

Remittances, Economic Freedom, and Economic Growth in North African Countries

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This contribution investigates the causal interactions between remittances, economic freedom and economic growth in a panel of 4 countries of North Africa (Tunisia, Morocco, Algeria and Egypt) from 1980 to 2012. Using System Generalized Method of Moment (GMM) panel data analysis, we find strong evidence of a positive link between remittances and economic growth. We also find evidence that economic freedom appear to be working as a complement to remittances and, moreover, that the effect of remittances is more pronounced in the presence of the economic freedom variable. Thus, to the extent that remittances have become a major source of external development finance, policies promoting greater freedom of economic activities gain significantly from the presence of remittances.

Keywords: Economic freedom index, Remittances, Economic growth, Panel data analysis.

JEL Classifications: O10; O43; F24; C23.

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1. Introduction

It is now well documented that remittances are a sizable and important feature of developing economies throughout the world. According to World Bank (2014), remittances to developing countries are projected to grow by 5.0 percent to reach US\$435 billion in 2014 (accelerating from the 3.4 percent expansion of 2013), and rise further by 4.4 percent to US\$454 billion in 2015. Global remittance flows, including flows to higher-income countries, are expected to follow a similar pattern, rising from US\$582 billion in 2014 to US\$608 billion in 2015. In 2013, remittances are more than three times larger than official development assistance, steadier than both private debt and portfolio equity flows, and excluding China significantly exceeded foreign direct investment flows to developing countries. They are also more stable component of receipts in the current account, reliably bringing in foreign currency that helps sustain the balance of payments and dampen gyrations.

In the extant literature, there is substantial disagreement as to what economic factors determine the inflow of remittances, as well as what impact, if any, these inflows have on economic growth. For example, Chami et al., (2005) found a negative relationship between remittances and economic growth among a sample of developing and developed economies from the early 1970s. Remittances were found to be counter-cyclical in nature: as income growth rises, remittances fall. Therefore, they demonstrated that remittances act like compensatory transfers and not like capital flows and hence do not contribute to economic growth. On the other hand, Giuliano and Ruiz-Arranz (2009) argued that the remittances impact on economic growth depends on the financial development degree in the host country. Indeed, the authors indicated that countries with less developed financial systems, remittances can be considered as an alternative way to finance investment and help overcome liquidity in order to

compensate for the inefficiency of the financial system, thus enhancing economic growth. In contrast, countries with well developed financial systems, the remittances *do not significantly* increase *economic growth*

It is equally important to outline that the causal link between remittances and economic growth has not received more systematic attention. In this context, few research works recently start to be interested in investigating such causality link directly or through transmission channels (see Bettin et al., 2009; Siddique et al., 2010; Le, 2011).

Our motivation is to provide comprehensive evidence on the existence and the nature of the dynamic relationship between remittances and economic growth by including institutional variable as a specific channel through which remittances may have an impact on economic growth in North African countries over the period 1980-2012. The inclusion of this variable in the model can be motivated by the fact that remittances alone would not be strong enough to promote economic growth. In this context, many empirical studies have investigated the key channels of how remittances affect economic growth. Indeed, controlling for institutional variables as transmission channels in the analysis enhances the impact of remittances on economic growth. The results show that remittances have a positive and significant effect on economic growth in the region, and that the impact is more pronounced when institutional development variable is included in the model. Moreover, we find that political countries with sounder institutions will increase the development payoff of remittances on economic growth. Thus, the findings reported in this study represent a significant contribution to the existing literature, particularly because they have been generated utilizing estimation techniques that address the inherent endogeneity of the included variables.

The paper is organized as follows. Section 2 reviews some of the voluminous extant literature. Section 3 describes the data and empirical methodology. The empirical results are presented in Section 4. The final section draws conclusions based on the results.

