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Migrant Remittances and Economic Growth: The Role of Financial Development and Institutional Quality

Imad El Hamma*

Abstract – This paper investigates the conditional effects of remittances on economic growth in 14 Middle East and North Africa (MENA) countries. Using unbalanced panel data over the period 1982-2016, we study the hypothesis that the effect of remittances on economic growth varies depending on the level of financial development and institutional environment in recipient countries. We use Two-Stage Least Squares (2SLS/IV) instrumental variables method in which we address the endogeneity of remittances. Our results reveal a complementary relationship between financial development and remittances to ensure economic growth. The estimations show that remittances promote growth in countries with a developed financial system and a strong institutional environment.

JEL Classification: G23, O17, O22

Keywords: remittances, economic growth, financial development, institutions quality

Reminder:

The opinions and analyses in this article are those of the author(s) and do not necessarily reflect their institution's or Insee's views.

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The increase in the volume of international migration over recent decades has led to an unprecedented increase in financial flows to labor-exporting countries. Indeed, international migrant remittances,¹ or money sent from migrants to households in the country of origin, have begun to be a significant source of external financing for developing countries. Considering only the remittances passing through formal channels their amount increased by 8.5 percent in 2017, rising to US\$ 466 billion (World Bank, 2018). In all regions, remittances have rebounded in 2017: by 20.9 percent in Europe and Central Asia, 11.4 percent in Sub-Saharan Africa, 9.3 percent in the Middle East and North Africa (MENA), 8.7 percent in Latin America and the Caribbean, and by 5.8 percent in East Asia and the Pacific or in South Asia. The trend is expected to continue in 2018, with remittance flows to developing countries growing by an estimated 4.1 percent to reach \$485 billion. With US\$ 73 billion of remittances, the MENA region is one of the top remittance recipients in the world after East Asia and the Pacific, Latin America and the Caribbean.

In the last decade, remittances have expanded while other financial inflows have declined. This has made remittances one of the most important sources of foreign exchange and household income. They contribute significantly to GDP surpassing Official Development Assistance (ODA), as well as to private debt and portfolio equity. In the countries of MENA region, in 2017, personal remittances received represented on average 6.5% of GDP (World Bank, 2018). The top receivers in terms of percentage of GDP are Lebanon (15.3%) and Palestine (14.3%) closely followed by Jordan (11%), Egypt (9.5%) and Morocco (6.2%) (cf. Appendix, Figure A-I).

However, recorded data on remittances are imperfect and underestimate the actual flows. On the one hand, a number of developing countries do not report remittances in their balance of payments (e.g. Afghanistan, Cuba). On the other hand, since fees for sending money (bank or transfer operators fees) are relatively high, remittances are often sent via informal channels such as friends, relatives and the Hawala system.² El Qorchi *et al.* (2003) estimate informal flows in the range of 10 to 50% of recorded remittances. Remittances fees are known to be high, they depend on the transferred amount, the exchange rate and the country of destination. The World Bank estimates that these

fees represent about 10% of the amount sent. Consequently, the high costs of operations may discourage migrants from sending small amounts through formal channels. Moreover, while migrants might be able to access formal operators or banking services to send money, this is not necessarily the case for recipients.

In the literature, the macroeconomic effects of remittances have been the subject of renewed attention in recent years. As other financial flows, remittances have positive and negative effects. They may increase investments, affect human capital accumulation and alleviate poverty. They may also significantly reduce work effort, create moral hazards or lead to Dutch disease effects. However, the majority of these studies have only focused on the direct effects and they do not incorporate the indirect or the conditional effects. Potential endogeneity problem may also affect these estimations. Remittances are endogenous to education, household income and labour supply of family members and relatives left behind. Reverse causality,³ common factors affecting both remittances, economic growth, and measurement error are also sources of endogeneity.

To address the endogeneity of remittances, in addition to their direct effect, this paper examines the conditional effects of remittances on economic growth in 14 MENA countries.⁴ Our contribution to the literature consists in looking specifically at the interaction between remittances and financial development, on the one hand, and between remittances and the level of institutional quality, on the other hand. Thus, we include a number of interaction variables in the empirical investigations. Our regressions show that a solid financial system and good level of institutional quality complement the positive effect of remittances on economic growth. The remainder of this paper is organised as follows. The next section provides a literature survey of the relationship between remittances and economic growth. The following

1. Transfers in kind are not included in international statistics.
 2. Hawala system is a parallel, informal remittance system. A Hawala transaction does not involve any physical transfer of cash from one country to another one. The system relies on a network of operators called Hawaldars or Hawala dealers. A person willing to transfer money contacts a Hawala operator at the source location. The Hawala operator collects the money and indicates the beneficiary. He then contacts his counterpart in the destination place/country (another Hawala operator) who will deliver the money to the designated beneficiary.
 3. Migrants' remittances may reduce income volatility, promote the financial sector and increase the quality of institutions.
 4. Algeria (DZA), Egypt (EGY), Iran (IRN), Iraq (IRQ), Israel (ISR), Jordan (JOR), Lebanon (LBN), Turkey (TUR), Morocco (MAR), Syria (SYR), Malta (MLT), Tunisia (TUN) and Palestine (PSE).

section describes the data, model specification and econometric technique. Then the empirical results are discussed.

Literature Survey

Existing studies on remittances do not provide conclusive evidence of their macroeconomic impacts. While some have found that remittances may increase investments (Woodruff & Zenteno, 2007; Giuliano & Ruiz-Arranz, 2009), make human capital accumulation easy (Edwards & Ureta, 2003; Rapoport & Docquier, 2005; Calero *et al.*, 2009; Combes & Ebeke, 2011), enhance total factor productivity (Abdih *et al.*, 2012) and alleviate poverty (Akobeng, 2016; Majeed, 2015; Adams Jr & Cuecuecha, 2013), others have pointed out that remittances may significantly reduce recipient households' work effort (El Hamma, 2017; Chami *et al.*, 2005), create moral hazards (Gubert, 2002), accelerate inflation (Khan & Islam, 2013), and lead to Dutch disease effects i.e. an appreciation in the real exchange rate accompanied by resource re-allocation from the traded sector towards the non-traded sector (Amuedo-Dorantes *et al.*, 2010; Bourdet & Falck, 2006; Acosta *et al.*, 2009).

