Analyzing the Impact of Foreign Capital Inflows on the Current Account Balance in Developing Economies: A Panel Data Approach

Amjad ALI
European School of Leadership and Management (ESLM), Belgium
Lahore School of Accountancy and Finance, University of Lahore, Pakistan
ORCID: https://orcid.org/0000-0002-7487-6844
chanamjadali@yahoo.com

Marc AUDI
Abu Dhabi School of Management (ADSM), United Arab Emirates
University Paris1 Pantheon, Sorbonne, France
m.aoudi@adsm.ac.ae
ORCID: https://orcid.org/0000-0002-6923-576X

Article's history:

Suggested Citation:

Abstract:

This research has explored the effects of foreign capital inflows on the current account deficit in developing countries from 1995 to 2020. The study considers various factors such as import demand, export demand, foreign direct investment, foreign debt, economic growth, foreign remittances, and foreign reserves as independent variables. The analysis utilizes the panel autoregressive distributed lag approach to examine both the long-run and short-run relationships between the dependent and independent variables.

Moreover, the study employs the Panel Granger causality test to evaluate the causal connections among the selected variables. The results indicate that import demand, foreign debt, and remittance inflows positively affect the current account deficit in developing countries. Conversely, export demand, foreign direct investment, economic growth, and foreign reserves have a negative impact on the current account deficit. Consequently, it is recommended that developing countries prioritize the augmentation of stable and substantial foreign reserves as a strategy to alleviate the level of the current account deficit."

Introduction

In recent times, the issue of the disequilibrium of current accounts has got much importance in the field of international finance, and sustainable current accounts have become the most concerned target of all economies. Different standard textbooks explain that the current account presents the situation of net indebtedness of an economy. Generally, it is predicted that current account imbalance is part and parcel of any economy because a trade balance is unlikely to happen when an economy is producing its optimal level of outcomes. It is very well explained by Wu and Tang (2000), that in the presence of temporary current account deficits, there is a dire need for reallocation of resources in the economy. However, a sustainable current account refers to a steady condition in which the deficit does not possess inherent forces to alter its path.

Conversely, an unsustainable current account imbalance arises from factors such as an increase in interest rates, a significant devaluation, or an abrupt economic disturbance at the domestic or global level (Mann, 2002). The current account deficit is also reasoned as a major factor to maintain the balance of payment. Developing economies have suffered from the current account deficit (Hakkio, 1995; Calderon et al., 2000; Yol, 2009; Van Bon, 2014). A continuous deficit in the current account balance is hurting any economy (Ali and Sadiq, 2020). The current account deficit serves as a significant metric for identifying external imbalances in the economies of different countries. In the present era, the persistent expansion of global imbalances has become a central topic of discussion among policymakers and experts in the field of social science (Sadiku et al., 2015).

Being the barometer for investors, policymakers, and social scientists, the current account also serves as a primary indicator of a country's economic performance. When temporary current account deficits arise, they are generally seen as a natural result of reallocating resources to the country where the factor of production receives the highest potential returns (Hakkio, 1995). However, a persistent and substantial current account deficit poses significant challenges for an economy and may necessitate prompt policy actions. Particularly in the long term, an increasing current account deficit leads to a rise in the domestic interest rate compared to the foreign interest rate, this will generate a high burden on future generations in the form of taxes, moreover, it accumulates the debt burden with high-interest payments, this will lower the overall living standard of the people. The rising current account deficits also work as a signal to other macroeconomic imbalances e.g., devaluation, high inflation with high unemployment.

An extensive amount of literature (Anoruo and Ramchander, 1998; Adalet and Eichengreen, 2007; Forbes and Warnock, 2012; Sevim et al., 2014; Rey, 2015) considers the current account deficit as a stepping stone toward the propagation of currency crises., e.g., the currency crises of Mexico and Chile (1980s), Nordic countries and the UK (1980s), Argentina and Mexico (1990s), and East Asian countries (1990s). These parts of the world are especially hurt by the persistent and high current account deficit. Kaminsky et al., (1998) empirically tested and mention that a larger current account deficit raises the chances of a currency crisis for an economy. But large external imbalances don't need to become the main cause of currency crisis (Milesi-Ferretti and Razin, 1996). After the liberalization process, the importance of foreign direct investment has increased in the global financial cycle. For microeconomic stability, transactions, of current accounts and capital transactions are more important with the deficit of the balance of payment (Akhas et al., 2013). Foreign direct investment holds greater advantages due to its ability to take the form of capital, knowledge transfer, and technology, thereby benefiting a stable nation. Conversely, portfolio investments lack stability and do not exert a significant impact on real sector development, making them vulnerable to economic stability concerns (Nurgroho, 2013).

In the age of globalization, the external balance of the country is the most important segment of the economy. One of the major economic hurdles for the economic development of developing economies is that they do have not sufficient local savings to finance their investment. They are a sustained need for foreign exchange capital in the form of direct or indirect investment to overcome the issue of the current account deficit because the current account deficit has now become an impact indicator for any economic performance. The current account deficit is unsuitable for managing a country's foreign debt, and a continuous rise in the deficit can lead to instability in the financial market (Yurdakul and Cevher, 2015).

Foreign direct investment is regarded as a crucial means to raise capital, generate employment opportunities, and enhance productive capacity by transferring technology and improving the skills of local labor and managers (Jaffri et al., 2012). Foreign capital inflow is commonly seen as a means to increase investment levels, stimulate economic growth, and bolster foreign exchange reserves. The influx of foreign capital enhances production capacity and reduces unemployment through the efficient allocation of resources. The influx of foreign capital can address the substantial imbalance in the current account, especially when it is directed towards exporting firms in the form of foreign direct investment. This additional foreign income source can also enhance the current account by financing existing trade deficits (Feldstein, 2008; Obstfeld, 2012). However, if foreign capital inflow is utilized to increase imports for consumption, it will worsen the current account. There are other channels through which foreign capital inflow can impact the current account, such as the appreciation of the nominal exchange rate resulting from the inflow of foreign currency and the occurrence of the Dutch disease phenomenon. These factors can reduce demand for exports, increase imports, and consequently deteriorate the current account balance.

Persistent current account deficits have the potential to trigger significant declines in the current account, which may have negative implications for long-term economic growth. Additionally, such deficits can lead to financial crises, subsequently exacerbating poverty and income inequality (Frankenberg et al., 2003). Consequently, the state of the current account holds crucial significance for developing and emerging market economies, necessitating an examination of the dynamics between the current account and foreign capital inflow. In a broader discussion on external imbalances, Milesi-Ferretti and Razin (1996) highlight the importance of factors such as the size of the export sector, international competitiveness, exchange rate flexibility, and exchange rate policies in relation to current account sustainability. Thus, the study aims to analyze the impact of foreign capital inflow on the current account deficit specifically within developing countries, considering the role of exchange rate regimes in current account adjustments.

1. Literature Review

It is globalization and trade liberalization which connect economies and regions. Empirical evidence has witnessed that easy movements of trade and capital make the current account of different countries more volatile (Cavadar and Aydin, 2015). For many decades current account has become an impression of a country's growth (Bacchetta et al., 2008). As any fluctuations in the current account balance have a direct impact on the domestic and foreign spending of a country. The current account deficit indicates a diminishing impact on domestic purchasing power and trade balance whereas its raises import prices and foreign debt (Kumari et al., 2021). A country running in a large current account deficit has faced a constant devaluation of currency and it has less amount of money for development expenditures, which further raises different socioeconomic economic issues e.g., unemployment, crime, financial dependency, and income inequality (Bayraktar et al., 2016; Ivanova, 2019). Developing countries are caught in such socioeconomic issues and there is a rising trend in the current account deficit as well. Thus, it is important to study the root causes of the current account deficit and how developing countries can control the rising current account deficit.

