DO INSTITUTIONAL QUALITY, FINANCIAL DEVELOPMENT, AND MIGRANT WORKERS' REMITTANCES IMPROVE CURRENT ACCOUNT BALANCE? EVIDENCE FROM MENA COUNTRIES

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Abstract

This article examines the relationship between the current account, workers' remittances, and financial development while taking into Institutional quality in 14 countries in the Middle East and North Africa (MENA) region over the period 1995-2020, using nonlinear autoregressive distributed lag (NARDL). By applying the index of political stability and absence of violence/terrorism as a measure of the Institutional environment and two indicators representing financial development, we found that financial development has a significant positive effect on the current account. This clearly reveals the complementarity between financial development and remittances to stimulate the current account balance. Furthermore, we highlight that the variable measuring political stability is negatively related to the current account balance, which implies that an increase in political Instability increases remittances inflows for the specific case of MENA countries. These results suggest an altruistic motivation for the MENA migrant's decision to transfer.

Keywords: Current account balance, Financial development, Institutions and the Macroeconomy, Remittances, Nonlinear panel ARDL, MENA countries

JEL classification: F32, F24, F02, J61, F22

1. INTRODUCTION

Migrant workers' remittances constitute the second prominent source of foreign transfers to developing countries after foreign direct investment (FDI) in the economy. According to the work of McAuliffe and Triandafyllidou (2021) in the Global Migration Report (2022), the flow of international migrants to developing

countries has increased over the past five decades, with 281 million people living in a country other than their home country of origin in 2019 was more than three times the number estimated in 1970. Although the growth rate in remittances has slowed since the global financial crises of 2008 and 2009, remittances have become an important part of international financial flows to developing countries, now more than three times the size of official development assistance and have become the second largest source of foreign direct investment (FDI) financing (Ratha et al. 2009).

In fact, remittance flows grow in the Middle East and North Africa (MENA) by 9,1% to hit $ 59 billion in 2018. However, in 2020, owing to the global economic slowdown caused by the coronavirus epidemic (COVID-19), remittances to the MENA region are expected to fall by 19,6% to $ 47 billion, following the 2,6% growth attained in 2019 (World Bank, 2021). This decline is the result of falling oil prices in the Gulf Cooperation Council (GCC) countries, as they are major players in the global economy thanks to the oil windfall that has allowed them to finance mega-projects and corporate acquisitions. It suggests the resilient behavior of migrant workers' remittances inflows during a crisis. Indeed, the MENA region relies heavily on foreign maneuvering for its economic growth and contains one of considerable numbers of migrants of any country in the world, who remit large sums of money to their home countries each year.

A glaring omission from the previous literature is the focus on analyzing the macroeconomic impact of remittances primarily in areas related to output volatility, financial sector development, poverty, and real exchange rate appreciation. But most of these capital flows are highly volatile and can disrupt exchange rates and current account sustainability, as the Asian crisis of the late 1990s showed. The current account positions of many MENA countries have sheds light notable improvement in recent years, although most countries still run current account deficits. The situation is quite critical for oil-importing countries, especially those affected by socioeconomic conflicts, exchange rate depreciation, massive external debt, and inappropriate trade policies. Thus, external resource flows, such as foreign direct investment (FDI), official development assistance (ODA), and migrant remittances could play a valuable role in offsetting current account deficits. However, despite the huge flow of remittances to MENA countries, to the best of our knowledge, specific empirical work to date that has examined the dynamic relationship between remittances, financial development, and the current account balance for MENA countries is scarce (Lartey et al, 2012). Therefore, we explore this question by examining whether the level of the host country's Institutional environment and financial development influence the impact of remittances on the current account. In this article, we examine the role of financial development and institutional quality as a channel through which migrants' remittances could affect current account balance in selected countries of the MENA region.

The rest of the paper is proceeds as follows. Section 2 describes the theoretical literature review. Section 3 outlines some descriptive statistics of political stability and remittances in MENA countries. The sample and data define in Section 4. Section 5 defines the empirical methodology. Section 6 discusses Preliminary analysis. Section 7 present our main results on the effect of remittance inflows on the current account. Section 8, we test robustness. Finally, section 9 provides some policy recommendations and concludes.

2. LITERATURE REVIEW AND THEORETICAL BACKGROUND

The existing literature presents conflicting positions regarding the effect of remittances and current account. These studies started with the contribution of Bugamelli and Paterno (2009) who underlined the necessity to integrate remittances into macroeconomic analysis, given the huge magnitude of cross-border capital flow exposures worldwide as well as remittances increasing financial stability in emerging economies and in development by decreasing the likelihood of current account reversals. This flux of capital can also create sources of greater vulnerabilities than trade deficits because of the speed and magnitude of adjustment in capital flows and valuations. Interestingly, few studies focus on the link between remittances and current account balance. Though, Lartey et al, (2012) and Hassan and Holmes (2016) are examples of this line of research. These studies examine the relationship between inflow of remittance and the sustainability of the current account. Though, there are different results about the net impact of Migrant workers remittances on the current account balance. To investigate the remittance and current account balance relationship, Lartey et al, (2012) shows that in the case of small open economy exposed to variations in remittances, a fixed exchange rate regime provides better results for households facing an upward trend in Migrant workers' remittances, while a flexible regime gives best results when unforeseen shocks to the business cycle are considered. Hassan and Holmes (2016) agree that more inflow of remittances facilitates the sustainability of current account balance, and that higher levels of remittances lead to a faster speed of adjustment or lower persistence of the current account following shocks. Furthermore, Lartey (2016) presents results to suggest that an increase in remittances leads to an increase in non-tradable inflation under a fixed exchange rate regime, whereas for an inflation targeting regime, an increase in remittances generates dynamics that result in a decrease in non-tradable inflation. Likewise, Lartey (2017) further evidence that current account dynamics generated by remittances inflow depends on both the nature of the remittance and choice of monetary policy regime. The combination of the findings from these theoretical analyses, and the extant literature on capital inflows suggest that exchange rate policy should carry implications for movements in the current account following the inflow of remittances.

Several previous empirical works have endorsed those countries have a low risk of sudden crises if the largest part of the current account balance is financed by more stable capital flows, such as FDI, migrant remittances, which promote greater automatic risk sharing or coincide with investors with a longer time horizon. From a perspective based on national accounts, the macroeconomic impact of remittances would mainly depend on the behavior of the current account. However, there are at least three possible transmission channels: a direct channel, since remittances are an integral part of the current account balance, and two indirect channels, via relative prices and the exchange rate, respectively. Indeed, the direct relationship between remittances and the current account remains ambiguous. On the one hand, net inflows improve the current account balance and on the other hand, as a large share of remittances is spent on imports, it works in the opposite direction, widening the trade balance deficit. While the marginal propensity would calculate the real effect to import from migrant remittances, in this view the current account balance can never deteriorate with the inflow of remittances. The effect of the indirect transmission channel through the exchange rate is likely to be negative. The domestic currency appreciates with an influx of foreign currency as additional demand leads to an upward variation in consumer prices, therefore the current account balance deteriorates, and domestic exports become less competitive internationally. It is possible in this case that countries face a Dutch disease situation in which remittances cause real appreciation, constraining export performance and thus possibly limiting output growth and employment. Remittances from migrants ensure the stability of the current account and reduce the volatility of national production and facilitate integration into international capital markets (Barajas et al., 2009; Ratha, 2009). Though, they can lead to a "boomerang effect", by widening the current account deficit, by increasing imports. Based on the above discussion, it can be assumed that the relationship between the current account balance and migrant remittances might be non-linear.

