*The Impact of International
Remittances on Poverty: Evidence
from the Southern and Eastern
Mediterranean*

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Background Rationale and Content

- In July 2018, a Euro-Mediterranean Research Network on Migration (*EuroMedMig*) was launched during the 15th IMISCOE Annual Conference in Barcelona, with an initial composition of 18 Members in the Steering Committee. Countries covered are: Algeria, Belgium, Egypt, Europe (EUI), Greece, Israel, Italy, Jordan, France, Lebanon, Morocco, Palestine, Portugal, Spain, Norway, Netherlands, Tunisia and Turkey. It has initially received institutional support from The Union for the Mediterranean and academically recognized as an IMISCOE Regional Network.

- This WP Series is part of first a specific action within a three-year (2019-2022) Erasmus+ Jean Monnet Network Program (Project Reference: 611260-EPP-1-2019-1-ES-EPPJMO-NETWORK) entitled "Mapping European Mediterranean Migration Studies" (Acronym: *EUMedMi*) and coordinated by GRITIM-UPF. More information about the project can be found in the following website: www.upf.edu/web/euromedmig

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- The content is multidisciplinary, considering socio-demographic, political science, economics, law, anthropology and other social sciences disciplinary approaches. It has an explicit gender/ethical concern in dealing with migration related issues. It seeks to promote multi-sited comparative researches, multilevel analysis, intersectional focuses, both conceptual, theoretical and empirical led research. *EuroMedMig Working Paper Series* is blind peer-reviewed.

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Abstract

Workers Remittances represent an important source of financing for recipient countries to the extent that it exceeds sometimes foreign direct investment (FDI) flows. International remittances flowing into developing economies has gained an increasing importance with view to the volume of these flows, their importance for the financial sector as well as their overall impact at the economic and social level. Based upon a review of theoretical and empirical literature, this paper uses an econometric model to assess the impact of remittances in terms of reducing the level of poverty. It is based on panel data of 8 southern and eastern Mediterranean countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Tunisia, Turkey and West bank and Gaza)[1] over the period 2000-2018. In most of these countries, remittances represent the largest foreign exchange earnings and **represent an average of 8% of GDP.** The results suggest that remittances have a positive impact on growth and therefore contribute, through income generation to poverty reduction. This impact becomes significant as the level of remittances relative to GDP increases.

Keywords: Migration, Remittances, Poverty, Mediterranean, Southern and Eastern Mediterranean.

Authors' biographical note

Professor of Economics at Faculty of Law and economics of Agdal - University Mohammed V Rabat-, Boutaina Ismaili Idrissi holds an MBA from the University of Central Lancashire (United Kingdom) and a PhD in economics from the University of Perpignan (France) covering structural issues related to the Euro-Mediterranean region. She is also teaching courses in economics for American Universities Education Abroad programs in Rabat. Besides her previous professional background in the public sector where she was close to social economy sector and SME's. Dr Ismaili Idrissi conducted research for UNECA related to the role of remittances in Morocco's development in 2015. She is active in AMERM "the Moroccan Association for studies and research on Migration" as a researcher and in the Master degree of "Migration and societies" as a professor and represents AMERM in the research network Euromedmig led by Pompeu Fabra University in Barcelona. Boutaina Ismaili Idrissi has published several articles and papers among them one related to "Euro Mediterranean migration dynamics: the role of the southern and eastern Mediterranean countries" published by IEMED in 2019 and has participated in national and international conferences on topics related to the major issues of the Moroccan economy, the Euro-Mediterranean relations, entrepreneurship, migration and refugees. The latest one on migration has covered "The impact of covid-19 on Refugees & Asylum seekers in North Africa" at an international conference organised by the University Hassan II Casablanca in 2021.

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[1] Lybia and Syria were excluded by the analysis, the first one with view to its status as migrant recipient country. The second one for the lack of Data.

Sara Kawkaba is a PhD student in Mohammed V University Rabat, got her Master degree in applied Econometrics modeling on micro and macroeconomic behaviors in 2016 at Hassan II University Casablanca and covered a topic on the determinants of household debt in Morocco. Her actual on-going PhD research is focused on "the determinants and impact of remittances on the living conditions of the population in Morocco: A Micro econometric analysis" since 2019. She participated as well in the summer school organized by EuroMedMig in 2021 in Barcelona.

Introduction

The issue of remittances has recently gained an ever-increasing attention in the context of developing countries, not only as a core subject of public policy but also as a topic of studies related to development issues. Remittances are financial resource flows arising from the cross-border movement of nationals of a country (Kapur, 2004). It encompasses the transfers of money and/or goods by migrants back to their home countries. It a very complex subject to apprehend as it involves various disciplines (economics, sociology, geography…). Remittances are believed to be a major and stable source of external funding for developing countries. The recent decades have seen the volumes of remittances grow steadily both in absolute and relative values - their relative growth was measured against financial aid extended to developing countries by foreign governments and international organizations. Remittances sent back home by gainfully employed emigrants are making a substantial difference in the developing countries. As currently estimated, the overall volume of remittances directed to the developing countries exceeds twice the Official Development Assistance (ODA) and almost amounts to the value of Foreign Direct Investments (FDI) and other capital revenues, if not higher in some countries.

Looking at the southern Mediterranean region as an important corridor of international migration. This position finds its root in the geography of the region itself and the uninterrupted interaction between both shores of the Mediterranean. The surge of migration from the region was intensified as a result of economic and social policies failure that have fueled the region with massive flows of migrants, especially since December 2010 in the aftermath of the so-called "Arab Spring", that has dramatically destabilized several South East Mediterranean countries. Indeed, the Southern and Eastern Mediterranean region witnessed a rise in political and social instability due essentially to inefficient governance systems, weak economic prospects and the worsening of inequalities at various level (high unemployment especially among youth, weak access to basic public services, education, health…).