The current account balance serves as an initial indicator of a country's economic performance, providing a comprehensive overview (Blanchard and Giavazzi, 2002). Sachs et al. (1981) were the first to address the issue of current account deficits through the intertemporal approach, which was further expanded upon by Obstfeld and Rogoff (1995), Milesi-Ferretti and Razin (1996), and Milesi-Ferretti and Razin (1998). A balanced current account enables an economy to withstand the emergence of bubbles and the transmission of global financial crises (Ca'Zorzi et al., 2009; Obstfeld, 2012), while an imbalanced current account can lead to significant macroeconomic and financial stress (Obstfeld, 2012). Evaluating the current account requires the use of appropriate equilibrium values or norms, which also aid in anticipating future adjustment needs and potential dynamics of economic fundamentals (Comunale, 2015). Several studies, including those by Shfferin and Woo (1990), Obstfeld and Rogoff (1995), Otto and Voss (1995), Bergin (2006), Cheung et al. (2013), Chinn et al. (2014), Sadiku et al. (2015), Longe et al. (2019), and Monastiriotis and Tunali (2020), have identified key determinants of current account deficits. However, none of these studies have explored the relationship between foreign capital inflow and the determinants of current account deficits in developing countries. Therefore, it is crucial to examine the underlying causes of current account deficits specifically in developing countries.

Through an extensive review of the literature, it becomes evident that the current account deficit is a subject of interest among researchers and policymakers. Various studies (Comunale, 2015; Shfferin and Woo, 1990; Obstfeld and Rogoff, 1995; Otto and Voss, 1995; Bergin, 2006; Cheung et al., 2013; Chinn et al., 2014; Sadiku et al., 2015; Longe et al., 2019; Monastiriotis and Tunali, 2020) have identified key factors influencing the current account deficit. However, none of these studies have explored the connection between foreign capital inflow and the determination of the current account deficit specifically in developing countries. As a result, this study paves the way for new research avenues and opportunities.

2. The Model

The issue of increasing the current account deficit and its detrimental impact on economic activities has been a subject of policy discussions in both developing and developed countries. In recent decades, the current account deficit has become a challenging situation for developing countries. For developing countries, sustaining a current account deficit is not viable, and it can lead to financial market turbulence (Yaman, 2012). Typically, when expenses exceed revenues, a current account deficit occurs. Consequently, developing countries often rely on developed countries or international financial institutions such as the World Bank and IMF. The concept of dependency theory emerged in the late 1960s and gained significance with the work of Ahiakpor (1985), highlighting that developed countries have also faced similar situations in the past. Through cooperation with developed countries, developing countries can achieve higher levels of economic growth.

Financial dependency is commonly observed in developing countries, characterized by low economic growth, high poverty rates, inefficient use of natural resources, and high inflation rates. Khapoya (2015) states that imperialism is the primary cause of financial dependence in African countries, as the West colonized these nations and exploited their natural resources. The leadership of developing and colonized countries continues to be influenced by developed countries. A concerning observation is that leadership dependency contributes to increasing levels of corruption and financial dependency among developing countries. While existing studies have examined the determinants of the current account deficit (Chinn and Prasad, 2003; Sooreea and Wheeler, 2010; Batdelger and Kandil, 2012), they have overlooked the relationship between the current account deficit and foreign capital inflow in developing countries.

By adopting the intertemporal approach, a comprehensive methodology exists to examine various transmission mechanisms that explain trends in current account balances (Huntington, 2015). Experts hold divergent opinions on the factors contributing to long-term periods of current account surpluses or deficits and their sustainability (Mann, 2002). Studies conducted by Chinn and Prasad (2003), Bussière et al. (2004), Chinn and Ito (2007), and Gruber and Kamin (2007, 2009) emphasize that the primary factors influencing current account balances in the medium to long term are linked to a country's propensity to save, encompassing both the public and private sectors. However, these studies consider structural variables that explain saving and investment levels while overlooking the impact of foreign capital inflow on the current account deficit in developing countries. In accordance with growth theories, economic growth plays a crucial role in shaping current account balances. Generally, an increase in domestic income leads to higher imports, subsequently reducing current account surpluses.

The "stages of development hypothesis" proposed by Faruqee and Debelle (1996) argues that during the early and intermediate stages of development, a country requires greater capital imports, resulting in higher current account deficits. However, as a country progresses to higher stages of development, it begins to generate current account surpluses by exporting capital goods to developing countries, thereby reducing past liabilities. Consequently, a non-linear specification of income is needed, incorporating both economic growth and the square of economic growth in the model. Therefore, income is expected to have a negative effect, while the squared income term is anticipated to have a positive effect on current account balances.

The economic surplus utilization and the challenges of financial dependency impact the internal and external conditions of developing countries, such as Pakistan. Developing countries continue to grapple with the dilemma of choosing between capitalism and socialism. The increasing financial dependency disrupts the equilibrium between expenditures and revenues, leading to current account deficits in developing countries. In an attempt to mitigate the effects of a rising current account deficit, foreign capital inflow has been considered. Following the studies by Howard (1989), Mann (2002), Gümüşoğlu and Alçin (2019), Ansari (2004), Matsubayashi (2005), Wu et al. (2001), Lee and Chinn (2006), Nason and Rogers (2002), Kano (2008), Adedeji and Handa (2008), Bannaga (2004), Apergis et al. (2000), Gruber and Kamin (2007), and Audi and Ali (2023), the mathematical model of the study can be written as:

$$CAD_{it} = F\,(IMPD_{it}, EXD_{it}, FDI_{it}, DEBT_{it}, GROWTH_{it}, REM_{it}, FR_{it}) \tag{1}$$

where: CAD = Current Account Deficit; IMPD = Import Demand; EXD = Export Demand; FDI = Foreign Direct Investment; DEBT = Foreign Debt; GROWTH = Economic Growth; REM = Foreign Remittance; FR = Foreign Reserves; t = Time (1995-2020); I = selected developing countries.

To analyze the relationship between the dependent variable and explanatory variables, an econometric model can be developed in order to assess their responsiveness.

$$CAD_{it} = \alpha + \beta_1 IMPD_{it} + \beta_2 EXD_{it} + \beta_3 FDI_{it} + \beta_4 DEBT_{it} + \beta_5 GROWTH_{it} + \beta_6 REM_{it} + \beta_7 FR_{it} + U_{it} \tag{2}$$

where: all the variables are explained above except: α = intercept coefficient; $\beta_{i's}$ = slope coefficients; U = error term (white noise).

The data for the chosen variables has been sourced from the World Bank's World Development Indicators database. Empirical analysis has been conducted using data spanning the period from 1995 to 2020.

3. Econometric Procedures

The stationarity of the variables has been an issue in the analysis of the exact level of integration among the variables of the model. Non-stationarity does not allow error terms to be white noise. Moreover, mean revision does not happen in the existence of unit root issues in the series. The study is going to use a panel dataset, panel unit root tests have been applied for unit root checking. Based on current literature, panel unit root tests adjust the variance and difference in mean of the error over the period and across the sections. Since we have taken data from 1996 to 2020, it is somehow considered a large period. In applied econometrics literature, numerous tests are available to examine the panel unit root issue. The most famous among them are Maddala and Wu (1999), I'm, Pesaran and Shin (2003); Levin, Lin, and Chu (2002), and Hadri's (2000). This study has used Levin, Lin & Chu t*, ADF - Fisher Chi-square, Im, Pesaran and Shin W-stat, and PP Fisher Chi-square unit root tests for the inspection stationarity of the variables.

