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Does Workers' Remittances Affect Growth: Evidence from Seven MENA Labor Exporting Countries

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Abstract

This paper presents an empirical examination of effects of workers' remittance on economic growth in a sample of 7 remittance-receiving MENA countries. In order to empirically analyze the impact of remittances we estimate growth equations using a set of 7 MENA labor exporting countries during the period 1975-2006. A standard growth models are estimated using both fixed-effects and random effects models. The empirical results show the support of the fixed –effects method as the random effects model is rejected in statistical tests. The results show the support for the view that remittances have a positive impact on growth both directly and indirectly through their interactions with financial and institutional channels.

Keywords: Remittances, Economic Growth, Panel Data, Fixed effects, MENA Countries
JEL Classification Code: 010, 043, 053, F43, F24,

1. Introduction

Remittances by international migrants to their countries of origin constitute the largest source of external finance for developing countries in recent years. International estimates of official remittances flows suggest that the total amount of remittances received by developing countries has reached $240 U.S. billion dollars in 2007, up from a mere $2.98 billion dollars in 1975 and $90 billion dollars in 2003 (World Bank's Global Economic Prospects). Moreover, remittances constitute a significant share of some countries' gross domestic product (Neyapti (2004) and Heilman (2006)). The apparent increase in remittances may in part be attributed to the rapid growth of money transfer institutions, making the money flows more visible and decreasing the average transaction cost of remitting.

The increasing flows of workers' remittances in the last decades have led to an interest in studying its anticipated effects on the economies of developing countries. Several studies have documented that for several developing countries total remittances already exceeded foreign aid and compete in size with foreign direct investment or FDI (Connell and Brown (2004), De Haas (2006), and Heilmann (2006)). While FDI flows are assumed to be profit driven and therefore considered as a source of development, the increase in remittances also has the potential to promote economic growth.

To look at remittances in the context of MENA[1] region, remittances could be considered as an important and relatively stable source of external finance. They represent over 2 percent of GDP, and thus constitute the second largest in the world[2]. The aims of this paper is to examine the impacts of remittances on economic growth, using panel data set of 7 labor exporting MENA countries[3] over the period 1975-2006. These countries are chosen mainly because over the past three decade, these countries have experienced a major increase in remittance inflows, and for many countries, remittances constitute the largest source of foreign exchange earnings and represent more than 10 per cent of GDP. Better understanding such impacts could help policymakers to design appropriate policies involved with the flows of remittances.

This paper contributes to the existing literature by broaden the scope of study in the manner that it evaluates the impact of remittances on growth through investigating the key channels of how remittances affect economic growth, which are usually ignored in the previous studies.

The rest of the paper is organized as follows. Section 2 reports a brief survey on the impact of worker's remittances on growth; through shedding some light on the economic benefit from remittances to labor exporting countries. This section also includes a brief review of literature. Section 3 outlines the estimated models, variables and methodology used in the study. Empirical results are discussed in section 4 and the last section concludes the paper.

2. Workers' Remittances and Its Impact on Growth

2.1. Economic Benefits from Remittance to Labor Exporting Countries

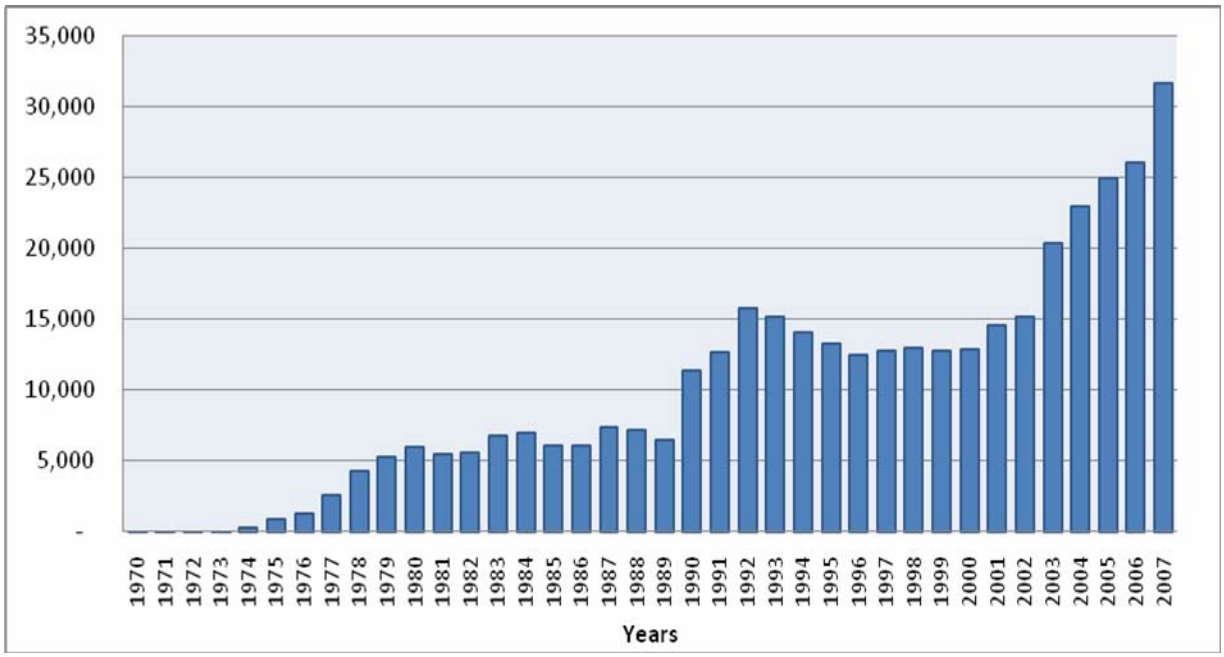
The benefits from worker's remittance to recipient countries are numerous. As mentioned earlier, remittances are important for generating foreign exchange essential to the balance of payment for a country. Worker's remittances are a key source of external development finance. They have been growing relative to other sources of external finance. For example, Figure 1 below indicates the increasing importance of remittances in MENA countries. Remittances have e starting to rise significantly after 1990.