Theoretical and empirical literature surveys examining the impact of remittances have not provided definitive results on macroeconomic indicators and are subject to several methodological and technical debates. The existing literature on migrant remittances has studied issues relating to their effect mainly on the levels of inequality and poverty (Adams and Page, 2005; Acosta et al., 2009; Azizi, 2021), boost economic growth (Docquier and Rapoport, 2005; Calero et al, 2009, Adarkwa, 2015; Olayungbo and Quadr, 2019), increase investment in human and physical capital (Djadjic, Docquier, and Michael, 2019; Hayot Berk, Lee and Azali, 2020), lead to an appreciation of the real exchange rate and therefore have an improvement in competitiveness (Singer, 2010, Hein and al., 2020), education (Yang, 2008); financial sector development, (Mehta et al, 2021), and the quality of Institutions (Lartey and Mengova, 2015; Guetat and Sridi, 2019). Existing empirical evidence suggests that remittances, more broadly, finance the consumer's intertemporal budget constraint or capital accumulation directly through investments or indirectly

through savings. Therefore, remittances are expected to affect current account dynamics. However, only a few studies have investigated the relationship between remittances and the current account while emphasizing the role of financial development and quality of Institutions.

Moreover, several empirical investigations have supported that the countries which have faced the brutal crises are the ones which have financed the greater part of the current account by more stable capital flows, such as remittances, which favor a greater large automatic risk sharing. The empirical literature has shifted the paradigm towards using remittances as a measure of a country's vulnerability. Remittances can play an important role in macroeconomic stability and financial development in different ways. First, remittances can provide foreign exchange to developing countries, easing the foreign exchange constraints often associated with development. Unlike private loans, remittances are like "*gifts*" from abroad, providing foreign currency without incurring debt in the future. Thus, in the case of remittances, the risks of painful current account liabilities and adjustments that are always associated with private borrowing are not considered. In this case, these transfers can reduce dependence on foreign capital and sustainably finance the current account deficit. For Instance, both financial development and migrant remittances have been identified among the significant drivers of current account balance, most especially the developing countries (Miniaoui and Ouni, 2020). The contributions are found that remittances promote certain aspects of financial development to some extent and better financial system foster receipts of remittances. It also argued that remittances could promote financial development in the short run and the development of the financial sector helps increase the propensity to remit via formal channels.

In a similar vein, empirical investigations on the relationship between remittance inflow and current account balance return to the contribution Chitgupi (2021). Applying the ARDL cointegration approach technique for the period from 2000–2001: Q1 to 2016–17: Q3 reflecting the behavior of India's current account after liberalization, they found that remittances have a higher contribution in ensuring current account sustainability than software services exports. Nevertheless, some researchers support the idea that the current account can only benefit from remittances if they have a good Institutional infrastructure. In other words, remittances will be limited in countries whose Institutional systems do not guarantee the enforcement of property rights and contracts (Guetat and Sridi, 2019). In this context, it is legitimate to introduce Institutional measures as mentioned in the literature El Hamma (2019). From several research conducted on the MENA region, a widely held idea associates the problem with the malicious economic policies adopted by policy makers (Arayssi and Fakih 2017). This view suggests that the implication of adopting these policies can generally be characterized by massive public sector employer numbers, considerable government intervention, large-scale

ineffective subsidies, restrictive trade policies and policies. inefficient budgets (Arayssi et al. 2019).

In fact, economic performance within the region has been relatively weak over the past few decades, which may be due to various political upheavals and conflicts. However, it is well known that MENA countries mainly North African countries have characterized by centralized political systems and higher levels of political Instability than other regions of the world. For several years, political unrest, terrorism, and violence have affected the region. Since the beginning of 2011, known as the Arab Spring revolution, it has experienced many upheavals in search of a more democratic system that should lead to political stability. Consequently, our research is inspired by these works while leading a reflection on the role of financial development and Institutional quality in the MENA region and their effect on the relationship of current account - remittance.

3. REMITTANCES IN MENA REGION: SOME HIGHLIGHTED FACTS

Several reasons justify the mobility of labor in the MENA region, including development gaps, income, Instability. In fact, some of the richest countries in the world (Gulf countries) and some of the poorest are members of the region. This huge imbalance within the region creates an opportunity for an exchange between the countries facing labor excess of supply (such as Egypt, and Jordan), and countries with a discrepancy in employment supply (such as the GCC countries).
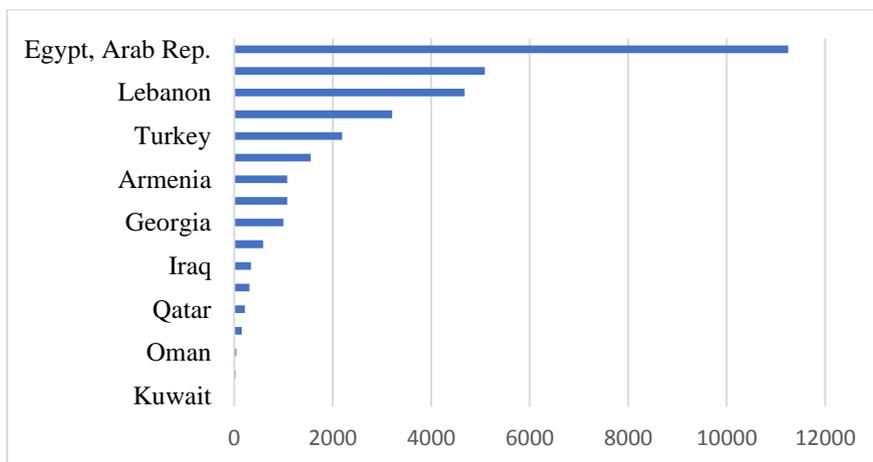

Figure 1. *Mean of remittances (billion U$) by country (1995–2020)*
Source: World Development Indicators (2022)

According to the World Bank (2020), MENA records 18,1 million emigrants representing 5.3% of the population. The top 10 emigration countries of the region

are Egypt, Morocco, Lebanon Iraq, Jordan, and Tunisia. However, Remittances from most countries remained below the 10% of GDP threshold. But, for some countries of the region such as Jordan, they are structurally as high as 20% of GDP. The exceptional highest values of more than 60% are observed in the context of serious trouble like Lebanon at the end of the 1980s. The destinations of the MENA region migrants are high-income OECD countries mainly (40,2%), high-income non-OECD countries (23,2%), developing countries (1,2%), and other unidentified countries (4%). The intra-regional migration represents 31,5%, (World Bank, 2020). Recent socioeconomic upheavals and conflicts are likely to be among the many influencing factors that continue to affect migration dynamics within the MENA region.

