, and Shin (2003), and the Fisher-type ADF and PP tests proposed by Maddala and Wu (1999). All tests were implemented using the EViews 9 econometric software package.

3.1.1. Panel Unit Root Test Results at Level (I(0))

The results of the panel unit root tests performed at level values are presented in Table 3. The test statistics and probability values obtained under both constant and constant–trend model specifications indicate that both the current account balance and GDP series are stationary at level. Specifically, the probability values in the Levin–Lin–Chu (LLC) and Im–Pesaran–Shin (IPS) tests are found to be below the 0.05 significance level, implying the rejection of the null hypothesis of a common unit root across the panel.

These results are consistent with the relevant literature. The LLC test assumes a common autoregressive parameter among the series (Levin et al., 2002), whereas the IPS test allows for heterogeneous unit root processes across cross-sections (Im et al., 2003). The consistency of both approaches in favor of stationarity enhances the methodological robustness and reliability of the findings obtained in this study.

Table 3. Panel Unit Root Test Results at Level (I(0))				
Panel Unit Root Tests	**Constant**		**Constant and Trend**	
	Current Account Balance (CD)			
	Test Statistic I(0)	**p-value I(0)**	**Test Statistic I(0)**	**p-value I(0)**
Levin, Lin & Chu	-2.62342	0.0044	-1.90310	0.0285
Breitung			-1.85432	0.0318
Im, Pesaran & Shin	-3.13266	0.0009	-1.90932	0.0281
Fisher ADF	24.0838	0.0022	15.9866	0.0426
Fisher PP	24.3028	0.0020	16.6274	0.0342
	Gross Domestic Product (GDP)			
Levin, Lin & Chu	-8.41297	0.0000	-7.93619	0.0000
Breitung			-3.82393	0.0001
Im, Pesaran & Shin	-9.05809	0.0000	-7.95462	0.0000
Fisher ADF	79.5880	0.0000	63.3930	0.0000
Fisher PP	80.4068	0.0000	64.2414	0.0000

According to Table 3, all test statistics reject the null hypothesis of a unit root at the 5% significance level. Both the current account balance and GDP series are stationary at level under constant and constant–trend specifications. The significance of the LLC, IPS, Fisher-ADF, and Fisher-PP tests confirms that the series are integrated of order zero, I(0), indicating that the data are suitable for further long-run (cointegration) analysis.

3.1.2. Panel Unit Root Test Results at First Difference (I(1))

The test results for the first-differenced series are presented in Table 4. Accordingly, all test statistics are found to be significant, confirming that the variables are stationary at their first differences. This indicates that both at level (I(0)) and at first difference (I(1)), stationarity is achieved, suggesting

that the panel dataset is suitable for cointegration analysis.

Moreover, the Fisher-type ADF and PP tests, which combine individual unit root statistics from each cross-section, produce robust results, particularly in heterogeneous panels, thereby supporting the findings of this study (Maddala & Wu, 1999).

Consequently, it is evident that the series exhibit no stationarity problems, meaning that the risk of spurious regression is eliminated and that proceeding to cointegration testing is methodologically appropriate.

Panel Unit Root Tests	Constant		Constant and Trend	
	Current Account Balance (ΔCD)			
	Test Statistic I(1)	p-value I(1)	Test Statistic I(1)	p-value I(1)
Levin, Lin & Chu	-9.20243	0.0000	-8.06674	0.0000
Breitung			-3.87826	0.0001
Im, Pesaran & Shin	-10.7925	0.0000	-9.96738	0.0000
Fisher ADF	97.1163	0.0000	82.0162	0.0000
Fisher PP	121.077	0.0000	171.792	0.0000
	Gross Domestic Product (ΔGDP)			
Levin, Lin & Chu	-19.1370	0.0000	-18.0311	0.0000
Breitung			-9.18114	0.0000
Im, Pesaran & Shin	-18.3936	0.0000	-18.1518	0.0000
Fisher ADF	153.481	0.0000	217.847	0.0000
Fisher PP	95.7043	0.0000	919.227	0.0000

Table 4. Panel Unit Root Test Results at First Difference (I(1))

Note: I(0) denotes the test statistics of the series at their level values, whereas I(1) represents the test statistics of the series at their first differences.

According to Table 4, all unit root tests reject the null hypothesis of non-stationarity at the 1% significance level. Both the current account balance and GDP series are confirmed to be stationary at their first differences, I(1). These results indicate that the data meet the requirements for performing panel cointegration tests in the subsequent stages of the analysis.