2. Literature Review

The literature on remittances to developing countries has developed rapidly in recent years. Many empirical studies concentrate on the impact of remittance inflows on the living standards of recipient households. In this context, Abdih et al., (2012) noted that remittances help lift poor people out of poverty by supporting a higher level of consumption than would otherwise be possible. Remittances also tend to help the recipients maintain a higher level of consumption during economic adversity (Chami et al., 2012). Recent studies reported that these inflows allow households to work less, take on risky projects they would avoid if they did not receive this additional source of income, or invest in the education and health care of the household. In other words, remittances are a boon for households. Others focus on the short run macroeconomic impact of remittances, typically finding a positive relationship with aggregate income, investments and employment. In this point, Glytsos (2002) modeled the direct and indirect impacts of remittances on incomes and hence on investment in seven Mediterranean countries, and found that investment rises with remittances in six out of the seven countries. Additionally, the results of the analysis conducted by Leon-Ledesma and Piracha (2004) for 11 transition economies of Eastern Europe over the period 1990-1999 showed support for the view that remittances have a positive impact on productivity and employment both directly and indirectly through their effect on investment.³

Other studies treated endogeneity problems by using internal instruments via dynamic panel techniques. Using panel unit root and

³ Also see Le (2011) and Dzansi (2013).

cointegration techniques, Ramirez and Sharma (2008) found that remittances have a positive and significant effect on economic growth of selected upper and lower income Latin American and Caribbean countries. Vargas-Silva et al., (2009) found positive effects of remittances on growth for 26 Asian countries. Eltayeb Mohamed (2009) showed that remittances have a positive impact on economic growth both directly and indirectly through their interactions with financial and institutional channels for 7 Middle East and North Africa countries. Fayissa and Nsiah (2010) found a significant positive impact of remittances on economic growth. Using annual panel data of 36 African countries between 1980 and 2004, they found that remittances inflows increased economic growth, providing an alternative way of financing investments and overcoming liquidity constraints. Bjuggren et al., (2010) estimated a model based on a panel of 79 countries over the period 1995-2005 to point out that remittances positively affect investment in presence of high quality institutional system and well developed credit market. Similarly, using a panel of 66 developing countries, including Guyana, over the period 1991-2005, Bettin and Zazzaro (2012) showed that an efficient banking system complements the positive effect of remittances on GDP growth. Also using the system GMM estimator, Nyamongo et al., (2012) indicated that remittances appear to be an important source of economic growth in a panel of 36 countries in Africa over the period 1980-2009. Similar results are reported by Nsiah and Fayissa (2013), who found that remittances had a positive and significant effect on economic growth in Africa, Asia and Latin American-Caribbean countries over the period 1985-2007. Recently, Imai et al., (2014) investigated the empirical link between remittances, economic growth and poverty using annual panel data for 24 Asian and Pacific countries. They found that remittances promote economic growth and reduce poverty in the region.

Despite the fact that most of the studies advocate remittances' positive impact in developing countries, critics argued that growth effects of remittances is either negative or at best zero. Guha (2013) applied the Dutch Disease theory to explain the effects of remittances on the economy and introduced a micro-macro framework to establish channels of transmission of remittances through the economy. They showed that remittances may lead to real exchange rate appreciation leading to sectoral production reallocation. The study further argued that multiple shocks in remittances may take the economy towards a negative growth path resulting from the weakening of the traded sector. Barajas et al., (2009) examined the impact of remittances on economic growth in 84 host countries based on annual observations over the period 1970-2004 and found a negative effect on economic growth.

Chami et al., (2005) in a study of 113 countries found a negative link between remittances and economic growth as was found by Rajan and Subramaniam (2005). Also the findings of Rahman's (2009) study on Bangladesh, Pakistan, India and Sri Lanka appeared inconclusive. In a discussion paper, Siddique et al., (2010) showed that growth in remittances does not lead to economic growth in Bangladesh. An IMF study in 2005 on 101 countries found no statistical relationship between remittances and economic growth. The above discussion on the empirics on remittances and economic growth indicates that the impacts of remittances on economic growth are mixed.

Part of explanations for these distinct findings may be that the studies suffer from an omitted variable bias: the role of institutions and governments policies. There are strong arguments, based on the analysis of Knack and Keefer (1995) and Acemoglu et al., (2001) for example, for believing that the economic growth impact of remittances ultimately depends greatly on the underlying institutions and government policies in the host country. The quality of institutions might play a key role in determining the exact effect of

remittances on economic growth, because institutions exert substantial impact on the volume and efficiency of investment.