After establishing the stationarity of the data and confirming that each series is integrated at the same order, whether in levels or first differences, the next step is to determine if the selected series can be combined into a single series through cointegration, which requires non-stationarity. Cointegrated series exhibit a shared long-run equilibrium, and this integration concept was introduced by Granger (1981) and further expanded upon by Engle and Granger (1987). To address issues with traditional methods, scholars have introduced the notion of panel cointegration, which combines cross-sectional and time-series data pools when dealing with non-stationary variables at the I(1) level. Additional cointegration tests for panel data, such as Westerlund (2007), have been proposed. However, this test is not applicable to our dataset, as Westerlund himself confirmed its bias when the sample size is less than 100. Consequently, considering the limitations of traditional methods, this study employs the panel Autoregressive Distributed Lag (ARDL) approach. Furthermore, the panel Granger (1969) causality test is utilized to examine the causal relationships among the variables in the model.

4. Results and Discussion

Descriptive statistics provide insights into the intertemporal characteristics of the dataset, including measures such as mean, median, maximum, minimum, standard deviation, and others. Table 1 presents the calculated descriptive statistics for the dataset. The results indicate positive kurtosis values for all selected variables, suggesting that the data follows a normal distribution as indicated by the Jarque-Bera test.

Table 1. Descriptive statistics

Variables	CAD	IMPD	EXD	FDI	DEBT	GROWTH	REM	FR
Mean	-2.379916	182.5287	270.3083	0.534872	47.52537	2.336477	3.748347	65.59771
Median	-2.640081	150.2727	184.8783	0.142693	39.50350	2.554441	2.148985	34.54321
Maximum	33.67854	715.3336	1976.785	30.32864	283.2539	33.03049	24.09280	2302.442
Minimum	-43.77123	34.69083	34.67049	-4.825033	3.895006	-16.32193	0.004506	0.087575
Std. Dev.	6.827543	108.6817	246.3388	2.117832	31.29320	4.136967	4.459289	162.5596
Skewness	0.130186	1.433419	2.499720	9.993435	2.283280	-0.165128	1.975505	9.069312
Kurtosis	9.829572	5.031440	11.96201	125.6054	13.13751	9.286762	7.165043	100.0030
Jarque-Bera	2175.947	575.0949	4905.784	718853.3	5758.748	1846.211	1535.297	453656.3
Sum	-2660.746	204067.1	302204.7	597.9873	53133.37	2612.182	4190.652	73338.24
Observations	1118	1118	1118	1118	1118	1118	1118	1118

Correlation analysis measures the strength of association between variables, and the extent of the relationship among the explanatory variables determines the presence of multicollinearity. Table 2 presents the correlation matrix results. Overall, the findings indicate significant correlations between the majority of explanatory variables and the dependent variable, the current account balance. These results indicate that the selected explanatory variables for the regression model exhibit a range of low to moderate correlations with each other. Consequently, there is no evidence of multicollinearity among the selected explanatory variables.

Table 2. Correlation matrix

Variables	CAD	IMPD	EXD	FDI	DEBT	GROWTH	REM	FR
CAD	1.000000							
IMPD	-0.034077	1.000000						
EXD	0.0832***	0.7890***	1.000000					
FDI	0.1316***	0.2217***	0.2278***	1.000000				
DEBT	-0.1794***	-0.049353*	0.06300**	-0.0941***	1.000000			
GROWTH	0.020104	0.1273***	0.1107***	0.2846***	-0.1229***	1.000000		
REM	-0.0738**	-0.0717**	-0.001081	-0.047334	0.07375**	0.020813	1.000000	
FR	0.2402***	0.009160	0.001824	0.034170	-0.2636***	0.037916	-0.0691**	1.000000

Note: ***, **, * represent significant 1%, 5%, and 10% respectively.

In order to assess the stationarity of the selected dataset, this study has employed various unit root tests, namely "PP-Fisher Chi-square (PP-FC), ADF-Fisher Chi-square (ADF-FC), Im, Pesaran, and Shin W-stat (IPSW), and Levin, Lin & Chu t (LLC). The detailed methodology for these unit root tests can be found in the econometric methodology section. The results of the unit root tests are presented in Table 3. The collective findings indicate that the selected variables in the model exhibit a mixed order of integration, which makes the panel autoregressive distributed lag (ARDL) model most suitable for analyzing the long-run and short-run coefficients.

Table 3. Unit Root Tests results

Variables	LLC	IPSW	ADF - Fisher	PP – Fisher
At Level				
CAD	-3.24027***	-5.27789***	156.024***	182.036***
IMPD	-2.94894***	1.77018	53.3934	46.6309
EXD	-0.87443	4.22204	34.3752	34.4874
FDI	-7.04531***	-8.98371***	248.325***	402.043***
DEBT	-0.41365	0.92879	71.9405	103.910*
GROWTH	2.90734	-5.29771***	167.776***	278.771***
REM	-2.04512**	-1.46951*	103.804*	102.306
FR	-2.76461***	-1.28473*	92.3362	65.3610
At First Difference				
dCAD	-17.2413***	-18.9185***	495.724***	728.383***
dIMPD	-10.0030***	-13.3111***	344.157***	472.860***
dEXD	-14.0548***	-15.9695***	412.056***	582.772***
dFDI	-17.9147***	-24.3614***	642.618***	1034.11***
dDEBT	-8.31228***	-10.4342***	270.387***	448.078***
dGROWTH	-8.83771***	-18.9924***	497.439***	801.559***
dREM	-9.77166***	-13.9026***	361.212***	615.665***
FR	-8.43952***	-10.9346***	283.215***	477.692***

Note: ***, **, * represent significant 1%, 5%, and 10% respectively.

After analyzing the level of integration and selection of lag order, now with the help of the autoregressive distributed lag model, the long-run and short-run coefficients can be examined. The long-run outcomes of the model have been presented in Table 4. The results indicate the relationship between the dependent variable with all independent variables within the selected developing countries over the selected time period. The result shows that import demand has a positive and significant impact on the current account deficit in the case of selected developing countries, the estimate reveals that with a 1% increase in import demand, the current account deficit is increased by (0.009748) percent. Presently, technology is one of the main indicators of economic development (Dahlman et al., 1987; Grossman and Helpman, 1995; Ali, 2011). Empirics show that technological integration is attached to socioeconomic and financial integration (Glass and Saggi, 1998; Mayer, 2000).

The developing countries lag behind technological progress (Dahlman et al., 1987; Glass and Saggi, 1998), and most of these countries rank poor on various technology and innovation indices e.g. Technological

Achievement Index, and the Innovation Capability Index (UNCTAD 2007). To meet the required technological demand, developing countries rely on imported technology from developed countries (Dahlman et al., 1987) and this imported technology is highly costly which raises the level of current account deficit of these countries (Knight et al., 2019). Our results are consistent with the findings of Hoekman et al., (2005), Levinson (2009), Kara and Sarıkaya (2014), Knight et al., (2019). Our estimated relationship is significant at a 1% level of significance.

