AMERICAN UNIVERSITY OF BEIRUT

THE INTERACTION BETWEEN REMITTANCES, REAL
EXCHANGE RATE, AND FINANCIAL SECTOR
DEVELOPMENT: THE CASE OF LABOR-EXPORTING
MENA COUNTRIES

by
NADINE NABIL YAMOUT

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AN ABSTRACT OF THE PROJECT OF

Nadine Nabil Yamout   for   Master of Arts in Financial Economics
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Title: The Interaction between Remittances, Real Exchange Rate, and Financial Sector Development: The Case of Labor-Exporting MENA Countries

For developing MENA countries, remittances constitute an expanding source of financial inflows, contributing to economic growth and improving citizens' living standards. However, remittance inflows can exert upward pressure on the real exchange rate resulting in the appreciation of the economy's currency, a phenomenon known as the Dutch Disease. The appreciation effect on the real exchange rate stems from the fact that remittances constitute a source of income to households that is mainly spent on consumption of goods and services. This project argues that if these foreign inflows are channeled through an effective financial sector, specifically the banking sector, into productive investment activity and/or contributed to government debt financing, then the upward pressure on the real exchange rate would lessen, thus reducing or even preventing currency appreciation.

After the general introduction, chapter 2 of this project discusses the micro- and macroeconomic consequences of remittances. It also presents a review of the literature on remittances, the real exchange rate, and financial sector development. Chapter 3 then provides an overview on labor-exporting MENA countries, shedding light on the impact of remittance inflows and the role of the financial sector in these economies. To test the stated argument, chapter 4 presents an empirical model applied on a panel of eight labor-exporting MENA countries. Ordinary Least Squares Fixed Effect estimation, Two-Stage Least Squares estimation and Generalized Method of Moments technique are employed to examine the interaction between the real exchange rate, remittances, and financial sector development. The empirical evidence reveals that while remittance inflows tend to have appreciating effect on the real exchange rate, the upward pressure is attenuated in countries with a well-established financial sector. Finally, chapter 5 concludes the project stating remarks and policy recommendations.

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To My

Beloved Family

CHAPTER 1

INTRODUCTION

The impact of remittances on economic growth and development has increasingly gained the interest of policy makers, bilateral donors, international organizations and researchers. This stems from the fact that remittance inflows constitute a substantial stream of financial resources to labor-exporting developing countries. Remittances have significantly increased in recent years, and their role in developing economies has thus come under study.

The considerable amount of remittance inflows highlights how labor migration, if well-managed, could play a vital role in the receiving country's economic development. In fact, numerous initiatives have been globally undertaken to explore and conceive the characteristics of remittance inflows and identify measures that could expand their development impact in remittance-receiving economies.

1.1. Definition of Remittances

Until today, there is still no consensus on the conceptualization or measurement of remittances. Indeed, economic literature provides different meanings to the concept of remittances, with no specific boundaries for this phenomenon (Ratha 2006). The absence of a common definition for remittances has made it difficult to calculate the value of these flows transferred to countries or regions (Taylor and Fletcher 1999).

Most literature has described remittances as financial or cash transfers sent by migrating members to their household. This definition thus excludes any in-kind

transfers and confines the definition to migrant workers' cash transfers. It also eliminates any transfers from refugees or other illegal migrants (Sørensen 2004; Van Doorn 2001). Other analysts have attempted to employ a broader definition of remittances with the purpose of improving the measurement of migrant worker's financial transfers. In that manner, remittance inflows, as measured in the balance of payments, are defined as the totality of workers' remittances, employees' compensation, and migrants' transfers (Ratha 2003).

The most commonly adopted official definition of remittances was proposed by the International Monetary Fund (IMF). According to their definition, remittances are international financial transfers sent by migrant workers to their households in the home country. Literature highlights that this definition entails including the three abovementioned constituents when compiling remittances statistics. The first constituent, workers' remittances, denotes the total value of current money flows transmitted by migrant workers living abroad for at least one year. The second constituent, compensation of employees, denotes the gross earnings of foreigners living abroad for less than one year (diplomats and seasonal workers for instance). The third constituent, migrants' transfer, denotes the net worth of migrant workers who alter their residence from one country to another (IMF 1993).

However, Adams and Page (2005) challenged this definition, arguing that IMF estimates of remittances do not provide a holistic measure of the actual remittance inflows. They argue that IMF estimates are based only on official worker remittances transferred through official banking channels, thus excluding a major portion of remittances transferred through private, unrecorded, or illegal channels.

Chami *et al.* (2008) provide a more recent challenging view against the IMF's methodology of computing remittances. They argue that the methodology is considered

problematic given that the aggregation of the three constituents could lead to severe misspecification and defective conclusions. The authors debate that workers' remittances constituent alone provides a reliable measure for remittance inflows, pointing that employee compensation and migrants' transfers are both theoretically different than and behave differently from workers' remittances. Chami *et al.* also note that workers' remittances carefully captures the commonly accepted definition of remittance inflows in literature, where these inflows are considered intermittent, unreciprocated, non-market transfers among residents of different nations. Meanwhile, the authors state that final accumulated assets brought back by migrants who return to their home country should be classified as capital transfers and not remittances. Further, they propose that compensation of employees should not be accounted for when measuring remittances since balance of payments assigns these inflows to the official country of residence. Hence, if the inclusion of employees' compensation is necessary, then researchers must calculate the net compensation amount by deducting from employees' compensation the portion of these earnings that is spent in the host country and hence not transmitted to the home country.

1.2. Remittances and the Real Exchange Rate

Remittances have emerged as a mounting source of foreign financing to developing countries over the last few decades. This expansion was accompanied with concerns about the potential challenges that large amounts of remittance transfers may impose on the receiving countries. As with foreign aid and natural resource boons, a particular challenge of remittances is that they may exert upward pressure on the real exchange rate since they provide abundant resources to labor-exporting countries. The resource curse of remittances leads to the Dutch Disease effect which causes real

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exchange rate appreciation and harms the competitiveness of the economy.

Corden and Neary (1982) present the classical model of the Dutch Disease. In this model, the economy is divided into three sectors: a booming (natural resource) sector, a lagging exports sector, and a non-tradable goods sector. The model reveals that the lagging export sector is crowded out by the booming sector and the non-tradable goods sector. This usually means deterioration in manufacturing sector for industrialized economies, and a dwindling agricultural sector in developing economies. The authors note that an upsurge in an economy's exports of natural resources primarily raises income, as foreign currency increasingly flows into the country. Two effects could occur if these foreign currency inflows are exchanged with local currency to be spent on local non-tradable goods. The spending effect assumes that remittance inflows result in excess demand for tradable and non-tradable goods, thus exerting upward pressure on their prices domestically, and resulting in real exchange rate appreciation. The resource movement effect relates to the shift in resources away from the tradable goods sector and thus leading to its contraction.

1.3. Objective of the Project

This project argues that when remittances are properly managed through a developed financial sector, then their Dutch Disease threats may be attenuated. As such, this project proposes that the existence of a developed financial sector, which can channel remittances into productive investment activities either by providing support to small and medium enterprises and entrepreneurship, and/or finance government debt, would reduce or even prevent currency appreciation.

To test this argument, an empirical model is applied on a panel of eight labor-exporting MENA countries, namely Algeria, Egypt, Jordan, Lebanon, Morocco, Syria,

Tunisia, and Turkey. An unbalanced panel dataset is employed over the period 1960–2012. The countries were selected based on two criteria: (1) that the country is a net remittances receiver, and (2) that the country has data on remittance inflows available for at least ten consecutive years. The model investigates the interaction between the real exchange rate, remittances, and financial sector development, while controlling for other determinants of the real exchange rate. In order to test the stated hypothesis, three panel estimation techniques are used: Ordinary Least Squares Fixed Effects, Two-Stage Least Squares, and Generalized Method of Moments.

The empirical evidence reveals that while remittance inflows tend to exert upward pressure on the real exchange rate, the appreciation effect is attenuated when financial sector development is incorporated in the model. Therefore, the project verifies that the existence of a developed financial sector can actively reduce the Dutch Disease effect by properly channeling the inflows to the economy by extending credit to the private sector and/or financing government debt.

This project also analyzes the dynamics behind the attenuation of the impact of remittance inflows on the real exchange rate in the presence of a developed financial sector within the Salter-Swan framework. The core Dutch Disease model is modified in order to incorporate the role played by the financial sector in channeling remittance inflows into private or public investments.

1.4. Outline of the Project

This chapter has given background information regarding the context of this project. It has discussed the different definitions of remittances, and has presented the interaction between remittances and the real exchange rate. In addition, the chapter has provided a general introduction to the empirical model developed in the project.

Chapter 2 discusses the microeconomic and macroeconomic consequences of remittances. It also presents a review of the literature on remittances, the real exchange rate, and financial sector development. Chapter 3 gives an overview on labor-exporting MENA countries, discussing their macroeconomic fundamentals, labor migration history, remittance inflows, and financial sector development.

To test the proposed hypothesis, Chapter 4 presents an empirical model applied on a panel of eight labor-exporting MENA countries. The model attempts to examine the interaction between the real exchange rate, remittances, and financial sector development. The empirical evidence reveals that while remittance inflow tends to have appreciation effect on the real exchange rate, the upward pressure is attenuated in countries with a well-established financial sector. Finally, Chapter 5 concludes the project stating remarks and policy recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1. Consequences of Remittances

Literature greatly contributes to the understanding of the consequences of remittance inflows in labor-exporting countries. The ongoing argument is on the use of these remittance inflows as well as their impact on economic development in the receiving countries. Early studies on remittances and economic development, conducted during the 1970s, focused on whether remittance inflows are channeled into consumption or investment. These studies realized that only a small proportion of remittance inflows are channeled into productive investment activities such as setting up businesses or enhancing agricultural techniques. As such, the interaction between remittances and development has been labeled as "unresolved" in early research (Carling 2005).

Nevertheless, recent studies provide evidence that remittances constitute a major source of financing for investment in entrepreneurship activities and human capital, both of which favor economic development (Acosta 2007; Sander 2003). A book published by the World Bank (2005) concludes that remittance inflows directly contribute to increasing global income since migration allows labor to move to areas where they can be more productive. Docquier and Rapoport (2005) present a similar argument, stating that migration and related remittance inflows positively affect the labor-exporting countries' economic performance in the long-run.