In addition to social conflicts, recent events, particularly the uprisings in Egypt, Libya, Tunisia, Lebanon, and Syria, have highlighted the problems associated with the intensive migration phenomenon. However, migrants from these countries have expressed an increased interest in investing their resources and time to support economic development and democratic transition in their countries of birth. Giving to the data of World Development Indicators (WDI, 2021), Egypt, Morocco and Lebanon receive the biggest amount of remittances (Figure 1).
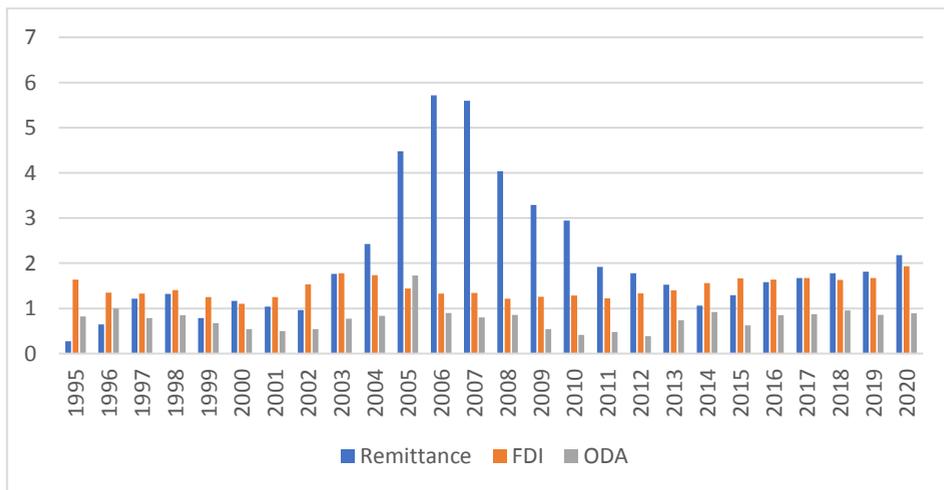
Figure 2. *Remittances and other international flows to the MENA countries as% of GDP.*
Source: World Development Indicators (2022)
Note: FDI: Foreign direct investment, net inflows, Remittances: Personal remittances, received and ODA: net official development assistance received.

Based on remittances per capita, the country with the highest level of personal remittances in 2020 was Egypt with $ 29,603 US. However, workers' remittances in the MENA region have exceeded official development assistance (ODA) and foreign direct investment (FDI). These inflows proved to be particularly resilient in the MENA region during the last global subprime crisis and after the

health crisis (covid-19), unlike other capital flows which fell sharply (Figure.2). In fact, Bettin et al. (2009) confirmed that political Instability in the home country, prompts immigrants to Australia to help relatives at home. To our knowledge, no previous study has attempted to analyze how Instability can influence the level of migrant remittances received in MENA countries and their impact on the current account balance.

4. DATA

4.1 SAMPLE AND CONTROL VARIABLES

Our study is to investigate the relationship among financial development, migrant workers' remittances, institutional quality, and current account balance with a special focus on the Middle East and North Africa (MENA) region over the period 1995-2020. The countries are Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Morocco, Djibouti, Armenia, Georgia, Cyprus, Qatar, Saudi Arabia, Tunisia, Turkey, Lebanon. These countries were chosen for being the top emigration countries in the region, and countries for which relevant data on remittances inflows was available over the period 1995-2020. In addition, several flows of these funds are made through informal channels not accounted for in the overall balance of payments. Therefore, the number of observations is expected to vary across countries leading to estimations over unbalanced panel data.

4.2 DATA ON INSTITUTIONAL QUALITY

The Middle East and North Africa region has long been one of the most unstable regions in the world. This socio-political Instability is the result of ongoing revolutions and tensions, as well as a variety of political divisions.
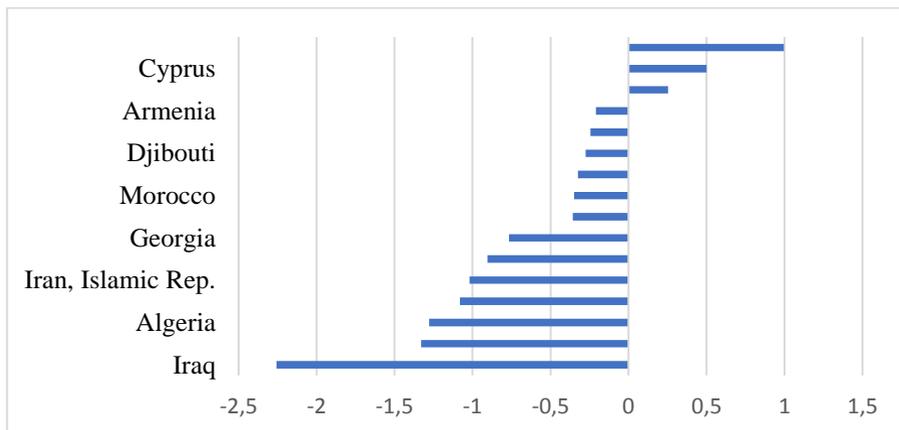
Figure 3. *Mean of political stability by country (1995–2020)*
Source: World Development Indicators (2022)

It also, however, is the result of a wide variety of long-term pressures growing out of the poor quality of governance, economic failures, demographic pressures, corruption, and other forces inside the civil sector. In contrast to previous work estimating the effect of international remittances on the current account, we examine the role that the quality of the policy and Institutional environment plays in conditioning this empirical relationship.

For the Institutional variable, we introduce the Political Stability and Absence of Violence/Terrorism index variable (-2.5; +2.5), which measures perceptions of the likelihood of the government being destabilized by unconstitutional or violent income, counting politically motivated violence and terrorism. If the value is close to -2.5, it means that the probability of insecurity and political Instability within the region is high. Conversely, if the index is close to 2.5, the probability of political Instability, violence, and terrorism is low. However, the average for 1995-2020 based on 14 countries was -0.93 points. The highest value was in Qatar: 0.99 points and the lowest value was in Iraq: -2.25 points.

4.3 OTHER DATA

To assess the strength of the independent link between financial development and current account balance, we control for other potential determinants of current account in our regression. Specifically, we consider the most used variables in the empirical theory defined as follows: the financial development; the foreign direct investment; the oil price; the growth rate as a percentage of GDP; and the official exchange rate. As for financial development (FD) measures, we use the most common indicators in the literature, which are we consider two proxies of financial development. (i) Private credit to the private sector as a percentage of GDP. It is considered to be an indicator of the activity of financial intermediaries (Demirgüç-Kunt and Levine 1996). (ii) money supply as a percentage of GDP (Miniaoui and Ouni, 2020). Table ** of the Appendix display data sources of the variables employed in the study.

Table 1 *Summary statistics*

Variables	Mean	Std.dev	Min	Max	Kurtosis	Jarque-Bera
CA	0.037	0.122	-2.620	4.545	11.756	0.000
FDI	1.118	0.436	-0.223	0.389	1.780	0.001
OER	0.788	0.113	2.331	3.835	1.288	0.018
OIL	0.873	0.188	0.341	1.161	1.720	0.001
CREDIT	0.366	1.648	-1.916	2.346	0.223	0.001
REM	0.078	0.223	0.000	2.308	1.338	0.019
STAB	0.215	1.265	-2.461	0.912	1.265	0.001
M2	0.647	0.303	0.000	1.922	2.069	0.000

Source : Authors' Computation

As a preliminary analysis, in table 1 we present the main descriptive statistics of the retained variables. First, to investigate the statistical properties of the data, we start by giving descriptive statistics of the main variables used in this study, the average current account balance of the total sample over the period studied is 3.7%. Of which the lowest current account balance is recorded in Lebanon (-26.20%) while the highest balance is in Kuwait (45.45%) for the period 1995-2020. Investment as a percentage of GDP has an average of 22%. However, financial development expressed by the credit percentage of GDP has an average of 44.8% which is relatively low. The higher value of the official exchange rate of the local currency is 42% for the case of Iran in 2020. As already mentioned, these variables are platykurtic with a Kurtosis less than 3; though, the current account is anti-platykurtic with a Kurtosis of 11.756. In addition, this distribution rejected the normality assumption (p-value = 0.00). For the countries studied, the Political Stability and Absence of Violence/Terrorism index varies between -2.46 and 0.912. In our sample, the Qatar represent the lowest risk. In Lebanon, the risk of political Instability and terrorism is highest due to the lack of national political consensus.