The results indicate that export demand has a negative and significant impact on the current account deficit in the case of selected developing countries. The estimate reveals that a 1% increase in import demand, reduces the current account deficit by (-0.004158) percent. Export demand is a powerful engine of economic development. Higher export demand in the international market for a particular country's goods and services means a higher amount of revenue. This further reduces the current account deficit for the exporting country. Thus, export demand raises government revenues and reduces the current account deficit. But the exports of developing countries comprise primary and agricultural goods and are more elastic to generate more revenues, so by improving the standard of the goods, developing countries can generate more revenue to excel the current account deficit. Our results are consistent with the findings of Hoekman et al., (2005), Levinson (2009), Kara and Sarıkaya (2014), Knight et al., (2019). Our estimated relationship is significant at a 1% level of significance.

The estimation results demonstrate a significant negative impact of foreign direct investment on the current account deficit in the selected developing countries. The estimate indicates that a 1% increase in import demand leads to a reduction of (-1.419696) percent in the current account deficit. In an economy with liberalized policies and flexible capital flows, policymakers face a considerable challenge in implementing appropriate measures to prevent imbalances in the external sector. According to the intertemporal approach, the current account deficit is influenced by forward-looking decisions regarding saving and investment, driven by factors such as expectations of productivity growth, government expenditure, interest rates, and other relevant factors (Calderon et al., 1999). Within this framework, the current account balance acts as a buffer against transient shocks in productivity or demand (Sachs, 1981; Obstfeld and Rogoff, 1995, 1996; Ghosh, 1995; Razin, 1995; Ali, 2015). In recent years, many developing and emerging economies have actively sought to attract foreign direct investment. Additionally, in the context of developing economies, greater openness to external flows facilitates the importation of technology, leading to faster knowledge accumulation and higher total factor productivity through the reallocation of resources from less productive to more productive activities (Ali, 2018; Amighini & Sanfilippo, 2014; Schiff & Wang, 2006; Grossman & Helpman, 1991). The estimated relationship is statistically significant at a 1% level of significance."

The estimated results indicate a significant positive relationship between foreign debt and the current account deficit in the selected developing countries during the specified time period. Specifically, the estimate reveals that a 1% increase in foreign debt is associated with a (0.047445) percent increase in the current account deficit. It is generally recognized that a persistent and substantial current account deficit can signal poor economic performance and vulnerability (Ali, 2022). "Such a deficit often indicates low national savings and investments, a lack of international competitiveness, and structural economic challenges, including an underdeveloped financial system. Moreover, a current account imbalance implies potential output loss and increased unemployment (Ali, 2022; Ghosh and Ramakrishnan, 2006). According to the debt overhang hypothesis (Myers, 1977), if a country's debt exceeds its capacity to repay in the future with some probability, the expected debt service will likely increase as the country's income level rises.

Consequently, a portion of the returns from domestic investments will be utilized to service external debt, thereby discouraging new foreign investors (Claessens et al., 1996; Ali, 2022). As a result, the borrowing nation may only utilize a portion of the increase in output and exports, as a significant portion will be allocated to debt servicing. This creates a problem because if a country has a potential investment project with a positive net present value, it may refrain from investing due to its existing debt burden, leading to a decline in the country's level of investment. The presence of external debt alters the incentives of both the creditor and the debtor. External debt relief can be beneficial for either party. The creditor may have an incentive to continue lending to avoid losses, with the expectation that the debtor's economic conditions will improve, enabling timely debt repayment. Conversely, the debtor may have a disincentive to invest, assuming that any gains will be taxed away to repay the lender. This theory suggests that a reduction in external debt can lead to increased domestic investment and reduced government spending. As a result, higher levels of investment worsen the current account balance, while reduced government spending improves it (Elbadawi et al., 1996; Ali and Audi, 2018). The estimated relationship in our study is statistically significant at a 1% level of significance.

The estimated findings demonstrate a statistically significant negative relationship between economic growth and the current account deficit in the selected developing countries during the specified time period. Specifically, the estimates reveal that a 1% increase in economic growth corresponds to a (-0.364074) percent decrease in the current account deficit. Given the eagerness of many developing countries to achieve high

economic growth, it is expected that a strong association exists between economic growth and the current account deficit (Ali and Bibi, 2017). However, the existing literature presents a mixed relationship between economic growth and the current account deficit. Calderon et al. (2000) and Kandil and Greene (2002) discovered an inverse relationship between the economic growth rate and the current account deficit. In our study, the results align with the findings of Calderon et al. (2000) and Kandil and Greene (2002). The estimated relationship in our study is statistically significant at a 1% level of significance.

The estimated results indicate a statistically significant positive relationship between foreign remittances and the current account deficit in the selected developing countries during the specified time period. Specifically, the estimate reveals that a 1% increase in the number of foreign remittances is associated with a (0.742183) percent increase in the current account deficit. Policymakers have increasingly focused on migrants' transfers of funds due to not only their size but also their favorable characteristics. According to the IMF (2005), foreign remittances are more stable and less cyclical compared to other capital flows. This can be attributed to the fact that migrants' transfers of funds are primarily driven by altruistic motives, such as the desire to improve the well-being of relatives residing in the home country, rather than investment-related intentions. These positive attributes of migrants' transfers of funds, coupled with their growing magnitude, make them a promising tool for reducing macroeconomic instability in recipient countries. "Specifically, foreign remittances, as inflows of foreign currencies, can be utilized to repay foreign debt, often denominated in foreign currency, without contributing to the stock of external debt or incurring debt-servicing costs. Consequently, they can help reduce the likelihood of financial crises. However, in the case of developing countries, the increasing volume of foreign remittances also contributes to the current account deficit (Chami et al., 2003; Calvo, 2003; Calvo et al., 2003; Calvo et al., 2004; Frankel and Cavallo, 2004; Ali and Rehman, 2015). Our findings are consistent with these studies. The estimated relationship in our study is statistically significant at a 1% level of significance.

The estimated findings reveal a statistically significant negative relationship between foreign reserves and the current account deficit in the selected developing countries during the specified time period. Specifically, the estimate indicates that a 1% increase in foreign reserves is associated with a (-0.023036) percent decrease in the current account deficit. Foreign reserves play a crucial role in international transactions, as they are utilized to facilitate economic exchanges between a country's residents and the rest of the world (Taylor, 1994; Vyshnyak, 2000; Ganchev, 2010). The accumulation of foreign reserves helps stabilize the currencies of developing countries in the foreign exchange market. This, in turn, reduces the disparity between import payments and export receipts, leading to a decrease in the current account deficit. These findings are consistent with previous studies conducted by Ganchev et al. (2012), Ravinthirakumaran et al. (2016), and Jackson and Jabbie (2020). The estimated relationship in our study is statistically significant at a 5% level of significance.

Table 4. Estimated outcomes

Dependent Variable: CAD	Long Run Results		Short Run Results	
	Coefficients	Std. Error	Coefficients	Std. Error
IMPD	0.009748***	0.003062	-0.014196**	0.007021
EXD	-0.004158***	0.001471	0.005692	0.005959
FDI	-1.419696***	0.303027	0.365884	0.686428
DEBT	0.047445***	0.011854	-0.012690	0.022119
GROWTH	-0.364074***	0.072463	-0.008862	0.051011
REM	0.742183***	0.078198	3.170804**	1.571451
FR	-0.023036***	0.010730	-0.053584***	0.019896
ECT	-	-	-0.340694***	0.049735

Note: ***, **, * represent significant 1%, 5%, and 10% respectively.