Poverty considered as only one of many causes of this "Arab Spring" has not been given the same emphasis in southern Mediterranean countries during the last decades, compared to other regions of the developing and emerging world. Most of the studies on the impact of international remittances had been confined mostly to Latin America, South Asia and Africa. However, the impact of international remittances on poverty in southern and eastern Mediterranean has not been highlighted sufficiently.
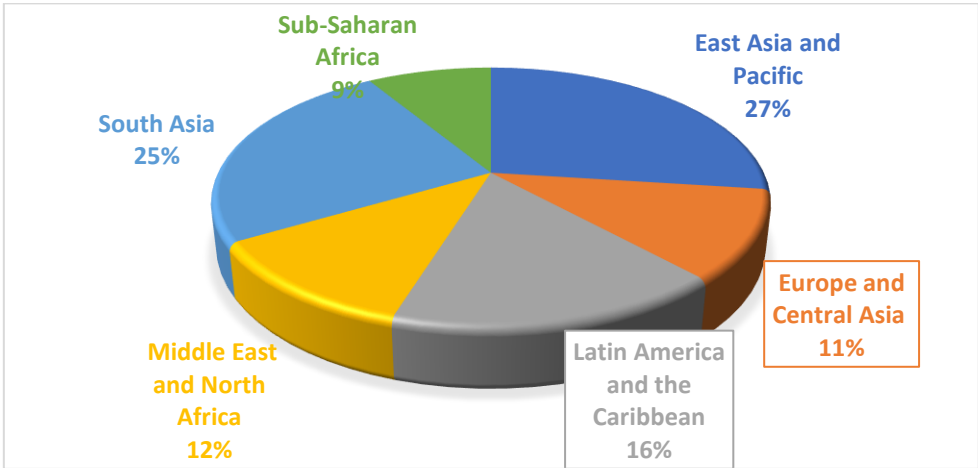
The paper is structured in four (4) sections. The first section highlights the trends in remittances flows in southern and eastern Mediterranean, compared to other regions. The second section provides a review of literature on remittances and poverty from theoretical and empirical perspectives; The third section presents the econometric model used to estimate the impact of remittances on poverty in selected countries using panel data of 8 countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Tunisia, Turkey and West bank and Gaza)[2] over the period 2000-2018. The last section draws some policy recommendations that may contribute to enhance the impact of remittances in terms of improving socioeconomic conditions in the above-mentioned countries.

I. Remittances to Southern and Eastern Mediterranean

1.1. Trends in global and regional remittances

According to the World Bank (global development indicators, 2019), global remittances totaled $ 689 billion in 2018, up from $633 billion in 2017. Of that total, $529 billion flowed into low and middle-income economies (See figure n°1 for details). The rise in remittances was driven by oil prices increase and the improvement of economic situation in developed economies, mainly the United States.

Figure n°1: Global Flows of International Migrant Remittances (US$ billion)

Source: World bank (2019)

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[2] Lybia and Syria were excluded by the analysis, the first one with view to its status as migrant recipient country. The second one for the lack of Data.
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From a regional perspective, the remittances to the **East Asia and Pacific region** grew almost 27 percent to reach $143 billion in 2018, after a moderate rate of 5 percent growth in 2017. Remittances to the Philippines rose to $34 billion, but growth in remittances was slower due to a drop in transfers from the GCC countries. Flows to Indonesia increased by 25 percent in 2018, after a slow progression in 2017.

After reaching 22 percent growth in 2017, remittances to **Europe and Central Asia** grew by 11 percent to attain $59 billion in 2018. Continued growth in economic activity increased outbound remittances from Poland, Russia, Spain, and the United States, major sources of remittances to the region. Smaller remittance-dependent countries in the region, such as the Kyrgyz Republic, Tajikistan, and Uzbekistan, benefited from the sustained rebound of economic activity in Russia. Ukraine, the region's largest remittance recipient, received a new record of more than $14 billion in 2018, up about 19 percent over 2017. This surge in Ukraine also reflects a revised methodology for estimating incoming remittances, as well as growth in neighboring countries' demand for migrant workers.