Likewise, neither theoretical nor empirical studies have provided conclusive answers regarding the specific effect of remittances on economic growth. Faini (2002) provides evidence of their positive effect on economic growth, but Chami *et al.* (2003) find a negative correlation between remittances and growth, due to moral hazard and the reduction of recipients' labour force participation. However, Lucas (2005) criticised Chami's study for not taking into account the remittances' endogeneity problem. In the Philippines, using simple correlation and vector autoregression technique (Impulse Response Functions) on annual data for 1985-2002, Burgess and Haksar (2005) argue that the long-term economic effects of remittances are ambiguous. However, they find evidence of a stabilising impact of remittances on private consumption. For the same country, Ang (2009) finds that the overall impact of remittances on growth is positive. Ziesemer (2012) provides evidence suggesting that the effect of remittances on economic growth is stronger in low-income countries (i.e. income lower than US \$ 1,200 per capita). Moreover, the author shows the presence of remittances would increase the growth rate by two percentage points. For

Latin American countries, Mundaca (2009), using the domestic bank credit as a regressor to examine the effect of remittances on growth, also finds a positive effect of remittances on economic growth. According to this author, a 10% increase in remittances (measured as a percentage of GDP) contributes to increasing per capita GDP by 3.49%. When she drops domestic bank credit from the equation, the GDP per capita increases only by 3.18%.

More recently, in Sub-Saharan African (SSA) countries, Singh *et al.* (2011) report that the impact of international remittances on economic growth is negative. However, countries with good governance have more opportunity to unlock the potential for remittances to improve economic growth. In a related study, using annual panel data for 64 African, Asian, and Latin American-Caribbean countries from 1987-2007, Fayissa and Nsiah (2012) find that remittances boost growth in countries with less developed financial systems, by providing an alternative way to finance investment and helping overcome liquidity constraints. In contrast, Ahamada and Coulibaly (2013) report that remittances do not increase growth in 20 SSA countries: for the authors, remittances do not increase physical capital investment. Adams and Klobodu (2016) using the General Method of Moments estimation technique, examine the effect of remittances and regime durability on economic growth find no evidence that remittances have contributed to economic growth in the SSA region.

Until the last decade, most empirical studies seemed to neglect other channels through which remittances can stimulate economic growth. As stated above, remittances can increase the volume of disposable income and savings. Thus, they can stimulate the investment rate and hence economic growth. In Pakistan, Adams Jr (2003) shows that international remittances have a positive effect on the saving rate. For the author, the marginal propensity to save on international remittances is 0.71, while it is only 0.085 on rental income. Moreover, the author demonstrates that the Pakistani households who receive remittances have a very high propensity to save, and the effect of remittances on growth could be amplified if remittances are channelled by the banking sector. In Kyrgyzstan, Aitymbetov (2006) also finds that remittances positively affect economic growth because about 10% of these transfers are invested. Using survey data from Mexico, Woodruff and Zenteno

(2007) find that 5% of remittances received are invested in micro-enterprises. For the authors, remittances have a positive effect on economic growth because they boost investment in the long term. Finally, in five Mediterranean countries, Glytsos (2005) investigates the impact of exogenous shocks of remittances on consumption, investment, imports, and output. Building a Keynesian model in which he includes the remittances as part of disposable income, he demonstrates that remittances boost growth. For the author, the effect of remittances on growth passes through the income disposable and investment channels.

These empirical studies investigate the direct effect of remittances on the determinants of economic growth. However, other researchers have investigated the conditional effect by incorporating an interaction term between international remittances and other variables that could complement the direct effect in stimulating growth. Fajnzylber *et al.* (2008) explore for Latin American countries the remittances' effect on real per capita growth. The authors include as a regressor a term of interaction between remittances and human capital, political institutions and the financial development. They find a negative indication of the remittances' coefficient and a positive sign of the interaction term when human capital and institutions are included. However, the remittances coefficient has a positive sign and the interaction term has a negative sign when the financial system depth is included. Fajnzylber *et al.* (2008) conclude that human capital accumulation and improvement in institutional quality enhance the positive effect of remittances on economic growth. But the financial development substitutes for international remittances in stimulating growth. On the basis of these findings, remittances are considered to be ineffective in enhancing economic development in countries where financial institutions are weak or where there is low human capital accumulation. Giuliano and Ruiz-Arranz (2009) conducted a study similar to Mundaca's. They used financial development in interaction with remittances as regressor and found that remittances are an alternative way to finance investment, help overcome liquidity constraints (substitute for the absence of financial development). In addition, Bettin and Zazzaro (2012) include an interaction variable (remittances multiplied by bank efficiency index) and find a complementary relation between remittances and financial development. As Giuliano and Ruiz-Arranz

(2009), Catrinescu *et al.* (2009) use political and institutional variables as terms of interaction with remittances. The authors, using the Anderson-Hsio estimator, found a positive relation between remittances and growth. However, Barajas *et al.* (2009) use microeconomics variables as instruments to deal with the potential endogeneity between remittances and growth. They find non-significant direct effects of growth of remittances in an estimate for a panel of 84 developing countries.

The literature review above reveals that the impact of remittances on economic growth found in the studies highly depends on the estimation method, the sample period, the country characteristics (strong financial development, good institutions quality, strong bank efficiency), observed and unobserved country-specific effects and the endogeneity of regressors. However, as far as we know, no studies have directly investigated the conditional effect of remittances on growth in the MENA region, having focused only on the direct effect. This paper is an attempt to fill the gap. Specifically, we investigate the interaction between remittances, financial development and the level of institutional quality. To do this, a number of interaction variables have been included in the specifications to assess the conditions in which remittances can improve economic growth in MENA countries.

Model Specification, Data and Variables

We investigate empirically the links between remittances, financial development, institutional quality and economic growth by using an extended version of the growth model of Barro (1991, 1996). The following reduced-form regression is used:

$$\text{GrowthGDP}_{it} = \alpha_0 + \beta_0 \text{GDP}_{it-1} + \beta_1 \text{REM}_{it} + \theta X_{it} + \eta_t + v_i + \varepsilon_{it} \quad (1)$$

Here, GrowthGDP_{it} indicates the growth of real GDP per capita in country i at time t . GDP_{it-1} is the initial (logarithm) GDP per capita, REM_{it} is the key explanatory variable referring to the ratio of the remittances to GDP, η_t is the time-specific effect, v_i an unobserved country-specific effect and ε_{it} is the error term. X_{it} is the matrix of control variables.

Following the definition of the World Bank, remittances are the current transfers sent by

resident or non-resident workers to their countries of origin. They include personal transfers and compensation of employees. Personal transfers consist of all current transfers in cash received (sent) by resident households from (to) nonresident households. Personal transfers thus include all current transfers between resident and nonresident individuals. Compensation of employees refers to the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident and of residents employed by nonresident entities. The remittances variable is scaled by the home country's GDP. It should be kept in mind that the data underestimate the amounts because they do neither include transfers through informal channels (either such as hand-carries by friends or family members or organised as through Hawala), nor in-kind remittances (clothes and other consumer goods).