5. MODEL AND ESTIMATION METHODOLOGY

Given the mixed claims in the literature on the link between remittances and the current account balance, the researcher opts for an optimistic view by hypothesizing that remittances positively affect the long-term current account balance for MENA countries during the period of study. To explore the symmetric relationship among the modelled variable, the Autoregressive distribute Lagged (ARDL) model is as follows (Qamruzzaman, 2017; Qamruzzaman and Wei Jianguo, 2018):

$$\Delta CA_{it} = \beta_0 + \beta_{1i}CA_{it-1} + \beta_{2i}REM_{it} + \beta_{3i}FD_{it} + \beta_{4i}X_{it}$$
$$+ \sum_{j-1}^{N1} \theta_{1i}\Delta CA_{it-1}$$
$$+ \sum_{j-1}^{N2} \theta_{2i}\Delta REM_{it-1}$$
$$+ \sum_{j-1}^{N3} \theta_{3i}\Delta FD_{it-1} + \sum_{j-1}^{N4} \theta_{4i}\Delta X_{it-1} + \varepsilon_i + \mu_{it}^i \qquad (1)$$

In our study, CA_{it} represents the current account balance and FD_{it} reflects the financial development (Credit and M2) and REM_{it} denotes the remittance and X_{it} are exogenous variables. Where the group-specific effect is depicted by ε_i, the groups number is designated by i; and the group period is denoted by t. Besides, the long-run slope coefficients are estimated as $\frac{\varphi_2}{\varphi_1}$ and $\frac{\varphi_3}{\varphi_1}$ correspondingly, since in the long-run, it is presumed that $\Delta CA_{it-1} = 0$; $\Delta REM_{it-1} = 0$ and $\Delta REM_{it-1} = 0$. In the next

step, the study follows the Error correction model (ECT) to estimate the short dynamics. Eq. (1) can be written to incorporate an ECT as follows:

$$\Delta CA_{it} = \sigma_1 v_{it-1} + \beta_0 + \beta_{1i} CA_{it-1} + \beta_{2i} REM_{it} + \beta_{3i} FD_{it} + \beta_{4i} X_{it}$$
$$+ \sum_{j-1}^{N1} \theta_{1i} \vartheta_{ij} \Delta CA_{it-1}$$
$$+ \sum_{j-1}^{N2} \theta_{2i} \Delta REM_{it-1}$$
$$+ \sum_{j-1}^{N3} \theta_{3i} \Delta FD_{it-1} \sum_{j-1}^{N4} \theta_{4i} \Delta X_{it-1} + \varepsilon_i$$
$$+ \mu_{it} \tag{2}$$

Where, v_{it-1} is the linear ECT; σ_1 illustrates the error-correcting speed of adjustment term, while the long-run fundamental parameters have been formerly specified as $\omega_{1i} = \frac{\varphi_2}{\varphi_1}$ and $\omega_{2i} = \frac{\varphi_3}{\varphi_1}$. In recent years, especially after the creation of the nonlinear framework by Shin et al. (2014), the assessment of nonlinearity has become one of the areas of interest using both time series and panel data. In the framework of nonlinearity, it is possible to detect the effect of positive and negative shocks of the explanatory variable on the endogenous variable both in the short and long term (Qamruzzaman and Wei Jianguo, 2018). In Eq. (1) and (2), there are no decompositions of remittance and financial development into negative and positive changes; consequently, symmetric assumption behavior of remittance and financial development on current account balance under this situation. The asymmetric form of Eq. (1) is designated beneath and the decomposition of Migrant workers' remittances into positive and negative shocks follows Shin et al (2014):

$$\Delta CA_{it} = \beta_0 + \beta_{1i} CA_{it-1} + \beta_{2i} REM_{it}^+ + \beta_{3i} REM_{it}^- + \beta_{3i} FD_{it}^+ + \beta_{5i} FD_{it}^- + \beta_{6i} X_{it}$$
$$+ \sum_{j-1}^{N1} \theta_{1i} \Delta CA_{it-1}$$
$$+ \sum_{j-1}^{N2} (\theta_{2i}^+ \Delta REM_{it-1}^+ + \theta_{3i}^- \Delta REM_{it-1}^-)$$
$$+ \sum_{j-1}^{N3} (\theta_{4i}^+ \Delta FD_{it-1}^+ + \theta_{5i}^- \Delta FD_{it-1}^-) + \sum_{j-1}^{N4} \theta_{6i} \Delta X_{it-1} + \varepsilon_i$$
$$+ \mu_{it} \tag{3}$$

In Eq. (3), the inflow of remittance and financial development variables REM_{it} and FD_{it} have now been decomposed into $(\theta_{ij}^+ REM_{it-1}^+ +$

$\theta_{ij}^- REM_{it-1}^-$) and ($\theta_{ij}^+ \Delta FD_{it-1}^+ + \theta_{ij}^- \Delta FD_{it-1}^-$) respectively, signifying positive and negative changes of Migrant workers' remittances and financial development correspondingly. These decomposed remittance and financial development are executed by performing Equation (4) and (5):

$$
\begin{cases}
REM_t^+ = \sum_{j=1}^{S} \Delta REM_{ij}^+ = \sum_{k=1}^{S} \max(\Delta REM_{ij}, 0) \\
REM_t^- = \sum_{j=1}^{S} \Delta REM_{ij}^- = \sum_{k=1}^{S} \min(\Delta REM_{ij}, 0)
\end{cases}
\tag{4}
$$

$$
\begin{cases}
FD_t^+ = \sum_{j=1}^{S} \Delta FD_{ij}^+ = \sum_{k=1}^{S} \max(\Delta FD_{ij}, 0) \\
FD_t^- = \sum_{j=1}^{S} \Delta FD_{ij}^- = \sum_{k=1}^{S} \min(\Delta FD_{ij}, 0)
\end{cases}
\tag{5}
$$

Following Shin et al. (2014), we formulate the ARDL model incorporating the asymmetry effects of Migrant workers' remittances and financial development in eq. (3). We can re-specify Eq. (6) to include an error correction. It is described as follows:

$$
\begin{aligned}
\Delta CA_{it} = {} & \varphi_i \pi_{it-1} + \beta_0 + \beta_{1i} CA_{it-1} + \beta_{2i} REM_{it}^+ + \beta_{3i} REM_{it}^- + \beta_{4i} FD_{it}^+ + \beta_{5i} FD_{it}^- \\
& + \beta_{6i} X_{it} \\
& + \sum_{j-1}^{N1} \theta_{1i} \Delta CA_{it-1} \\
& + \sum_{j-1}^{N2} (\theta_{2i}^+ \Delta REM_{it-1}^+ + \theta_{3i}^- \Delta REM_{it-1}^-) \\
& + \sum_{j-1}^{N3} (\theta_{4i}^+ \Delta FD_{it-1}^+ + \theta_{5i}^- \Delta FD_{it-1}^-) + \sum_{j-1}^{N4} \theta_{6i} \Delta X_{it-1} + \varepsilon_i \\
& + \mu_{it}
\end{aligned}
\tag{6}
$$

In Eq. (6), π_{it-1} represent the ECT that addressed the long-run equilibrium in the asymmetric Panel ARDL while its related parameter φ_i is the speed of adjustment term that Checks how long the system would take to return to its long-run whenever there is a shock. To confirm the short-term and long-term asymmetric relationship for the different variables in the model, we performed statistical Wald tests by estimating the NARDL model given in Eq. (3). The null hypothesis is investigated using a Wald statistic of the respective short-run and long-run hypothesis ($\beta_{2i} = \beta_{3i}, \beta_{4i} = \beta_{5i}$), and ($\theta_{2i}^+ = \theta_{3i}^-$, $\theta_{4i}^+ = \theta_{5i}^-$), for i=1, 2,… q_{i-1}.