Remittances flows into **Latin America and the Caribbean** grew 10 percent to $88 billion in 2018, supported by the strong U.S. economy. Mexico continued to receive the most remittances in the region, posting about $36 billion in 2018, up 11 percent over the previous year. Colombia and Ecuador, which have migrants in Spain, posted 16 percent and 8 percent growth, respectively. Three other countries in the region posted double-digit growth: Guatemala (13 percent) as well as Dominican Republic and Honduras (both 10 percent), reflecting robust outbound remittances from the United States.
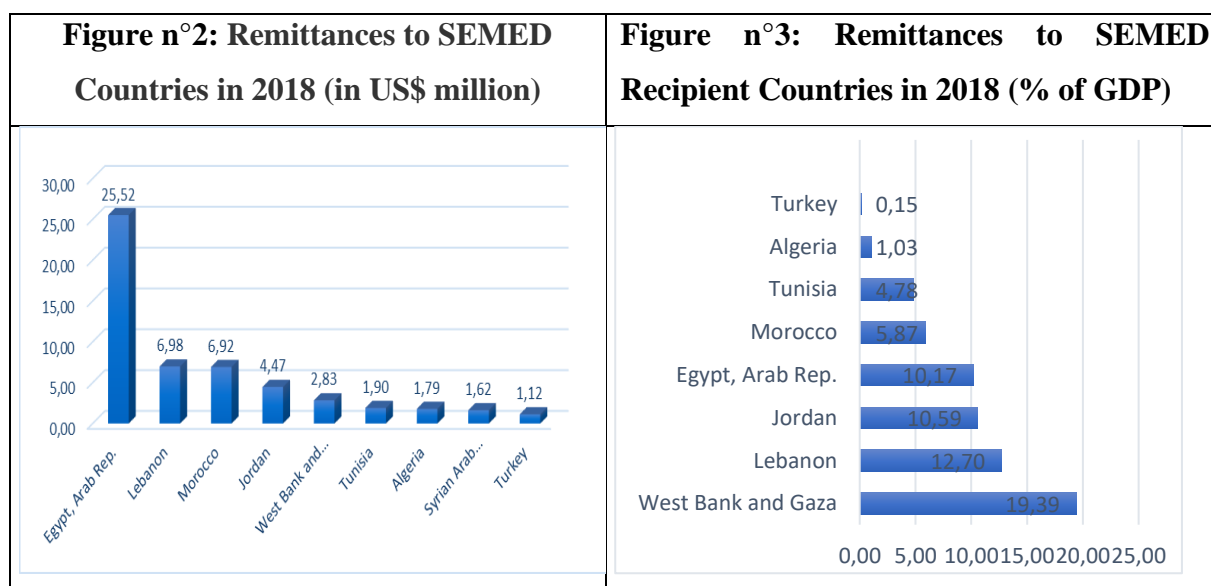
Remittances to the **Middle East and North Africa** grew 9 percent to $62 billion in 2018. The growth was driven by Egypt's rapid remittance growth of around 17 percent. Beyond 2018, the growth of remittances to the region is expected to continue, albeit at a slower pace of around 3 percent in 2019 due to moderating growth in the Euro Area**.**

Remittances to **South Asia** grew 12 percent to $131 billion in 2018, outpacing the 6 percent growth in 2017. The upsurge was driven by stronger economic conditions in the United States and a pick-up in oil prices, which had a positive impact on outward remittances from some GCC countries. Remittances grew by more than 14 percent in India, where a flooding disaster in Kerala likely boosted the financial help that migrants sent to families. In Pakistan, remittance growth was moderate (7 percent), due to significant declines in inflows from Saudi Arabia, its largest remittance source. In Bangladesh, remittances showed a brisk uptick in 2018 (15 percent). Remittances to **Sub-Saharan Africa** grew almost 10 percent to $46 billion in 2018, supported by strong economic conditions in high-income economies. Looking at remittances as

a share of GDP, Comoros has the largest share, followed by the Gambia, Lesotho, Cabo Verde, Liberia, Zimbabwe, Senegal, Togo, Ghana, and Nigeria[3].

1.2. Trends of Remittances in SEMED Countries

Recent available data on the global remittances reveal that, during 2018, the total remittances inflow to all SEMED countries was evaluated at $53,16 billion as it is shown in figure 2. More than 50% is captured by Egypt then Lebanon and Morocco with respectively $6,98 billion and $6,92 billion. The demographic weight of Egypt largely explains the gap in terms of remittances flows compared to other countries. With Lebanon, this discrepancy is justified by the pioneering nature of the Lebanese emigration, which dates back to the early 19th century, and the nature of insertion into the host countries of this emigration largely made up of businessmen with a high level of attachment to their countries of origin (Ismaili Idrissi, 2015). However, looking at its weight in term of GDP, West bank and Gaza is ahead with 19,29% of GDP.

Figure n°2: Remittances to SEMED Countries in 2018 (in US$ million)	**Figure n°3: Remittances to SEMED Recipient Countries in 2018 (% of GDP)**

Source: World bank

II. Literature Review

2.1. Theoretical literature on remittances to poverty reduction

The concept of the "dollar a day" poverty line was first introduced in 1990 and it is in its most general sense is that of insufficient or lack of necessities such as food, Shelter, clothing and so. The "dollar a day" poverty line measured absolute or extreme poverty by the standards of the world's poorest countries. It is the proportion of population living on less than 1.5 US $

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[3] https://www.worldbank.org/en/news/press-release/2019/04/08/record-high-remittances-sent-globally-in-2018

per day measured at purchasing power parity (PPP) for international comparisons and aggregation (World Bank, 2010). Due to recent inflations around the world and considering the PPP (Purchasing Power Parity) the World Bank reset it in 2015 to $1.90 a day as it is the updated World Poverty Line (World Bank, 2015). Since 2017, the World Bank has also been tracking poverty at $3.20 a day, the typical line for lower-middle-income countries, and $5.50 a day, typical for upper-middle-income countries. Therefore, $3.20 will be the poverty line in this study. This number is controversial; therefore, each nation has its own threshold for absolute poverty line.

Basic food, shelter, medical care, safety, and clothing are generally thought necessary based on shared values of human dignity. However, people around are different in terms of they view towards necessities and basic needs. Because what is a necessity to one person is not uniformly a necessity to others. Needs may be relative to what is possible and are based on social definition and past experience (Sen, 1999). Valentine (1968) argues that "the essence of poverty itself is inequality. The basic meaning of poverty is relative deprivation (Devkota, 2015). Mollie Orshansky, for the first time created what is called the "poverty line" in 1963 at the U.S. Department of Agriculture based on three times her estimate of what a family would have to spend for an adequate but far from lavish diet. The very definition of poverty was political, aimed to benchmark the progress of poverty programs for the War on Poverty as it is shown by Michael Darby (1997). Adjusted for inflation, it was believed that the poverty line for a family of four was $17,050 income in 2000 according to the US Census. According to most, poverty scholars identify many problems with this definition related to several concepts such as concept of family, cash income, treatment of taxes, special work-related expenses and of course regional differences in the cost of living (Blank 1997; Quigley, 2003).