3.2. Cointegration Analyses

Based on the results obtained from the panel unit root tests, a panel cointegration analysis was conducted to determine whether a long-run relationship exists between the current account balance and economic growth. Two complementary testing approaches were employed in this study:

✓ **Pedroni (1999; 2004) Panel Cointegration Test**

✓ **Kao (1999) Panel Cointegration Test**

The Pedroni test provides both *within-group* and *between-group* statistics, allowing for heterogeneity in the parameters across cross-sections. This feature makes it a widely preferred method in studies involving large and diverse country panels. In contrast, the Kao (1999) test adapts the Engle–Granger residual-based approach to a panel framework and assumes a common cointegrating vector for all cross-sections. Using both tests together enhances the methodological robustness of the analysis and allows for a consistency check of the results.

In this analysis, the fact that both tests support the existence of a long-term cointegration relationship indicates that the current account balance and economic growth move together in the long run and maintain a stable economic relationship. This finding is consistent with prior empirical studies on developing countries (e.g., Holmes, Otero, & Panagiotidis, 2011). Additionally, to further validate the robustness of the results, the Johansen–Fisher Panel Cointegration Test was also applied and evaluated.

Table 5. Results of Panel Cointegration Tests				
Pedroni Panel Cointegration Test Results				
	Statistic Value	**p-value**	**Weighted Statistic**	**p-value**
(Within-Dimension)				
Panel v	0.714229	0.2375	-0.258285	0.6019
Panel rho	-7.044419	0.0000	-8.029015	0.0000
Panel PP	-7.474540	0.0000	-8.515287	0.0000
Panel ADF	-6.981705	0.0000	-6.651975	0.0000
(Between-Dimension)				
Group rho	-6.239258	0.0000		
Group PP	-10.72114	0.0000		
Group ADF	-8.421009	0.0000		
Kao Panel Cointegration Test Results				
	Statistic Value		**p-value**	
ADF	-4.474456		0.0000	
Residual Variance	23.21522			
HAC Variance	5.242413			
Johansen-Fisher Panel Cointegration Test Results				
Null Hypothesis	**Fisher Statistic (from Trace Test)**	**p-value**	**Fisher Statistic (from Max-Eigen Test)**	**p-value**
No cointegrating vector	62.05	0.0000	43.66	0.0000
At most one cointegrating vector	38.78	0.0000	38.78	0.0000

The Pedroni test provides both *within-dimension* and *between-dimension* statistics, thereby capturing both the common (pooled) and individual (group-specific) dynamics in a panel data structure (Pedroni, 2004). As seen in Table 5, the *Panel rho*, *Panel PP*, and *Panel ADF* statistics are statistically significant. Likewise, the *Group rho*, *Group PP*, and *Group ADF* statistics also reject the null hypothesis of no cointegration. Although the *Panel v* statistic is not statistically significant, the significance of all other statistics strongly indicates the existence of a long-run cointegration relationship between the variables. This outcome is consistent with Pedroni's (1999) framework, in which the PP and ADF statistics are generally considered more powerful and reliable indicators of cointegration. Therefore, it can be concluded that there exists a long-term equilibrium relationship between GDP and the current account balance in the MINT countries.

The Kao (1999) test, unlike Pedroni's approach, assumes a common cointegrating vector across the entire panel. As shown in Table 5, the ADF statistic is -4.47 with a p-value of 0.0000, leading to the rejection of the null hypothesis of "no cointegration." Thus, the presence of a cointegration relationship between the variables is confirmed by a second independent method.

The consistency of the results from both tests provides methodological robustness, confirming the existence of a strong long-term relationship. The Johansen–Fisher panel cointegration test, which adapts Johansen's (1988) multivariate cointegration approach to a panel context through a Fisher-type combined testing procedure, further reinforces these findings. As shown in Table 5, both the *trace test* and *maximum eigenvalue test* reject the null hypothesis.

The rejection of both hypotheses "no cointegrating vector" and "at most one cointegrating vector"- demonstrates that there exists at least one long-run cointegration relationship across the panel. This finding is fully consistent with the results obtained from the Pedroni and Kao tests, confirming the existence of a stable long-run equilibrium between the current account balance and economic growth in the MINT economies.

3.3. Panel FMOLS Long-Run Coefficient Estimates

Following the confirmation of the cointegration relationship, the Fully Modified Ordinary Least Squares (FMOLS) method was employed to estimate the long-run coefficients. This approach allows for the unbiased estimation of the long-run slope parameters by correcting for serial correlation and endogeneity that may arise in cointegrated panels. For this

reason, FMOLS is widely used in empirical studies dealing with long-run equilibrium relationships in panel data frameworks (Phillips & Hansen, 1990; Pedroni, 2000; Çifçi et al., 2018b; Yaşar, 2019).