The choice of control variables and proxies of the determinants of growth are guided by the literature (Barro, 1996; Giuliano & Ruiz-Arranz, 2009; Combe & Ebeke, 2011; Imai *et al.*, 2014). These variables consist of:

- The initial GDP per capita ($\log(\text{GDP}_{t-1})$) to test the convergence hypothesis (Barro, 1996);
- The ratio of gross fixed capital formation to real GDP used as a proxy for investment in physical capital;
- A proxy for the country's degree of openness, measured by the ratio of the sum of exports and imports to GDP;
- The inflation rate, as a proxy for monetary discipline and macroeconomic stability;
- Government spending, measured as the ratio of government consumption to GDP;
- The age dependency ratio, that is, the ratio of dependents (people younger than 15 or older than 64) to the working-age population (those ages 15-64), as a proxy of capital human.

To capture the role of financial development on the effect of remittances on growth, we use three proxies related to the banking sector: the domestic credit to the private sector by banks as a percentage of GDP, M3 (the sum of currency and deposits in the central bank) as part of GDP and bank efficiency ratio. The first variable evaluates financial intermediation. The second one is used as a proxy of the size of financial intermediaries (relative to the size of the economy). The bank efficiency ratio is

defined as the sum of expenses (without interest expenses) divided by the revenue. This is a quick and easy measure of banking productivity, i.e. a bank's ability to turn resources into revenue. All these variables have been chosen to form the financial indicator of World Development Indicators (WDI).

To evaluate the role of the institutional quality level on the effect of remittances on growth, we use four proxies: Political Institutions index, Law and Order, Government Stability and Democratic Accountability indexes. The first index is used to assess the political stability of the countries, Law and Order is used to assess the strength, impartiality of the legal system and popular observance of the law. Government Stability and Democratic Accountability indexes are used to respectively evaluate the government's ability to carry out its declared program(s) and its ability to stay in office, and how responsive government is to its people. These indices on institutional quality are available in data from the PRS Group, who specializes in country risk analysis.⁵

Apart from the variables on institutions quality, all the others are drawn from the World Bank's indicators (World Development Indicators, WDI). WDI is a collection of time-series data for 217 economies, with many indicators going back to more than 50 years, that provides cross-country comparable statistics about development and people's lives around the globe. Summary statistics for all variables and availability of the data are detailed in the Appendix (see Table A-1). The model is estimated on annual observations, as well as 4-years averaged data. All the variables are described in the Appendix (see Table A-2).

The paper implements a panel regression analysis of 14 countries ($N = 14$) from 1982 to 2015 ($T = 34$). The countries are Algeria, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Malta, Morocco, Palestine, Syria, Tunisia, Turkey and Yemen. These countries were chosen for being the top emigration countries in the region, and also countries for which relevant data on remittances inflows was available over the period 1982-2016.

As a starting point (equation (1)), we do not include variables for financial development

5. Detailed definitions and calculation method for institutional quality data are available at <https://www.prsgroup.com/wp-content/uploads/2012/11/icrgmethodology.pdf>.

or institutional quality. Then, in a second set of regressions, we test the hypothesis that the responsiveness of economic growth to remittances depends on the level of financial development and the level of institutional quality. In other words, we explore how the level of financial development or the institutional quality level of the recipient country affects the impact of remittances on economic growth. The novelty of the present paper lies in the estimation of the combined effect of remittances and conditional variables (financial development or the institutional quality). To this end, we introduce an interaction term between remittances and the financial development level or the institutional quality in equation (1). The modified versions of equation (1) that include the interactive terms can be written as:

$$\begin{aligned} \text{GrowthGDP}_{it} = & \alpha_i + \beta_0 \text{GrowthGDP}_{it-1} \\ & + \beta_1 \text{REM}_{it} + \beta_2 (\text{REM}_{it} \times \text{Findvp}_{it}) \\ & + \beta_3 \text{Findvp}_{it} + \theta X_{it} + \eta_t + \nu_i + \mu_{it} \end{aligned} \quad (2)$$

$$\begin{aligned} \text{GrowthGDP}_{it} = & \alpha_i + \beta_0 \text{GrowthGDP}_{it-1} \\ & + \beta_1 \text{REM}_{it} + \beta_2 (\text{REM}_{it} \times \text{InstQ}_{it}) \\ & + \beta_3 \text{InstQ}_{it} + \theta X_{it} + \eta_t + \nu_i + \varepsilon_{it} \end{aligned} \quad (3)$$

In equation (2) and (3), the interaction term indicates that the effect of remittances on economic growth is different for different value of financial development or institutions quality, respectively. The unique effect of remittances on economic growth is not limited to β_1 but also depends on the value of β_2 and financial development/institutions quality. In other words, β_1 and β_2 provide information on the marginal impact⁶ of remittances on growth conditional upon the financial development level or the institutional quality. Moreover, in equation (2), if β_1 is positive and β_2 is negative, remittances are more effective in promoting growth in countries with a shallower finance system. In other words, a negative interaction means that remittances have de facto acted as a substitute for financial services to enhance economic growth. However, when the effect of remittances is significantly negative, a positive interaction suggests that remittances and the financial system are complements (a better functioning financial system would lead remittances towards growth-enhancement). In a similar way, in equation (3), a positive interaction ($\beta_2 > 0$) would indicate that the institutional quality enhances the positive

effect of remittances on growth when ($\beta_1 > 0$). Otherwise, when the interaction is negative ($\beta_2 < 0$), the institutional quality diminishes ($\beta_1 > 0$) or aggravates ($\beta_1 < 0$) the negative impact of remittances on growth.

A panel fixed effect (FE-OLS / OLS) estimation is used to estimate the effect of remittances on economic growth. However, we apply a Fixed Effects Two-Stage Least Squares (FE 2SLS) developed by Bollen (1996) to deal with the potential endogeneity problem and measurement errors. For example, remittances and finance development are likely to be correlated with the error terms because of the reverse causality from growth to those variables. However, when we run FE 2SLS, we test if the instruments selected are correlated with the endogenous regressors using the weak instrument test developed by Cragg and Donald (1993) and test their endogeneity using the Sargan's overidentifying restrictions test. According to the literature (Bollen, 1996; Bollen & Paxton, 1998; Pesaran & Taylor, 1999; Bollen *et al.*, 2007), 2SLS method not only deals with the endogeneity problem and the possible causality between remittances and growth: it easily caters for non-linear and interactions effects, it permits the routine use of often ignored diagnostic testing procedures for problems such as heteroscedasticity and specification error, and simulation evidence from econometrics suggests that 2SLS may perform better in small samples. For the endogenous variables, we rely on the internal instruments that are one lag variables. To check the validity of our estimations, collinearity, causality and endogeneity tests have been applied. In all the regressions, time-dummy variables were included to deal with any specific time effect. This should help to reduce the degree of heteroscedasticity in the error terms. We believe that would make the FE 2SLS more reliable because they are asymptotically efficient as estimates from Generalized Method of Moments developed by Arellano and Bond (1991) and Blundell and Bond (1998).