[1] MENA Countries refers to Middle East and North Africa. The MENA region discussed in this paper comprises Arab Countries in North Africa (Algeria, Egypt, Morocco, Tunisia and Sudan) and West Asia (Jordan and Syria). With population of nearly 400 million and a notable strategic position between the North and the South, the MENA region constitutes a distinct region of the developing world. Despite obvious differences within and between its countries, MENA region is cemented by a number of common characteristics related to its distinctive climate, ecology, history, language and culture, which permeate its social fabric, development aspirations and quest for a meaningful future.

[2] See World Bank (2006), Global Economic Prospects: Economic Implications of Remittances and Migration.

[3] These countries are, Algeria, Egypt, Jordan, Morocco, Syria, Tunisia, Sudan

Figure 1: Worker's Remittance Inflows to MENA Region, 1970-2007
(Millions of US Dollars)

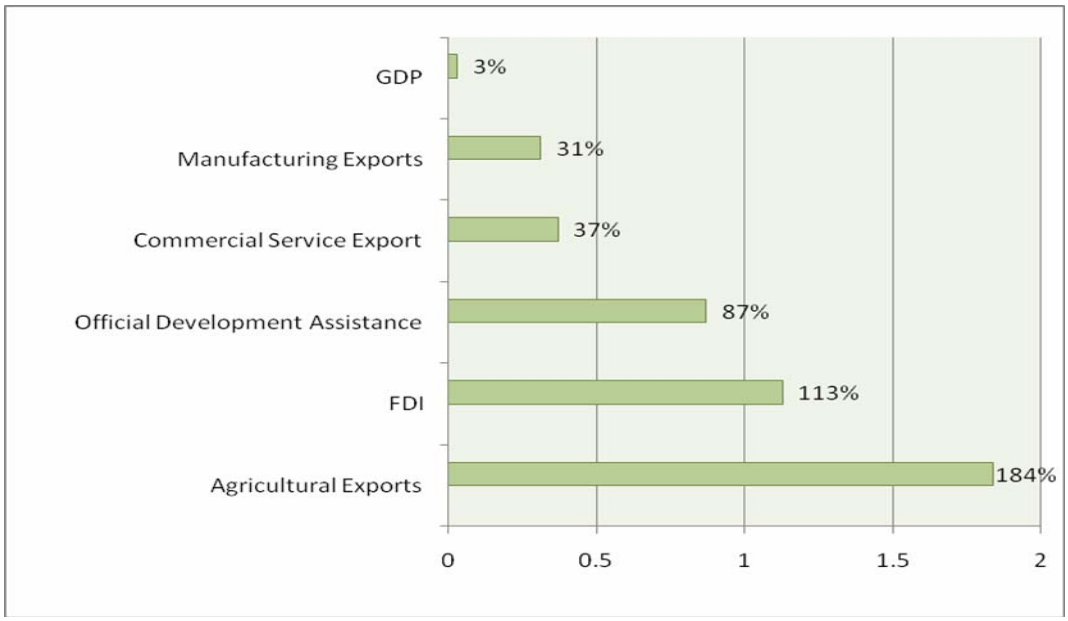


Source: World Bank, World Development Indicators, 2007

Remittances made up of a significant proportion of many developing countries that understandably have become dependent on these payments. For instance, these payments provide more than 20% of GDP for Tonga, Lesotho, and Jordan; more than 15% of GDP for Albania, Nicaragua, Yemen an Moldova; more than 10% of GDP for Lebanon, El Salvador, Cape Verde and Jamaica; more than 5% of GDP for many countries including Morocco, Dominican Republic, Vanuatu, Philippines, Honduras, Uganda, Ecuador, and Sri Lanka (Ratha, 2004). Moreover, worker's remittances are also important for labor exporting countries on the level both macro and micro economics because they increase both income of recipients and foreign exchange reserve of labor exporting countries. Figure 2 below compares remittance to other financial flows in MENA region and show the extent to which remittance constitute to a country's flow of foreign exchange.