There is some limited empirical work suggesting that institutions play a role in the impact of remittances on economic growth. Faini (2002), for instance, found that the impact of remittances on economic growth is positive. He interpreted the positive coefficient on the policy variable as a signal that in order for the full impact of remittances to be realized, a good policy environment is needed. That is, an environment that does not foster macroeconomic uncertainty and supports social and productive infrastructures. Barajas et al., (2009) also argued that their findings that remittances have had, at best, no impact on economic growth may suggest that many countries do not yet have the right institutions and infrastructure in place. However, they do not investigate this claim empirically.

Ratha (2003), in a less systematic analysis, found that during 1996-2000, remittances averaged 0.5 percent of GDP in countries with a higher-than-median level of corruption compared to 1.9 percent in countries with lower-than-median corruption, giving an indication that corruption has an effect on the level of income generated from remittances. The quality of political institutions may therefore, affect the flow of remittances. Moreover, one of the most important determinants of remittances is the cost of transactions in the destination country. Conceivably, an improvement in economic institutions that facilitate economic freedom would serve to reduce such costs, which affect both the volume and value of remittances. In this context, the quality of economic institutions in general, could be an important determinant of remittances in developing countries.

Rodrik (2004) noted that institutional quality holds the key to prevailing patterns of prosperity across countries. He argued that rich countries attract investors because of the presence of effective property rights and the rule of law, and the existence of monetary and fiscal policies that are grounded in solid macroeconomic institutions,

whereas poor countries are those where these arrangements are absent or ill-formed. He also indicated, however, that institutions exert a very strong effect on aggregate incomes, such that poor countries that strengthen property rights of entrepreneurs and investors would likely experience a lasting increase in productive capacity.

In a related study, Freund and Spatafora (2008) investigated the determinants of remittances and their associated transaction costs. They found a negative and statistically significant impact of transactions costs on remittances to suggest that, when costs are high, migrants either refrain from sending money home or else remit through informal channels. The study concluded that one percentage reduction in transaction costs would increase money transfer through formal channels by 14-23%. The same conclusion is drawn by Ratha (2013) who surveyed numerous empirical studies to show that the extent to which countries benefit from remittances is closely related to the strength of domestic institutions and the macroeconomic environment.

Catrinescu et al., (2009) extended the approach of Chami et al., (2005) to include policy and institutional variables and estimate a panel using the Anderson-Hsiao estimator. They found some significantly positive results for the impact of remittances on economic growth, which are more robust when interaction terms with institutional indicators are included. They argued that a sound institutional environment affect the volume and efficiency of investment; hence in the presence of good institutions, remittances could be channeled more efficiently, ultimately leading to higher output. Abdih et al., (2012), on the other hand, showed that remittances affect the incentives faced by governments, and may therefore have important impact on the quality of domestic governance. They argued that access to remittance income makes government corruption less costly for domestic households to bear, the government engages in more corruption.

Bang et al., (2013) also examined the impact of financial liberalization on remittances inflows to 84 countries over the period 1990-2005. They found that various dimensions of financial reform impact remittances differently. In their study, increased economic freedom in the financial sector, captured by absence of direct government control over the allocation of credit has a positive and immediate impact. However, improved robustness of financial markets, captured by the effective and apolitical regulations and other policies that enhance financial markets, has a negative, lagged effect. They concluded that the net combined effect suggests that in the long-run, an across-the-board reform has a slightly negative impact on remittances.

Given that remittances are a major source of external development finance, the quality of institutions in the host countries can be expected to affect remittances, particularly in the case where they are driven by a portfolio choice motive, where migrants seek to exploit investment opportunities as a means to allocate their savings optimally between origin and destination countries. The presence of high quality institutions that favor foreign investments would, therefore, serve to attract remittances towards investment opportunities in the host country. Much of the literature that focuses on institutions tries to find a direct link between institutional quality and economic growth. This paper seeks to extend this literature by examining the importance of institutional quality across a range of countries, in order to determine whether there are interaction effects with remittances.