Then, in the second regression, we examine the hypothesis that the responsiveness of the current account to remittances is not monotonic and depends on financial development and the level of political regime. Accordingly, we include an interaction term between remittances from migrant workers and institutional quality or financial development in equation (1). Modified versions of equation (1) that include the interaction terms can be written as:

$$
\begin{aligned}
\Delta CA_{it} = {} & \varphi_i \pi_{it-1} + \beta_0 + \beta_{1i} CA_{it-1} + \beta_{2i} REM_{it}^+ + \beta_{3i} REM_{it}^- + \beta_{4i} FD_{it}^+ + \beta_{5i} FD_{it}^- \\
& + \beta_{6i} X_{it} \\
& + \sum_{j-1}^{N1} \theta_{1i} \Delta CA_{it-1} \\
& + \sum_{j-1}^{N2} (\theta_{2i}^+ \Delta REM_{it-1}^+ + \theta_{3i}^- \Delta REM_{it-1}^-) \\
& + \sum_{j-1}^{N3} (\theta_{4i}^+ \Delta FD_{it-1}^+ + \theta_{5i}^- \Delta FD_{it-1}^-) \\
& + \sum_{j-1}^{N4} \theta_{6i} \Delta X_{it-1} \\
& + \sum_{j-1}^{N5} \theta_{7i} \Delta INSTQ_{it-1} + \sum_{j-1}^{N6} \theta_{8i} \Delta REM \times INSTQ_{it-1} + \varepsilon_i \\
& + \mu_{it} \quad (7)
\end{aligned}
$$

Furthermore, $INSTQ_{i,t}$ represents the measures used to indicate the level of Institutional development and $(REM_{i,t} \times INSTQ_{i,t})$ is the interaction term between the Institutional quality and remittance.

$$
\begin{aligned}
\Delta CA_{it} = {} & \varphi_i \pi_{it-1} + \beta_0 + \beta_{1i} CA_{it-1} + \beta_{2i} REM_{it}^+ + \beta_{3i} REM_{it}^- + \beta_{4i} FD_{it} + \beta_{5i} X_{it} \\
& + \sum_{j-1}^{N1} \theta_{1i} \Delta CA_{it-1}
\end{aligned}
$$

$$+ \sum_{j-1}^{N2} (\theta_{2i}^+ \Delta REM_{it-1}^+ + \theta_{3i}^- \Delta REM_{it-1}^-)$$

$$+ \sum_{j-1}^{N3} (\theta_{4i}^+ \Delta FD_{it-1}^+ + \theta_{5i}^- \Delta FD_{it-1}^-)$$

$$+ \sum_{j-1}^{N4} \theta_{6i} \Delta X_{it-1} + \sum_{j-1}^{N5} \theta_{7i} \Delta FD_{it-1} + \sum_{j-1}^{N6} \theta_{8i} \Delta REM \times FD_{it-1} + \varepsilon_i$$

$$+ \mu_{it} \quad (8)$$

In equation (8), if the coefficient of the REM is positive and the interaction term is negative, it can be said that remittances are more effective in improving the current account balance in countries whose financial system is less developed. In other words, a negative interaction indicates that remittances have de facto acted as a substitute for financial services to boost the current account balance.

6. PRELIMINARY ANALYSIS

The first step in our analysis is to perform cross-sectional dependence tests to ensure that the cross-section in the panel data analysis is independent of the consistent coefficient estimates. For this reason, we examine cross-country dependence using the cross-country dependence (CD) test and the Lagrange multiplier (LM) test developed by Breusch-Pagan (1980) proposed by Pesaran (2004). However, several studies have ignored this essential step, which can lead to biased results. The cross-sectional dependence test presented in Table 2 cannot be rejected at a significance level of 1%. This implies that there is a cross-dependency in our data.

Table 2 *Cross-sectional dependence tests*

Tests	Statistic	P-value
Breusch-Pagan LM	42.169***	0.000
Pesaran Scaled LM	8.269***	0.000
Pesaran CD	152.369***	0.000

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively

There is necessity to check the time series properties of the variables before studying the inferential estimation among the variables. Table 3 presents the results of the commonly used unit root test, namely the Im-Pesaran-Shin (IPS) and Levin-Lin Chu (LLC). The results of the estimation revealed a mixed order of integration, which implies that the variables are stationary either at or/and after the first difference.

Table 3 *Panel Unit root test*

Variable	Im-Pesaran-Shin		Levin-Lin-Chu		Ordre of integration
	Level	1st difference	Level	1st difference	
CA	1.589	-9.266***	1.077	-6.145***	I (1)
REM	0.557	-7.265***	-7.627***	-9.223***	I (0)
CREDIT	1.663	-8.215***	-3.227**	-9.225***	I (1)
FDI	1.326	-7.669***	1.362	-11.128***	I (1)
OER	-5.229***	-8.478***	-4.996***	-8.178***	I (0)
OIL	1.965	-4.124***	1.447***	-8.218***	I (1)
INSTQ	-7.166***	-12.266***	-5.412***	-8.695***	I (0)
M2	1.279	-6.289***	2.157	-10.269***	I (1)

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively

After confirming the mixed stationary status of the variables in the panel unit root test, we examined the cointegration relationship between the variables by applying the panel cointegration test proposed by Pedroni (1999, 2004) and Westerlund-Durbin-Hausman (2008). The results of the cointegration test estimation are reported in Table 4.

Table 4 *Panel cointegration test*

Pedroni (1999, 2004) Panel Cointegration Test

Approach	I		II		III	
	Statistical	*P-value*	*Statistical*	*P-value*	*Statistical*	*P-value*
Panel V-stat	1.259	0.103	0.931	0.175	4.512	0.000
Panel rho-stat	−3.511	0.000	−0.597	0.275	−0.284	0.388
Panel PP-stat	−3.506	0.000	−1.039	0.149	1.051	0.853
Panel ADF-stat	−2.772	0.000	0.584	0.720	−0.459	0.322

Alternative hypothesis: between dimension

	W statistical	*P*-value	*W* statistical	*P*-value	*W* statistical	*P*-value
Group rho-stat	−0.535	0.2962	−0.398	0.345	1.789	0.493
Group PP-stat	−3.418	0.0003	−1.073	0.141	−0.459	0.322
Group ADF-stat	−2.693	0.0035	−0.563	0.286	1.091	0.173

Westerlund-Durbin-Hausman (2008) Panel Cointegration Test

	Coefficient	*P-value*
Durbin-Hausman Group Statistic	23.454***	0.000
Durbin-Hausman Panel Statistic	6.621 ***	0.000

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
"I" indicates a model with no deterministic intercept and no trend, "II" a model with an interception, but no trend, and "III," a model with deterministic interception and trend.
***, ** and * denotes 1%, 5% and 10% significant level, respectively.

However, most of the estimated coefficients (Pedroni, 1999, 2004) are statistically significant at the 1% level of significance, confirming model variables I

through III are cointegrated over the long term in all estimates. Furthermore, we also investigate the long-run association by performing Westerlund-Durbin-Hausman panel cointegration proposed by Westerlund (2008). Estimation of the model produced two statistics, namely group statistics based on panel homogeneity and panel statistics based on panel heterogeneity. We observe that the null hypothesis of absence of cointegration is rejected. These results imply that in the long term, the current account will be affected by any changes in financial development and remittances in the economy

Table 5 *Wald test for short and long-run symmetries*

H_0	F-statistic	P-value
$W_{LR,FD}$	22.26	0.001**
$W_{SR,FD}$	1.379	0.148
$W_{LR,REM}$	2.269	0.229
$W_{SR,REM}$	1.596	0.485

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively, W_{LR} represents the Wald test for the long-run symmetry. W_{SR} represents the Wald test for the short-run symmetry.