Looking to the relationship between poverty and remittances, there has been an increasing interest from researchers, academics and policy makers around the world. Existing evidence has shown that remittances receiving households have higher incomes and expenditure relative to similar households that do not receive remittances. Remittance inflows have grown rapidly and become an increasingly key factor to the objective of poverty alleviation in situations of low income in developing countries. Thus, the linkage between remittances and poverty in developing countries has drawn attention recently many economists, even before the advent of the New Economics of Labor Migration (NELM), acknowledged that family ties in the form of mutual caring are probably a prime motivation for remitting.

The earliest studies on remittances explain that remittances are used for *altruistic purposes* (Johnson & Whitelaw, 1974). In line with this implication, Lucas & Stark (1985) postulate that "Certainly the most obvious motive for remitting is pure altruism—the care of a

migrant for those left behind". Indeed, this appears to be the single notion underlying much of the remittance literature. Recent theories on the relationship between remittances on poverty have also focused on the idea that there can be *self-interest reasons* for remitting. These self-interest approaches of remittances are built on the family because they consider the family as a business or as a nexus of contracts that permits the members to enter Pareto-improving arrangements (Chami et al. 2005). Self-interest theories of remittances date back to the pioneering study of Lucas & Stark (1985) suggest that migrants may have investments that need to be tended while they are away, so they will use other family members as their agents. The remittances sent by the migrant are used to care for the migrant's interests, but they also contain some compensation for the agents.

Remittance inflows can reduce poverty by increasing consumption and this importantly helps recipients of remittances to improve their living conditions. Additionally, remittances also assist in the creation of new social assets, services, and community physical infrastructure, including schools, roads, health, and other community projects which will indirectly contribute to poverty reduction (Ghosh, 2006; and Sorensen & Pedersen, 2002).

Based on relevant literature, the greater portion of remittances is used to fulfill personal needs. Such needs have consumed 80 to 90 percent of the funds, and only a tiny share was channeled into education and healthcare. The most common investments (and relatively productive ones) were made to buy land. Land purchases may translate into economic gains through growing plants or through other ways of the land commercial exploitation (Mamunn, Nath, 2010). The same author also observes that the locals employ the funds so as to make their lives more dignified and freer from privation.

2.2. *Empirical literature on the impact of international remittances on poverty*

Most of the empirical studies have shown that there is a negative relationship between migrants' remittances and poverty. Migration reduces poverty as people migrate from low-income rural areas to high-income city areas or from low-income economies to high-income economies.

The impact of remittances on the reduction of poverty can be understood from both the micro and macro perspectives. However, to capture this impact, there is no formal framework (Chimhowu et al., 2005). But it is evident and it is reasonable to assume that the amount of transfer done by the migrants to the family members back home do have some overall impact in reducing the poverty. Uruci and Gedeshi (2003) using survey of long-term legal immigrants find that majority of the international migrants (69.7 per cent) send their money in order to meet "the essential needs of the family".

Adams (1991) as one of the pioneers in this field found that in rural Egypt, the number of poor households declines by 9.8 percent when household income includes international remittances, and that remittances account for 14.7 percent of total income of poor households. Adams and Page (2003) concluded in one of his studies based on 74 low- and middle-income developing countries, that international remittances -- defined as the share of remittances in country GDP – has a strong, statistical impact on reducing poverty. On average, a 10 percent increase in the share of international remittances in a country's GDP will lead to a 1.6 percent decline in the share of people living in poverty. Another study of the same authors Adams and Page (2005) strongly associated remittances with poverty reduction, using a 71-country multi-variate data set, arguing that a 10 percent increase in international remittances from each individual migrant will lead to a 3.5 percent decline in the proportion of people living in poverty, such that remittances are said to significantly reduce the level, depth and severity of poverty in developing countries. This result is also corroborated in a separate analysis for 101 countries over the period 1970 – 2003 reported in the IMF's 2005 World Economic Outlook. Adams (2004), analyzed the expenditure behavior of Guatemalan households in the country level study. The study employed a two-stage selection model to correct selection bias and calculated poverty types in a counter-factual scenario sampling 7,276 households. Remittances decreased poverty both internally and externally but had more effect on the poverty gap and squared poverty gap than the poverty headcount.

Similarly, using data from a large household survey Adams (2006 a, b) found that international remittances significantly relieved poverty among the "poorest of poor households." Employing the same econometric method, Jongwanich (2007) examined the impact of workers' remittances on growth and poverty reduction in developing Asia-Pacific countries using panel data over the period 1993- 2003. The result showed that, while remittances do have a significant impact on poverty reduction through increasing income, smoothing consumption and easing capital constraints of the poor, they have only a marginal impact on growth operating through domestic investment and human capital development. In the same way, Imai et al., (2014) confirm that remittances contribute to poverty reduction in 24 Asian and Pacific countries over the period 1980-2009 by controlling the endogeneity of remittances and other variables. Their finding is supported by Vargas-Silva (2009), who uses annual data of Asia to examine the effects of remittances on growth and poverty. They reveal that remittances reduce poverty and spur economic growth. Then again, this position is in line with Acosta et al., (2007), who propose that remittances have statistically significant poverty reduction effects of the remittances receiving countries in Latin America.