3. Data and Empirical Methodology

3.1. Data

This section describes the data used in the empirical analysis, specifically the measures of economic growth and a number of controlling variables used in growth regressions. Our sample consists of 4 countries of the North Africa (Tunisia, Morocco, Algeria and

Egypt) with annual data for the period 1980-2012. The sources of economic data were the World Bank's World Development Indicators (WDI) and African Development Indicators (ADI). Institutional data were obtained from (Gwartney et al., 2014).

Data on remittances as a ratio of GDP is obtained from the ADI (2015). The broader measure records remittances as the sum of three aggregates: First, *workers' remittances* records current transfers to nonresidents by migrants who are employed in, and considered a resident of, the countries that host them. The category *employee compensation* is composed of wages, salaries, and other benefits earned by individuals in countries other than those in which they are residents for work performed for and paid for by residents of those countries. Finally, *migrants' transfers* are contra-entries to the flow of goods and changes in financial items that arise from individuals' change of residence from one country to another, such as movement of accumulated savings when a migrant returns permanently to the home country. In most research on remittances, all three types of transfers are summed and labeled "remittances".

The extended model will also include the following institutional variable⁴: the economic freedom index (EFI) from the Fraser Institute. EFI is used to measure freedom of economic activities in a country. Higher indexes are associated with smaller governments (Area 1), stronger legal structure and security of property rights (Area 2), access to sound money (Area 3), greater freedom to exchange with foreigners (Area 4), and more flexible regulations of credit, labor, and business (Area 5). According to the survey of De Haan et al., (2006), which focused on the empirical studies that used this economic freedom indicator of the Fraser Institute, greater EF stimulates economic growth. Thus, a positive coefficient is expected. This variable is taken from (Gwartney et al., 2014).

⁴ There is an extensive literature on the effects of institutions on economic growth. See, among others, Acemoglu et al., (2001, 2003), Glaeser et al., (2004), and Catrinescu et al., (2009).

The dependent variable is the real GDP per capita growth. Our baseline model includes the explanatory variables common to most growth regressions found in the literature:

- Initial GDP per capita was included to control for economic convergence in our regressions. Several studies pointed out that per capita income could serve as a good proxy for the general development and sophistication of institutions (La Porta et al., 1998). A negative coefficient is expected, indicating the existence of conditional convergence among countries;
- Investment ratio (INV), defined as the ratio of gross fixed capital formation to GDP. A positive coefficient is expected, as greater investment shares have been shown to be positively related with economic growth (Mankiw et al., 1992);
- Primary school enrollment (PSE). Greater enrollment ratios lead to greater human capital, which should be positively related to economic growth (Gemmel, 1996).
- Population growth (PG). All else remaining the same, greater population growth leads to lower GDP per capita growth (Solow, 1956). Thus, a negative coefficient is expected.

3.2 Empirical Methodology

Here we explain the estimation strategy used in this paper. As a starting point we formulate the standard growth model in a manner consistent with Catrinescu et al., (2009). We estimate the impact of remittances on economic growth by system GMM. For illustrative purposes, we do not include in our first regression any variable for institutional development. We estimate the following equation:

$$GDP_{i,t} = \alpha_0 + \alpha_1 * GDP_{i,t-1} + \alpha_2 * Re m_{i,t} + \alpha_3 * X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t} \quad (1)$$

where $GDP_{i,t-1}$ denotes the (logarithm of) level of GDP per capita of country i at the end of period t , $Re m_{i,t}$ refers to the log of remittances as a percentage of GDP, $X_{i,t}$ is the matrix of control variables described in the previous section; μ_t is a time specific effect, η_i is an unobserved country-specific fixed effect and $\varepsilon_{i,t}$ is the error term.⁵

We are interested in testing whether the marginal impact of remittances on growth, α_2 , is statistically significant. The group of conditional variables is comprised of variables frequently used in the growth literature including population growth, investment ratio, and primary school enrollment (as a proxy for human capital).

In order to assess whether the countries in question have a legal-institutional framework that is perceived by investors (and remittance senders) as conducive to economic growth and business activity, the well-known economic freedom index (EFI) generated by the Fraser Institute is included in the model. This index is a summary measure of a number of components of economic freedom, such as monetary policy and price stability, the top marginal tax rate, legal structure and property rights, viability of contracts, and the rule of law. The index has a scale that ranges from 1 to 10, where a score of 10 represents the highest attainable level of economic freedom. It is anticipated that this variable will have a positive and statistically significant effect on economic growth, and attract more remittance flows to the region.