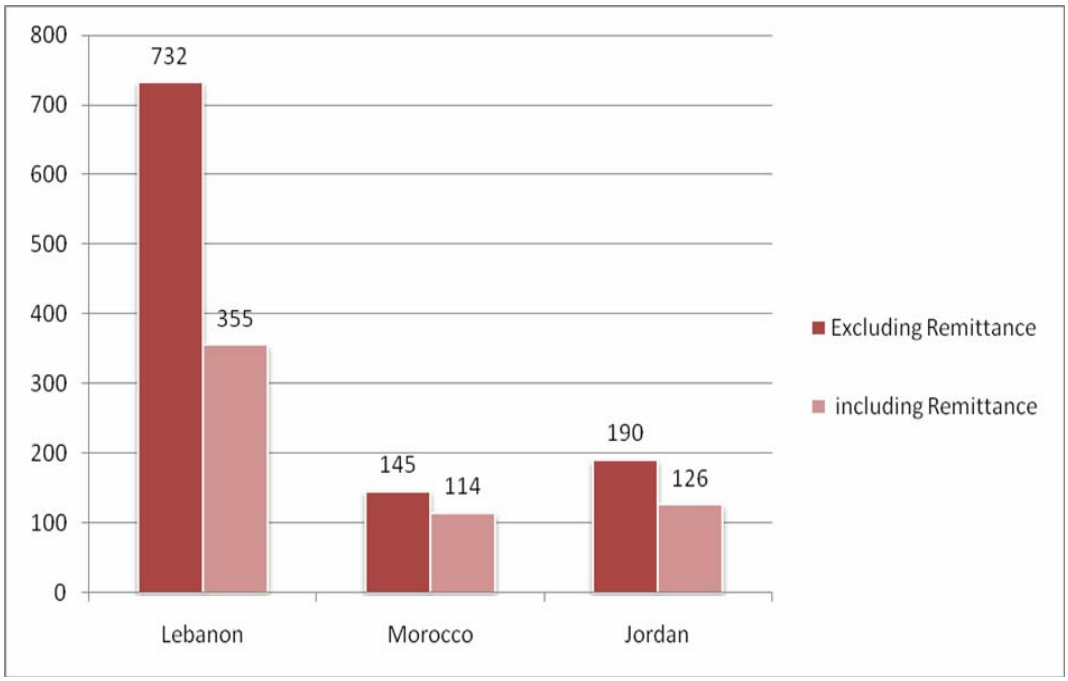
Remittances are also positive development tool for the labor exporting countries. They affect development through encouraging saving, investment, growth, consumption, reduction in poverty and more equitable income distribution. The impact of remittances on growth is achieved through savings and investment and in the short run they also affect aggregate demand and output through consumption. Unlike the government-to -government foreign aid, the strength of remittances is that money goes directly to individuals which are a good way to a void bureaucracies and corruption.

Figure 2: Remittance Inflows as a Share of Selected Financial flows and GDP in MENA Region



Source: Remittance Data, Development Prospect Group, World Bank, 2007

Figure 3: Indebtedness Classification including and excluding Remittance in Selected MENA Countries, 2003



Source: World Bank, World Development Indicators, 2007

* Percent value of external debt as percent of exports of goods and services, and remittances
Debt as Percent of Exports*

Remittances can also be beneficial to the recipient country through their improving a country's creditworthiness and thereby enhance its access to international capital markets. As shown in figure 3, the ratio of debt to export of goods and services, a key indebtedness indicator, would increase significantly in the selected MENA countries if remittances were excluded from the denominator

2.2. Trends and Characteristics of Remittance to MENA Countries

In this section we discuss some trends and characteristics for MENA labor exporting countries. MENA countries have been a part of the increasing global trend, although remittances to this region have generally increased at slower pace as compared to other regions of thee developing world. Table 1 below, presents the flow of remittance by region for 1977, 1987, 1997, and 2007. The last column of the Table reports the average yearly growth rate of remittances by region between 1977 and 2007. As reported in the Table, the MENA region was a top in 1977 and 1987 but it missed its position in the 1990's and 2000's[4]. As noted in the Table, between 1987 and 2997 and with the exception of MENA and Sub-Saharan Africa remittances flows has been growing faster in the rest of the developing world.

Table 1: Remittance Received by MENA and other Regions: (Millions of US Dollars)

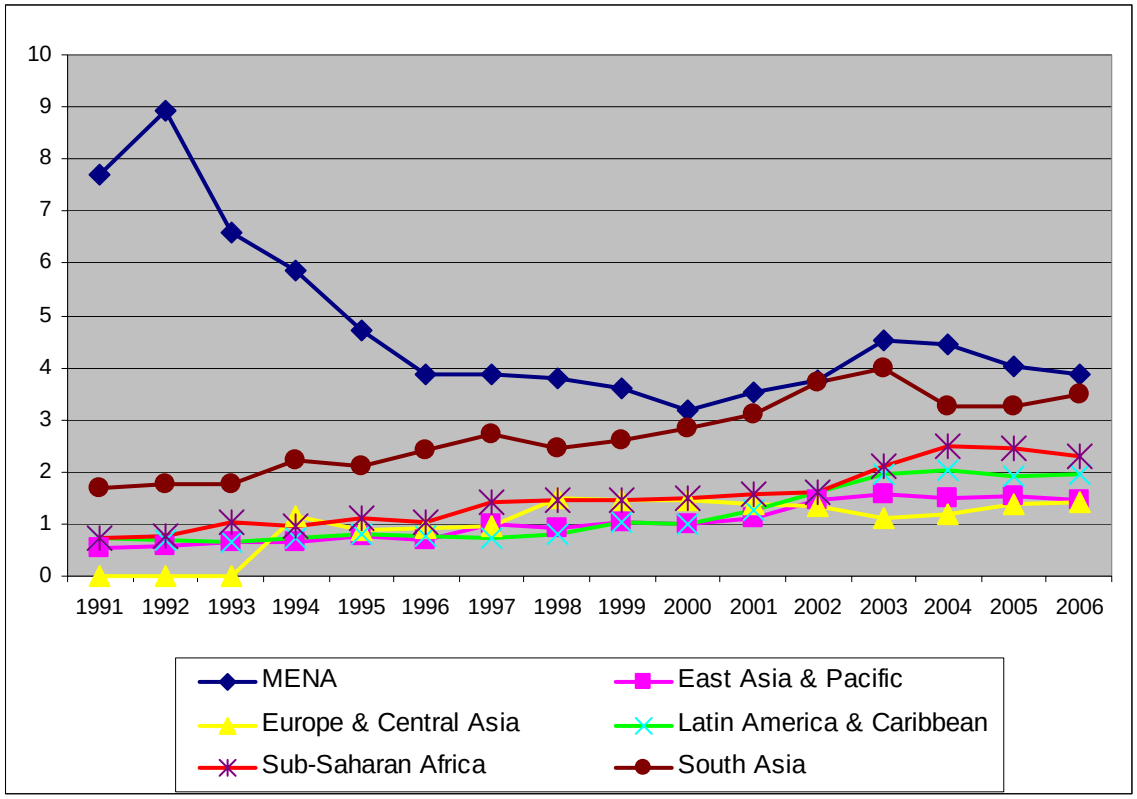
World Regions	1977	1987	1997	2007	Annual Growth (1977-2007)*
East Asia and Pacific	455	2,418	15,238	65,351	142.63
Europe and Central Asia	982	2,021	9,373	50,977	50.91
Latin America and Caribbean	632	3,664	14,389	63,117	98.87
Middle-East and North Africa	2,597	7,411	12,809	31,717	11.21
South Asia	1,903	5,945	14,557	55,490	28.16
Sub-Saharan Africa	601	1,463	4,397	18,587	29.9
High income OECD	10,540	25,382	47,007	89,126	7.46
High income non-OECD	210	808	1,761	5,686	26.07
High income	10,750	26,190	48,768	94,811	7.82
World	17,920	49,112	119,531	380,050	20.21