Based on the results presented in Table 5, which verifies the existence of a long-run asymmetric relationship in the relationships between the current account balance, remittances, and financial development in the MENA region, we estimate the NARDL model given in Eq. (3) determine the asymmetric and non-asymmetric influence of the various variables on the short-term and long-term current account balance.

7. EMPIRICAL RESULTS AND DISCUSSIONS

7.1 THE EFFECT OF FINANCIAL DEVELOPMENT-REMITTANCE ON THE CURRENT ACCOUNT REGRESSION

This section presents the baseline regression results using both ARDL and Non-linear ARDL panel estimations. According to table 6, the ARDL bound test rejects the null hypothesis of no cointegration association between remittances, current account, and financial development. Before drawing conclusions, the validity of the dynamic specification is first assessed due to several diagnostic statistics, including Lagrange multiplier (LM) test for serial correlation and Jarque-Bera statistics for normality. The current account model including other variables passes all diagnostic tests for absence of heteroscedasticity, error normality, parameter stability, and autocorrelation. However, Table 6 reports the estimation of each sample, Panel-A exhibits long-run coefficients with symmetric test results, Panel-B represents short-run coefficients along with symmetric test results of the relationship between the dependent and the independent variables.

The estimations reported in Table 6 show that the coefficient of the oil balance is positive and strongly significant correlated with current account balance. This implies 1% increase in current account would increase significantly current account balance by 0.663%. Among several previous studies which have found the similar result are Chinn and Ito (2008) for from East Asia, Uneze and Ekor (2012) for Nigeria, and Bousnina and Gabsi (2021) for MENA region.

Table 6 Current account estimations results

	ARDL		NARDL	
Variable	**Coefficient**	**P-value**	**Coefficient**	**P-value**
Panel A: Long-run coefficient				
Rem	0.755	0.125	0.652	0.421
FD	0.461	0.000***	0.326	0.004**
Fdi	0.415	0.071*	0.266	0.011**
Oer	-0.623	0.001**	0.227	0.061*
Oil	0.415	0.000***	-0.663	0.001**
REM^+			0.318	0.221
REM^-			0.276	0.425
FD^+			0.266	0.018**
FD^-			0.466	0.014**
C	0.996	0.748	1.699	0.748
Panel B: Short-run coefficient				
ΔRem	0.889	0.111	0.522	0.112
ΔFD	0.761	0.001**	0.326	0.007**
ΔFdi	0.585	0.071*	0.695	0.048**
ΔOer	-0.259	0.066*	-0.369	0.069*
ΔOil	0.488	0.000**	0.988	0.042**
ΔREM^+			0.433	0.216
ΔREM^-			0.476	0.859
ΔFD^+			0.766	0.001**
ΔFD^-			0.265	0.002**
ECT (-1)	-0.856	0.000**	-0.829	0.000***
Diagnosis test				
W_{JB}^2	1.442		1.292	
W_{LM}^2	1.345		1.785	
W_{BPG}^2	6.332		5.312	
W_{RS}^2	1.592		2.482	
$Adj. R^2$	0.998		0.917	
F-statistic	7.326		5.966	
ARDL bound test				
10%	[LB=2.41; UB=2.66]		[LB=1.41; UB=1.96]	

| 5% | [LB=3.11; UB=3.96] | [LB=2.45; UB=3.27] |
| 1% | [LB=4.86; UB=5.23] | [LB=3.92; UB=4.17] |

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively S.E: Standard error.
$W_{LM}^2, W_{BP}^2, W_{RS}^2$ *and* W_{JB}^2 *represent the LM test for serial correlation, Brusch Pagan test for heteroscedasticity, Ramsey Reset test and Jarque Bera normality test for model specification. LB and UB denote lower bound and upper bound, respectively. ECT represent the error correction term. C: constant.*

They all revealed positive relationship between current account and oil balance at different period for different countries. On the other hand, exchange rate is found to be negatively related to current account (Chinn and Ito, 2008). Turning to the proxy of financial development, its effect on the current account is positive statistically significant. The main reason for the positive effect of credit to the private sector on the current account balance is that by increasing the savings rate, mobilizing, and pooling funds, creating investment information, allowing, and promoting foreign capital inflows, and optimizing capital allocation, financial development supports economic growth through capital accumulation and technological progress.

With respect to the effect of remittance inflows on current account, we show that the coefficient is statistically insignificant. These results contrast with previous literature that found a significant positive effect of remittances on the current account balance (Bugamelli and Paterno, 2009; Hassan and Holmes, 2016). These results lead that remittance transfers to MENA countries could be sent in the presence of asymmetric information.

Though, the latter creates a power imbalance between recipients and migrants. In this case, recipients may opt for opportunistic behavior and accept the deterioration of their living conditions to receive more remittances. In other words, recipients who choose to live off the remittances they receive are likely to reduce their participation in the labor market, or engage in riskier ventures (Abdih, 2012). However, the results found lead to questions about the nature of the relationship between the current account and remittances. Otherwise, the impact of remittances on the current account may be conditioned by other variables. We further verify the relationship of substitutability or complementarity of financial development and remittances on the current account in MENA countries during the study period, as already mentioned with the variables d interactions in Tables 7. As a result, we explore the interaction term effect of both financial development and remittance on current account balance for both ARDL and NARDL estimates. We found that this measure positively stimulates the current account balance both in the long run and the short run at 1% significance level. In this case, it can be said that remittances and financial development have a complementary effect on the current account.

The traditional interpretation of this indicator as a measure of the sophistication of the financial system suggests that financial deepening could induce more savings, although a contrasting view argues that more developed financial markets might decrease the need of precautionary savings, and therefore have the opposite effect. Indeed, it is assumed that remittances and financial development have a complementary effect in stimulating the current account balance. This suggests that remittances only have a positive effect on the current account in countries with well-functioning banking systems. Similar results were obtained by Bettin and Zazzaro (2012) and Bousnina and Gabsi (2021).

When asymmetry is included in the estimation, the calculated coefficients indicate an astonishing outcome. The long-run outcomes of the NARDL disclosed; (i) a positive shock in remittances has a positive and significant effect on current account balance (0,318), signifying that any positive shock in remittances trigger current account appreciation in the MENA region. Moreover, they have a greater effect than other financial flows such as FDI and aid, since they are more stable (Mughal and Makhlouf, 2011).

Table 7 *Impact of financial development on the relationship current account balance-remittance*

	ARDL		NARDL	
Variable	**Coefficient**	**P-value**	**Coefficient**	**P-value**
Panel A: Long-run coefficient				
Rem	0.789	0.001*		
FD	0.266	0.011**	0.989	0.018**
Fdi	0.463	0.061*	0.478	0.081*
Oer	-0.714	0.025**	-0.992	0.015**
Oil	0.378	0.023**	0.154	0.003**
Rem^+			0.422	0.011**
Rem^-			0.379	0.002**
FD^+			0.318	0.013**
FD^-			0.276	0.005**
Rem× FD	0.485	0.000***	0.378	0.014**
C	1.021	0.944	2.117	0.944
Panel B: Short-run coefficient				
ΔRem	0.422	0.-001**	0.389	0.001**
ΔFD	0.766	0.001**	0.248	0.000***
ΔFdi	0.416	0.004**	0.296	0.075*
ΔOer	-0.789	0.078*	-0.419	0.018**
ΔOil	0.385	0.000***	0.369	0.000***
ΔRem^+			0.489	0.007**
ΔRem			0.263	0.005**
ΔFD^+			0.433	0.000***
ΔFD^-			0.476	0.000***
$\Delta Rem× FD$	0.447	0.011**	0.322	0.001**
ECT (-1)	-0.815	0.000***	-0.869	0.000***
Diagnosis test				
W_{LM}^2	1.425		1.128	