2.1.1. Microeconomic Consequences of Remittances

2.1.1.1. Labor Supply and Entrepreneurship

Literature thoroughly discusses the relation between remittance inflows and labor supply in recipient countries. Various studies claim that remittances can create a disincentive to work, thus resulting in a drop in labor force participation rate due to leisure consumption preference. A study by Funkhouser (1992) provides evidence for this claim, stating that higher income generated by households due to remittance inflows would lead to lower labor supply. The study uses data on El Salvador migrants during the 1980s and concludes that massive migration has substantial negative impact on labor force participation of households who receive remittances, primarily due to the income effect of these remittance inflows. Likewise, a study by Zachariah *et al.* (2001) shows that labor force participation in Kerala, India is 24 percentage points higher among households without migrating members than households with migrating members.

A more recent study by Hanson (2007) supports this claim by examining the difference in labor force participation across household members with varying exposure to migrants. Using data from Mexico's population census in the year 2000, he finds that within households receiving remittances, men are 11.0% and women are 2.2% less likely to supply labor. He also notes that households with migrating members supply fewer labor hours than households without migrating members.

On the other hand, literature provides evidence on the favorable impact of remittances on entrepreneurship activity. To test this argument, Woodruff and Zenteno (2001) examine the effect of remittances on capital investment levels in 600 micro-enterprises in urban Mexico. The results reveal that remittances finance more than 25% of capital invested in small businesses. They also state that the impact of remittance

inflows extend beyond rural areas, from which most migrants originate, into urban areas where productive investment activities take place.

Acosta (2007) reaches a similar conclusion on the interaction between remittances and entrepreneurship in a study on El Salvador households. The author employs Probit regression of micro-enterprise management as a function of access to remittances. The results show that business ownership is significantly positively correlated to remittance inflows. He thus states that remittances play a vital role in overcoming borrowing constraints and thus facilitate micro-enterprises' access to capital.

2.1.1.2. <u>Human Capital</u>

Literature on remittances focuses on their contribution to development of recipient households while emphasizing their impact on educational attainment. In a study on migration and schooling, Hanson and Woodruff (2003) examine – while treating migration behavior as an endogenous variable – whether households with migrating members complete more schooling years at a given age. The study reveals that having a migrating member in a household increases schooling years by 0.7-0.89 years for 10-15 years old girls whose parents are low-educated. The authors thus conclude that remittance inflows reduce low-income households' liquidity constraint and consequently improve educational attainment.

Yang (2004) also provides evidence on the favorable effect of remittances on human capital accumulation in Philippines. He proposes that the currency appreciation of the country migrated to against the Philippine peso results in an increase in remittance inflows. This positive exchange rate shock results in enhanced human capital through higher educational spending, better child schooling, and lower child labor.

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Acosta (2006) reaches a similar conclusion on the impact of remittances on schooling in El Salvador. Controlling for possible bias by using instruments for remittance income, the author finds that boys and girls below 14 years of age belonging to remittances-receiving households are more likely to enroll at school than their counterparts in non-receiving households.

Remittances also constitute an important income source for financing health spending, especially in countries which lack universal public health insurance coverage. Frank and Hummer (2002) conduct a study to understand the effect of migration and remittances on birth weight of Mexican infants. The analysis establishes that the risk of low birth weight is mitigated for women belonging in remittances-receiving households. The authors hence argue that remittance inflows improve living standards and ensure better nutrition for pregnant women, resulting in better infant health.

López-Córdova (2005) presents a similar study by considering the impact of varying remittance inflows among households in Mexico on infant mortality rates. The study shows that remittances are significantly negatively correlated to infant mortality, suggesting that a 1% increase in remittances-receiving households reduces infant mortality by 1.2 deaths. Amuedo-Dorantes *et al*. reach the same conclusion on the positive effect of remittances on health condition. Their finding state that income received from international migrants increases health expenditures, with hospitalization expenditures exhibiting the highest responsiveness to remittance inflows. The analysis also reveals that the effect of increased remittance income on health expenditures is more significant than a similar rise in non-remittance income.

2.1.1.3. <u>Investment</u>

Literature encompasses mixed conclusions on the effect of remittance income

on investment. Early research stressed that remittance inflows are utilized for consumption, with very little left to finance productive investment activities. Another argument among researchers pertains to the definition of consumption and investment. Critics of early studies argue that expenditure on health and education should not be considered consumption spending but investment in human capital. Additionally, they state that higher consumption by low-income households is often associated with alleviation of poverty, which is a goal by itself (Carling 2005).

To address this issue, Adams (1991) conducts a study on rural Egypt examining how remittances affect personal consumption and investment. His analysis indicates that households with former or present migrating members exhibit higher marginal propensity to invest that non-migrant households. Adams states that remittance income is allotted to investment expenditures such as small businesses, agricultural equipment, land, and housing, arguing that spending on housing is to be classified as investment due to the fact that it offers a potential for future return.

In a more recent study, Adams *et al*. (2008) present a comparative study on three sub-groups of households in Ghana: households who do not receive remittances, households who receive internal remittances, households who receive international remittances. The results show that households who receive internal remittances spend more on health and less on housing than those who do not receive remittances, while households who receive international remittances spend more on durable goods and less on food and housing than the other sub-groups.

Likewise, a study by Yang (2007) on Philippines shows that the depreciation of Philippine peso against the currencies of countries migrated to results in a rise in remittance inflows. His study also finds that remittances contribute to expanding entrepreneurial activities in transportation, communication, and manufacturing sectors.

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Yang explains the mechanism through which remittances enhance investment, arguing that the positive income shock generated by these inflows provides the necessary resources for fixed investments which were previously hindered by credit constraints.

2.1.1.4. Poverty and Inequality

The impact of remittances on poverty alleviation is an ongoing controversial subject among academics and researchers. Some studies attempted to analyze the issue in a specific region or country. They provide evidence suggesting that remittance inflows have actually reduced poverty incidences but their impact is small in magnitude and greatly depends on the proxy for poverty considered. Adams and Page (2005) argue that no studies examined the effect of remittances on poverty alleviation in a comprehensive set of developing countries. They state that the lack of coherent data on poverty as well as the insufficiency of published data on remittances in developing countries has made conducting these studies methodologically difficult.

Apart from the data and methodological problems in quantifying the effect of remittance inflows on poverty, various studies conducted on the issue conclude that remittances, whether directly or indirectly, alleviate poverty. Adams and Page (2005) develop a dataset encompassing 71 developing countries with sound information on remittances, poverty, and inequality. In the study, the authors consider three measures of poverty computed relative to national poverty line: poverty headcount index; poverty gap index; and squared poverty gap index. The study reveals that a 10% rise in per capita remittances results in a 3.5% decline in the number of people living in poverty.

Martinez and Yang (2006) analyze the effect of remittances on poverty in households with migrating member in Philippines during the Asian financial crisis in 1997. They realize that the depreciation of the Philippine peso during the crisis resulted

in a rise in remittance inflows, which translated into a decline in poverty rate by 0.6%. The study also shows that poverty rates even dropped in households without migrating members in regions with more favorable exchange rate shocks.

Literature is divided with regards to the influence remittances have on inequality. Some scholars claim that remittances contribute to equality given that these inflows target the poor households and can thus distribute income effectively. Other scholars oppose this postulate, arguing that remittances can cause inequality since remittance income is mostly received by wealthy households. Meanwhile, other studies conclude that remittances have no significant impact on inequality.

A study by Adams (1991) on rural Egypt shows that remittances have an unfavorable effect on income distribution. The author finds that when remittance inflows are incorporated into predicted income per capita income inequality rises, as measured by Gini coefficient that increases by 25% from 0.23 to 0.290. Similarly, Rodriguez (1998) evaluates changes in income due to migration inflows. The author finds evidence that a rise in household income by 0.06% due to remittance income, leads to a rise in inequality by 0.032%. He thus clarifies that if migration chances are related to household specific factors, then it could additionally accentuate the adverse income distributional effect of remittances.

On the other hand, some scholars present evidence that the effect of remittances on inequality in labor-exporting countries varies according to the type and history of migration. Stark *et al*. (1986) consider one village in Mexico with an extensive migration history and another village in the United States with modest migration experience. They argue that at the onset of migration history, only members of wealthy households migrated given the high migration cost. As such, remittance inflows were necessarily unequitable. However, the authors expect that inequality will

fall since migration will no more be restricted to wealthy households due to the guidance, from initial a migrant, which decreases migration costs.

2.1.2. Macroeconomic Consequences of Remittances

2.1.2.1. Growth and Macroeconomic Stability

Few studies discuss the effect of remittances on overall economic performance. These studies also reach varying results and provide mixed interpretations. Some scholars are skeptical about the role of remittances in economic growth. They argue that: although microeconomic researchers discuss that remittances benefit the receiving economy even if these inflows are spent on consumption; there is no macroeconomic proof about the effect of remittance inflows on long-run growth. Instead studies have revealed that remittances are in fact detrimental to growth (Chami *et al.* 2005).

Chami *et al*. (2005) consider a panel of 113 countries over the period 1970-1998, to empirically test the effect of remittance on economic growth. The authors find a significant and negative relation between remittances growth and GDP growth. In an attempt to justify the results, they propose that remittances not only compensate recipients for adverse economic outcomes, but also give rise to a moral hazard problem by creating a disincentive to supply labor and encourage risky investments that could result in deteriorating economic activity. Chami *et al*. (2008) also state that remittances can hinder economic growth through the Dutch Disease phenomenon where remittances cause real exchange rate appreciation, rending the receiving country less competitive.

Other researches convey a positive perspective on the impact of remittances on economic growth. Ratha (2006) shows how remittances could stimulate financial development, thus enhancing economic growth and reducing poverty. Docquier and Rapoport (2005) criticize Chami *et al*. (2005), claiming that their study disregards the

possibility that, given liquidity constraints, remittances can affect investments and human capital accumulation. Hence, they state that remittance inflows tend to have a positive overall effect economic activity on the long-run.

Remittance inflows are also considered to be a steady source of external financing and thus play a fundamental role in social insurance, specifically in countries troubled with political and economic crises. World Bank (2006) argues that remittances are regarded as a more reliable and hence more consistent source of external inflows since they are less pro-cyclical and less volatile than other capital inflows. Remittance inflows also increase when the receiving economy witnesses economic downturns or negative exogenous shocks due to natural disasters, political conflicts, or financial crises, since migrating members transfer more funds to aid their households (World Bank 2006). Thus, remittances contribute to smoothening consumption as well as to the macroeconomic stability of receiving economy.

Various studies have been conducted to support the above argument. Ahmed (2000) demonstrates that remittances increased to USD 500 million yearly in Post-war Somaliland. A study by Yang (2005) reveals that remittance inflows to Philippines increased during the Asian financial crisis in 1997. Gupta (2005) also find evidence supporting the role of remittances in macroeconomic stability. He argues that remittance inflows to India are counter-cyclical in nature, that is, they increase during periods of deteriorating agricultural activity.