Source: Global Economic Prospects, 2006, and World Development Indicators, 2007, Washington DC
* Authors' calculations.

It is also apparent from the Table 1 that the growth of remittances in MENA has not been very high as compared to other regions. Moreover, remittances flows to the MENA region as a percentage of GDP have much been larger than in other regions (see figure 4).

[4] This attributed mainly to the effect of Gulf War in 1990's, and to some structural changes that occur in some regions in the developing world. For example in 199'0, countries in Eastern Europe and Central Asia made the transition from centrally planned to free market economies which permit labor migration in search of better jobs in the oil-Middle East and Industrialized Western Europe. This migration resulted in a significant growth of remittances to those regions.

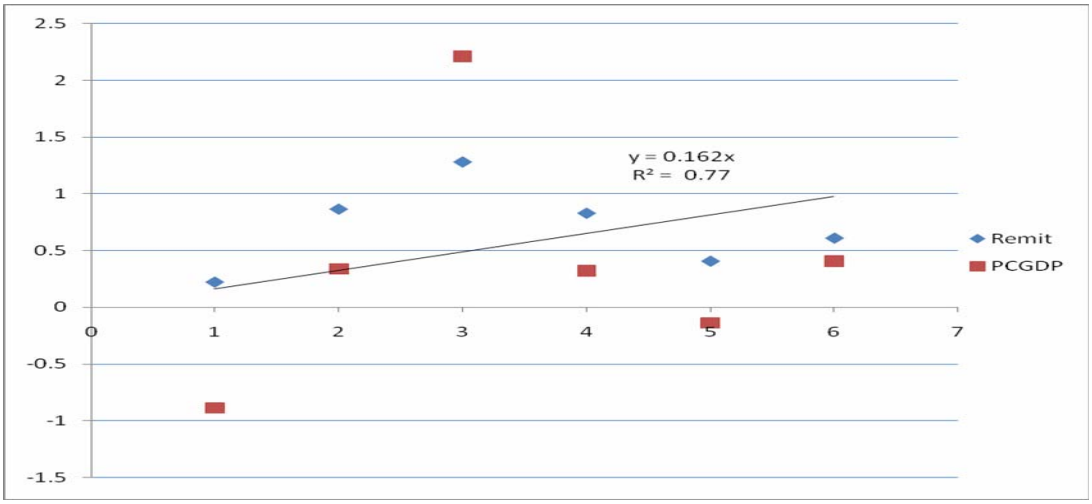
Figure 4: Workers' Remittance as Percent of GDP in MENA and Other Regions, 1991-2006



Source: World Bank, World Development Indicators, 2007

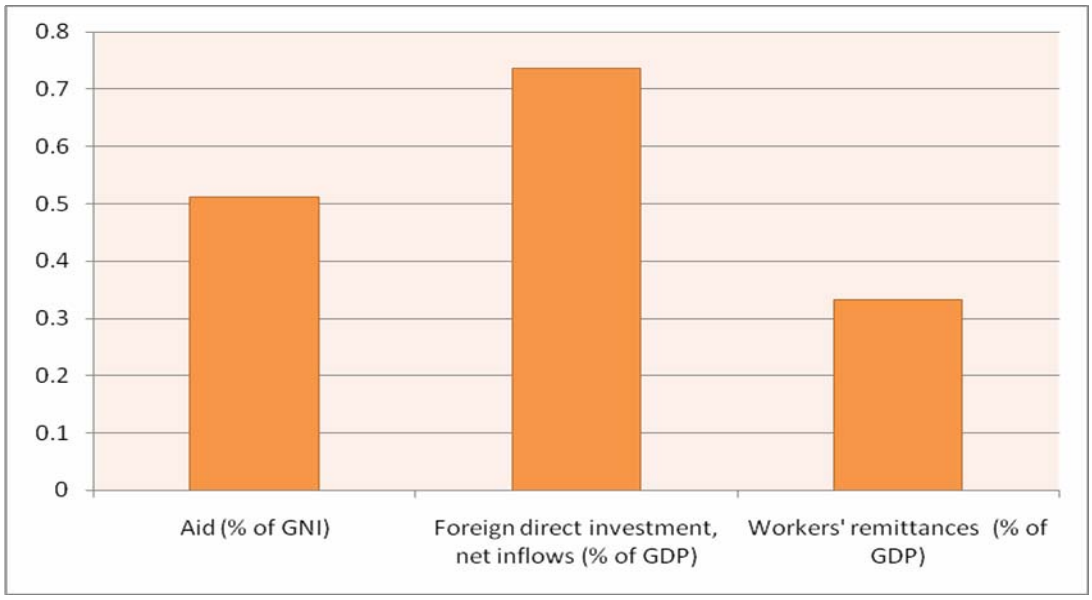
Moving to the characteristics of remittances in MENA we note that there are two key characteristics related to the movements of remittances to MENA countries. First, when we plot the log of remittances with the log of GDP per capita growth rate, the positive relationship seems to emerge. This implies the importance of remittances in the MENA countries (Figure 5). Second, from our calculation on volatility, remittances in the MENA region are relative stable source of external finance, compared with FDI and Aid inflows. Throughout the 1990s, the coefficient of correlation of the ratio of remittances to GDP is around 0.33 while that of FDI an Aid inflows are 0.73 and 0.51, respectively (Figure 6).