W_{BPG}^2	5.415	1.915
W_{RS}^2	2.552	3.269
W_{JB}^2	1.112	1.229
$Adj. R^2$	0.999	0.911
F-statistic	6.116	7.226
NARDL bound test		
10%	[LB=2.06; UB=2.21]	[LB=1.06; UB=1.41]
5%	[LB=2.82; UB=3.16]	[LB=2.52; UB=2.86]
1%	[LB=4.22; UB=5.74]	[LB=3.85; UB=4.43]

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively S.E: Standard error.
$W_{LM}^2, W_{BP}^2, W_{RS}^2$ *and* W_{JB}^2 *represent the LM test for serial correlation, Brusch Pagan test for heteroscedasticity, Ramsey Reset test and Jarque Bera normality test for model specification. LB and UB denote lower bound and upper bound, respectively. ECT represent the error correction term. C: constant.*

On the flip side, a negative shock in remittance has a positive and significant effect on current account (0,276), signifying that a negative remittance shock triggers current account in the MENA economies which implies that the government can react to reduced remittances inflow and mitigate on its effects on current account balance in the long run. Therefore, both negative and positive shock in inflow of remittances triggers current account in the MENA economies. Thus, policymakers in the MENA economies should formulate policies that will encourage the flow of money to the home country since it stimulates growth in the economy, though most remittances are channeled to consumption. As expected, the ECT (0,815) is negative and statistically significant, confirming that there is a relatively high speed of adjustment to the long-term equilibrium after the short-term shock subsides. Consequently, nearly 81% of the imbalance caused by the shocks of the previous period converges towards the long-term equilibrium. The negative magnitude of the error correction term implies that 81% of the deviations caused by the shocks of the previous year converge towards the long-term equilibrium of the current year. Therefore, a high level of financial development allows remittances to enhance economic growth and ensure a current account surplus for MENA countries.

7.2 REMITTANCE AND CURRENT ACCOUNT BALANCE: THE ROLE OF INSTITUTIONS

In an attempt to shed some light on the role of institutional system in the between the current account and remittances, we examine both the symmetric and asymmetric model reported in Table 8. The relationship between these two variables and the current account balance is statistically significant at 1%. Though, the interaction term between political stability and remittance appears with a negative and significant sign while political stability is positively related to the current account balance. However, the impact of the interaction term is high (0,758) in this specification for both estimations. Therefore, remittances and the quality of the

Institutional environment are assumed to be complementary in stimulating the current account balance. It seems that the increased risk in MENA countries stimulates their migrants to transfer more money home to help their families in situations of weak regulation and political Instability. Nevertheless, the MENA region is known as a continuously politically and economically unstable region. We can therefore conclude that political Instability can encourage remittances in the case of the MENA region.

To better explain the result, it can be said that remitters transfer more money to their families for consumption purposes, regardless of the conditions in the countries of origin, since this situation is usually escorted by a high unemployment rate and a high emigration rate of skilled people. This means that migrants are interested in the wealth of their families in the countries of origin. This confirms the altruistic motivation of the MENA migrant's decision to transfer. Consistent with the results found by Lucas and Stark (1985), when family income increases, the sender transfers more money with the aspiration to invest or with the intention to return home.

Table 8 *Impact of Institutional quality on the relationship current account balance-remittance*

Variable	ARDL		NARDL	
	Coefficient	**P-value**	**Coefficient**	**P-value**
Panel A: Long-run estimation				
Rem	0.762	0.000		
FD	0.699	0.000		
Fdi	0.426	0.025	0.325	0.122
Oer	-0.485	0.074	0.425	0.007
Oil	0.366	0.001	0.411	0.001
InstQ	0.694	0.000	0.836	0.001
Rem^+			0.415	0.001
Rem^-			0.362	0.000
FD^+			0.412	0.001
FD^-			0.222	0.254
Rem×InstQ	-0.826	0.000	-0.521	0.000
C	1.362	1.315	2.366	1.227
Panel B: Short-run estimation				
Rem	0.412	0.000		
ΔFD	0.216	0.001		
ΔFdi	0.366	0.112	0.219	0.119
ΔOer	-0.432	0.001	0.421	0.001
ΔOil	0.263	0.000	0.359	0.011
ΔRem^+			0.521	0.009
ΔRem^+			0.521	0.009
ΔFD^+			0.226	0.014
ΔFD^-			0.412	0.000
$\Delta InstQ$	0.369	0.000	-0.691	0.000
$\Delta Rem×InstQ$	-0.758	0.000	-0.483	0.000
ECT (-1)	-0.856	0.000	-0.785	0.007

Diagnosis test				
$W_{I.M}^2$	1.325	1.425		
W_{BPG}^2	0.465	5.415		
W_{RS}^2	1.695	2.552		
W_{JB}^2	1.015	1.112		
$Adj. R^2$	0.999	0.989		
F-statistic	9.116	6.456		
Bound test				
10%	[LB=3.16; UB=3.29]		[LB=3.17; UB=3.41]	
5%	[LB=3.52; UB=4.66]		[LB=3.78; UB=4.52]	
1%	[LB=4.80; UB=5.24]		[LB=4.78; UB=5.16]	

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively S.E: Standard error. $W_{LM}^2, W_{BP}^2, W_{RS}^2$ and W_{JB}^2 represent the LM test for serial correlation, Brusch Pagan test for heteroscedasticity, Ramsey Reset test and Jarque Bera normality test for model specification. LB and UB denote lower bound and upper bound, respectively. ECT represent the error correction term. C: constant.

7.3 DUMITRESCU AND HURLIN (2012) CAUSALITY TEST

Therefore, the presence of cointegrating relationship between the variables does not necessarily mean that there is a causal relationship between them, we then proceed to perform Dumitrescu and Hurlin (2012) panel Causality tests. Moreover, this test verifies the robustness of cross-sectional dependence (Baloch et al., 2021) The existence of a cointegrating relationship between the current account balance, remittances, institutional quality, and financial development confirms that there should be at least a causal relationship. The idea of the existence of a causal relationship comes from the fact that the development of the financial system such as the technological innovation of money gram, digital currency, mobile transfer, mobile banking, digital payment, and savings can stimulate migrant remittance flows. Alternatively, banks' quest to create more profit can create a financial system that attracts remittances. However, financial market development can boost economic growth and a developed economy can also improve the current account balance.

Table 9 *Pairwise Dumitrescu–Hurlin panel causality tests*

	Zbar-Stat	P-value
Ca ±> Rem	1.452	0.458
Rem ±> Ca	0.956	0.124
Ca ±> FD	1.326	0.414
FD ±> Ca	2.694**	0.004
Ca ±> InstQ	0.159	0.226
InstQ ±> Ca	0.412**	0.015
Rem ±>FD	3.218**	0.001
FD ±> Rem	1.369**	0.009
Rem ±>InstQ	0.416**	0.001
InstQ ±> Rem	0.745	0.451

FD ±> InstQ	0.485	0.625
InstQ ±> FD	0.695**	0.022

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively; ±> >denotes no causality

From Table 9, the result of the causality test endorses the existence of a unidirectional causal relationship of remittances to financial development at 5% level of significance in MENA countries. The presence of causality between these two variables justifies the previous result of a relationship of complementarity between them. Indeed, The Dumitrescu and Hurlin (2012) panel test result, reveals the absence of causality between the current account and remittances. This implies thar the results already found in the previous section, which postulates that the relationship between the current account and remittances is conditioned by other factors. The results also highlighted the complementarity between remittances and financial development in stimulating current account balance. Specifically, our estimation supports the view that remittances promote current account sustainability in countries with a developed financial system.