Campos and Palomo (2002) find that, in 2000, remittances helped reduce the national poverty rate by 4.2 per cent in El Salvador as well as reduced the Gini coefficient from 0.55 to 0.53. Adams (2004) finds that the squared poverty gap measure in Guatemala declined by 19.8 per cent when international remittances were included as a part of the total household income. López-Cordova (2005) finds that remittances have a statistically significant impact in reducing poverty in Mexico at the municipal level.

Based on 33 African countries' panel data (1990-2005), Anyanwu and Erhijakpor (2010) postulated that a 10 percent increase in official international remittances as a share of GDP leads to a 2.9 percent decline in the poverty headcount. The point estimates for the poverty gap and squared poverty gap suggest that a 10 percent increase in the share of international remittances will lead to a 2.9 percent and 2.8 percent decline respectively in the depth and severity of poverty in African countries.

A similar study by Taylor et al (2005) used the data of 1782 household from 2003 survey of rural Mexico to show the impact of international remittances on poverty. The study estimates that poverty headcount and poverty gap indices would decline by 0.77 and 0.53 respectively with 10 per cent increase in international remittances. A study by Gupta et al (2007) covering a larger sample of countries has found that remittances tend to lower poverty. Ratha (2003) had suggested that remittances that raise the consumption levels of rural households might have substantial multiplier effects because they are more likely to be spent on domestically produced goods. Also, Maimbo and Ratha (2005) found that, in terms of poverty reduction, rural areas in developing countries tend to benefit the most because much of the world's migrants are drawn from these areas. In a recent World Bank (2006) report, using a poverty simulation model that relates the change in poverty to income growth and inequality change for 81 countries, a 5%-point average increase in the headcount ratio for lower-remittance countries and more than twice of that for higher remittance countries are found to result when the impact of remittances on poverty rate is eliminated.

The results of the empirical research conducted by Huay & Bani (2018) has shown that remittances have significantly decreased the level, depth and severity of poverty in developing countries. The impact of remittances on poverty is negative and statistically significant on each of the three poverty measures: headcount, poverty gap, and squared poverty gap. The coefficient estimates of remittances suggest that a 1 percent increase in remittances will decrease poverty headcount by 0.41 percent. This finding was considered by the same authors consistent with recent literature on the negative effects of remittances on poverty (Adams & Page 2005; Imai et al. 2004).

Based on a research of the World Bank (2006), International Migration and Development Research Program shows that: (a) International remittances reduce the level and depth of poverty. For example, a 10 percent increase in international remittances from each individual migrant will lead to a 3.5 percent decline in the share of people living in poverty; (b) While remittances reduce poverty, countries with higher levels of poverty are not necessarily receiving more remittances. Countries with the highest level of poverty such as those in Sub-Saharan Africa do not produce many international migrants and therefore receive fewer remittances; and (c) In general the largest effect of remittances on poverty is observed in countries located close to major labor–receiving areas. Developing countries close to the United States or Europe tend to receive more remittances which are usually spread evenly among the population.

III. The Model and Data: Impact of Remittances on Poverty in the South East Mediterranean: The Empirical Model

3.1 The Empirical Model

The basic growth poverty model suggested Ravallion (1997) and Ravallion and Chen (1997) accompanied by the frameworks postulated by Adams & Page (2005) to evaluate the effect of remittances on poverty, poverty is taken as a function of per capita income, some measure of income distribution, and the remittances to GDP ratio. The baseline specification is:

$$\text{Log (POVit)} = \alpha i + \beta 1 \log(GINI_{it}) + \beta 2 \log(GDP_{it}) + \beta 3 \log(REMIT_{it}) + \beta 4 \log(X_{it}) + \varepsilon it$$
$$(\text{Where, } i = 1.....N, t = 1....Ti), \qquad (1)$$

When POVit is poverty measures in country I at the time t;

αi is a fixed effect reflecting time difference between countries;

$\beta 1$ is the elasticity of poverty with respect to income inequality given by the Gini coefficient;

$\beta 2$ the PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates;

$\beta 3$ is the elasticity of poverty with respect remittances as % of GDP;

$\beta 4$ is the control variables X, including level of inflation trade openness and illiteracy;

εit is an error term that includes errors in the poverty measure.

To measure poverty, three indicators are used poverty headcount ratio at 3.20$ a day (PPP) percentage of population; poverty gap at 3.20$ a day (PPP); the severity of poverty.

- The poverty headcount measure is considerably the most commonly calculated poverty measure;

- The poverty gap or the poverty depth indicates how far below the poverty line the average poor household's income falls, and is measured by the poverty gap ratio which is defined as the total income shortfall, expressed in proportion to the poverty line, of families with income below the poverty threshold, divided by the total number of families;

- The severity of poverty is the poverty measurement that is more sensitive to the income distribution among the poor. The measure used for the severity of poverty is the squared poverty gap ratio which is the total of the squared income shortfall, expressed in proportion to the poverty line, of families with income below the poverty threshold, divided by the total number of families. The severity of poverty defines how many families are located far below the poverty line. These people are labeled as the "poorest of the poor;"

- Gini coefficient is used as a measure of inequality;

- GDP variable used is PPP GDP in constant 2011 US dollars;

- Inflation is the annual percentage change in the consumer price index;

- Trade openness measured by trade to GDP ratio represents openness of the economy;

- Illiteracy is illiteracy rate in adult total (percentage of people aged 15 and above).