Table 6: Panel FMOLS Cointegration Results				
Independent Variable	Coefficient	Standard Error	t-Statistic	p-Value
GDP (Economic Growth)	0.208259	0.116210	1.792097	0.0752

According to Table 6, the FMOLS results show that the coefficient of GDP is 0.208259, which is statistically significant at the 10% level (p = 0.0752). This indicates that a long-term increase in GDP has a positive effect on the current account balance.

This finding aligns with the literature suggesting that, particularly in developing economies, sustained economic growth can contribute to the improvement of external balance through mechanisms such as productivity gains, export diversification, and enhanced competitiveness (e.g., Holmes, Otero, & Panagiotidis, 2011).

3.4. Dumitrescu–Hurlin Panel Causality Analysis

While the cointegration tests confirm the existence of a long-run equilibrium relationship between the variables, the Dumitrescu and Hurlin (2012) panel causality test is applied to determine the direction of causality between the current account balance and economic growth. The results of this analysis are presented in Table 7.

Table 7. Dumitrescu–Hurlin Panel Causality Test Results						
	Lag: 1			Lag: 2		
Null Hypothesis	W-Stat.	Z-Stat.	p-Value	W-Stat.	Z-Stat.	p-Value
GDP Current Account Balance	2.99610	2.46430	0.0137	5.68264	3.11257	0.0019
Current Account Balance GDP	0.73104	-0.41961	0.6748	0.57641	-1.36535	0.1721

The findings obtained for different lag lengths can be interpreted as follows:

• GDP → Current Account Balance (Causality Exists):

For both lag specifications, the W and Z statistics are statistically significant ($p < 0.05$). Therefore, the null hypothesis stating that "GDP does not cause the current account balance" is rejected. This indicates the presence of a unidirectional causality from GDP to the current account balance.

• Current Account Balance → GDP (No Causality):

The probability values are well above 0.05, and the null hypothesis cannot be rejected in either lag structure. This suggests that there is no causality from the current account balance to GDP. Hence, across the entire panel, the direction of causality is unidirectional from GDP to the current account balance. This finding implies that economic growth is a key determinant of external balance dynamics.

When all results are evaluated together:

✓ There exists a long-run cointegration relationship between GDP and the current account balance.

✓ According to the FMOLS estimations, GDP positively affects the current account balance in the long run.

✓ The causality analysis clearly reveals the direction of the relationship, showing a unidirectional causality from GDP to the current account balance (GDP → CAB).

These findings demonstrate that in the MINT countries, economic growth dynamics play a decisive role in shaping the current account balance, which is fully consistent with the existing empirical literature on emerging market economies.

Conclusion

This study examined the relationship between the current account balance and economic growth in the MINT countries—Mexico, Indonesia, Nigeria, and Türkiye—using annual data for the period 1981–2019 within a panel data analysis framework. The findings reveal that although MINT countries share similar demographic and economic characteristics, they exhibit heterogeneous structures in terms of external balance and growth dynamics. The results of the panel unit root tests indicate that both variables

are stationary at level and at first difference, allowing for the analysis of their long-run relationship through panel cointegration tests.

The results of the Pedroni (1999, 2004) and Kao (1999) panel cointegration tests provide strong evidence of a long-run equilibrium relationship between the current account balance and economic growth. The Johansen–Fisher test further supports these findings, confirming that external balance and growth move together in the long term in the MINT countries. This outcome is consistent with previous empirical studies showing that the behavior of external balance is closely linked to growth performance in developing economies (e.g., Chinn & Prasad, 2003; Holmes, Otero, & Panagiotidis, 2011).

According to the FMOLS long-run estimation results, economic growth has a positive effect on the current account balance. This finding suggests that in MINT countries, stronger growth performance can improve the current account position. In particular, for countries that manage to diversify their production structure, increase export capacity, and reduce dependence on energy imports, external balances may improve in parallel with economic growth.

The Dumitrescu–Hurlin panel causality analysis clearly identifies the direction of causality as unidirectional—from economic growth to the current account balance. This implies that while economic growth influences the current account balance, changes in the external balance do not produce a systematic feedback effect on growth. Considering the macroeconomic structure of MINT economies, this result indicates that domestic demand–driven growth plays a decisive role in determining external balance dynamics.

Overall, the findings demonstrate that in MINT countries, sustainable growth policies should be designed with consideration of external balance constraints. Despite demographic advantages and high growth potential, factors such as energy dependence, import-intensive production, and sensitivity to global markets make the external balance vulnerable. Therefore, in the long-term growth strategies of MINT countries, it is crucial to focus on enhancing export capacity, increasing value-added production, and strengthening macroeconomic stability to ensure sustainable and resilient economic development.

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