The results also show that institutional quality causes the current account balance at a significance level of 5%. This implies that political stability can affect the sustainability of current account balance but not vice versa. Our results are in line with Bousnina and Gabsi (2021), in MENA countries, who found that the environment institutional solid improve the current account. As far as the relationship between remittance and political stability is concerned, the result of estimation suggests that there is no causal relationship. This result supports that an unstable political environment encourages migrants in the MENA region to transfer more funds to their families if political, economic, and financial risks increase in their country of origin.

8. ROBUSTNESS CHECK

To check the robustness of our model, we introduce quasi-money (M2) or money supply as an alternative indicator of financial development. Indeed, the inclusion of quasi-money serves a broader purpose, as it creates a wider range for financial inclusion than having only credit to the private sector as a proxy for financial development (Bousnina et al., 2020).

Table 10 *Robustness check: alternative specification*

Variable	ARDL		NARDL	
	Coefficient	**P-value**	**Coefficient**	**P-value**
Panel A: Long-run estimation				
Rem	0.695	0.011		
Rem⁺			0.326	0.000
Rem⁻			0.419	0.000
M2	0.215	0.415	0.254	0.255

Fdi	0.362	0.125	0.125	0.107
Oer	-0.425	0.000	0.225	0.014
Oil	0.412	0.004	0.191	0.005
C	1.986	1.148	1.326	1.128
Panel B: Short-run estimation				
Rem	0.755	0.141		
ΔRem^+			0.542	0.007
ΔRem^-			0.255	0.025
$\Delta M2$	0.235	0.002	0.129	0.144
ΔFdi	0.275	0.109	0.227	0.117
ΔOer	-0.552	0.002	0.523	0.002
ΔOil	0.292	0.000	0.257	0.029
ECT (-1)	-0.815	0.000	-0.785	0.007
Diagnosis test				
W_{LM}^3		1.785		1.785
W_{BPG}^3		0.645		0.645
W_{RS}^3		1.595		1.595
W_{JB}^3		1.025		1.025
$Adj.R^3$		0.979		0.979
F-statistic		9.136		9.136
Bound test				
10%	[LB=3.16; UB=3.39]		[LB=3.16; UB=3.39]	
5%	[LB=3.53; UB=4.66]		[LB=3.53; UB=4.66]	
1%	[LB=4.80; UB=5.34]		[LB=4.80; UB=5.34]	

Source: Extracted from STATA.14 Output (Authors' Computation, 2022).
***, ** and * denotes 1%, 5% and 10% significant level, respectively S.E: Standard error.
$W_{LM}^3, W_{BP}^3, W_{RS}^3$ *and* W_{JB}^3 *represent the LM test for serial correlation, Brusch Pagan test for heteroscedasticity, Ramsey Reset test and Jarque Bera normality test for model specification. LB and UB denote lower bound and upper bound, respectively. ECT represent the error correction term. C: constant.*

As can be seen from table 10, our conclusions remain the same, thus confirming previously obtained results. In this specification, we discovery that the relationship between financial development and current account is positive but not significant when we use money supply (M2). This suggests that highly developed financial markets will encourage migrants to send money through formal financial channels to their home countries.

9. CONCLUSION AND POLICY IMPLICATIONS

Over the past two decades, remittances have reached the highest level in history. However, despite the existence of an extensive theoretical literature review, researchers do not have a clear consensus on their effect on the current account. Indeed, as several channels exist, it is difficult to establish the direction of the relationship between the current account and remittances. In this paper, we focus on the role of the financial sector and Institutional quality as channels through which remittances can affect the current account. Our evaluation is based on MENA region

for the period 1995-2020. We used ARDL and NARDL models, as well as causality analysis, to examine causal relationships among the above indicators.

Our article contributes to the literature in several ways. In fact, we address for the first time a topical issue in terms of economic policy, namely the potential influence of migrant remittances, financial development, and the quality of the Institutional environment on current imbalances. current account balance for the MENA region. The main conclusions of our study are that a significant part of the evolution of current account balances has been characterized by structural determinants, including foreign direct investment, remittances, oil intensity, financial development, and quality of the Institutional environment in accordance with the result found by Bousnina et al. (2021). We also highlighted that there is a conditional association between the current account and remittance inflows.

More specifically, for MENA countries and in contrast to other regions of the world, migrant remittances increase as the risk of political Instability increases. Therefore, an unstable political environment encourages MENA migrants to transfer more remittances to their families if political, economic, and financial risks increase in their home country. Altruistic behavior of MENA migrants can explain this. Thus, recent regional upheavals, mainly from the Arab Spring countries that have increased the risk of Instability in the region, have not discouraged migrants from transferring more remittances to Tunisia and Egypt, respectively (2 100 and 29 603 US$ million in 2020). Based on the results, we conclude that social solidarity and altruism are a specific motivation to lead for MENA migrants. These results are coherent with the findings of Guetat and Sridi (2017).

It is noteworthy, though, that the moderating effect of financial development probably highlights the more immediate effects of remittances on the current account, potentially through credit from banking Institutions to the private sector. Indeed, the increased adoption of remittance transactions by some financial Institutions is an indication that when remittances are mandated through formal channels, some aspects of the financial system may reform over time (Giuliano and Ruiz-Arranz, 2009; Aggarwal et al. 2011; Misati et al., 2011)

In summary, our research highlights are of major significance for policymakers who pursue to attract remittances. From a policy perspective, for a sustainable current account, policymakers need to encourage migrant remittances even in times of crisis because of the solidarity behavior of MENA migrants. Therefore, they should mobilize these funds well through a rigorous investment policy, so that these inflows are spent on productive investments, offering benefits to migrants to realize personal profit and increase their families' income at the same time. Policymakers would also ensure an attractive exchange rate as this will increase remittance flows.

First, to build capacity for financial infrastructure policies, MENA countries need to ensure financial market sophistication to channel remittances towards more productive activities, using new communication and information technologies whose purpose is to transfer and effectively direct remittances.

Second, MENA countries need to take steps to improve governance, including measures to improve the delivery and quality of public services. The government should focus on minimizing remittance fees for MENA residents abroad, as this will help reduce remittance flows through informal channels. This will promote the legal formalization of cooperation at the regional level, which is essential. Policymakers can draw from this research a way to link remittances received through formal channels to the advancement of banking products and services. Indeed, financial Institutions can adopt credit facilitation programs, i.e., remittance operations as part of their core business modus operandi.

Finally, it would be interesting to point out that the conclusions drawn from this study are of considerable importance for policy makers in MENA countries. Future studies could focus on deepening our research on the politics of remittance spending, it seems relevant to us to keep the complex multidimensional nature of financial development. In other words, there is no composite indicator that simultaneously includes the depth, size, and efficiency of the financial system.

DECLARATION OF CONFLICTING INTERESTS

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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APPENDIX

Table 11 Variable Description, Measurement and Sources

Variables	Sources	Notation	Comments
Current account balance	IMF	CA	Sum of net exports of goods and services, net primary income, and net secondary income. (% of GDP)
Private credit	WDI	CREDIT	Domestic credit to private sector (% of GDP)
Broad Money Supply	WDI	M2	M2/GDP in % of each country
Oil prices (US$)	WTRG Economics	OIL	Annual average of crude oil prices (in USD per barrel, inflation adjusted)
Foreign direct Investment	UNCTAD	FDI	Foreign direct investment, net inflows (% of GDP)
Official exchange rat	WDI	OER	Official exchange rate (LCU per US$, period average)
Remittance	WDI	REM	Personal remittances received /GDP in % of each country