Differentiating equations (2) and (3) with respect to remittances, equations (4) and (5) capture the marginal effect of remittances on GDP per capita growth for different levels of financial development and institutional quality, respectively. Moreover, according to equation (4) and (5), the minimum level (threshold) of

6. β_1 measures the direct effect while β_2 represents to the conditional effect.

financial development and institutional quality at which the effect of remittances on economic growth is equal to zero is $(-\beta_1/\beta_2)$.

$$v\text{Findvp} = \frac{\partial \text{REM}}{\partial \text{GDP}} = -\beta_1 + \beta_2 \times \text{Findvp}_{it} \quad (4)$$

$$v\text{InstQ} = \frac{\partial \text{REM}}{\partial \text{GDP}} = -\beta_1 + \beta_2 \times \text{InstQ}_{it} \quad (5)$$

Econometric Results

Tables 1 and 2 (models 9-11) report FE-OLS and 2SLS regression based on equation 2 and using both annual and 4-year averaged data to avoid any potential simultaneity bias. However, we only interpret the results of the 2SLS estimation, because OLS results are likely to be biased: the relationship between remittances-growth and remittances-financed development is certainly endogenous. Fixed effects and period effects are added to the whole regression, which makes sense as far as the level of remittances may change over time. Tables 1, 2 and 3 show that the regressions satisfy mutually the Kleibergan-Paap test for weak instruments, and overidentification test of all instruments. The estimations reported in Table 1 (Model 1) show that the coefficient of the GDP lag is negative and strongly significant, and investment and trade openness are positively correlated with economic growth. Human capital, population growth rate and government spending negatively affect the growth rate (Jongwanich, 2007; Acosta *et al.*, 2009). This finding seems to validate the idea that higher involvement of the government in the economy will have significant consequences on economic growth (Fer & Henrekson, 2001). Finally, high inflation is associated with a lower growth rate. These results are confirmed by estimation based on 4-year averaged data (see Table 2).

Moving to the key variables, we can see that all the measures of financial development have a positive and statistically different from zero effect. However, the estimated coefficients of remittances are not statistically different from zero (i.e. remittances do not have a significant impact on economic growth). These findings contrast with previous literature which found a positive effect of remittances on economic growth (Klobodu *et al.*, 2016; Imai *et al.*, 2014; Nyamongo *et al.*, 2012). These results suggest that remittances inflows to MENA countries could be sent in the presence of asymmetric information. The latest creates an imbalance

of power between migrants and recipients: the latter may adopt an opportunistic behaviour and display a deterioration in their living conditions in order to receive more remittances. In other words, recipients who opt to live off the transfers they receive are likely to decrease their labour force participation or work effort, limit their job search, or engage in risky ventures (Ebeke, 2012). In these cases, remittances arguably create moral hazard which is harmful to economic growth.

These results also lead to questioning the nature of the relationship between remittances and growth. In other words, the effect of remittances on economic growth may depend on other variables. Therefore, we explore this issue by investigating whether the financial development and the institutional level of the receiving countries influence the effect of remittances on the performance of economic growth. First, we estimate equation (2) in which a number of interaction variables have been added. We explore whether there is a substitutability or complementarity relationship between remittances and financial development in promoting economic growth in MENA countries. Models 2 to 4 (Table 1) and Models 9 to 11 (Table 2) present the outcomes of the regression models for both annual and four-year averaged data. In each model, we use one proxy for financial development. The estimated coefficients of remittances and the interaction term are significantly negative and positive, respectively. As we explain above, the remittances and the financial development have a complementary effect in boosting the growth of GDP. This finding suggests that remittances have a positive effect on economic growth only if the domestic banking system is sufficiently sound. Similar findings were also obtained by Bettin and Zazzaro (2012) and Nyamongo *et al.* (2012). However, these results are not in line with those of Barajas *et al.* (2009) or Giuliano and Ruiz-Arranz (2009) that supported the substitution view. Unlike our study, Giuliano and Ruiz-Arranz only used measures of the size of the financial sector, ignoring its efficiency (i.e. the ability to provide high-quality products and services at the lowest cost).

Solving equation (4), the threshold for a positive effect of remittances on economic growth is equal to $(-\beta_1/\beta_2)$. Based on 2SLS estimations of model 1, and taking into account the ratio of domestic credit provided by banks to GDP as measure of the level of financial development, one obtain a value of $(-0.31/0.07309 = 4.2413)$. The

Table 1
Growth, Remittances and Financial Development (Annual Data)

Independent variables	Dependent variable: GDP per capita growth (Annual data)							
	Model 1		Model 2		Model 3		Model 4	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
GDP per capita (initial)	-0.0997 (0.108)	-1.281*** (1.467)	-0.106 (0.0986)	-1.661*** (0.578)	-0.143 (0.0902)	-1.582*** (1.583)	-0.113 (0.0933)	-1.875*** (0.523)
Investment	-0.515 (1.083)	3.151*** (1.184)	1.638* (0.881)	5.591*** (1.571)	1.615* (0.875)	4.904*** (1.637)	1.569* (0.878)	5.905*** (1.590)
Inflation	-0.00250 (0.0118)	-0.00733* (0.00722)	-0.0113 (0.00938)	-0.0312** (0.0181)	-0.0120 (0.00935)	-0.0300*** (0.0168)	-0.0109 (0.00936)	-0.0295*** (0.0171)
Trade openness	0.137 (0.755)	-0.751 (1.666)	0.504 (0.594)	0.916 (1.453)	0.317 (0.588)	0.935 (1.449)	0.363 (0.582)	1.414 (1.526)
Population growth	-1.996*** (0.655)	-2.932*** (0.766)	-1.378** (0.570)	-3.232*** (0.643)	-1.987*** (0.600)	-2.566*** (0.650)	-1.443** (0.578)	-3.406*** (0.656)
Government spending	-1.135 (1.151)	-3.915** (1.924)	-1.757* (0.928)	-3.623** (1.741)	-2.081** (0.905)	-2.523 (1.751)	-1.777** (0.905)	-3.479** (1.765)
Human capital	-0.338 (1.616)	-7.638*** (2.835)	0.162 (1.349)	-5.805*** (2.023)	1.231 (1.343)	-5.590*** (1.879)	0.105 (1.317)	-5.444*** (2.109)
Remittances (REM)	0.479 (0.274)	1.005 (0.486)	-0.226 (0.172)	-0.310** (0.017)	-0.541** (0.227)	-0.4580** (0.099)	-0.330 (0.222)	-0.1421* (0.084)
Findvp1			0.0113* (0.0142)	-0.0560* (0.0330)				
REM * Findvp1			0.0033 (0.069)	0.07309** (0.0085)				
Findvp1					-0.373* (0.199)	0.4945* (0.0289)		
REM * Findvp2					0.0564 (0.0234)	0.1438* (0.0122)		
Findvp3							-0.0487 (0.0357)	0.0140** (0.0068)
REM * Findvp3							0.373* (0.199)	0.0757** (1.0164)
Constant	-0.163** (0.0733)		0.0331* (0.0847)		0.0289 (0.0851)		0.0393* (0.0847)	
Observations	359	355	311	309	331	324	311	303
R-squared	0.331	0.292	0.292	0.295	0.234	0.276	0.234	0.290
Kleibergen Paap test stat.		0.269		2.873		1.270		1.321
P-value Overidentit		0.311		0.728		0.292		0.172
Number of id	14	14	14	14	14	14	14	14