The estimated coefficients for the short-run effects are presented in Table 4. The results indicate that import demand has a significant negative impact on the current account deficit. However, export demand, foreign direct investment, foreign debt, and economic growth do not have significant effects on the current account deficit in the short run, which differs from the long-run results. The findings reveal that remittance inflows have a positive impact on the current account deficit, while foreign reserves have a negative impact in the short run, aligning with the long-run outcomes. The significant negative value (-0.340694) of the error correction term (ECT) is theoretically sound and indicates short-run convergence towards the long-run equilibrium. Additionally, the significant negative value of the ECT signifies the speed of adjustment from the short run to the long run. The estimated coefficient suggests that it takes approximately two years and nine months for the short-run dynamics to converge to the long-run

equilibrium. The estimates demonstrate that short-term fluctuations are corrected by around 34.0694% in the following year in the case of developing countries.

Causality analysis examines the direction of relationships between variables. The estimated outcomes of the panel Granger causality test are presented in Table 5. The results indicate that there is a unidirectional causality running from the current account deficit to import demand and from the current account deficit to export demand in the case of selected developing countries. Additionally, there is unidirectional causality from foreign direct investment to the current account deficit and from the current account deficit to foreign debt. However, there is no causal relationship found between economic growth and the current account deficit, as well as between foreign remittances and the current account deficit. Furthermore, the results indicate unidirectional causality from the current account deficit to foreign reserves in the case of selected developing countries. Bidirectional causality is observed between export demand and import demand. Unidirectional causality is found from foreign direct investment to import demand and from import demand to external debt. Moreover, there is bidirectional causality between economic growth and import demand. However, no causal relationship is detected between remittances and import demand, as well as between foreign reserves and import demand. Regarding export demand, bidirectional causality is observed with foreign direct investment and economic growth. Unidirectional causality is found from export demand to foreign debt. Additionally, there is unidirectional causality running from foreign direct investment to economic growth, from foreign debt to economic growth, and from economic growth to foreign remittances. However, no causality is found between remittances and export demand, between foreign reserves and export demand, between foreign debt and foreign direct investment, between remittances and foreign direct investment, between foreign reserves and foreign direct investment, between remittances and foreign debt, between foreign reserves and foreign debt, between foreign reserves and economic growth, and between foreign reserves and remittances in the case of selected developing countries.

Table 5: Pairwise Granger Causality Tests

IMPD	←	CAD	EXD	⟷	IMPD	FDI	⟷	EXD
EXD	←	CAD	FDI	→	IMPD	DEBT	⟷	EXD
FDI	→	CAD	DEBT	←	IMPD	GROWTH	⟷	EXD
DEBT	←	CAD	GROWTH	⟷	IMPD	REM	—	EXD
GROWTH	—	CAD	REM	—	IMPD	FR	—	EXD
REM	—	CAD	FR	—	IMPD	DEBT	—	FDI
FR	←	CAD	REM	—	DEBT	GROWTH	←	FDI
FR	—	REM	FR	—	DEBT	REM	—	FDI
GROWTH	—	FR	GROWTH	→	REM	FR	—	FDI
						GROWTH	←	DEBT

Note: Arrows represent unidirectional, bidirectional, and no causality.

Conclusions and Suggestions

Based on the estimated results and discussions, several key conclusions can be drawn. The descriptive statistics demonstrate that the selected variables possess appropriate intertemporal properties, enabling the examination of their long-run and short-run relationships. The correlation matrix reveals significant associations among most variables, indicating the absence of multicollinearity issues among the selected explanatory variables. The outcomes of the unit root tests suggest that the selected variables have mixed orders of integration. Regarding the impact on the current account deficit in developing countries, the results indicate that import demand, foreign debt, and remittance inflows have a positive influence. Conversely, export demand, foreign direct investment, economic growth, and foreign reserves have a negative impact on the current account deficit in selected developing countries. The short-run results highlight the convergence of short-term deviations towards the long-run equilibrium. The Granger causality test indicates that many of the explanatory variables have a causal relationship with the current account deficit in developing countries over the specified time period. Overall, the findings conclude that the inflow of foreign capital plays a significant role in determining the level of the current account deficit in developing countries.

Based on the estimated results, discussions, and conclusions drawn from the study, several policy suggestions are recommended for developing countries to achieve their target of reducing the current account deficit. Given that import demand has a positive impact on the current account deficit, developing countries should focus on reducing domestic demand for imported goods. By promoting domestic production and encouraging the consumption of domestically produced goods, countries can decrease their reliance on imports and consequently lower the current account deficit. Export demand has a negative and significant impact on the current account deficit. Developing countries should strive to increase their export activities by enhancing the competitiveness of their domestic goods and services in international markets. This can be achieved through measures such as improving product quality, diversifying export markets, and providing support to exporters. Foreign direct investment (FDI) has a negative and significant impact on the current account deficit. Developing countries should actively seek to attract FDI as it brings in new technology, capital, and expertise. By promoting a favorable investment climate and implementing policies that encourage FDI inflows, countries can reduce the current account deficit. The estimated results indicate that foreign debt has a positive and significant impact on the current account deficit. Developing countries should be cautious in taking on excessive foreign debt, as it leads to high debt servicing payments and increases the current account deficit. Efforts should be made to minimize reliance on foreign borrowing and explore alternative sources of financing. Economic growth has a negative and significant impact on the current account deficit. Developing countries should prioritize policies that promote stable and higher economic growth. By implementing measures to stimulate investment, enhance productivity, and foster a conducive business environment, countries can strengthen their domestic currencies and reduce the current account deficit. The number of remittances has a positive and significant impact on the current account deficit. However, the depreciation or devaluation of the local currency can offset the positive impact of remittances. Developing countries should aim for stability in their currency exchange rates to fully benefit from remittances and effectively reduce the current account deficit. Foreign reserves have a negative and significant impact on the current account deficit. Developing countries should strive to build and maintain stable and higher levels of foreign reserves. Adequate foreign reserves strengthen the local currency and reduce the need for foreign payments, thus lowering the current account deficit. By implementing these policy recommendations, developing countries can work towards reducing their current account deficits and achieving greater economic stability and sustainability.

Credit Authorship Contribution Statement:

Amjad Ali was responsible for the conceptualization, methodology and writing of the original draft, while Marc Audi was responsible for data collection, writing review and editing. The research and technical analysis were carried out collaboratively, with both Amjad Ali and Marc Audi contributing equally.

Acknowledgments:

Conflict of Interest Statement:

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

[1] Adalet, M., and Eichengreen, B. (2007). *Current account reversals: always a problem? In G7 Current Account Imbalances: Sustainability and Adjustment*, pp. 205-246. University of Chicago Press. https://www.nber.org/papers/w12194

[2] Adhikary, B. K. (2012). Trends and Dimensions of FDI in South Asian Economies - A Comparative Analysis. *The Journal of World Investment & Trade,* 13(5), 729-768. https://doi.org/10.1163/22119000001305003

[3] Ahiakpor, J. C. (1985). The success and failure of dependency theory: The experience of Ghana. *International Organization*, 39(3), 535-552. https://doi.org/10.1017/S0020818300019172

[4] Ali, A. (2011). Disaggregated import demand functions of Pakistan; An empirical Analysis. M-Phil Thesis, NCBA&E, Lahore, Pakistan, 1-70. https://mpra.ub.uni-muenchen.de/95674/

[5] Ali, A. (2015). The impact of macroeconomic instability on social progress: an empirical analysis of Pakistan. (Doctoral dissertation, National College of Business Administration & Economics Lahore). http://prr.hec.gov.pk/jspui/handle/123456789/6885