Bugamelli and Paternò (2005) empirically study the relationship between remittance inflows and current account reversal. They show that high remittances as a percent of GDP decreases the probability of severe current account deficits, thus reducing the likelihood of financial crises. Chami *et al.* (2008) also provide empirical support that a rise of remittances as percent of GDP by 1% results in a reduction of

standard deviation of GDP growth by 0.16%. They argue that economies with high remittances-to-GDP ratio are characterized with considerably lower macroeconomic volatility than they would otherwise.

2.1.2.2. Inflation

Some academics argue that remittances can cause inflation since these inflows increase the demand for consumption. Ghosh (2006) reviews several researches and conclude that rising construction and land costs are common in remittances-receiving countries including Egypt, Pakistan, Greece, and Yemen.

Elbadawi and Rocha (1992) conclude that remittance inflows significantly affect inflation in labor-exporting North African and European countries. The authors note that inflation is indirectly influenced by these external inflows since high inflation dampens investment and results in lower remittances to the receiving economies.

On the other hand, some studies reach a different conclusion about the effect of remittance inflows on inflation. Lukas (2005) argues that Kerala, a state in India, which accounts for approximately one-third of India's total remittance inflows, shows no evidence that prices rise more than in other states in India. Ghosh (2006) argues that the impact of remittances on inflation depends on the size of remittance with respect to internal markets, as well as the economy's flexibility in reallocating resources into goods and services' production in order to meet rising demand.

2.1.2.3. Creditworthiness and External Financing

Remittance inflows can also contribute to improved creditworthiness of the receiving country, thus enhancing its access to capital in international markets. According to Ratha (2007), one of the key indicators for creditworthiness assessment is

the debt-to-exports ratio. He notes that including remittances into the denominator of the ratio would reduce the figure. This would improve the receiving country's credit rating. The author argues that in the case of Lebanon and Haiti, including remittances would improve their credit ratings by two notches and would result in a reduction in the spread by 130 to 334 basis points.

Furthermore, remittance inflows can be used to raise funds in international capital markets through securitization. Each of El Salvador, Mexico, Brazil, Turkey, and Panama has pledged future remittance inflows as collateral for raising funds. Securitization thus provides access to external financing at a lower cost than sovereign borrowing.

2.2. Remittances and the Real Exchange Rate: Dutch Disease

Remittances can result in the appreciation of the receiving country's currency, which in turn could render exports to become less competitive. This would discourage productive sectors, thus negatively affecting log-term economic growth (Acosta *et al*. 2007). Although remittance inflows could have micro- and macroeconomic benefits, the local currency appreciation may result in lower external competitiveness, given the rise in export prices. Amuedo-Dorantes and Pozo (2004) state that this paradox is comparable to the one presented by the Dutch Disease phenomenon where some sectors in the economy would benefit from resource booms, while other sectors are negatively impacted. The authors argue that, in a similar manner, remittances have an appreciation effect on the real exchange rate, thus, reducing the receiving economy's competitiveness in international markets.

2.2.1. The Mechanisms

Dutch Disease phenomenon refers to the detrimental consequences of large natural resources inflows on the receiving country's exchange rate, and eventually on its domestic production, trade balance, and credit costs. In fact, large foreign currency inflows can pose serious ramifications on key segments of the country's economy, because local currency appreciation reduces non-natural resource exports' competitiveness, hence leading to the contraction in these sectors (Frankel 2010). Even though Dutch Disease is commonly associated with natural resource booms, yet any development generating large foreign currency inflows could give rise to this phenomenon, including remittances, foreign direct investment, foreign aid and development assistance, and foreign debt.

Corden and Neary (1982) present the classical model of the Dutch Disease. In this model, the economy is divided into three main sectors: a booming (natural resource) sector, a lagging exports sector, and a non-tradable goods sector. The model reveals that the lagging export sector is crowded out by the booming sector and the non-tradable goods sector. This usually means deterioration in manufacturing sector for industrialized economies, and a dwindling agricultural sector in developing economies. The authors note that an upsurge in an economy's exports of natural resources primarily raises income, as foreign currency increasingly flows into the country. Two effects could occur if these foreign currency inflows are exchanged with local currency to be spent on local non-tradable goods, namely: the spending effect, and the resource movement effect.

- The spending effect relates to the pressure on domestic demand for tradable and non-tradable goods due to the increase in money supply which occurs when foreign currency inflows are converted into local currency. The rising demand for tradable and

non-tradable goods would exert upward pressure in domestic prices, hence raising the nominal exchange rate, and consequently results in real exchange rate appreciation. Therefore, tradable goods become more expensive and hence less competitive domestically and internationally. As such, the now affordable imported goods would squeeze locally produced goods out of the trade market. This results in the contraction of non-resource sectors in the economy and in greater dependence on natural resources sector. Further, the spending effect shifts labor demand into the non-tradable goods sector and away from the lagging exports sector. The shift is often termed as indirect de-industrialization (Corden 1984).

- The resource movement effect is related to the shift in resources, mainly labor and capital, into the domestic non-tradable goods sector to satisfy increased local demand, as well as into the booming sector. These two shifts would result in the contraction of the lagging exports sector. The shifts are often termed as direct de-industrialization (Fardmanesh 1991).

Wijnbergen (1984) considers learning-by-doing as an important factor to examine the possible consequences of Dutch Disease. The author argues that if it is assumed that economic growth is explained by learning-by-doing in the tradable goods sector, then the Dutch Disease would reduce an economy's long-run growth. Consequently, Wijnbergen presents an argument in favor of providing production subsidies in response to Dutch Disease shocks. However, this highly depends on whether an economy has an open or closed capital account. If the economy possesses an open capital account, Dutch Disease revenues would increase the stock of foreign assets, which would counter-balance the appreciation of the real exchange rate, hence unwinding the need for production subsidies.

Krugman (1987) includes dynamic economies of scale into the standard trade

model. He thus derives the conditions under which the Dutch Disease phenomenon may arise. Krugman concludes that for the Dutch Disease to create a de-industrialization problem, the shock has to either be large enough or last for long period; otherwise it will only be a transitory phenomenon. In line with the influential contribution discussed above, Edwards and Aoki (1983) argue whether the Dutch Disease phenomenon is actually a disease to begin with. They display that it cannot be considered a disease if the real exchange rate appreciation is permanent, hence shifting the economy to a new long-run equilibrium.

2.2.2. A Formal Model

Ball, Lopez, and Reyes (2012) present a formal model of the impact of remittance inflows on the real exchange rate. The model considers a representative consumer who maximizes utility through the consumption of tradable goods, non-tradable goods, and money services. The authors devise the following utility function which is separable in its components:

$$U\left(c_t^T, c_t^N, m_t\right) = \int_0^\infty \left[\gamma\log(c_t^T) + (1-\gamma)\log(c_t^N) + \alpha\log(m_t)\right] e^{-\rho t}\, dt \qquad (2.1)$$

where c_t^T denotes consumption of tradable goods, c_t^N denotes consumption of non-tradable goods, and $m_t = \frac{M_t}{E_t}$ denotes real money balances, the ratio of nominal money M_t to the nominal exchange rate E_t.

The authors also assume that the consumer can hold internationally traded assets which yield fixed world interest rate r. They can also earn income from selling tradable and non-tradable goods, as well as receive government transfers and remittances. Hence, the budget constraint is:

$$\dot{a}_t = sa_t + y_t^T + \frac{y_t^N}{e_t} + \tau_t - c_t^T - \frac{c_t^N}{e_t} - i_t m_t + r \qquad (2.2)$$

where y_t^T denotes tradable goods, y_t^N denotes non-tradable goods, $e_t = \frac{E_t}{P_N}$ denotes the real exchange rate, a_t denotes assets holdings, τ_t denotes government transfers and r_t denoted remittances, while P_N is the price of non-tradable good.

Production in this model uses a single input, labor. Specifically, l_t units of labor are employed in the tradable goods sector while $(1 - l_t)$ units of labor are employed in the non-tradable goods sector. Hence, the production functions are:

$$y_t^T = A_t \, l_t^\alpha \quad 0 < \alpha < 1 \tag{2.3.a}$$

$$y_t^N = B_t \, (1 - l_t)^\beta \quad 0 < \beta < 1 \tag{2.3.b}$$

The authors then solve the model by maximizing (2.1) subject to (2.2), (2.3.a) and (2.3.b) and impose the following conditions:

- Interest parity condition: $i_t = i_t^* + \varepsilon_t$ (2.4)

- Non-tradable goods market clearing: $y_t^N = c_t^N$ (2.5)

- Steady state equilibrium conditions: $e_t = \bar{e} \quad y_t^N = \bar{y} \quad c_t^N = \bar{c}^N$ (2.6)

- Economy's resource constraint: $\dot{k}_t = sk_t + y_t^T + r_t - c_t^T$ (2.7)

where i_t denotes domestic interest rate, i_t^* denotes foreign interest rate, ε_t denotes the rate of depreciation of the domestic currency, and k_t is the sum of consumer's asset holdings and official asset holdings.

This yields the following expression for equilibrium real exchange rate:

$$\bar{e} = \frac{y^N}{sk_0 + y^T + r} \cdot \frac{\gamma}{1 - \gamma} \tag{2.8}$$

The authors proceed by differentiating the above expression with respect to remittancesr:

$$\frac{d\bar{e}}{dr} = \frac{-y^N}{(sk_0 + y^T + r)^2} \cdot \frac{\gamma}{1 - \gamma} < 0 \tag{2.9}$$

Thus, an increase in remittances ($\uparrow r$) results in a drop in the real exchange rate ($\downarrow \bar{e}$)

indicating currency appreciation. Thus, according to this model, remittance inflows

cause a real exchange rate appreciation and a resource distribution according to the

Dutch Disease phenomenon.

2.2.3. Empirical Evidence

Several studies empirically examine the Dutch Diseases phenomenon which

suggests that large capital inflows can result in real exchange rate appreciation, and

eventually lead to falling competitiveness in sectors exposed to international markets.

Amuedo-Dorantes and Pozo (2004) examine the effect of remittances on the

real exchange rate in a panel of 13 Latin American countries. Controlling for other

variables, the authors find that remittances do exert appreciation pressure on the real

exchange rate, thereby resulting in reduced competitiveness in international markets.

They quantify the relation, stating that doubling remittance inflows would lead to a 22%

real exchange rate appreciation in the studied countries. Hence, they conclude that the

situation mirrors the Dutch Disease phenomenon where discoveries of resources lead to

currency appreciation as well as subsequent resource shifts from the tradable goods

sector to the non-tradable goods sector in the economy.