⁵ Note that Eq. (1) can be alternatively written with the growth rate as dependent variable as:
 $Growth_{i,t} = GDP_{i,t} - GDP_{i,t-1} = \alpha_0 + (\alpha_1 - 1) * GDP_{i,t-1} + \alpha_2 * Re m_{i,t} + \alpha_3 * X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t}$

where $(\alpha_1 - 1)$ is the convergence coefficient.

Next, institutional variable is included to determine if there is any relation between the degree of economic freedom and the impact of remittances on growth. A positive interaction term indicates that remittances and the quality of institutions are complementary and that the growth effects of remittances are enhanced in good policy environments. On the other hand, a negative interaction term reveals that remittances and institutional quality are used as substitutes to promote economic growth. This study estimated Eq. (2) with an interaction term between remittances and the EFI variable to determine whether these variables were complements or substitutes.

$$GDP_{i,t} = \alpha_0 + \alpha_1 * GDP_{i,t-1} + \alpha_2 * Rem_{i,t} + \alpha_3 * EFI_{i,t} + \alpha_4 * (Rem_{i,t} * EFI_{i,t}) + \alpha_5 * X_{i,t} + \mu_i + \eta_i + \varepsilon_{i,t}$$

(2)

Our estimation technique addresses issues of endogeneity and unobserved country characteristics. Therefore, to account for endogeneity and country-specific unobserved characteristics, we use the system GMM dynamic panel estimation method. The option to use system GMM is based on the argument that the existence of weak instruments implies asymptotically that the variance of the coefficient increases and in small samples the coefficients can be biased.

To reduce the potential bias and inaccuracy associated with the use of Difference GMM Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998) develop a system of regressions in differences and levels. The instruments for the regression in differences are the lagged levels of the explanatory variables and the instruments for the regression in levels are the lagged differences of explanatory variables. These are considered as appropriate instruments under the assumption that although there may be correlation between the levels of explanatory variables and the country specific effect, there

is no correlation between those variables in differences and the country specific effect.

The consistency of the System GMM estimator depends on the validity of the assumption that the error term does not exhibit serial correlation and on the validity of the instruments. By construction, the test for the null hypothesis of no first-order serial correlation should be rejected under the identifying assumption that the error is not serially correlated; but the test for the null hypothesis of no second-order serial correlation, should not be rejected. We use two diagnostics tests proposed by Arellano and Bover (1995) and Blundell and Bond (1998), the Sargan test of over-identifying restrictions, and whether the differenced residuals are second-order serially correlated. If the null of both tests cannot be rejected, this would indicate that the model is adequately specified and the instruments are valid. The results from this estimation procedure are reported in table 1.

4. Empirical results

To investigate the role of remittances and economic growth we present a range of results. We follow the approach of first estimating the growth model following the standard variables as shown in Table 1 then the proxy for institutional development, the EFI index, is included.

Further evidence of the importance of remittances to economic growth are shown in Table 1, where the institutional development indicator is introduced into the model, and it is found that the estimated coefficients are largely positive and significant at the conventional levels of testing. The results suggest that the main variable of interest, migrant remittances to GDP are positive and statistically significant in all columns, suggesting that remittances

contribute significantly to economic growth in North Africa. However, the impact is more pronounced when the institutional development variable is included. Column (1), for example, suggests that a 1% increase in remittances leads to a 0.0036% increase in the growth rate. A 1% increase in migrant remittances leads to a 0.0064% increase in economic growth in column (2). This conclusion is also consistent with previous empirical studies such as Ramirez (2013).