[6] Ali, A. (2018). Issue of Income Inequality Under the Perceptive of Macroeconomic Instability: An Empirical Analysis of Pakistan. *Pakistan Economic and Social Review*, 56(1), 121-155. https://www.jstor.org/stable/26616735

[7] Ali, A. (2022). Determining Pakistan's Financial Dependency: The Role of Financial Globalization and Corruption. *Journal of Business and Economic Options.* https://mpra.ub.uni-muenchen.de/116097/

[8] Ali, A. (2022). Financial Liberalization, Institutional Quality and Economic Growth Nexus: Panel Analysis of African Countries. *Bulletin of Business and Economics (BBE),* 11(3), 37-49. https://doi.org/10.5281/zenodo.7639577

[9] Ali, A. (2022). Foreign Debt, Financial Stability, Exchange Rate Volatility and Economic Growth in South Asian Countries. *Journal of Business and Economic Options.* https://mpra.ub.uni-muenchen.de/116328/

[10] Ali, A. and Bibi, C. (2017). Determinants of Social Progress and its Scenarios under the role of Macroeconomic Instability: Empirics from Pakistan. *Pakistan Economic and Social Review*, 55 (2), 505-540. https://www.jstor.org/stable/26616725

[11] Ali, A., and Audi, M. (2018). Macroeconomic Environment and Taxes Revenues in Pakistan: An Application of ARDL Approach. *Bulletin of Business and Economics* (BBE), 7(1), 30-39. https://www.bbejournal.com/index.php/BBE/article/view/172

[12] Ali, A., and Rehman, H. U. (2015). Macroeconomic instability and its impact on the gross domestic product: an empirical analysis of Pakistan. *Pakistan Economic and Social Review,* 285-316. https://www.jstor.org/stable/26153261

[13] Ali, M. M., and Sadiq, R. (2020). Foreign Direct Investment and Current Account Balance: The Case of South Asian Economies. *Pakistan Journal of Social Sciences* (PJSS), 40(4), 1577-1588. http://pjss.bzu.edu.pk/index.php/pjss/article/view/960

[14] Amighini, A., and Sanfilippo, M. (2014). Impact of South–South FDI and trade on the export upgrading of African economies. *World Development,* 64, 1-17. https://doi.org/10.1016/j.worlddev.2014.05.021

[15] Anoruo, E., and Ramchander, S. (1998). Current account and fiscal deficits: Evidence from five developing economies of Asia. *Journal of Asian Economics,* 9(3), 487-501.

https://doi.org/10.1016/S1049-0078(99)80099-2

[16] Ansari, M. I. (2004). Sustainability of the US current account deficit: An econometric analysis of the impact of capital inflow on domestic economy. *Journal of Applied Economics,* 7(2), 249-269. https://doi.org/10.1080/15140326.2004.12040611

[17] Apergis, N., Katrakilidis, K. P., and Tabakis, N. M. (2000). Current account deficit sustainability: The case of Greece. *Applied Economics Letters,* 7(9), 599-603. https://doi.org/10.1080/13504850050059087

[18] Audi, M., & Ali, A. (2023). Public Policy and Economic Misery Nexus: A Comparative Analysis of Developed and Developing World. *International Journal of Economics and Financial Issues,* 13(3), 56. https://mpra.ub.uni-muenchen.de/115031/

[19] Bacchetta, P., Van Wincoop, E., and Reinhart, C. M. (2008). Capital Flows to Emerging Markets: Liberalization, Overshooting, and Volatility (pp. 61-104). University of Chicago Press. https://www.nber.org/papers/w6530

[20] Bannaga, A. A. (2004). Adjustment policies and the current account balance: empirical evidence from Sudan (No. 1650-2016-135982). https://ageconsearch.umn.edu/record/30546/

[21] Batdelger, T., and Kandil, M. (2012). Determinants of the current account balance in the United States. *Applied Economics,* 44(5), 653-669. https://doi.org/10.1080/00036846.2010.518950

[22] Bayraktar, Y., Taha, E. G. R. I., & Yildiz, F. (2016). A causal relationship between oil prices current account deficit, and economic growth: An empirical analysis from fragile five countries. *Ecoforum Journal*, 5(3). http://ecoforumjournal.ro/index.php/eco/article/view/474

[23] Bergin, P. R. (2006). How well can the new open economy macroeconomics explain the exchange rate and current account? *Journal of International Money and Finance*, 25(5), 675-701. https://doi.org/10.1016/j.jimonfin.2006.04.001

[24] Blanchard, O., & Giavazzi, F. (2002). Current account deficits in the euro area: the end of the Feldstein-Horioka puzzle? *Brookings Papers on Economic Activity*, 2002(2), 147-209. https://muse.jhu.edu/article/38519/pdf

[25] Bussière, M., Fratzscher, M., & Müller, G. J. (2004). Current account dynamics in OECD and EU acceding countries-an intertemporal approach.. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=515074

[26] Calderon, C., Chong, A., Loayza, N. (2000). Determinants of current account deficits in developing countries. *Policy Research Working Paper*, 2398, 1-37. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=630771

[27] Calvo, G. A. (2003). Explaining sudden stop, growth collapse, and BOP crisis: the case of distortionary output taxes. *IMF Staff papers,* 50(1), 1-20. https://link.springer.com/article/10.2307/4149912

[28] Calvo, G. A., Izquierdo, A., and Mejia, L. F. (2004). On the empirics of sudden stops: the relevance of balance-sheet effects. NBER Working Paper No. w10520, Available at SSRN: https://ssrn.com/abstract=552883

[29] Calvo, G. A., Izquierdo, A., and Talvi, E. (2011). Sudden stops, the real exchange rate, and fiscal sustainability: Argentina's lessons. IDB Working Paper No. 393, Available at SSRN: http://dx.doi.org/10.2139/ssrn.1817265

[30] Ca'Zorzi, M., Chudik, A., and Dieppe, A. (2009). Current account benchmarks for Central and Eastern Europe: a desperate search? ECB Working Paper No. 995. http://dx.doi.org/10.2139/ssrn.1316215

[31] Chami, R., Fullenkamp, C., and Jahjah, S. (2005). Are immigrant remittance flows a source of capital for development? IMF Staff papers, 52(1), 55-81. https://doi.org/10.2307/30035948

[32] Cheung, C., Furceri, D., and Rusticelli, E. (2013). Structural and cyclical factors behind current account balances. *Review of International Economics,* 21(5), 923-944. https://doi.org/10.1111/roie.12080

[33] Chinn, M. D., and Ito, H. (2007). Current account balances, financial development and institutions: Assaying the world "saving glut". *Journal of International Money and Finance,* 26(4), 546-569. https://doi.org/10.1016/j.jimonfin.2007.03.006

[34] Chinn, M. D., and Prasad, E. S. (2003). Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration. *Journal of International Economics*, 59(1), 47-76. https://doi.org/10.1016/S0022-1996(02)00089-2

[35] Chinn, M. D., Eichengreen, B., and Ito, H. (2014). A forensic analysis of global imbalances. *Oxford Economic Papers*, 66(2), 465-490. https://doi.org/10.1093/oep/gpt027

[36] Comunale, M. (2015). Current account and REER misalignments in Central Eastern EU countries: an update using the macroeconomic balance approach. *BOFIT Discussion Paper No. 28/2015.* https://ssrn.com/abstract=2683310

[37] Dahlman, C. J., Ross-Larson, B., and Westphal, L. E. (1987). Managing technological development: lessons from the newly industrializing countries. *World Development*, 15(6), 759-775. https://doi.org/10.1016/0305-750X(87)90058-1