In a similar study, Bourdet and Falck (2006) test whether the Dutch Disease

phenomenon arises from remittance inflows in Cape Verde; a country characterized by

an estimated remittances share of 15% of GDP. The outcome of the study, which

employs Engel-Granger technique, confirms the view that rising remittance inflows is

associated with real exchange rate appreciation. However, the authors find that, high

levels of official aid may result in a depreciative effect of increased remittances.

Saadi-Sedik and Petri (2006) estimate the impact of remittances and grants on

the long-term equilibrium real exchange rate in Jordan. The authors employ the

Johansen co-integration technique over the period 1964-2005. While controlling for macroeconomic variables, the study reveals that both grants and remittances tend to have an economically and statistically significant appreciation effect on the equilibrium real exchange rate. The authors hence argue that the empirical effect of the explanatory variables on the real exchange rate is in line with economic theory. Therefore, a rise in grants or remittances will appreciate the long-term equilibrium real exchange rate.

Vargas-Silva (2007) also presents a study to investigate the interaction between remittances, money demand, and real exchange rate in Mexico. He shows that remittance shocks tend to have positive effect on local money demand. This proposes that upsurges in remittance inflows have the same effect on money demand as rises in other income sources. Additionally, positive remittance shocks have shown a negative effect on Mexico's exchange rate. Hence, although remittances serve as an external financing source for Mexico, they may exert appreciation pressure on the Mexican peso, consequently disadvantaging tradable goods sector in international markets. Vargas-Silva finally notes that as remittance inflows to Mexico continue to rise, the government may need to devise suitable policies that would mitigate the negative impact on the export-oriented sectors.

Lopez *et al*. (2007) also reach the same conclusion concerning the impact of remittance inflows on the real exchange rate. The authors argue that despite the existence of empirical evidence supporting the positive contribution of remittances to economic development in the receiving economy, large remittance inflows relative to the size of the receiving economy may bring about several undesired problems, among which the most feared is the likelihood of real exchange rate appreciation. The study provides empirical evidence suggesting that remittances tend to significantly appreciate the real exchange rate. Specifically, the empirical model reveals that approximately half

of the estimated variation in the real exchange rate is explained by adjustments in the equilibrium exchange rate due to remittance inflows.

In a more recent study, Lartey, Mandelman, and Acosta (2008) show that rising remittance inflows in emerging economies tend to have a spending effect that results in increasing non-tradable goods' relative price, which translates into appreciation of the real exchange rate. The study also reveals evidence of the resource movement effect which favors the non-tradable goods sector over the tradable goods sector following a rise in remittance inflows. In particular, when remittances rise, the share of services sector out of total output increases while the share of manufacturing sector drops. This constitutes the main characteristic of the Dutch Disease phenomenon. Even after adjusting for the possibility of endogeneity and controlling for trade openness, terms of trade, economic growth, fiscal policy and monetary aggregates, the Dutch Disease effect persists.

2.3. Remittances and Financial Sector Development

The literature on the relation between remittances and financial sector development offers numerous theories and arguments yielding mixed results. Some scholars debate that remittance inflows play an important role in enhancing the financial sector of the receiving economy, if remittance receiving households deposit these inflows in domestic banks. Using a panel of 99 developing countries over the period 1975-2003, Aggarwal *et al.* (2006) study the effect of remittance inflows on financial sector development. Specifically, the authors investigate the contribution of remittances to aggregate deposits and aggregate credit extended by domestic banks. They justify the motive of this study by stating the importance of financial sector development in enhancing growth and reducing poverty. The study supports the argument that

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remittance inflows promote financial sector development. Specifically, it shows that remittances have a positive and significant effect on deposits-to-GDP ratio and credit-to-GDP ratio. A one percentage point rise in remittances results in 0.4%-0.5% rise in deposits-to-GDP and 0.3%-0.4% increase in credit-to-GDP. Moreover, the use of Generalized Method of Moments estimations leads to the same conclusion, with a one percentage point rise in remittance inflows leading to 0.19 percentage point increase in deposits and 0.12 percentage point rise in credit.

In a more recent study, Fajnzylber *et al*. (2008) examine the same question on a micro- and macro-level. Macro-level examination reveals that remittance inflows tend to have a positive effect on financial sector development in developing countries. In specific, a one percentage point rise in remittances-to-GDP ratio results in about five percentage points increase in deposits-to-GDP and credit-to-GDP ratios. Likewise, micro-level examination shows evidence that the possibility of having a deposit account is higher among remittances-receiving households, and that deposit markets are likely to be more developed in areas with high remittance inflows. In fact, remittances-receiving households are 13 percentage points more likely to own a deposit account.

Mundaca (2005) analyzes the impact of remittances on economic growth in Central American countries, Dominican Republic, and Mexico, paying particular attention to the role of financial sector development in increasing the influence of these inflows on growth. She finds that remittances do impact economic growth and that the impact is stronger when a country is financially developed. Specifically, only when one of three financial development indicators is introduced together with remittance inflows, these indicators become significant contributors to growth. Hence, Mundaca concludes that remittances can enhance economic growth if the financial sector is well-developed such that it would speed up growth by reducing credit constraints on individuals and

start-up firms, more so than on big firms. In that way, when financial services are more readily available, remittances would be better utilized and would contribute to boosting economic growth.

On the other hand, Giuliano and Ruiz-Arranz (2009) reach a different conclusion when they study how financial development affects the receiving country's capability of taking advantage of remittance inflows. The study shows that remittance inflows boost economic growth more in countries with underdeveloped financial sector. The authors justify the results by arguing that in these countries, remittances provide a substitute means for financing investment activities and assist in overcoming liquidity constraints. The findings, which control for the possible endogeneity in remittance inflows and financial sector development using a Generalized Method of Moments approach. The model is also robust to various robustness tests, and does not vary with the considered measure of financial development. The authors conclude that remittances can become an alternative for inefficient and underdeveloped credit markets, thus alleviating credit constraints and improving capital allocation, all of which boost growth.

In contrast, Alberola and Salvado (2006) note that one remarkable fact about the rapidly escalating remittance inflows, is the absence of local commercial banks as significant players. In addition, the authors argue that remittances are identified as a catalyst for financial development in receiving economies. Building on these observations, the authors develop a two-period financial model of remittances. This model reveals that commercial banks can overcome any competitive disadvantage derived by migrating individuals' mistrust through their vital role in providing an intermediary for savings and credit. As such, the entry of commercial banks decreases the transaction fees and raises the level of remittance inflows. This allows for optimum

consumption smoothing and enhances the welfare of migrating individuals and their households.

2.4. Interaction between Remittances, the Real Exchange Rate, and Financial Sector Development

Limited literature exists on the effect of remittances on the real exchange rate, while taking into consideration the role played by the financial sector. In one study, Acosta *et al.* (2009) use a panel of 109 countries over the period 1990-2003 to examine this relation. Using different econometric model specifications, the authors show that while remittances can appreciate the real exchange rate by themselves, yet when financial sector development is considered in the model this effect weakens. The authors explain that the financial sector plays a role in maintaining the receiving country's competitiveness in international markets, thus preventing real exchange rate appreciation.

Fayad (2010) reaches a similar conclusion when investigating the potential Dutch Disease phenomenon in a panel of remittances-receiving countries in the Middle East and North Africa (MENA) region. The author employs Pooled Mean Group estimation, while accounting for the interaction between remittances and foreign direct investment, which results in simultaneity between the two variables. She finds that the standalone real exchange rate appreciation effect of remittances is attenuated by the real exchange rate depreciating effect of foreign direct investment. The study also determines a threshold of foreign direct investment level beyond which the effect of remittance inflows on the real exchange rate becomes depreciative. This shows that while remittance inflows in the MENA region can induce currency appreciation, foreign

direct investment aids at preserving a country's competitiveness through channeling

funds towards productive activities.

CHAPTER 3

OVERVIEW ON LABOR-EXPORTING MENA COUNTRIES

This project explores the interaction between remittances, the real exchange rate, and financial sector development in eight labor-exporting MENA countries: Algeria, Egypt, Jordan, Lebanon, Morocco, Syria, Tunisia, and Turkey.

3.1. Macroeconomic Overview

3.1.1. Economic Growth

The years 2012 and 2013 witnessed developments in some labor-exporting MENA countries, with implemented political reforms in Egypt, Jordan, Morocco, and Tunisia. In contrast, the Syrian conflict, which spiraled into a civil war in the second quarter of 2012, has had devastating regional spillover effects, especially in Jordan and Lebanon. Turkey has also suffered from slower growth as a spillover from the European sovereign debt crisis has taken its toll in the years 2012 and 2013. As such, weaker confidence has undermined economic activity in these MENA countries.

In light of an unstable global and regional environment, Algeria continued its own, eccentric and modest evolution. In fact, despite its ample hydrocarbon resources and the government's sufficient financing capabilities, real gross domestic product (GDP) growth in Algeria has remained modest over the past decade, with the economy growing at an average annual rate of 3.5%. However, the year 2013 witnessed a drop in GDP growth to 3.1%, as a result of militant attack on the country's natural gas facility which disturbed natural gas production and resulted in an economic slowdown. This reveals that the hydrocarbons sector constitutes the backbone of the Algerian economy,

as it accounts for one-third of GDP and secures about two-thirds of fiscal revenues. The lack of foreign investment in the sector led to a contraction in exports of hydrocarbons by an annual rate of 4% over the period 2006-2013. This highlights a major challenge facing the Algerian economy which is the pressing need for diversification in the country's economic activity.

In contrast, Egypt has experienced fluctuations in its growth since the onset of its revolution in January 2011. The country has witnessed several political challenges during the period of political transition. Thus, real GDP growth fell from 5% growth level prior to the revolution to 2.2% in 2012, and further declined to 1.8% in 2013. The ongoing political and social unrest has weakened tourists' inflows and reduced foreign direct investment, the two main sectors ensuring foreign reserve inflows. As such, with falling investment levels due to lack of investor confidence and declining tourist sector due to political and security unrest, the public and private consumption, which combined account for 85% of GDP, has been the main growth driver over the period 2011-2013. Moreover, with the persistent social unrest and the ongoing growth in population, Egypt's human development challenges are mounting. Indeed, poverty and illiteracy remain flagrant, with one-quarter of the Egyptian population living under poverty line, and the illiteracy rate at high rate of 27%.