Figure 5: Workers' Remittance and Growth Rate in MENA Region, 1984-2003



Source: Own calculation based on data from World Bank, World Development Indicators, 2007

Figure 6: Volatility of Remittances and other capital flows in MENA Region, 1990s



Source: Own calculation based on data from World Bank, World Development Indicators, 2007
Note: Volatility is defined as the coefficient of correlation of the ratio of the relevant inflows to GDP

2.3. Review of Literature

There is a growing body of literature in recent years that has examined the economic effects of remittances (Ozden and Schiff 2005). These studies serve to underscore the increasing importance of remittances provided by migrant workers from developing countries working in other countries. For instance, Ratha (2003) emphasizes the growing importance of remittances as a source of external funds for developing countries. Edwards and Ureta (2003) examine the effect of remittance on education in El Salvador and report that remittances have an important effect on school retention.

The empirical evidence on the effect of remittances on economic growth, poverty, and income inequality has shown mixed results. For instance, Chami et al. (2003), covering 113 countries found that remittances had a negative effect on growth. The authors of the study attribute this negative effect on the moral hazard problem that remittances create. Essentially, the study concluded that income from remittances allows receiving families to decrease their own work and productivity, which then translates into a reduction in the labor supply for the developing country.

In a recent study conducted by IMF (2005) about the impact of remittances on growth over an extended period (1970-2003) for 101 developing countries found no statistical link between remittances and per capita output growth, or between remittances and other variables such as education or investment rates. However, this inconclusive result attributed to measurement difficulties arising from the fact that remittances may behave countercyclical with respect to growth.

Faini (2002) and Ang (2007) found that the impact of remittances on growth is positive. Faini (2002) argues that remittances overcome capital market imperfections and allow migrant households to accumulate positive assets. Ang (2007) shows the relationship between workers' remittances and economic growth at the national and at the regional levels in the case of Philippines. He found that at the national level remittances do influence economic growth positively and significantly. When he broke down his analysis at the regional level to confirm the national results, he found that mixed results giving rise to his anecdotal observations that remittance do not positively affect economic growth. In sum, he concludes that remittances have to be translated to value-added activities and investments which are more foundational sources of development and growth.

Glytsos (2005) using data for 1969-1998 for Egypt, Greece, Jordan, Morocco, and Portugal shows that the impact of remittances on output varies over time and across countries. For Egypt,

Jordan, and Morocco the growth-generating capacity of rising remittances characteristic is smaller than the growth-destroying capacity of falling remittances. Therefore the large fluctuations in the real value of remittances contribute to large fluctuations of output growth and cause instability in the economies concerned.

Giuliano and Ruiz-Arranz (2005) gathered a sample of 73 countries during the 1975–2002 periods, then calculated five-year averages for all variables used in their study to smooth out cyclical variations. Again, remittances were defined as the sum of workers' remittances, employee compensation, and migrant transfers. This study conducted OLS as well as fixed-effects panel estimates, and through a system generalized method of moments (SGMM) procedure used internal instruments to account for possible endogeneity. The study's basic specification regressed per capita GDP growth on the total remittances–to–GDP ratio, conditioning on the initial level of GDP per capita, the investment rate, population growth, the fiscal balance as a percentage of GDP, years of education, a measure of openness, and inflation. This specification did not find total remittances to be significantly related to growth. However, the authors also explored possible interactions between the total remittances–to–GDP ratio and financial deepening, as a way of testing whether remittances might enhance growth by relaxing credit constraints. Indeed, the authors found significant negative interaction terms and interpreted these results as indicative of the credit constraint hypothesis; total remittances appeared to have positive effects on growth only in countries with small financial sectors where presumably credit constraints would be more pervasive.

Another study, by Catrinescu and others (2006), incorporated institutional variables into the analysis, which covered 114 countries during the 1991–2003 period. Catrinescu and colleagues conducted OLS cross-sectional and various static and dynamic panel regressions of per capita GDP growth on the (log of) total remittances–to–GDP, controlling for initial GDP per capita, ratios of gross capital formation and net private capital inflows to GDP, and such institutional variables as the United Nations Human Development Index, six governance indicators as in Kaufmann, Kraay, and Mastruzzi (2003), and risk ratings from the International Country Risk Guide (ICRG). Overall, their study found a robust positive relationship between growth and gross capital formation, as well as between growth and some of the institutional variables. The study also found some evidence of a positive relation- ship between growth and total remittances, although this relationship was not very robust and, as the authors acknowledge, relatively mild.

Finally, the World Bank (2006) conducted cross- country growth regressions on a data set of 67 countries measured over 1991–2005. The control variables included (logs of) initial GDP per capita, the secondary school enrolment ratio, the ratio of private domestic credit to GDP, the ICRG political risk index, the ratio of real imports and exports to GDP, the inflation rate, real exchange rate overvaluation, government consumption, and time period dummies. An SGMM estimation was performed, in which the instrument for remittances was a set of "migration" instruments formed by computing the product of the share of a country's migrants going to each of its top five OECD country destinations (as of 2000) and a measure of the respective OECD country's economic performance, such as GDP per capita, the GDP growth rate, or the unemployment rate. These instruments reflect the idea that income in the host country appears to be a key driver of remittances. The inverse of the distance between the migrants' destination country and the remittance-receiving country was also used in place of migration shares in the migration instruments described above to form "distance" instruments. The growth regressions found a consistently positive relationship between the total remittances–to– GDP ratio and GDP growth, both when investment was included and when it was excluded from the estimations. When investment was excluded, however, the coefficients lost their significance. The authors also calculated the contribution of total remittances to growth rates and found that it was small.