[38] Elbadawa, J. B., Ndulu, J. E. and Ndungu, N. (1996). Debt Overhang and Economic Growth in Sub-Saharan Africa. *Journal of External Financing for Low-income Countries*, 22(2), 72-80. https://doi.org/10.5089/9781451957198.071

[39] Engle, R. F., and Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: journal of the Econometric Society,* 251-276. https://doi.org/10.2307/1913236

[40] Faruqee, M. H., and Debelle, G. (1996). What determines the current account? A cross-sectional and panel approach. *International Monetary Fund.* ISBN: 978-1451966701/1018-5941

[41] Feldstein, M. (2008). Resolving the global imbalance: The dollar and the US saving rate. *Journal of Economic Perspectives,* 22(3), 113-25. https://www.aeaweb.org/articles?id=10.1257/jep.22.3.113

[42] Forbes, K. J., and Warnock, F. E. (2012). Capital flow waves: Surges, stops, flight, and retrenchment. *Journal of International Economics*, 88(2), 235-251. https://doi.org/10.1016/j.jinteco.2012.03.006

[43] Frankenberg, E., Smith, J. P., and Thomas, D. (2003). Economic shocks, wealth, and welfare. *Journal of Human Resources,* 38(2), 280-321. https://doi.org/10.3368/jhr.XXXVIII.2.280

[44] Ganchev, G. T. (2010). The twin deficit hypothesis: the case of Bulgaria. *Financial Theory and Practice*, 34(4), 357-377. https://hrcak.srce.hr/clanak/94674

[45] Ganchev, G. T., Stavrova, E., and Tsenkov, V. (2012). Testing the Twin Deficit Hypothesis: The Case of Central and Eastern European Countries. *International Journal of Contemporary Economics & Administrative Sciences*, 2(1). https://core.ac.uk/reader/296912660

[46] Ghosh, A. and Ramakrishnan, U. (2006). Do Current Account Deficit Matter? *Journal of International Monetary Fund,* 15(2), 11-26. https://www.elibrary.imf.org/downloadpdf/journals/022/0043/004/article-A015-en.pdf

[47] Ghosh, A. R. (1995). International capital mobility amongst the major industrialised countries: too little or too much? *The Economic Journal*, 105(428), 107-128. https://doi.org/10.2307/2235322

[48] Glass, A. J., and Saggi, K. (1998). International technology transfer and the technology gap. *Journal of Development Economics,* 55(2), 369-398. https://doi.org/10.1016/S0304-3878(98)00041-8

[49] Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica: Journal of the Econometric Society,* 424-438. https://doi.org/10.2307/1912791

[50] Granger, C. W. (1981). Some properties of time series data and their use in econometric model specification. *Journal of Econometrics*, 16(1), 121-130. https://doi.org/10.1016/0304-4076(81)90079-8

[51] Grossman, G. M., and Helpman, E. (1995). Technology and trade. *Handbook of International Economics*, 3, 1279-1337. https://doi.org/10.1016/S1573-4404(05)80005-X

[52] Gruber, J. W., and Kamin, S. B. (2007). Explaining the global pattern of current account imbalances. *Journal of international money and Finance,* 26(4), 500-522. https://doi.org/10.1016/j.jimonfin.2007.03.003

[53] Gümüşoğlu, N. K., and Alçin, S. (2019). The impact of capital flows on current account deficit for Turkey. *Journal of Life Economics,* 6(1), 21-34. https://doi.org/10.15637/jlecon.6.003

[54] Hadri, K. (2000). Testing for stationarity in heterogeneous panel data. *The Econometrics Journal*, 3(2), 148-161. https://doi.org/10.1111/1368-423X.00043

[55] Hakkio, C. S. (1995). The US current account: the other deficit. *Economic Review-Federal Reserve Bank of Kansas City*, 80, 11-11. https://ideas.repec.org/a/fip/fedker/y1995iqiiip11-24nv.80no.3.html

[56] Hoekman, B. M., Maskus, K. E., and Saggi, K. (2005). Transfer of technology to developing countries: Unilateral and multilateral policy options. *World Development*, 33(10), 1587-1602. https://doi.org/10.1016/j.worlddev.2005.05.005

[57] Howard, D. H. (1989). Implications of the US current account deficit. *Journal of Economic Perspectives*, 3(4), 153-165. https://www.aeaweb.org/articles?id=10.1257/jep.3.4.153

[58] Huntington, H. G. (2015). Crude oil trade and current account deficits. *Energy Economics*, 50, 70-79. https://doi.org/10.1016/j.eneco.2015.03.030

[59] Jackson, E., and Jabbie, M. (2020). Twin Deficits Hypothesis as an Indication of Government Failure in Sierra Leone: An Empirical Investigation (1980-2018). *Journal of Economic Policy Researches*, 7(1), 43-68. https://doi.org/10.26650/JEPR658440

[60] Jaffri, A. A., Asghar, N., Ali, M. M., and Asjed, R. (2012). Foreign direct investment and current account balance of Pakistan. *Pakistan Economics and Social Review,* 50(2), 207-222. https://www.jstor.org/stable/43855781

[61] Kaminsky, G., Lizondo, S., and Reinhart, C. M. (1998). Leading indicators of currency crises. *Staff Papers,* 45(1), 1-48. https://doi.org/10.2307/3867328

[62] Kandil, M., and Greene, J. (2002). The impact of cyclical factors on the US balance of payments. *IMF Working Paper,* 45. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=879436

[63] Kano, T. (2008). A structural VAR approach to the intertemporal model of the current account. *Journal of International Money and Finance,* 27(5), 757-779. https://doi.org/10.1016/j.jimonfin.2008.04.003

[64] Kara, H., and Sarıkaya, Ç. (2014). Current Account Deficit in Turkey: Cyclical or Structural? (No. 1420). Working Paper. https://www.econstor.eu/handle/10419/108660

[65] Khapoya, V. (2015). *The African Experience*. Routledge. https://cir.nii.ac.jp/crid/1130000796962901376

[66] Knight, D. S., Portugal-Perez, A., and Nedeljkovic, M. (2019). Turkey: An Empirical Assessment of the Determinants of the Current Account Balance. *World Bank Policy Research Working Paper*, (8982). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3438036

[67] Kumari, R., Shabbir, M. S., Saleem, S., Khan, G. Y., Abbasi, B. A., and Lopez, L. B. (2021). An empirical analysis among foreign direct investment, trade openness and economic growth: evidence from the Indian economy. *South Asian Journal of Business Studies.* https://doi.org/10.1108/SAJBS-06-2020-0199

[68] Lee, J., and Chinn, M. D. (2006). Current account and real exchange rate dynamics in the G7 countries. *Journal of International Money and Finance,* 25(2), 257-274. https://doi.org/10.1016/j.jimonfin.2005.11.002

[69] Levin, A., Lin, C. F., and Chu, C. S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics*, 108(1), 1-24. https://doi.org/10.1016/S0304-4076(01)00098-7

[70] Levinson, A. (2009). Technology, international trade, and pollution from US manufacturing. *American Economic Review,* 99(5), 2177-92. https://www.aeaweb.org/articles?id=10.1257/aer.99.5.2177

[71] Longe, A. E., Muhammad, S., Ajayi, P. I., and Omitogun, O. (2019). Oil price, trade openness, current account balances and the official exchange rate in Nigeria. *OPEC Energy Review*, 43(4), 446-469. https://doi.org/10.1111/opec.12164