Meanwhile, given that the acceptable political and social stability in Jordan, the country's economic activity remained resilient despite the regional unrest. However, after having suffered from the spillover effect of the 2008 global financial crisis, the Jordanian economy has not yet recovered pre-crisis growth rates which averaged 8% over the period 2005-2008. For the years 2012 and 2013, economic growth in Jordan recorded an average annual rate of 3.1%, with the main drivers of growth being private and public expenditures. Growth was also driven by the rising tourism revenues, as

tourists shifted away from politically and socially unstable countries. Despite Jordan's proximity to Syria, the Syrian conflict's impact on Jordan has been modest. Indeed, the inflows of wealthy displaced Syrian nationals played an important role in boosting local demand and have supported the recovery of the tourism sector.

On the contrary, Lebanon's economy was severely affected by the regional disturbances. In fact, after four years (2007-2010) of high real economic growth rates of an average 7.5%, which were among the best in the world, Lebanon's growth weakened over the years 2011-2013 to around 1.5% per annum. Yet, the high growth rates witnessed in 2007-2010 were not coupled with bold actions to carry on reforms tackling key sectors such as power and telecom. This deterioration in the macroeconomic picture comes as a direct result of the domestic political instability as well as the regional tensions, which together resulted in lower consumer and investor confidence. Despite the economic slowdown, Lebanon's economy has not fallen into the recessionary trap. In fact, what buffered Lebanon's economy from the risk of falling into a recession are the increased spending on basic consumption goods due to the large pool of displaced Syrian nationals as well as the stimulus package devised by the Central Bank of Lebanon which subsidizes interest rates on loans.

Given its successful economic development model, combining liberalization, trade openness, and structural reform, Morocco's economic performance was marked with resiliency in the context of difficult regional and international situations. In fact, Morocco has developed an articulate strategy since the early 2000s to accomplish its economic vision. It has succeeded so far in developing its phosphate industry to become the world's largest producer and exporter of phosphate. Yet, economic slowdown in Europe, Morocco's main economic partner, as well as low agricultural production led to a remarkable decline in growth to 2.7% in 2012. Real growth picked up to 5.1% in

2013, driven by domestic consumption as well as public investment. However, various structural and developmental problems remain flagrant including high unemployment level especially among fresh graduates, undiversified exports base, and lack of sufficient foreign investment.

Since early 2011, Syria has been struggling in the grasp of a civil war. Even though no accurate figures are available, the consensus holds that Syria's economy has tightened by about one-third, while the country's social and physical infrastructure suffered severe destruction and deterioration. As such, the war's economic costs have already surpassed Syria's yearly economic output. Before Syria plunged into war, its economy was diverse, where major sectors contributing to the economy included industry (25% of GDP), retail (23%), agriculture (22%), and tourism (12%). However, the deterioration in the country's oil sector, textile industry, construction, trade, and mining since the up-rise in 2011, brought the Syrian economy to its knees. Hence, the Syrian pound has lost about two-thirds of its value against the US dollar, and unemployment rate escalated to more than 50%.

After suffering from negative economic growth, Tunisia's economic performance recovered in 2012, growing by 3.6%. A productive agricultural sector, coupled with modest recovery in tourism, increased foreign inflows, as well as rising phosphate and hydrocarbon production has contributed to the economy's rebounding. However, security concerns coupled with decline in foreign demand from the Europe slowed drown Tunisia's recovery in 2013, where economic activity grew by 3.0%. Various risks threaten Tunisia including ideological tensions, political uncertainties, and deteriorating security situation. Yet, the government is implementing reforms aimed at improving growth and enhancing governance, in order to restore public and investor confidence.

Despite its proximity to countries witnessing unrests, Turkey remained immune to the uprisings, recording an average annual growth rate of 9% over the period 2010-2011. Furthermore, the strategy to diversify away from European markers and towards MENA markets has played an important role in reducing Turkey's exposure to the European crisis. However, the implemented tightening monetary policy in the second half of 2011 led to a 1.8% contraction in domestic demand, and consequently resulted in a slower 2.2% real economic growth in 2012. In 2013, growth picked up to 3.8% due to the devised pro-cyclical economic policies. However, growing external imbalances remain a challenge for Turkey as it attempts to sustain high growth levels.
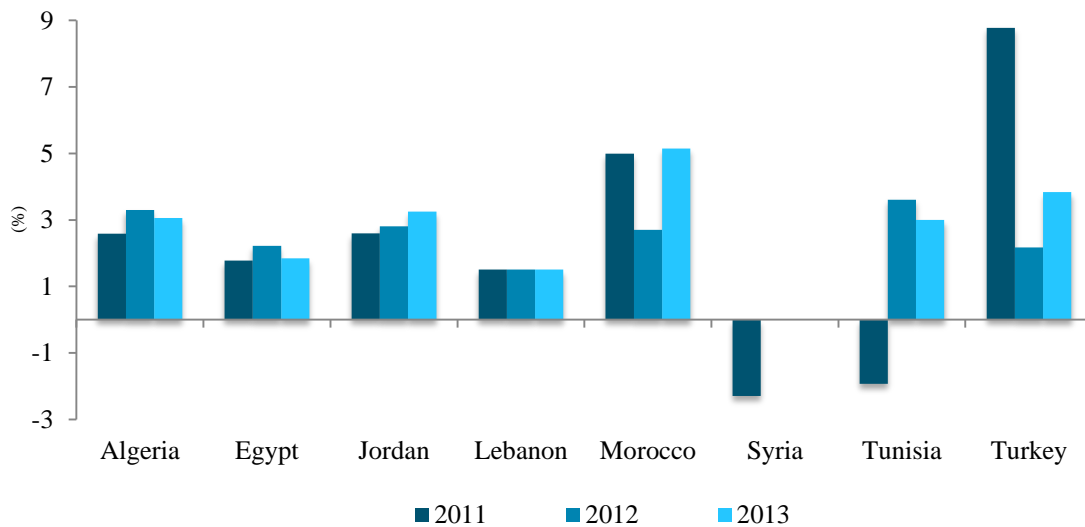
Fig.3.1. Real GDP Growth in Labor-Exporting MENA Countries
Source: IMF World Economic Outlook Database, October 2013.

3.1.2. Inflation

High inflation, a result of a high dependence on food and fuel imports, is considered a main challenge for labor-exporting MENA countries. In fact, since the fuel price spike in 2007-2008, average consumer price inflation recorded high levels in these

countries. However, since 2011, dwindling global energy and food prices, coupled with weak local demand and below-potential activity have succeeded at dampening inflation rates. Although inflation rates have been declining in some countries and stabilizing in others since 2011, these figures remain well above the rates during 1996-2005 decade.

Table 3.1. Average Inflation Rate in Labor-Exporting MENA Countries

Country	1996-2005	2006-2013
Algeria	4.6%	4.5%
Egypt	5.0%	10.1%
Jordan	2.6%	5.3%
Lebanon	2.5%	4.8%
Morocco	1.6%	1.9%
Syria	2.3%	7.5%
Tunisia	2.9%	4.2%
Turkey	51.2%	8.3%

Source: IMF World Economic Outlook Database, October 2013.

Particularly, this is the case in Egypt, which recorded a 5.0% average inflation rate over the period 1996-2005 and a remarkably higher 10.1% inflation rate during 2006-2013. The high inflation rate witnessed in Egypt was mainly a result of weak Egyptian pound, fuel shortages, and rise of food prices which exacerbated with subsidy cuts. Yet, inflationary pressures slightly subsided in 2013 as the Egyptian government issued fixed pricing lists.

The case in Tunisia is similar, where inflation steadily accelerated to 6.0% in 2013, after having dropped to 3.5% in 2011, hence recording an all-time high since the early 1990s. This has been a direct result of higher food prices given the increased demand from Libya, as well as restrictions in distribution systems. In addition, huge liquidity injections during 2013 have also exerted inflationary pressures.

Inflation in Jordan has also witnessed fluctuations, especially over the period 2005-2013. This is mainly attributed to domestic factors including the inconsistent growth of money supply, along with external factors including the fluctuation in commodities prices, specifically oil and food prices. Even though the Central Bank of Jordan pursued a tighter monetary policy to reduce inflationary pressures, the abandonment of fuel subsidies offset its effect and resulted in the continuation of the rising trend in inflation.

Inflation in Algeria also witnessed fluctuations over the period 2011-2013, however for different reasons. The year 2012 witnessed a high increase in inflation, which reached 8.9%. This rise was mainly due to the increase in public sector wages. However, as the Algerian government implemented a tighter fiscal budget in 2013, consumer price inflation returned to its equilibrium 5% level.

Likewise, inflation in Lebanon has been on the rise since 2011, affected by high food, oil, and housing prices. The rise continued in 2012 and 2013 as price of fuel and housing failed to moderate. Inflation was also driven by the government's inability to subsidize commodities, resulting in a 6.3% inflation rate by end-2013.

By comparison, a notable exception to the high inflation has been Morocco, which didn't experience upheavals in the past few years. Morocco has performed better in terms of inflation than other MENA countries, with inflation recording 2.3% in 2013. This reflects the fact that the Moroccan government's food and energy subsidies have succeeded at keeping prices artificially low. In addition, the stability of Morocco's exchange rate along with the sound monetary policy which targets a 3% inflation rate have played a key role in maintaining a relatively low price level.
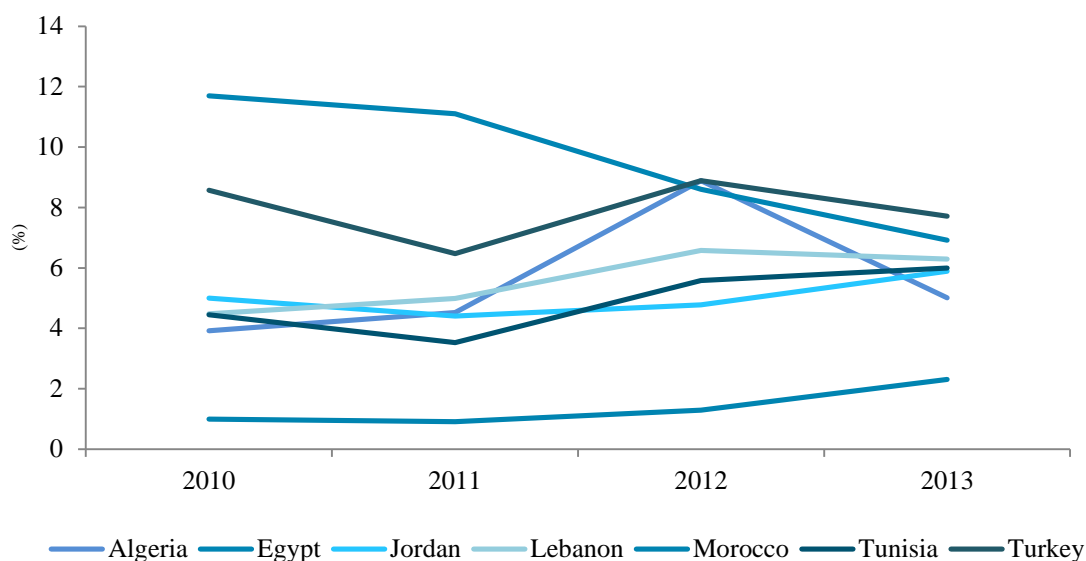
Fig.3.2. Average Consumer Price Inflation in Labor-Exporting MENA Countries
Source: IMF World Economic Outlook Database, October 2013.