The second equation estimated is remittances (REM) as a function of poverty (POV), Per capita GDP, trade openness (Trade to GDP ratio), Illiteracy Rate, Inflation Rate and lagged remittances (Remt-1) for capture the dynamic impact.

$$\text{Log (REM}_{it}) = \alpha_i + \alpha_1 \log (\text{POV}_{it}) + \alpha_2 \log(\text{GDP}_{it}) + \alpha_3 \log(\text{TRADE}_{it}) + \alpha_4 \log(\text{Illiteracy}_{it})$$
$$\alpha_5 \log(\text{INF}_{it}) + \alpha_6 \log (\text{REMIT}_{it-1}) + \epsilon_{it} \qquad (2)$$

(Where, i = 1.....N, t = 1....Ti),

The log transformation of all the variables allows interpretation of the coefficients as elasticities.

3.1.1. The data

To estimate the impact of remittances on poverty in southern and eastern Mediterranean, this paper uses relevant panel data for 8 selected countries for the period 2000 to 2018 which are: Morocco, Algeria, Tunisia, Egypt, West bank and Gaza, Jordan, Lebanon and Turkey. Data related to poverty in Libya and PPP GDP in Syria are not available.

Justification of variables

The poverty and personal remittances received data variables were used as the dependent and independent variable, respectively Gini index, PPP GDP, inflation, trade openness and illiteracy rate were used as control variables in the current study.

According to Shahidur (2012), inflation lowers the value of people's liquid assets, their real income and the purchasing power of their money, thus subjecting them to increased levels of poverty. However, the United Nations report (2010) argued that inflation lowers real wages, thereby increasing employment levels due to reduced labor costs. Also raises the possibility for workers to be able to generate income and generate projects for themselves, thus contributing to the reduction of poverty levels. In the current study, therefore, inflation is expected to influence poverty positively or negatively.

Pradhan and Mahesh (2014) showed that trade openness has a negative effect on poverty in developing countries. Trade openness creates new international markets for locally manufactured goods and services while injecting new goods and services manufactured abroad into the local market. Local producers benefit as they now have easy access to foreign inputs for use in their production processes, and consumers benefit from greater variety and cheaper products, which increases national income and triggers poverty reduction. In the current study, trade openness influence poverty negatively.

Afzal et al (2010) argue that lack of quality education is a source of child labor, perpetuating poverty. It is in this context that the current study predicts a positive or negative impact on poverty reduction. Anyanwu, (1998, 2005) shows that education increases the stock of human capital, which in turn increases labor productivity and wages. Thus, while an increase in illiteracy decreases opportunity of the poor to generate income, the coefficient associated with illiteracy is expected to be negative.

Descriptive statistics

Table 1 and 2 provide detailed descriptions of the raw dataset. Before proceeding to the regression analysis, it is instructive to present bivariate relationships between poverty indicators and all the other variables, for example Table 2 show clear negative relationship between remittances and all measures of the poverty in SEMED countries.

Table 1: Descriptive Statistics of Regression Variables

Variable	Obs	Mean	Std. Dev.	Min	Max	Median	Range
Poverty Headcount	152	9.56	9.40	0.06	35.34	6.19	35.28
Poverty Gap	152	2.19	2.23	0.00	8.15	1.28	8.15
Severity of Poverty	152	0.86	0.75	0.01	2.75	0.72	2.74
Gini Index	152	34.78	2.98	27.62	42.85	34.78	15.24
PPP GDP	152	398109698510.34	518282146236.61	10443520864.38	2331268901303.35	125854512473.93	2320825380438.96
Remittances to GDP	152	8.22	6.97	0.06	26.42	6.31	26.36
Inflation Rate	152	5.80	7.81	-3.75	54.92	4.19	58.66
Trade openness	152	76.06	24.42	30.25	144.88	73.99	114.63
Illiteracy Rate	152	14.94	7.59	1.77	47.69	14.94	45.92

Note: These are the variables before the log transformation

Table 2: Bivariate Correlations of Regression Variables

Variable	Poverty Headcount	Poverty Gap	Severity of Poverty	Gini Index	Per capita GDP	Remittances to GDP	Inflation Rate	Trade openness	Illiteracy Rate
Poverty Headcount	1.0000								
Poverty Gap	0.988**	1.00							
Severity of Poverty	0.896**	0.933**	1.00						
Gini Index	0.12	0.13	0.03	1.00					
PPP GDP	0.13	0.10	-0.01	0.573**	1.00				
Remittances to GDP	-0.333**	-0.345**	-231**	-0.340**	-0.554**	1.00			
Inflation Rate	0.14	0.12	0.07	0.188*	0.449**	-0.242**	1.00		
Trade Openness	-0.384**	-0.359**	-334**	-0.181*	-0.616**	0.560**	-0.326**	1.00	
Illiteracy Rate	0.387**	0.381**	0.375**	-0.13	-0.11	-0.15	0.00	-0.07	1.00

Note: ** Significant at 5% level; * Significant at 10% level.   Source: Authors' Calculations

3.1.2 Empirical results

Table 3: Ordinary Least Squares

Variable	Poverty headcount	Poverty Gap	Severity of poverty
Gini Index	0.645**	0.191***	0.0555**
	(0.275)	(0.0648)	(0.0220)
PPP GDP	-5.74***	-1.76***	-7.16***
	(2.13)	(5.02)	(1.71)
Remittances to GDP	-0.183	-0.0601***	-0.00893
	(0.121)	(0.0285)	(0.00969)
Inflation Rate	0.0898	0.0212	0.00627
	(0.0924)	(0.0218)	(0.00739)
Trade Openness	-0.162***	-0.0378***	-0.0157***
	(0.0370)	(0.00872)	(0.00296)
Illiteracy Rate	0.408***	0.0914***	0.0297***
	(0.0885)	(0.0208)	(0.00708)
Constant	-3.402	-1.867	-0.00146
	(9.326)	(2.195)	(0.746)
R-Squared	0.3273	0.3369	0.3213
N	152	152	152

Note: The numbers in parentheses are t-values. *** Significant at 1 % level; ** Significant at 5% level; * Significant at 10% level.