The role of institutional development is shown in Table 1. In particular, we explore whether the institutional development of the recipient country influences the specific uses given to remittances and their capacity to influence growth. To this end, we estimate Eq. (2), which allows the impact of remittances on economic growth to vary across levels of institutional development in the recipient country. The EFI coefficient carries a positive sign and is statistically significant at conventional levels, implying that economic growth is stronger when EFI is high because it makes investment more productive. This finding is consistent with the survey conducted by Azman-Saini et al., (2010) and Ramirez (2013) who concluded that EFI is crucial for economic growth. Importantly, our results also confirm that the greater the EFI the more it enhances the advantage of remittances inflows. Notice that the coefficients of the core variables considered in the equation enter the regression equation with the correct sign and are significant at the 10% significance level or better. Additionally, the estimated regression passed both specification tests. The null of no second-order serial correlation cannot be rejected at the 5% level. The regression is not plagued by simultaneity bias as the orthogonality conditions cannot be rejected at the 5% level, as indicated by the Hansen test. This suggests that the equation is adequately-specified and the instruments employed in the analysis are valid.

Table 1. Remittances, economic freedom, and economic growth

	(1)	(2)
Initial GDP per capita	-0.0346***	-0.0345***
Rem	0.0036*	0.0064*
EFI	0.0136**	0.0146**
PG	-0.009*	-0.0088*
PSE	0.0091*	0.0081*
INV	0.0147**	0.015**
Rem*EFI	-	0.0006*
Constant	-0.134*	-0.137*
R-squared	0.51	0.55
AR(1) test	0.00	0.00
AR(2) test	0.71	0.75
P-value Sargan test	0.73	0.69

Dependent variable is real GDP per capita growth. *, **, and *** indicate statistical significance at 10 percent, 5 percent and 1 percent levels, respectively.

Column (2) displays the regression results based on interaction specification using an interaction term between Rem and the EFI (Rem*EFI). In this specification, we relied on the interaction term to establish the contingency. If the term is positive and significant, this would imply that the effect of remittances on economic growth increases with EFI. The first thing to note is that the sign of the coefficient of the interaction term between remittances and the degree of economic freedom (Rem*EFI) is positive, implying that remittances and the degree of economic freedom act as *complements*. *This evidence supports the argument that the effect of remittances on economic growth depends on*

whether countries' institutions are conducive to a productive use of remittances. This finding is consistent with the survey conducted by Catrinescu et al., (2009) who concluded that remittances will be more likely to promote economic growth in countries with higher quality political and economic policies and institutions.

We introduce the level of initial GDP per capita (the natural logarithm) as independent variable according to the conditional convergence hypothesis. The initial GDP per capita coefficient is negative, meaning that the conditional convergence hypothesis is evidenced: holding constant other growth determinants, countries with lower GDP per capita tend to grow faster. The initial position of the economy is thus a significant determinant of economic growth, as recognized by the neoclassical theory. The initial income has a negative effect on economic growth coherent to the theoretical study and statistically significant at a 1% level. The result corroborates the work of Barro and Sala-i-Martin (1997) and Easterly and Levine (1997). With regards to the effect of the other variables in the regression, they are all consistent with standard growth regression results. Investment and primary school enrollment ratios⁶ have positive and statistically significant coefficients, indicating that greater investment and education promote economic growth. Finally, population growth has the expected negative coefficient.

5. Conclusion

Several important conclusions emerge from this study. First, the system GMM estimates suggest that remittances have a positive and significant effect on economic growth in a panel of 4 countries of

⁶ The results are virtually the same when secondary enrollment is used instead of primary enrollment. Since we have more observations for the latter, we opted to include it in the estimations reported in this paper.

North Africa (Tunisia, Morocco, Algeria and Egypt) over the period 1980-2012. Second, this paper examined an institutional conduit via which remittances can affect growth, viz., the opportunity to invest remittances more productively because households have more secure property rights and greater freedom of exchange. The results suggest that, controlling for the degree of economic freedom as measured by the EFI; remittances have a positive and significant effect on economic growth. Finally, the positive interaction term between remittances and the EFI suggests that remittances have a greater impact on economic growth when the level of institutional development is high.

The results obtained in this paper could also have significant policy implications. Since institutions seem to matter in the manner in which remittances are used, the best way for host country governments to ensure that remittances contribute to positive economic growth is to foster better quality of institutions, thus ensuring that a greater proportion of remittances are channeled in a more effective way to have a positive impact on economic growth.

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