3.1.3. Unemployment

The labor market in labor-exporting MENA countries consists of three main segments:

- The rural sector, which employs a substantial portion of the labor force in these countries;

- The informal urban sector, which is mostly characterized by self-employment, limited fraction of the labor force, low employment security, and high wage flexibility;

- The formal urban sector, which is characterized by hiring workers based on explicit contracts and high compliance with labor laws.

In labor-exporting MENA countries, the public sector plays a fundamental role in the labor market, and is in fact the dominant employer, mainly of educated labor. Public sector employment as a percentage of total employment is among the highest in the developing regions. Governments are considered the employers of the last resort.

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For example, Egypt has devised a regulation in the 1960s guaranteeing public sector

employment for post-secondary graduates. Meanwhile, in Algeria, Tunisia, and Jordan,

public sector employment has been rising significantly during slowdown periods, thus

playing a counter-cyclical role.

Table 3.2. Public Sector Employment in Labor-Exporting MENA Countries

Country	% of Total Employment
Algeria	30%
Egypt	29%
Jordan	36%
Lebanon	11%
Morocco	9 %
Syria	29%
Tunisia	21%
Turkey	14%

Source: LABORSTA, International Labor Organization, Author's calculation

Open and disguised unemployment has increased in the past few years, as most

labor-exporting MENA countries witnessed economic slowdowns. In the year 2012,

unemployment in these countries averaged 11%, with a large disproportion between

males and females. Unemployment in the labor-exporting MENA countries embeds a

gender element. Specifically, unemployment among females in these countries are

among the highest in the world, whether in absolute term or in comparison with male

unemployment. To illustrate, women unemployment in Egypt reached a high rate of

24.1% while male unemployment recorded 8.4%. The case in Tunisia is similar, with

female unemployment recording 27.4% while male unemployment reached 15.0%. On

the other hand, this discrepancy is less acute in Morocco and Turkey, which recorded

1.2 percentage points and 2.3 percentage points' difference between male and female unemployment, respectively.
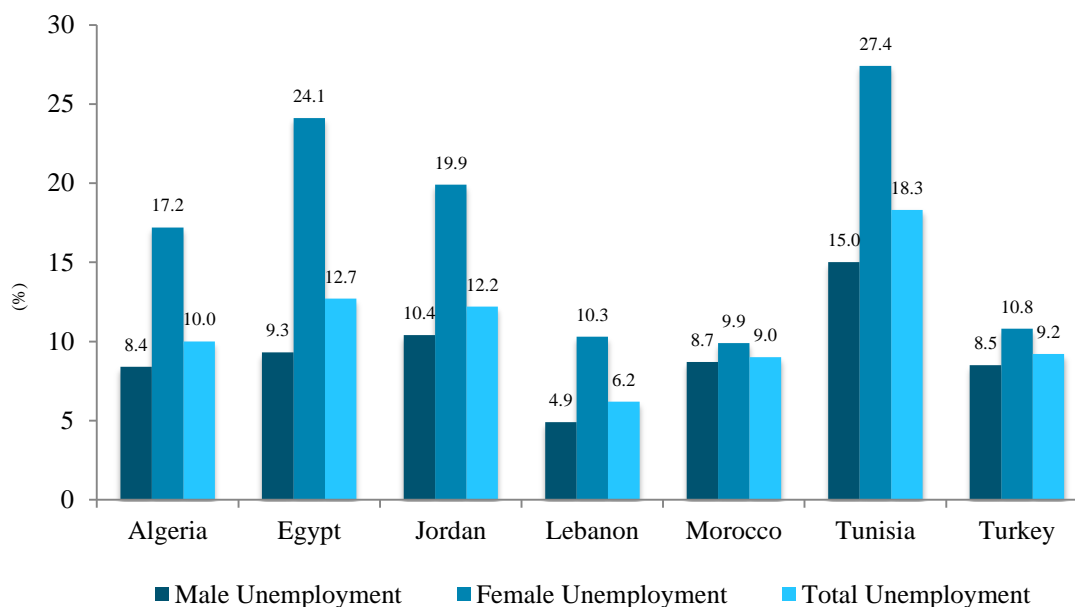
Fig.3.3. Unemployment Rates in Labor-Exporting MENA Countries in 2012
Source: World Bank Databank.

In most labor-exporting MENA countries, high rates of unemployment are mainly due to young job seekers searching for jobs. As such, the share of youth out of the total unemployed population exceeds the 50% level in most of these countries. The share of youth out of total unemployment reaches as high as 82% in Morocco and 63% in Egypt. Hence, unemployment is a significant problem facing the youth in MENA countries, thus justifying the significant waves of labor migration witnessed over the past decade. It is also an issue of labor market insertion where in most of these countries first-time job seekers account for the majority of the unemployed population. This is especially high in Syria and Egypt, where these job-seekers' share constitute about two-thirds. This justifies why although unemployment is a flagrant problem in labor-

exporting MENA countries, it does not directly translate into a major poverty problem.
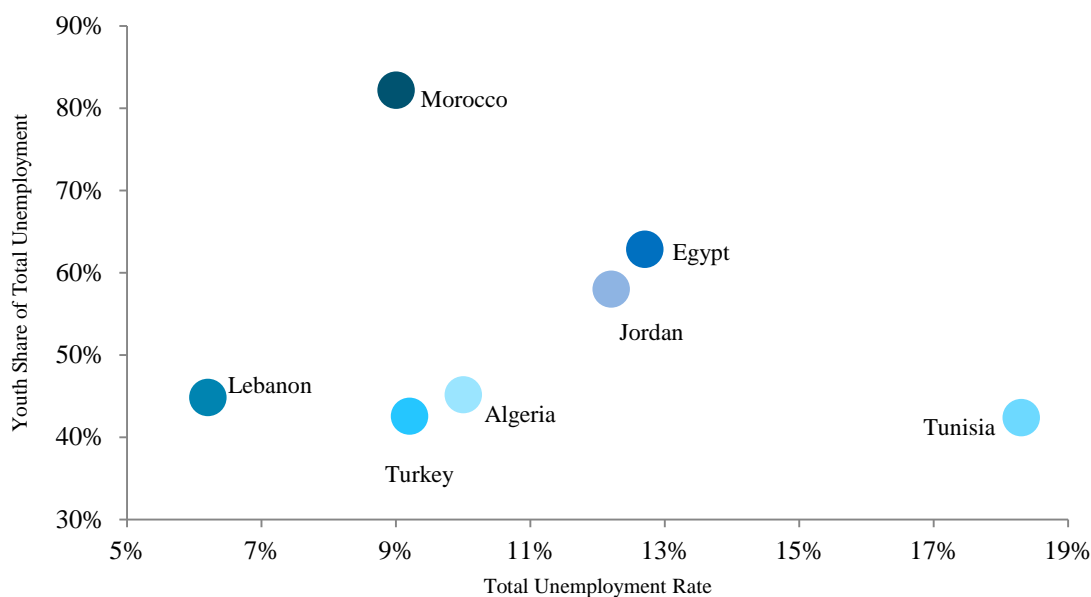
Fig.3.4. Youth Share of Total Unemployment Rates in Labor-Exporting MENA
Countries
Source: LABORSTA, International Labor Organization, World Bank, Author's
calculation.

When it comes to salaries and wages, the mechanism of wage determination in
labor-exporting MENA countries usually deviates from market-clearing. This is mainly
due to legal restrictions, firm's wage-setting manner, and active labor unions.
Specifically, wages in agriculture sector and informal urban sector are highly flexible.
On the other hand, other sectors are characterized by rigid wage systems which are
subject to constraints by employing institutions. Furthermore, in most labor-exporting
MENA countries, civil service salary scale provides a reference point for wage setting
in public enterprises and private sector firms. This justifies the downward rigidity in
wage setting in the private sector, given that public wage settlement is not frequently
revised. As for non-wage labor costs, these countries are characterized with high social
security contributions, which accounts for about one-quarter of total wage bill.
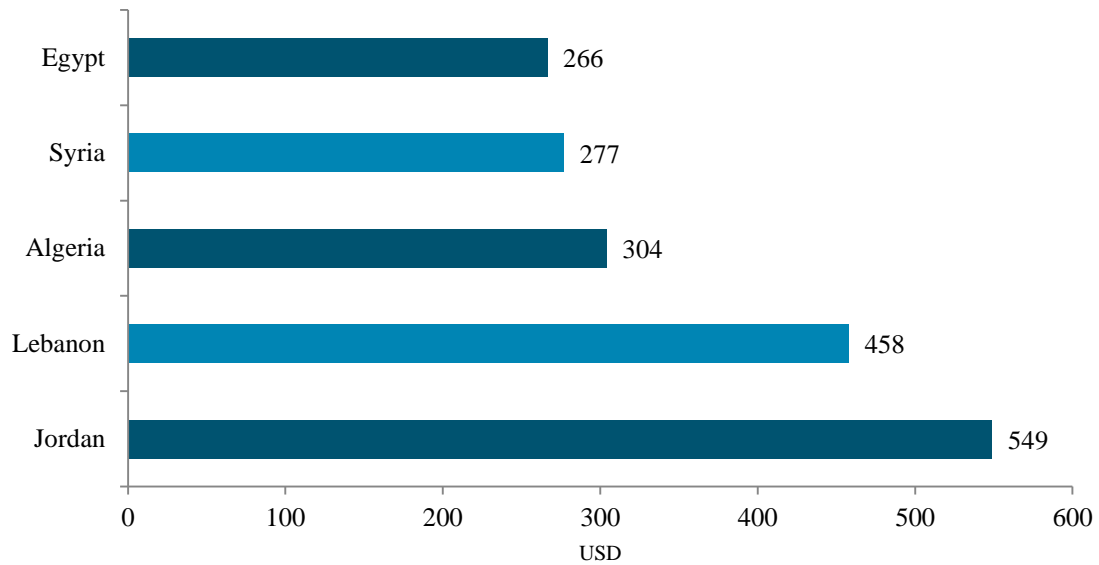
Fig.3.5. Average Monthly Wage in selected Labor-Exporting MENA Countries
Source: International Labor Organization, Author's calculation.