Notes: * p<0.05, ** p<0.01, *** p<0.001. Standard errors in parentheses and their significance were calculated using the robust procedure in the Stata software application. Findvp1 = Domestic credit to private sector by banks in % of GDP; Findvp 2 = Liquide Liabilities (Broad money) in % GDP sector to GDP; Findvp3 = Claims on private sector (annual growth as % of broad money).
Sources: See Table A-1 in Appendix; author's calculations.

Table 2
Growth, Remittances, Financial Development and Institutional Quality (4-Year Average Data)

Independent variables	Dependent variable: GDP per capita growth (4 year average)								
	Financial development			Institutions quality				Findvp & InstQ	
	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17
	Findvp1	Findvp2	Findvp3	Polit. risk	Law and order	Gov. Instab.	Dem. Account..	Findev1/ Pol. Risk	Findvp2/ Gov. Sta.
GDP per capita initial	-0.057*** (0.02)	-0.052*** (0.03)	-0.087*** (0.01)	-0.024*** (0.02)	-0.016*** (0.03)	-0.018*** (0.00)	-0.231*** (0.04)	-0.058*** (0.08)	-0.015*** (0.06)
Investment	1.060*** (0.13)	1.063** (0.11)	1.026** (0.10)	1.724** (0.08)	1.313*** (0.00)	1.420*** (0.08)	3.994* (0.04)	1.179** (0.25)	1.280** (0.41)
Human capital	1.195 (0.79)	1.234 (0.97)	1.038 (0.18)	8.978 (0.23)	3.499 (0.85)	5.163 (0.32)	3.214 (0.04)	6.385 (0.35)	-3.291 (0.98)
Government spending	0.0483* (0.02)	0.0471** (0.01)	0.0560** (0.01)	1.161** (0.22)	0.421*** (0.06)	0.761* (0.03)	1.354*** (0.04)	0.846** (0.33)	0.398** (0.99)
Inflation (coefficient * 100)	-0.02*** (0.06)	-0.034*** (0.13)	-0.0475*** (0.08)	-2.41*** (0.19)	-0.719*** (0.58)	-1.47*** (0.28)	-1.40*** (0.04)	-1.53** (0.26)	-0.641** (0.65)
Population Growth	-0.321*** (0.10)	0.301*** (0.09)	0.259** (0.05)	1.823** (0.20)	5.012** (0.61)	3.0444* (0.29)	6.138 (0.04)	3.459* (0.26)	4.330* (0.64)
Trade Openness	-0.0311 (0.08)	-0.0252 (0.06)	-0.0714 (-0.09)	-0.333 (0.10)	-0.0601 (0.01)	0.148 (0.17)	-1.110 (0.04)	-0.114 (0.07)	0.0266 (0.06)
Remittances (REM)	-0.0135** (0.03)	-0.254** (0.05)	-0.975*** (0.05)	0.897** (-0.08)	0.646* (0.39)	2.207*** (-0.26)	21.46** (-0.04)	-0.0259* (-0.00)	-0.749 (0.48)
Findvp1	0.154** (0.14)							0.072** (0.03)	
REM * Findvp1	0.0626* (0.20)							0.094* (0.65)	
Findvp2		0.0345** (0.01)							0.0305 (0.10)*
REM * Findvp2		.0181*** (0.00)							.0364** (0.44)
Findvp3			0.894*** (0.15)						
REM * Findvp3			0.0885** (0.05)						
Political Risk Index				-0.144 (0.22)				0.0984 (0.34)*	
REM * Pol.Risk Index				0.0270 (0.04)				0.176 (0.16)	
Government Instability					-0.436*** (0.84)				-0.382* (0.9)
REM * Gov. Instability					0.0687*** (0.05)				0.0397 (0.03)
Law and Order						-0.295** (0.15)			
REM * Law and Order						0.0540*** (0.27)			
Democratic Accountability							7.488 (0.04)		
REM * Demo. Account.							0.062 (0.04)		
Observations	61	61	58	58	58	58	58	58	58
R-squared	0.232	0.231	0.254	0.392	0.119	0.230	0.131	0.219	0.323
Kleibergen Paap test stat.	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.001	0.000
P-value Overidentit.	0.458	0.456	0.468	0.789	0.759	0.843	0.755	0.525	0.568
Number of id	14	14	14	13	13	13	13	13	13

Notes: * p<0.05, ** p<0.01, *** p<0.001. No data from Institutional Quality Database being available for Palestine, the country was excluded from the sample in models 12 to 17.

Sources: See Table A-1 in Appendix; author's calculations.

sample mean is equal to $\log(68.435) = 4.2196$, indicating that the main part of the sample could benefit from remittance flows.

Table 3 provides the list of countries satisfying the threshold for the estimated models (models 2 to 4). We can see that 8 out of 14 countries satisfy the requested threshold of models 2 and 3. However, only 6 countries reach the requested threshold estimated with model 4. In the other countries, the impact of remittances on growth is negative.

For example, in the case of Egypt, when financial development is measured as the ratio of domestic credit provided by the financial sector to GDP, the total effect is $\partial \text{GDP} / \partial \text{REM} = -0.4352 + (0.1873 \times 4.4775) = 0.0172$. This indicates that a 1% increase in the share of remittances in GDP leads to a 0.0172% increase in GDP per capita growth rate. However, in Algeria, a 1% increase in remittances leads to a 0.046% decrease in the GDP growth rate. Figure I presents the impact of remittances on GDP per capita growth calculated for each country at the mean level of the three financial development indicators. This figure shows that whatever the financial development indicator, only 6 countries of the sample seem to benefit from remittances.

As for the last estimations, all control variables have the expected sign and are on the whole significant, whatever the nature of the specification. From Table 4, we can note that the direct effect of the institutional variables is positive (with one exception, the case of the democratic accountability). This suggests that countries with high level of institutions quality (lower risk) register a higher growth rate than countries with low level of institutions quality. This finding is in line with Farooq *et al.* (2013) for Pakistan, Agostino *et al.* (2016) for African countries, Huang (2015) for Asia Pacific countries and Alam (2017) for a panel of 86 countries.