A later exercise in the same World Bank study included interaction terms for remittances and education, remittances and financial depth, and remittances and institutional quality indicators in three separate growth equations that had the same specification as the growth equations examined previously, with the argument that remittances augment growth in the presence of complementary

policies that enhance education, financial market depth, or institutional quality. The World Bank study found a negative and significant coefficient on the total remittances–to–GDP ratio, but positive and significant coefficients on each of the interaction terms. The study argued that this implies a net positive impact of total remittances on GDP, when the complementarities are included. In addition, the study included an estimate of total remittances' impact on investment, finding a similar pattern of coefficients.

3. Estimated Models and Methodology

The model to investigate the role of remittances on economic growth is based on the extended version of Giuliano and Ruiz-Arranz (2005). Like the work of Giuliano and Ruiz-Arranz (2005), it includes financial development, and its interaction with remittances, in the model, besides institutions. Within this framework the growth equations can be expressed as follows:

a. General Base-Model

$$Y_{it} = \beta_{0i} + \beta_1 Y_{it-1} + \beta_2 Remit_{it} + \beta_3 FDev_{it} + \beta_4 Ins_{it} + \beta_5 X_{it} + \eta_i + \varepsilon_1 \quad (1)$$

Where Y_{it} is the annual percentage growth of real per capita GDP in country $_i$ in the five year period, Yit-1 is the logarithm of the initial GDP per capita in country i in time t-1. Remitit is the logarithm of worker remittances to GDP ratio, FDevit is a vector of financial development variables; Inst is a vector of institutional quality variables; and X_{it} is a set of other exogenous control variables. η is an unobserved country-specific effect and ε it is the error term. Basing on Barro (1996), Barro and Sala-i-Martin (1995) and Giuliano and Ruiz-Arranz (2005), the other variables includes investment (log of gross fixed capital formation to GDP), human capital (HC), government consumption (GOV), and inflation (INF). However, the Appendix describes in details the data used in the empirical analysis.

As our main assumption in this section is to examine the role of remittance on growth through financial market and institutions, the models below test whether the recipient country's abortive capacity represented by financial development and institutions quality proxies could influence the impact of remittance on growth. To this end, we interact the remittance variable with an indicator of financial development, infrastructure and institutions and to test for the significance of the interacted coefficient. In addition, both financial development, and institutions variables are included in the regression separately in order to ensure that the interaction term doesn't proxy for them. Hence, we run the following models:

b. Model with Remittance-Finance Interaction

$$Y_{it} = \beta_{0i} + \beta_1 Y_{it-1} + \beta_2 Remit_{it} + \beta_3 FDev_{it} + \beta_4 (Remit_{it} * FDev_{it}) + \beta_5 X_{it} + \varepsilon_{it} \quad (2)$$

c. Model with Remittance-Institutions Interaction

$$Y_{it} = \beta_{0i} + \beta_1 Y_{it-1} + \beta_2 Remit_{it} + \beta_3 Inst_{it} + \beta_4 (Remit_{it} * Inst_{it}) + \beta_5 X_{it} + \quad (3)$$

Regarding the above models and according to economic theory the following expectations can be made. The coefficient associated with remittances is ambiguous as discussed in earlier. The coefficient on the initial GDP (β1) is expected to be negative, representing a conditional rate of convergence. Growth theory predicts that because of diminishing returns to capital, countries that start out with a low per capita tend to grow relatively fast which allows them to catch up with countries that were already at higher stages of development. We thus control for the initial income while studying the influence of other factors and expect a negative sign for the coefficient of initial income. One of the important factors that determine growth is the rate at which a country saves and invests. Most past research attributes a significant portion of per capita income growth to the share of investment to GDP.

So we expect a positive sign for the coefficient of investment. Human capital the other factor of production is also expected to have positive impact on growth.

By contrast, we expect the negative coefficients relating to government consumption and inflation. The government consumption is an approximate measure of government spending in non-productive so that an increase in this variable tend to generate negative impacts on economic growth. Higher inflation tends to reduce real money balances thereby subjecting private agents to larger transaction costs. In addition, higher inflation is often viewed as key symptoms of macroeconomic stability, which reflects weakness in macroeconomic management. Such instability hampers private investment and saving decisions, thereby leading to an inefficient allocation of resources. All in all an increase in inflation tends to have a negative impact on economic growth.

Based on literature in the field of economic growth, strong financial markets contribute to positive growth, so one would expect that the coefficient of the measures of the financial development variables will be positive. Based on the results of Giuliano and Ruiz-Arranz (2005), one would expect the coefficient on remittances times credit to be negative, due to a crowding out effect. With the exception of credit, the coefficients on the interaction terms of other variables are difficult to predict, not being covered extensively in the literature. We expect also good quality of institutions represented by ICRG measures to have a positive impact on growth.

The estimation of equations (1), (2) and (3) requires some consideration of possible country-specific factors that affect growth but are not easily measured. When the unobservable country-specific variables are correlated with the included right-hand-side variables, the model can generate misleading results. To address this problem, we could potentially use either fixed-effect or random-effect models. We prefer the fixed-effects approach since the random-effects estimation requires that the omitted variables be uncorrelated with the included right-hand-side variables for the same country, which seems unrealistic in the context of the growth model we consider.