Table 3 shows the results of the empirical estimations using the ordinary least squares (OLS)[4] of panel data analysis. The remittances variable has a negative impact on all three of the poverty measures: the poverty headcount, the poverty gap, and severity of poverty. The results of the OLS test show that a 5% increase the remittances flows as a percentage of the GDP can lead to a decrease in the poverty gap of 6.1%.

Regardless of the measure of poverty used on the dependent variable. Gini index has a positive and significant coefficient for all the poverty measures indicate that greater inequality is associated with higher poverty. A negative and significant coefficient for the PPP GDP for all the poverty measures.

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[4] Ordinary least squares (OLS) is a method for estimating the unknown parameters in a linear regression model. This method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation.

The other explanatory variables show positive effects of both inflation rate and illiteracy rate. As regards trade openness, the results show that all the poverty measures have a negative and significant impact.

Table 4: Three Stage Least Squares Estimations

Variables	Dependent variable Poverty Headcount		Dependent variable Poverty Gap		Dependent variable Severity of poverty	
	Poverty headcount	Remittances	Poverty Gap	Remittances	Severity of poverty	Remittances
Gini Index	2.828*** (0.654)		5.771*** (1.395)		0.580 (1.559)	
PPP GDP	-1.948*** (0.0494)	-0.784*** (0.218)	-2.246*** (0.105)	-0.348** (0.138)	-2.071*** (0.118)	-0.310*** (0.111)
Remittances to GDP	-0.149** (0.0619)		-0.135 (0.132)		-0.695*** (0.148)	
Inflation Rate	0.0265 (0.0298)	0.0115 (0.0389)	0.0903 (0.0635)	0.0164 (0.0398)	0.193*** (0.0709)	0.0253 (0.0382)
Trade openness	-0.652*** (0.110)	0.791*** (0.152)	-0.366 (0.234)	1.031*** (0.124)	-0.548** (0.262)	1.067*** (0.109)
Illiteracy Rate	-0.0236 (0.0572)	-0.139* (0.0753)	-0.0889 (0.122)	-0.139* (0.0770)	-0.0792 (0.136)	-0.136* (0.0722)
Poverty		-0.325*** (0.105)		-0.0899* (0.0517)		-0.204*** (0.0431)
Lagged Remittances		0.438*** (0.0734)		0.312*** (0.0585)		0.307*** (0.0537)
Constant	38.63*** (3.019)	24.56*** (5.372)	35.98*** (6.439)	14.01*** (3.468)	47.94*** (7.196)	12.677*** (2.950)
Observations	152	152	152	152	152	152
R-squared	0.982	0.743	0.938	0.731	0.905	0.763

Note: The numbers in parentheses are t-values. *** Significant at 1 % level; ** Significant at 5% level; * Significant at 10% level.

The regression results were conducted using Three Stage Least Squares (3SLS)[5] because Ordinary least squares (OLS) estimates are likely to be biased when any right-side variable is endogenous. It can argue that the relationship between poverty and remittances is unlikely to be unidirectional. To tackle this issue a system estimation technique that allows for both poverty and remittances to be determined simultaneously is adopted. Three stage least squares is often described as the system equivalent of a two-stage least squares. The advantage is that estimating a system of equations where both poverty and remittances are endogenously determined allows us to observe not just the effect of remittances on poverty, but also the reverse effect of poverty of remittances. All regression coefficients representing the relationship the variables among are shown in Table 4.

The results suggest that the model is globally satisfactory in this two-equation system with a coefficient of determination (R-squared) which amounts to 0.98 for the poverty headcount, 0.94 for the poverty gap, and 0.91 for the severity of poverty. In other words, the model can explain 98%, 94% and 91% of the variability of the impact of remittances on poverty in SEMED countries, when poverty is endogenously modeled.

Then reading of t-statistics shows that most of the coefficients of the variables selected are significant at the 1%, 5%, and 10%, in this two-equation system.

The main finding is the impact of remittances on poverty. As expected, the analysis results from three stage least squares estimations show the negative relationship between remittances and poverty and this impact are significant for the poverty headcount and severity of poverty when poverty is endogenously modeled, an increase in remittances can directly lead to poverty reduction in the long run. This may be due to the fact that remittances directly increase the income of poor people, smooth household consumption and ease capital constraint, and also this negative effect might be due to the transaction cost associated with migration. The results prove to be in accordance with expectations.

Regardless of the measure of poverty used as the dependent variable. Gini index has a positive and significant coefficient for the poverty headcount and the poverty gap which is according to expectation. This positive relation indicates that at a given rate of economic growth, poverty reduces more in low inequality countries.

PPP GDP is a consistently negative and significant determinant of remittances in this two-equation system at 1%.

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[5] The three-stage least squares technique involves simultaneously generating two-stage least squares estimates of all the equations in the system. The technique allows for nonzero contemporaneous correlations between the disturbances in different equations. If the disturbances are uncorrelated, the three-stage least squares technique reduces to a two-stage least squares.