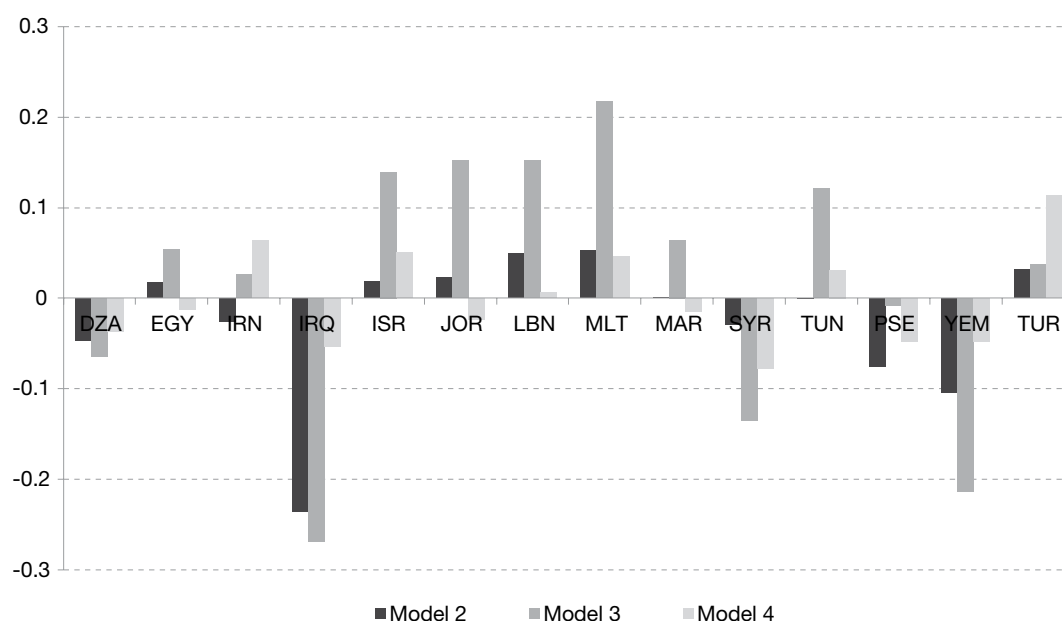
Results of equation (3) appear in Table 4 (annual data) and in Table 2 (4-year averaged data, models 12 to 15). In this estimation, we test the interaction between remittances and the institutional environment. In other words, the specification allows us to test the hypothesis that the effect of remittances on growth is conditioned by the institutional quality. We present five specifications. In the first one, we use the composite Political Risk Index. This index is the sum of 12 components measuring various dimensions of the political and business environment faced by the firms operating

Table 3
Financial Development Threshold (Annual Data)

Mean by component				Model 2		Model 3		Model 4	
				β_1	β_2	β_1	β_2	β_1	β_2
				-0.3100	0.0730	-0.458	0.1438	-0.1421	0.0757
	Findvp1	Findvp2	Findvp3	Threshold					
Algeria	3.601424	2.735302	1.382847	4.2413		3.1850		1.8771	
Egypt	4.477593	3.554391	1.709718	Countries satisfying the threshold by model					
Iran	4.247697	3.364963	2.721709	Egypt		Egypt			
Iraq	1.019601	1.317312	1.173017	Iran		Iran		Iran	
Israel	4.487161	4.152959	2.537411	Israel		Israel		Israel	
Jordan	4.545133	4.240894	1.564242	Jordan		Jordan		Lebanon	
Lebanon	4.913593	4.240236	1.956086	Lebanon		Lebanon		Malta	
Malta	4.958192	4.691771	2.4798	Malta		Malta		Tunisia	
Morocco	4.253182	3.630694	1.6798	Morocco		Morocco		Turkey	
Palestine	3.209784	3.127658	1.240927	Tunisia		Tunisia			
Syria	3.837318	2.241324	0.8459081	Turkey		Turkey			
Tunisia	4.24037	4.026381	2.286178						
Turkey	4.66627	3.443014	3.372612						
Yemen	2.813941	1.700788	1.23657						

Sources: See Table A-1 in Appendix; author's calculations based on annual estimation (cf. Table 1).

Figure I
Marginal Effect of Remittances on Economic Growth Based on Each Country's Findvp Index Value



Sources: See Table A-1 in Appendix; author's calculations.

in a country. The value of this index varies from 0 for very high risk to 100 for very low risk. Then we replace the Political Risk Index by indices of Government Stability, Law and Order, and Democratic Accountability to better assess which of these components is effective in transmitting the effect of remittances to economic growth.

Considering our variables of interest, we note that all the interaction terms are positive and significant (exception for democratic accountability). The coefficients of remittances are negative, meaning that a higher level of institutional quality could eliminate the negative effect of remittances on economic growth. Remittances and institutional quality are complements in enhancing growth. Thus, the strength and impartiality of the legal system, popular observance of the law, the government's ability to carry out its declared programs, and its ability to stay in office send a positive sign to recipient households, which may correct the asymmetry of information and promote growth. This implies that, in MENA countries, the economic performance is positively correlated with the quality of institutions. Based on these results, Table 5 compares this calculated threshold with the level of the

institutional quality in each country of the sample. As we can see, out of 14 countries considered in the analysis, only Iraq and Lebanon do not have the robust and resilient institutional system required to benefit from remittances. Figure II shows the marginal effect of remittances on growth based on each country's Institutions quality index value. As we can see, remittances may have a negative effect on economic growth. However, the institutions of the country of origin can moderate this effect. First, a legal and regulatory system involving protection of property rights, contract enforcement, and good accounting practices has been identified as essential for financial development (Huang, 2010). A solid financial system in the country of origin increases migrants' confidence in the banking system, and money will be sent through banks. In the country of origin, remittances tend to reduce the liquidity constraints of the financial system, allowing to finance other projects stimulating economic growth.