4. Empirical Findings

The results of the empirical analysis are presented in Table 2 and 3. The panel analyses using the fixed-effects method conducted in accordance with a modified version of the Giuliano and Ruiz-Arranz (2005) model, and include two separate periods, 1975-2006 and 1984- 2003. The logic behind using two separate periods for our model is dictated by the availability of data, especially for institutions variables. For example, the institutional measures provided by ICRG start in 1984 limiting our analysis to the sample of five- 4 period averages per country. For all specifications shown the Hausman test verifies the superiority of the fixed –effects models since the random –effects model is found to be inconsistent.

Table 2 presents the results of the basic regression of growth in which the growth rate of real GDP per capita varies against various measures of independent variables using four specifications that replicate, to some degree, those used by Giuliano and Ruiz-Arranz (2005). The first specification test for the direct effect of remittances (as a percentage of GDP) on economic growth without introducing in this step the effects of one of our main variables of interest (i.e. financial development variable). So, the results as shown in the first column in Table 2 indicate that remittance are found to be positively and significantly correlated with growth. In the other three specifications we add the financial development variables besides other independent variables. In these specifications, remittances also exhibit positive and significant sign.

Looking at the interaction terms of remittances and the financial development measures in Table 2 shows interesting features of how remittances work. The interaction term between credit and remittances is negative and significant. This would suggest that remittances have a more positive impact on growth in countries with less access to credit. Remittances may serve as a substitute for credit when it is not available. This result is consistent with the findings of Giuliano and Ruiz-Arranz (2005). The sign of the interaction term between financial development index (FINDEX) and

remittances is also negative and significant indicating the substitutability of remittance for financial systems .The coefficient on liquid liability (M3/GDP) times remittances gives different result and exhibit significant and positive sign, suggesting that remittances can complement total liquidity in these countries to enhance growth.

Tables 2 also present results for our set of control variables. The initial per capita income is highly significant. The negative sign of the estimated coefficient support the conditional convergence hypothesis where the poor economies tends to grow faster than rich economies, once the determinants of their steady state are held constant. Our parameter reflects conditional convergence within our sample which includes only low and middle income countries. Since we don't have high income countries by design the convergence rate tends to grow faster. The investment rate show no influence on output and this result may reflect the weak correlation between domestic investment and the growth rate of MENA countries. Other controlling variables, i.e. human capital, government consumption and inflation, reach the theoretical expected sign and statistical significance.

Table 2: Growth Effects of Workers' Remittances as a Share of GDP: Basic Testing of the Financial Market Channel: Panel data of five-year overlapping periods, 1975-2006

Dependent Variable: Growth Rate of Real Per Capita GDP

	Specification (1) ***Basic Regression***	***Specification (2)*** ***M3/GDP***	***Specification (3) CBS***	***Specification (4)*** ***FINDEX***
$Remit_{it}$ /GDP	9.62 [2.72]**	10.53 [2.30]***	9.37 [5.33]***	29.80 [5.26]***
Initial Income: $Y_{i,t-1}$	-0.67 [-2.13] ***	-0.58 [-2.12] **	-0.65 [-4.94] ***	-0.54 [-3.62] *
Human capital (HC)	0.01 [2.70]**	0.54 [4.94]**	0.13 [8.73]*	0.13 [3.41]**
Investment (GFCF)		0.66 [0.910]		0.09 [1.18]
Financial market (FDev)		-4.23 [-1.16]	-8.66 [-1.20]	-210.56 [-3.10]*
Government Consumption: GOV	-0.014 [-3.87]**	-0.482 [-4.47]**	0486 [3.42]***	1.04 [2.36]**
Inflation: INF	-0.751 [-8.87]**	-0.698 [-2.88]**	- 0.53 [-4.98]***	1.04 [2.36]**
*$Remit_{it}$ /GDP) * FDev.*		0.11 [2.67]**	-0.67 [-3..67]**	-0.05 [-6.29] *
Constant	0.03 [1.07]	0.03 [1.07]	0.04 [1.22]	0.07 [2.00]*
Observations R^2	224 0.64	224 0.64	224 0.70	224 0.65

Note: Robust t-statistics in brackets. * Significant at 10%; ** significant at 5%; and *** significant at 1%. Each specification was also run using random effects. The Hausman test, however reject random effect estimation in each case since P (chi > 0.05) far exceeds the critical chi-sq value.

Finally, Table 3 reports fixed-effects estimation of model (2) where institutions are proxies by ICRG indicators. Taken individually, socioeconomic conditions (SEC), and investment profile (INV) exert no influence on growth, whereas the ICRG index show positive and significant sign. Moreover, the more interest result arises from the specifications in which we interact institutions with remittance. These specifications a allow us to test whether the impact of remittances on growth is conditioned by the institutional environment. The interaction variables appear to be significant as well as they all show the expected sign. Socioeconomic conditions (SEC), investment profile (INV) and ICRG index all appear to exert positive impact of remittance on growth. With regard to other control variables, the initial per capita income is highly significant with negative sign of the estimated coefficient which support the conditional convergence hypothesis. The policy variables i.e., inflation rate and government consumption all have their expected negative sign. Moreover, while the investment rate

variable exert no influence on growth in this specification the human capital variable reach its expected positive sign and with statistical significance.