[72] Maddala, G. S., and Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics,* 61(S1), 631-652. https://doi.org/10.1111/1468-0084.0610s1631

[73] Mann, C. L. (2002). Perspectives on the US current account deficit and sustainability. *Journal of Economic Perspectives,* 16(3), 131-152. https://doi.org/10.1257/089533002760278758

[74] Matsubayashi, Y. (2005). Are US current account deficits unsustainable? Testing for the private and government intertemporal budget constraints. *Japan and the World Economy*, 17(2), 223-237. https://doi.org/10.1016/j.japwor.2003.12.011

[75] Mayer, J. (2000). Globalization, technology transfer and skill accumulation in low-income countries. Globalization and the obstacles to the successful integration of small vulnerable economies. Geneva: UNCTAD. https://doi.org/10.4324/9780203427637

[76] Milesi-Ferretti, G. M., and Razin, A. (1996). Current account sustainability: selected East Asian and Latin American experiences. https://www.nber.org/papers/w5791

[77] Milesi-Ferretti, G. M., and Razin, A. (1996). Persistent current account deficits: a warning signal? *International Journal of Finance & Economics,* 1(3), 161-181. https://doi.org/10.1002/(SICI)1099-1158(199607)1:3<161::AID-IJFE19>3.0.CO;2-W

[78] Milesi-Ferretti, G. M., and Razin, A. (1998). Sharp reductions in current account deficits an empirical analysis. *European Economic Review*, 42(3-5), 897-908. https://doi.org/10.1016/S0014-2921(97)00124-4

[79] Monastiriotis, V., and Tunali, C. B. (2020). The sustainability of external imbalances in the European periphery. *Open Economies Review,* 31(2), 273-294. https://link.springer.com/article/10.1007/s11079-019-09560-8

[80] Myers, S. (1977). Determinants of Corporate Borrowing. *Journal of Financial Economics*, 5(2), 147–175. https://doi.org/10.1016/0304-405X(77)90015-0

[81] Nason, J. M., and Rogers, J. H. (2002). Investment and the current account in the short run and the long run. *Journal of Money, Credit and Banking,* 967-986. https://www.jstor.org/stable/3270723

[82] Nugroho, R. (2013). A comparison of open data policies in different countries: Lessons learned for an open data policy in Indonesia. http://resolver.tudelft.nl/uuid:ae4e0a64-579d-40c4-bed0-d51614ddea9c

[83] Obstfeld, M. (2012). Does the current account still matter? *American Economic Review*, 102(3), 1-23. https://www.aeaweb.org/articles?id=10.1257/aer.102.3.1

[84] Obstfeld, M. (2012). Financial flows, financial crises, and global imbalances. *Journal of International Money and Finance*, 31(3), 469-480. https://doi.org/10.1016/j.jimonfin.2011.10.003

[85] Obstfeld, M., and Rogoff, K. (1995). The intertemporal approach to the current account. *Handbook of International Economics,* 3 (March 1994), 1731–1799. https://doi.org/10.1016/S1573-4404(05)80014-0

[86] Otto, G., and Voss, G. M. (1995). Consumption, external assets and the real interest rate. *Journal of Macroeconomics,* 17(3), 471-494. https://doi.org/10.1016/0164-0704(95)80064-6

[87] Ravinthirakumaran, N., Selvanathan, S., and Selvanathan, E. A. (2016). The twin deficits hypothesis in the SAARC countries: An empirical investigation. *Journal of the Asia Pacific Economy*, 21(1), 77-90. https://doi.org/10.1080/13547860.2015.1053592

[88] Razin, A. (1993). The dynamic-optimizing approach to the current account: theory and evidence. https://www.nber.org/papers/w4334

[89] Rey, H. (2015). Dilemma not trilemma: the global financial cycle and monetary policy independence, *National Bureau of Economic Research,* No. w21162. https://www.nber.org/papers/w21162

[90] Sachs, J. D., Cooper, R. N., and Fischer, S. (1981). The current account and macroeconomic adjustment in the 1970s. *Brookings Papers on Economic Activity,* 1981(1), 201-282. https://www.jstor.org/stable/2534399

[91] Sadiku, L., Fetahi-Vehapi, M., Sadiku, M., and Berisha, N. (2015). The persistence and determinants of current account deficit of FYROM: an empirical analysis*. Procedia Economics and Finance*, 33, 90-102. https://doi.org/10.1016/S2212-5671(15)01696-2

[92] Schiff, M., and Wang, Y. (2006). North-South and South-South trade-related technology diffusion: an industry-level analysis of direct and indirect effects. *Canadian Journal of Economics/Revue Canadienne D'économique,* 39(3), 831-844. https://doi.org/10.1111/j.1540-5982.2006.00372.x

[93] Sevim, C., Oztekin, A., Bali, O., Gumus, S., and Guresen, E. (2014). Developing an early warning system to predict currency crises. *European Journal of Operational Research*, 237(3), 1095-1104. https://doi.org/10.1016/j.ejor.2014.02.047

[94] Sheffrin, S. M., and Woo, W. T. (1990). Testing an optimizing model of the current account via the consumption function. *Journal of International Money and Finance,* 9(2), 220-233. https://doi.org/10.1016/0261-5606(90)90032-U

[95] Sooreea, R., and Wheeler, M. (2010). A dynamic analysis of the determinates of the US current account deficit. *Applied Financial Economics,* 20(22), 1687-1695. https://doi.org/10.1080/09603107.2010.524612

[96] Taylor, L. (1994). Gap models. *Journal of Development Economics,* 45(1), 17-34. https://doi.org/10.1016/0304-3878(94)90057-4

[97]   Van Bon, N. (2014). Current account and Fiscal deficits-evidence of twin divergence from selected developing economies of Asia. *Southeast Asian Journal of Economics,* 33-48. https://so05.tci-thaijo.org/index.php/saje/article/view/48770

[98]   Vyshnyak, O. (2000). *Twin deficit hypothesis: The case of Ukraine*. Kyiv: National University Kyiv, Mohyla Academy. http://www.kse.org.ua/uploads/file/library/2000/Vyshnyak.pdf

[99]   Westerlund, J. (2007). Testing for error correction in panel data. *Oxford Bulletin of Economics and Statistics*, 69(6), 709-748. https://doi.org/10.1111/j.1468-0084.2007.00477.x

[100]   Wu, F., and Tang, L. (2000). China's capital flight, 1990–1999: Estimates and implications. *Review of Pacific Basin Financial Markets and Policies,* 3(01), 59-75. https://doi.org/10.1142/S0219091500000054

[101]   Wu, J. L., Chen, S. L., and Lee, H. Y. (2001). Are current account deficits sustainable? Evidence from panel cointegration. *Economics Letters,* 72(2), 219-224. https://doi.org/10.1016/S0165-1765(01)00420-7

[102]   Yaman, Y. (2012). Domestic credit expansion, capital flows and current account imbalances: empirical analyses for Brazil and Turkey (Master's thesis, Middle East Technical University). https://open.metu.edu.tr/handle/11511/21846

[103]   Yol, M. A. (2009). Testing the sustainability of current account deficits in developing economies: evidence from Egypt, Morocco, and Tunisia. *The Journal of Developing Areas*, 177-197. https://www.jstor.org/stable/40376279

[104]   Yurdakul, F., and Cevher, E. (2015). Determinants of current account deficit in Turkey: the conditional and partial Granger causality approach. *Procedia Economics and Finance,* 26, 92-100. https://doi.org/10.1016/S2212-5671(15)00884-9