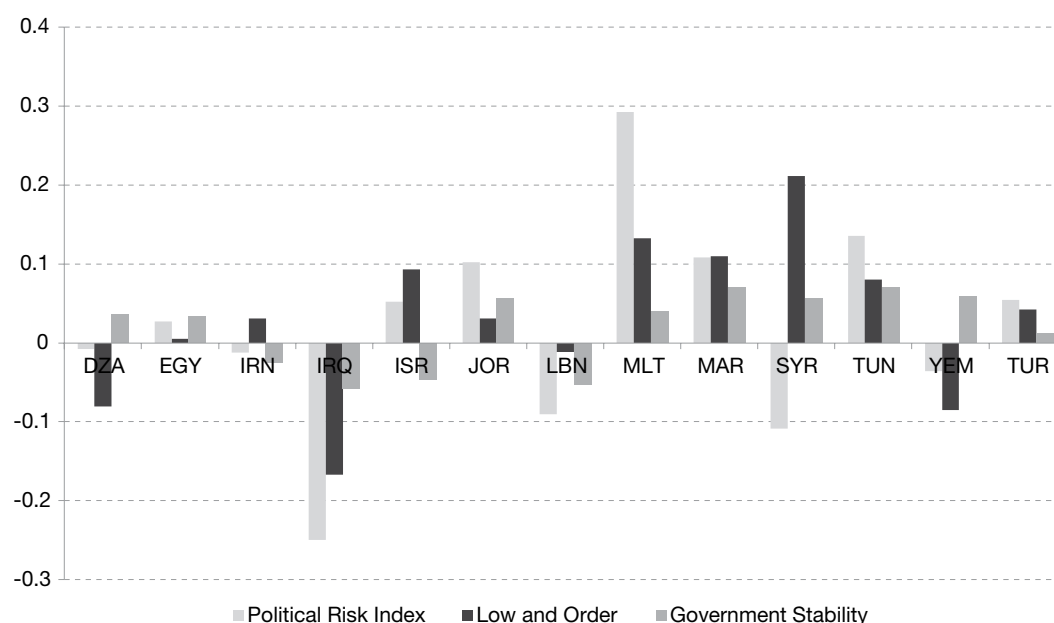
Policy implications are of different orders. First, remittances might become a substitute for inefficient or non-existent credit markets, providing local entrepreneurs with an alternative source of credit, and helping bypass the

Table 4
Growth, Remittances and Institutional Quality (Annual Data)

Independent variables	Dependent variable: GDP per capita growth (Annual data)							
	Model 5		Model 6		Model 7		Model 8	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
GDP per capita (initial)	-0.161* (0.0909)	-1.983*** (0.804)	-0.105 (0.0879)	-1.478*** (0.669)	-0.120 (0.0926)	-1.304*** (0.488)	-0.132 (0.0886)	-1.320*** (0.490)
Investment	1.639* (0.896)	4.642*** (1.618)	1.648* (0.897)	5.057*** (1.531)	1.363 (0.883)	4.738*** (1.593)	1.601* (0.883)	5.780*** (1.598)
Inflation	-0.0116 (0.00942)	-0.0270* (0.0154)	-0.0113 (0.00945)	-0.0290* (0.0164)	-0.00760 (0.00957)	-0.0272* (0.0153)	-0.0133 (0.00973)	-0.0288* (0.0160)
Trade Openness	0.276 (0.614)	0.854 (1.418)	0.508 (0.578)	0.880 (1.434)	0.162 (0.584)	0.830 (1.449)	0.246 (0.590)	1.037 (1.520)
Population Growth	-2.092*** (0.621)	-2.836*** (0.611)	-1.410** (0.574)	-3.033*** (0.602)	-1.785*** (0.603)	-2.582*** (0.656)	-1.513*** (0.561)	-3.219*** (0.575)
Government spending	-2.133** (0.911)	-2.611 (1.723)	-1.746* (0.906)	-3.365** (1.695)	-1.707* (0.936)	-2.943* (1.696)	-2.028** (0.931)	-3.353** (1.699)
Human capital	0.841 (1.279)	-5.893*** (1.991)	0.125 (1.419)	-5.661*** (1.936)	1.137 (1.351)	-5.313*** (1.824)	0.436 (1.355)	-5.606*** (2.031)
Remittances (REM)	-0.588** (0.239)	-0.6821** (0.075)	-0.220 (0.071)	-0.322* (0.024)	-0.410** (0.014)	-0.428** (0.045)	-0.296 (0.216)	0.570 (0.340)
Political Risk Index	-0.0175 (0.0246)	0.0520** (0.0351)						
REM * Pol. Risk Index	0.218** (0.090)	0.0124** (0.0137)						
Law and Order			-0.0327 (0.192)	0.0725* (0.280)				
REM * Law and Order			0.0974 (0.0999)	0.0981** (0.144)				
Government Stability					0.180 (0.117)	0.245* (0.130)		
REM * Gov. Stability					0.098* (0.0548)	0.0569* (0.0113)		
Democratic Accountability							0.163 (0.170)	-0.0399 (0.244)
REM * Demo. Account.							0.00991 (0.0890)	-0.105 (0.105)
Constant	1.907* (7.653)		1.133 (7.998)		-2.149 (7.681)		1.423 (7.896)	
Observations	316	310	313	310	313	310	313	310
R-squared		0.246		0.659		0.252		0.242
Kleibergen Paap test stat.		0.365		1.863		1.654		1.761
P-value Overidentit.		0.311		0.728		0.292		0.342
Number of id	13	13	13	13	13	13	13	13

* p<0.05, ** p<0.01, *** p<0.001. Standard errors in parentheses; significance is calculated using Stata's robust procedure.
Note: Data from Institutional Quality Database are not available for Palestine.
Sources: See Table A-1 in Appendix; author's calculations.

Figure II
Marginal Effect of Remittances on Growth Based on Each Country's Institutions Quality Index Value



Note: Data from Institutional Quality Database are not available for Palestine.
Sources: See Table A-1 in Appendix; author's calculations.

Table 5
Institutional Quality's Threshold (Annual Data)

Mean by component				Model 5		Model 6		Model 7				
				β_1	β_2	β_1	β_2	β_1	β_2			
				-0.6821	0.0124	-0.322	0.0981	-0.428	0.0569			
	Political Risk Index	Law and Order	Government Stability	Threshold								
Algeria	54.2	2.5	8.2	54.7871		3.2824		7.5220				
Egypt	57.0	3.3	8.1	Countries satisfying the threshold by model								
Iran	53.8	3.6	7.1									
Iraq	34.7	1.6	6.5							Egypt	Egypt	Algeria
Israel	59.0	4.2	6.7							Israel	Jordan	Egypt
Jordan	63.0	3.6	8.5							Jordan	Israel	Jordan
Lebanon	47.6	3.2	6.6							Malta	Malta	Malta
Malta	78.3	4.6	8.2							Morocco	Morocco	Morocco
Morocco	63.5	4.4	8.8							Turkey	Turkey	Turkey
Syria	46.1	5.4	8.5							Yemen	Yemen	Tunisia
Tunisia	65.7	4.1	8.8							Tunisia	Tunisia	
Turkey	59.2	3.7	7.7									
Yemen	51.9	2.4	8.6									

Note: Data from Institutional Quality Database are not available for Palestine.
Sources: See Table A-1 in Appendix; author's calculations based on Table 3.

lack of collateral or high lending costs to start productive activities (Giuliano & Ruiz-Arranz, 2009). Second, a higher level of institutions quality (enforcement of contracts, property rights, absence of corruption), might reassure the migrants regarding the situation of their home country, possibly leading to virtuous circles of migrants increasing their transfers to invest, innovate and take part in the economic activity, and recipient families further motivated to invest in physical and human capital.