Table 3: Growth Effects of Workers' Remittances as a Share of GDP: Basic Testing of the Institutions Channel: Panel data of five-year overlapping periods, 1984-2006

Dependent Variable: Growth Rate of Real Per Capita GDP

	Specification (1) *Basic Regression*	***Specification (2)*** *Socio Economic Conditions: SEC*	***Specification (3)*** *Investment Profile: INVP*	***Specification (4)*** *ICRG Index*
Remit$_{it}$ */GDP*	*1.32* *[3.06]**	2.55 [3.10]***	3.92 [2.9]***	5.94 [2.77]***
Initial Income: Yi,t −1	-0.62 [-3.02] **	-0.49 [-3.44] *	-0.64 [-8.46] *	0.66 [-3.06] ***
Human capital (HC)	0.96 [1..33]	0.81 [4.26]**	0.99 [3.42]**	0.77 [2.31]**
Investment (GFCF)	0.52 [1.92]	2.24 [0.97]		2.27 [1.17]
Institutions (Ins)		-0.005 [-0.86]	5.26 [1.04]	0.006 [3.36]***
Government Consumption: GOV	-2.27 [-2.37] *		-3.92 [-2.9] *	1.09 [2.38]**
Inflation: INF	-0.14 [-8.10] **			-0.04 [0.22]
Remit$_{it}$ */GDP) * Inst.*		2.62 [3.10] *	3.15 [3.50] **	1.05 [4.7] *
Constant	40.32 [4.36] *	45.46 [2.52] **	39.48 [5.67]**	34.27 [4.89]*
Observations	28	28	28	28
R^2	0.57	0.64	0.62	0.65

Note: Robust t-statistics in brackets. * Significant at 10%; ** significant at 5%; and *** significant at 1%. Each specification was also run using random effects. The Hausman test, however reject random effect estimation in each case since P (chi > 0.05) far exceeds the critical chi-sq value.

5. Conclusions and Policy Recommendations

This study has examined the effects of workers' remittance on economic growth in a sample of 7 MENA countries. The study, gives insights on two important channels through which remittances affect growth i.e. institutions and financial development. Using fixed effects approach the empirical analysis points to the fact that institutions and financial development play an important role in how remittances affect economic growth. Through the financial development channel remittances are found to play a mixed role in MENA labour exporting countries. Through their negative interaction with credit they promote growth by substituting credit, thus improving the allocation of capital and hence accelerating economic growth. They also, promote growth by complementing total liquidity.

The results also show that in a sound institutional environment remittances could be channelled more efficiently, ultimate leading to higher growth. The results supports the argument that the effect of remittance on growth depends on whether countries' institutions are conducive to growth. Good socioeconomic conditions, prevalence of law and order and good quality of institutions are preconditions for a successful use of remittance.

The results obtained in this paper have several policy implications. First, on a country level, these results can be used to help form a macroeconomic context that will be the most receptive to remittances fostering economic growth. Secondly, policy scheme should be emphasized toward how remittances will be used for productive activities. According to our empirical estimates, financial

development and institutions quality are two key channels through which remittances could generate the positive effects on economic development

Appendix

A. Data Sources and Description

The panel data set used for this analysis covers seven MENA countries (Algeria, Egypt, Jordan, Morocco, Syria, Tunisia, Sudan and runs from 1975-2006. I split the sample period 1975-2006 When we use financial development variables) into six non-overlapping five year periods (except for the last period for which we average our data for seven years). Also I spilt the sample period 1984-2003 in (When we use institutions variables) into 4 non-overlapping five year periods (except for the last period for which we average our data for only 4 years). We use five -year periods rather than a yearly basis to reduce business cycle fluctuations associated with data series. The database has been built using a number of different sources. The main sources were the World Development Indicators (WDIs) database, compiled by the World Bank (2007), and the International Country Risk Guide (ICRG) published by the Political Risk Services (PRS) group[5]. All values used in the analysis are expressed in US dollars in real terms.

B. Variables and Expected Signs

Code of Variable	Definition of Variables	Expected sign
Dependent variable		
Y_{it},	growth rate of real per capita GDP in constant (2000) U.S. dollar	-or +
Independent Variables		
• *Remitit /GDP*	Defined as the sum of three components, compensation of employees, worker's remittances and migrants' transfer	+
• *Financial Development*		
M3/GDP	M3/GDP represents the liquid liabilities of the financial system (currency plus demand and interest-bearing liabilities of the financial intermediaries and non-bank financial intermediaries) divided by GDP	+
CBS	CBS is a domestic credit extended by banks as a share of GDP	+
FINDEX	The FINDEX is constructed by using the weighted average of liquid liabilities, credit to private sector and credit by banks to the private sector. $FINDEXit = \frac{1}{m}\sum_{j=1}^{m}\left[\left(\frac{Fj,it}{Fj}\right)\right]$	
• *Institutional Quality*		
SEC	An estimate of the general public' satisfaction or dissatisfaction with the government economic policies, covering a broad spectrum of factors.	+
INVP	Investment profile, includes assessment in contract viability/expropriation, profits repatriation, and payment delays	+
ICRG Index	Is a weighted average of three ICRG variables, corruption, law and order, and Bureaucracy quality measures. **Source:** http://www.prsgroup.com/ICRG.aspx	+
• *Policy Variables*		
INF	Annual Percentage Change in CPI	+
GOV	Level of government consumption in constant dollars as a share of GDP.	-

[5] On a monthly basis since 1980, *ICRG* has produced political, economic and financial risk ratings for countries important to international business. *ICRG* now monitors 140 countries. Data on institutions quality variables come from this source. http://www.prsgroup.com/ICRG.aspx

• *Control Variables*		
Initial Income: Yi,t −1	Is the log level of real per capita GDP in constant dollars at the beginning of each five year block in the panel.	-or +
Investment (GFCF)	Is the log level of gross fixed capital formation in constant dollars as a share of GDP	-
Human capital (HC)	Inflation measured as the average years of secondary schooling into total population: Source: Barro and Lee (1996), See update version at: http://www.cid.harvard.edu/ciddata/ciddata.html	+

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