3.1.4. Fiscal Position

During the period of political instability in labor-exporting MENA countries, fiscal positions have worsened. The overall fiscal balances deteriorated with the onset of social and political unrest, and continued to worsen since then. This has been due to higher government expenditures and lower revenue streams. In fact, the total fiscal deficit of labor-exporting MENA countries – excluding Syria – reached USD 77.6 billion in 2013, up from a deficit of USD 49.3 billion recorded in 2010. As such, fiscal balances' deterioration has left an unfavorable impact on public debt, thus raising the susceptibility of labor-exporting MENA countries to adverse shocks.
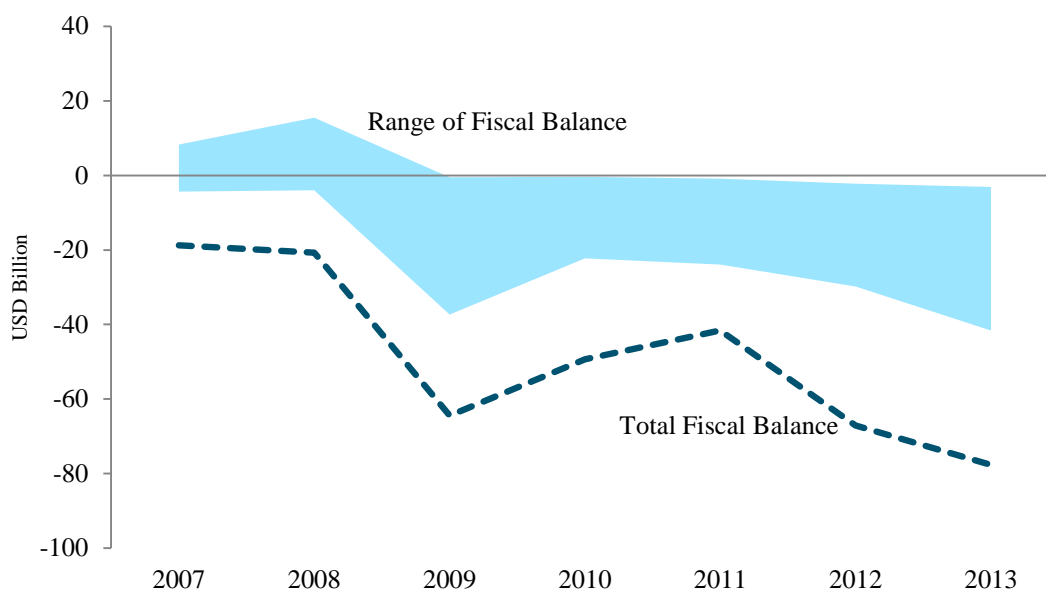
Fig.3.6. Fiscal Balance in Labor-Exporting MENA Countries (excluding Syria)
Source: IMF World Economic Outlook Database, October 2013, Author's calculation.

Since the year 2010, mounting pressures for social expenditures in an attempt to ease social and political unrest, coupled with increasing international food and oil prices have resulted in a remarkable rise in government spending in labor-exporting MENA countries. Food and energy subsidies as well as public-sector wage bills and debt service constitute the largest portion of the increased government spending in Egypt, Jordan, Lebanon, Morocco, and Tunisia. Furthermore, governments in these countries – except in Lebanon and Tunisia – have cut capital expenditures to partially offset the rising current spending. Concurrently, fiscal revenues have decreased in each of Egypt, Jordan, and Morocco, as a result of slower economic activity, as well as tax exemptions and tax breaks.

Fiscal deficits and high public debt remain a major challenge for labor-exporting MENA countries. Sustained fiscal deficits have amplified the already high debt levels (Egypt, Jordan, and Lebanon) and have as well increased vulnerability to shocks in countries with moderate debt levels (Morocco and Tunisia). This phenomenon

is especially obvious in Egypt where fiscal deficit-to-GDP ratio rose from 8.3% in 2010 to 14.7% in 2013, and Lebanon where the aforementioned ratio witnessed 2.7 percentage point increase.
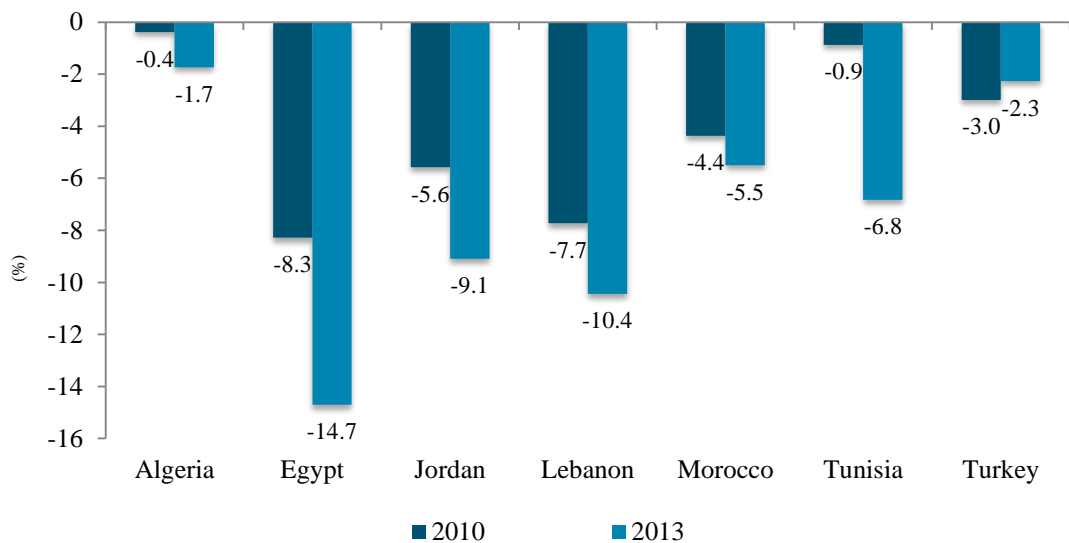
Fig.3.7. Fiscal Balance-to-GDP in Labor-Exporting MENA Countries (excluding Syria)
Source: IMF World Economic Outlook Database, October 2013, Author's calculation.

As fiscal deficits mounted, governments in labor-exporting MENA countries have depended on domestic commercial banks for financing, especially that these governments' sovereign rating downgrades resulted in higher bond spreads in world financial markets. In fact, growth in credit extended to governments by commercial banks in these countries outpaced the growth in total deposits. For example, while deposits at commercial banks in Jordan grew by 10.9% over the period 2010-2013, credit extended by these banks to the Jordanian government expanded by 58.3%. Similar is the case of Morocco where commercial banks deposits increased by 18.3% whereas commercial bank's financing of the government grew by 41.2%. This led to a

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reduction in credit available for financing the private sector, thus crowding out private

investments. If the trend proceeds, it may further have a negative impact on commercial

banks' ratings given there heightening exposure to sovereign debt.
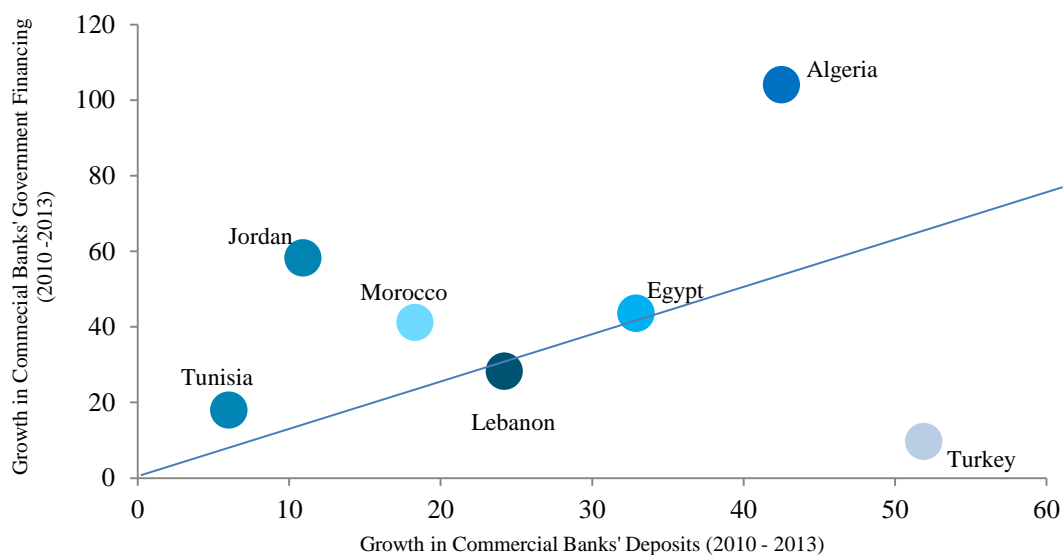
Fig.3.8. Commercial Banks' Government Financing in Labor-Exporting MENA
Countries
Source: Individual Central Banks, Author's calculation.

Hence, debt levels have been on the rise in most labor-exporting MENA

countries. Among these countries, Lebanon has the highest debt-to-GDP ratio which

reached 143.1% in 2013. On the other hand, Algeria is characterized with the lowest

debt-to-GDP ratio which stood at 10.8% during the same year. Hence, reducing public

debt has proven to be a challenge for these countries. Under the current policies

implemented, public debt is likely to remain at higher than 50% of GDP in most of

these economies, even with substantial fiscal consolidation. This is mainly due to

contained economic activity, falling revenue streams, as well as internal and external

political and social constraints.

Table 3.3. Public Debt in Labor-Exporting MENA Countries in 2013

Country	Total Debt (USD Billion)	Debt-to-GDP
Algeria	23.4	10.8%
Egypt	234.6	89.5%
Jordan	28.6	83.9%
Lebanon	62.3	143.1%
Morocco	64.8	61.8%
Tunisia	22.0	45.6%
Turkey	296.1	36.0%

Source: IMF World Economic Outlook Database, October 2013, Author's calculation

3.1.5. External Position

Current account deficits in labor-exporting MENA countries deteriorated in the period 2010-2013. While remittances remained stable, total exports of goods went down in each of Egypt, Jordan, Morocco, and Tunisia during that period. The drop in exports is mainly attributed to the recession in European countries, economic slowdown in emerging markets, disruption in mining, falling prices of non-fuel commodities, as well as displacement of transit of goods through Syria. Adding to this is the dependence of labor-exporting MENA countries on imports of fuel and food, where the persistently elevated food and fuel prices have been keeping the import bill high.