* *
*

In the last two decades, remittances reached the highest level in history and the receiving countries realized their importance. However, despite the growing literature, economists and researchers do not have a clear consensus regarding their impact on economic growth. Indeed, since many channels exist, it is challenging to establish the direction of relationship between migrants' transfers and economic growth. In this paper, we were interested in the role of financial sector and institutions quality as channels from which

remittances may affect growth. Thus, we use, respectively, three and four indexes of financial development and institutions quality. Our Two-Stage Least Squares estimations show that high level of financial development and a strong institutional environment are required to enable remittances to enhance growth, independently of the measure of financial development and institutions quality used. However, our data have several limitations. First, we could not find an indicator taking into account the complex multidimensional nature of financial development. In other words, there is no composite measure that would encompass simultaneously the size, depth and efficiency of financial institutions. Second, the frequency and availability of data on institutions quality within the time horizon of the study vary between countries, making international comparisons difficult. Third, we did not include informal remittances and in-kind transfers, which may affect our estimations. Finally, within these limits, a policy implication for MENA countries could be that it is important not only attract more remittances inflows, but also to should provide more incentives for these inflows to be spent in productive investments contributing to economic growth. □

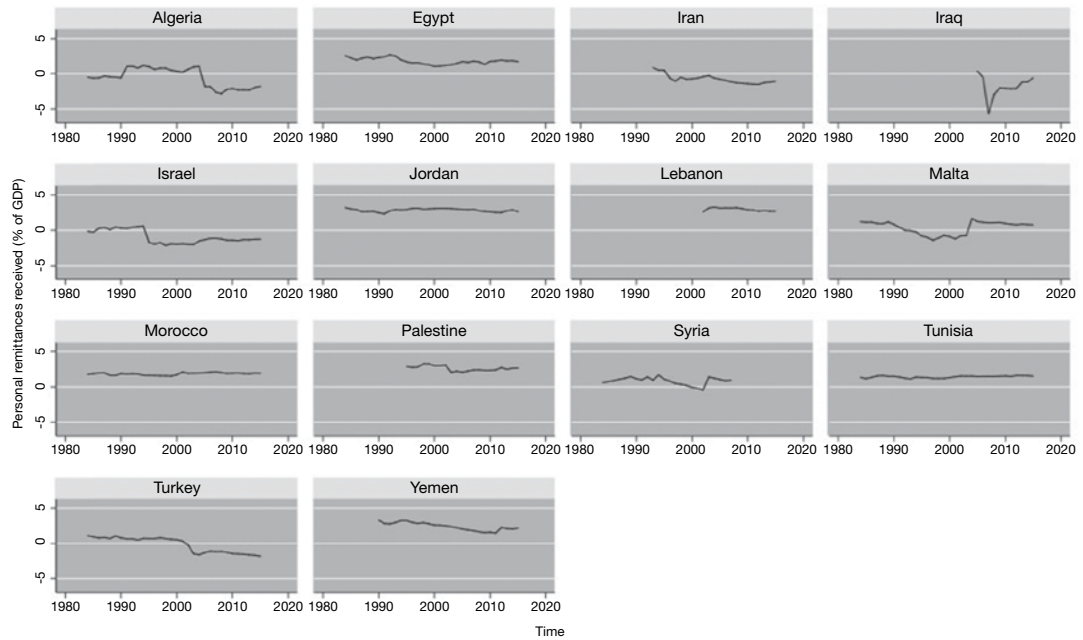
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Figure A-I
Personal remittances, received (% of GDP) in 2017



Sources: World Bank national accounts data; author's calculations.

Table A-1
Sources Used for the Variables

Indicator	Source	
GDP per capita growth (annual %)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
GDP growth (annual %)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
GDP per capita (current US\$)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
Population growth (annual %)	Derived from total population. Population source: (1) United Nations Population Division. World Population Prospects: 2017 Revision, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.	1982-2016
GDP per capita (constant LCU)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
Personal remittances, received (% of GDP)	World Bank staff estimates based on IMF balance of payments data, and World Bank and OECD GDP estimates.	1982-2016
Inflation, GDP deflator (annual %)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
Trade (% of GDP)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
Gross fixed capital formation (% of GDP)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
Age dependency ratio (% of working-age population)	World Bank staff estimates based on age distributions of United Nations Population Division's World Population Prospects: 2017 Revision.	1982-2016
General government final consumption expenditure (% of GDP)	World Bank national accounts data, and OECD National Accounts data files.	1982-2016
Domestic credit provided by financial sector (% of GDP)	International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates.	1982-2016
Domestic credit to private sector (% of GDP)	International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates.	1982-2016
Domestic credit to private sector by banks (% of GDP)	International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates.	1982-2016
Broad money (% of GDP)	International Monetary Fund, International Financial Statistics and data files, and World Bank and OECD GDP estimates.	1982-2016
Political Risk Index	International Country Risk: The PRS Group	1984-2013
Low and Order	International Country Risk: The PRS Group	1984-2013
Government Stability	International Country Risk: The PRS Group	1984-2013
Democratic Accountability	International Country Risk: The PRS Group	1984-2013

Table A-2
Summary Statistics

Variables	Mean	Std. Dev.	Min.	Max.	N
GDP per capita growth (annual %)	1.8	7.7	-64.9	53.9	417
GDP growth (annual %)	4.2	7.8	-64.1	57.8	417
Personal remittances, received (% of GDP)	6.078	6.7	0.0	26.6	375
GDP per capita (constant LCU)	5,885,703.6	17,384,328.7	890.7	84,729,064	420
Gross fixed capital formation (% of GDP)	23.5	6.1	1.7	42.1	396
Population growth (annual %)	2.2	1.2	-3.1	7.1	441
Human capital (Gross enrollment ratio)	71.7	19.1	39.4	119.1	442
Inflation, GDP deflator (annual %)	15.9	37.8	-26.8	396.4	417
Trade (% of GDP)	79.4	51.9	0.0	326.1	413
Government final consumption expenditure (% of GDP)	17.1	5.5	2.3	35.8	413
Domestic credit to private sector by banks (% of GDP)	40.7	27.6	1.2	124.4	370
Domestic credit provided by financial sector (% of GDP)	68.4	42.2	-16.3	207.3	363
Claims on private sector (A. growth as % of broad money)	11.5	21.7	-75.9	307.7	358
Broad money (% of GDP)	74.9	44.2	20.2	249.5	359
Political Risk Index	57.6	15.1	18	88	238
Low and Order	24.9	28.2	1	75	383
Government Stability	6.2	2.6	1	11	383
Democratic Accountability	5.4	2.9	0	12	383

Sources: See Table A-1; author's calculations.