The inflation rate has a positive impact in this two-equation system, this can be explained by the fact that inflation can be a factor that accelerates poverty by expanding the gap between the rich and the poor. High income people benefit from a wage hike due to increasing in inflation, while poor people who tend to experience difficulties in finding job opportunities, cannot enjoy such a benefit. These results confirmed also that remittance inflows lead to upward pressure on inflation in SEMED countries.

As regards the results show that Trade openness has a positive and significant coefficient at the 1% when remittances are endogenously modeled. And has a negative significant coefficient when poverty is endogenously modeled, it can be interpreted that trade openness may worsen the income distribution by accelerating the skill-biased technical change in response to the increased competition with foreign countries. However, trade liberalization may not necessarily be good for poverty reduction unless there are drastic per capita income growth and overall economic growth.

Finally, the lagged remittances are significant, positive predictor of current remittances implying that the countries with higher remittances in the initial year, possibly indicating higher migrant stock, have higher remittances.

IV. Conclusions and Policy Recommendations

The present paper investigated the impact of remittances on poverty in eight SEMED countries through an analysis based on poverty profiles, a method that is applied in several studies on the subject. These countries are known for their historical and recent background on migration which has intensified because of the increasing pressures on their political situation fueled by a decline in their socio-economic situation.

The results that emerge from this research converge to a large extent with a number of studies on the subject in other countries and region of the world. It has shown that remittances significantly reduce poverty in SEMED countries. 5% increase in remittances flows as a percentage of the GDP can lead to a decrease in the poverty headcount ratio of (0.75%), and 1% increase in remittances flows as a percentage of GDP can lead to decrease in the severity of poverty of (0.70%).

Some important recommendations and conclusions need to be considered based on these findings. It is widely admitted that the scope of economic and financial benefits of the remittances on recipient countries has a significant social dimension. They have shown resilience in times of crisis as they are weakly sensitive to the decline in activity in the host countries. Based on this important fact, recipient countries need to set up policies toward

encouraging more remittances flows as they are less volatile resource compared to FDI and foreign aid and due to their important role in alleviating poverty.

The implementation of appropriate financial infrastructures by encouraging competition in banking sector that will enable reducing costs and delays that will be beneficial to enable households to conduct their financial transactions more easily through formal channels. Despite efforts that have been made to reduce the transaction cost in some SEMED countries, the average transaction cost of sending remittances remains quite high in some countries (appendix 1). Lowering remittances transaction costs will help to increase the poverty-reducing impact of these remittances as it would increase the disposable income of migrant's families and encourage them to use the official banking, postal services or transfer operators' channels. Therefore, encouraging partnership between the international banking and postal services and money transfer operators would help reduce remittance costs while preserving high security standards.

To decrease poverty, a set of appropriate and complementary policies that extends beyond the focus on remittances must be put in place. In particular, remittances receiving countries need to develop a plan for maximizing the benefits of remittances and to minimize their negative repercussions. Governments must put in place the right policies to ensure that remittances have the desired effect on human capital. Investments in educational infrastructure and training of teachers must be undertaken, particularly in the communities from which migrants originate, to enable the local population to use remittances to send their children to school. Improving access to education, for example, can reduce inequality (and hence poverty) both by increasing individual productivity and by facilitating the movement of poor people from low-paying jobs in agriculture to higher-paying jobs in industry and services. More importantly, public spending on education (as well as on health and other human capacity), when targeted toward the poor, can produce a double dividend, reducing inequality and poverty in the short run and increasing the chances for poor children to access formal jobs and thus break free from the intergenerational poverty trap. Increasing educational levels and its quality should be accompanied by a strong investment climate to ensure that productive jobs are created for the newly educated.

SEMED countries should reinforce their policies to mitigate the adverse poverty consequences of trade reforms. Improving safety nets and labor-market policies and institutions, investing in access roads to improve access by the poor to markets, improving climate affairs can also reduce the adverse poverty changes that may result from trade liberalization.

Appendix: Average transaction cost of sending remittances to a specific country (%)

Appendix Table 1: Description of Variables	
Variable	Source
Remittances (sum of receipts of worker remittances. employee compensation. migrant transfers) (as % of GDP)	World Development Indicators | DataBank (worldbank.org)
Poverty indicators	PovcalNet database (available at http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp.)
Gini index	World Development Indicators | DataBank (worldbank.org)
PPP GDP (constant 2011 US dollar)	World Development Indicators | DataBank (worldbank.org)
Adult Illiteracy Rate	World Development Indicators
Trade openness ((imports + exports)/GDP)	
Inflation (annual percentage change in CPI)	World Development Indicators | DataBank (worldbank.org)
	World Development Indicators | DataBank (worldbank.org)

Average transaction cost of sending remittance to a specific country is the average of the total transaction cost in percentage of the amount sent for sending USD 200 charged by each single remittance service provider (RSP) included in the Remittance Prices Worldwide (RPW) database to a specific country.

Year	Algeria	Egypt. Arab Rep	Jordan	Lebanon	Morocco	Tunisia	Turkey
2011	14.08	4.15	5.31	13.57	8.47	8.79	8.76
2012	12.99	4.28	4.37	11.44	8.31	8.78	7.75
2013	13.06	3.85	5.00	10.86	8.05	8.80	7.95
2014	10.12	4.46	5.95	11.85	7.49	8.95	6.91
2015	11.89	5.67	5.78	13.13	6.99	6.09	6.95
2016	8.10	4.97	5.49	11.99	6.84	8.58	7.40
2017	8.26	5.30	5.70	11.66	6.78	8.48	6.84

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