Labor-exporting MENA countries' current account deficit reaches as high as 4.7% of GDP. Specifically, disruptions in goods transit through Syria, coupled with increased food imports due to the high number of Syrian refugees, are weighing heavily on the current account balances of Jordan and Lebanon. In Morocco, the current account deficit widened due to lower remittances and higher food and oil prices. As for Tunisia, its current account deficit has expanded well beyond its long-term average on the account of rising import bill and falling export base. In the case of Turkey, the rise in current account deficit is a result of heightening income and foreign trade deficits,

which offset the net increase in services surplus owing to the country's tourism revenues.
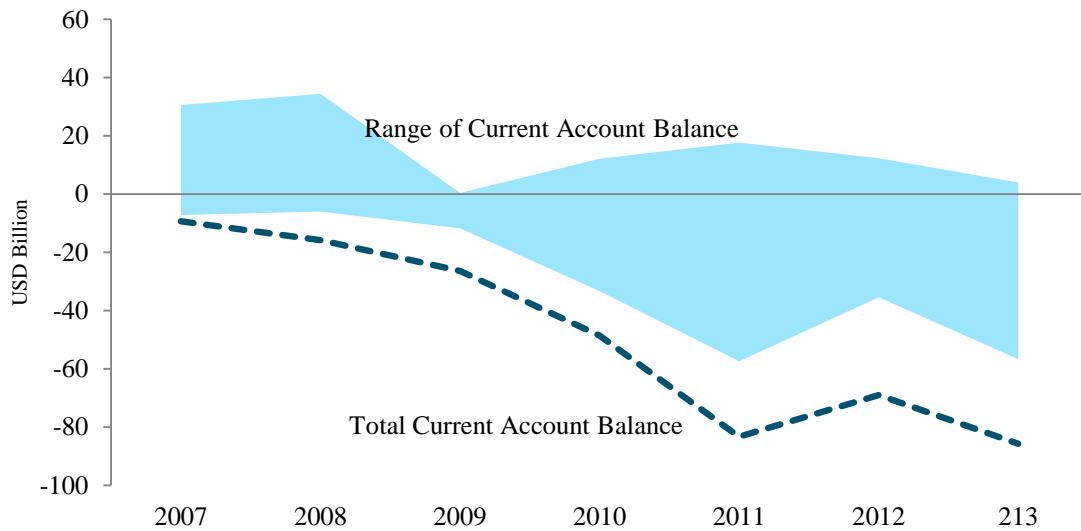
Fig.3.9. Current Account Balance in Labor-Exporting MENA Countries (excluding Syria)
Source: IMF World Economic Outlook Database, October 2013.

Trade is not considered a substantial growth engine in labor-exporting MENA countries. In these countries, the exports-to-GDP ratio is remarkably below the average for developing countries and emerging markets, with the gap widening over the past few years. For example, Egypt's exports-to-GDP ratio stood at a low 11.4%, while that of Lebanon recorded 13.6%. Moreover, trade patterns of these countries are mainly directed towards European countries, hence limiting the benefit from high growth in emerging markets. Further, the transition towards exporting higher value-added goods has been sluggish, mainly due to low foreign direct investments. This reflects the trends witnessed in the wider MENA region, where it is estimated that exports are currently at only one-third their potential, and total intra-industry trade, an indication of participation in supply chains, is well-below all other regions.
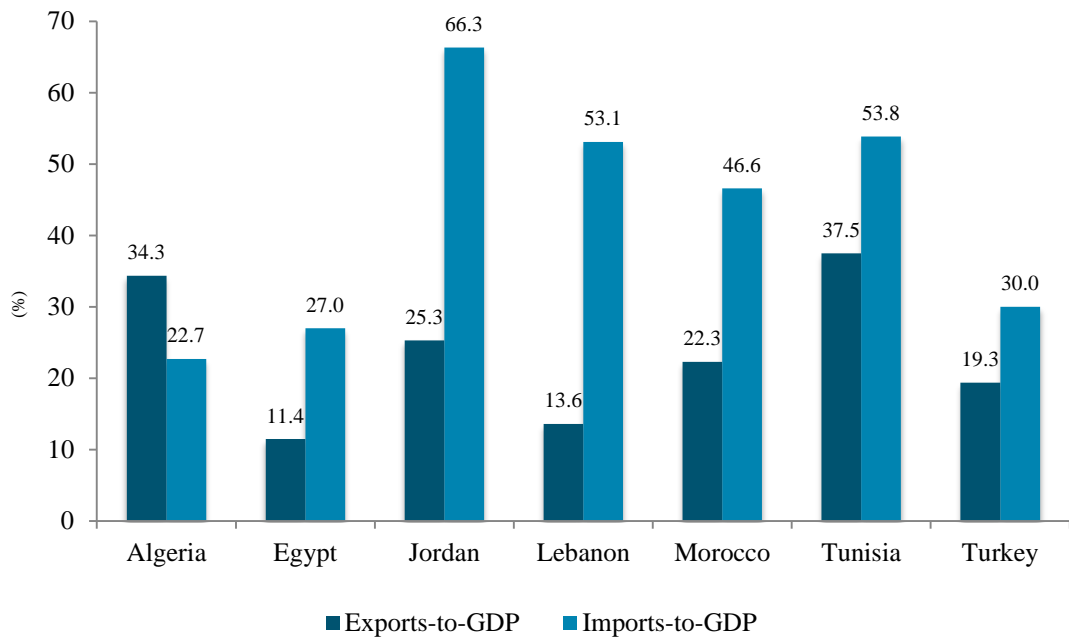
Fig.3.10. Exports and Imports in Labor-Exporting MENA Countries in 2012
Source: World Trade Organization, IMF World Economic Outlook Database, Author's Calculation.

Deep trade integration would provide a major boost to labor-exporting MENA countries. Specifically, enhancing trade openness could raise GDP growth, create jobs in the export sector, catalyze the growth in productivity by increasing foreign investment, and facilitate access to cheaper intermediate inputs. Hence, labor-exporting MENA countries have a potential to reap the full benefits of global trade integration.

As such, these countries should reduce their tariff and nontariff barriers. Even though some countries impose relatively low trade tariffs (Lebanon and Turkey) or have devised plans to reduce them (Morocco and Tunisia), these countries' average trade tariffs are still high. These countries must also diversify trade towards emerging markets which have recorded high economic growth levels. In addition, reducing import barriers would allow for the exploitation of benefits available in international value chains.

Table 3.4. Trade Barriers and Trade Tariffs in Labor-Exporting MENA Countries

Country	Prevalence of Trade Barriers Score (/7)	Trade Tariffs (%)
Algeria	3.4	14.4%
Egypt	3.6	17.7%
Jordan	4.4	10.1%
Lebanon	4.2	6.3%
Morocco	4.9	12.3%
Tunisia	4.1	16.3%
Turkey	4.1	5.1%

Source: World Economic Outlook, Global Competitiveness Report 2013-2014.

As for international reserves, they remain at remarkably low levels in labor-exporting MENA countries, with the exception of Algeria, Lebanon, and Turkey. Specifically, during the period of political instability 2010-2012, Egypt has lost 55.1% of its foreign reserves, while each of Jordan and Morocco lost 27.2% and 25.6% of their foreign reserves, respectively.

Table 3.5. Foreign Reserves in Labor-Exporting MENA Countries

Country	2009	2012	% Change 2009-2012
Algeria	155.1	200.6	29.3%
Egypt	34.9	15.7	-55.1%
Jordan	12.1	8.8	-27.2%
Lebanon	39.1	52.5	34.2%
Morocco	23.6	17.5	-25.6%
Tunisia	11.3	8.7	-22.8%
Turkey	74.9	119.2	59.1%

Source: World Bank Databank.

3.2. Labor Migration and Remittance Inflows

3.2.1. Labor Migration

The MENA region has witnessed numerous migration waves since the onset of

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the nineteenth century, including intra-region migration. The forced Palestinian migration constituted the prime example, where more than 80,000 Palestinians migrated from Palestine to neighboring Arab countries. Jordan and Lebanon received the bulk of the Palestinian refugees, while the rest went to Egypt, Iraq, and Syria.

Several other international migration waves followed. The Lebanese civil war, which extended over the period 1975-1990, has resulted in a remarkable rise in the flow of Lebanese migrants. The ongoing turbulences in the Kurdish regions of Turkey and Iraq resulted in a huge flow of Kurdish migrants to Europe. Kuwait's invasion by Iraq and the resultant first Gulf War led to the expulsion of migrants working in Iraq and the Gulf.

More recently, North America has received a rising number of non-temporary (permanent) migrants from the MENA region. The number of migrants has not been as high as was the case in migration to Europe; yet, the migration nature has been different. Specifically, most of these migrants have had university degrees and have been of middle-class origin. Additionally, Australia has attracted a considerable number of Arab migrants, nonetheless possessing lower skills' level.

On the other hand, temporary migration has been absorbed by three main destinations: Gulf oil-exporting countries, where the oil boom in 1970s resulted in heavy demand for labor; Libya and Iraq, two oil-producing economies with relatively small populations involved in armed struggle; and Sub-Saharan Africa, the destination for Lebanese migrants during the French mandate, and later during Lebanon's civil war.

Table 3.6. Major MENA Migration Waves

MENA Migration Waves	Year
Lebanese migration to North America and Egypt	1840-1860
Lebanese migration during French Mandate	1920-1945
Palestinian forced migration to Jordan and Lebanon	1948
Kurdish migration to Western Europe	1960s
Palestinian migration following Arab-Israeli war	1967
Lebanese migration due to Lebanon's civil was	1975-1990
Migration to GCC countries following oil-boom	1970s
Iranian migration to North America	1979

Source: World Bank Report "Labor Migration in Middle East and North Africa."

Various factors played important roles in shaping migration trends in the MENA region. The fourfold rise in international oil prices during the year 1973 resulted in a slowdown in European economies, thus substantially shortening the demand for labor in these countries. Simultaneously, strong demand for labor in MENA oil-exporting countries (except Algeria) emerged. This new demand for labor mainly originated in Libya and the Gulf countries. As such, Jordan, Lebanon, and Syria benefited from the rising labor demand in the Gulf area, while Algeria, Morocco, and Tunisia exported labor to Libya, their close neighbor. As for Egypt, it benefited from the rising manpower needs in both Libya and the Gulf region. This temporary migration trend to oil-producing countries contributed to the alleviation of rural migration pressure, given that most migrants originated from rural areas, as the case in Egypt and Morocco. Furthermore, most temporary migrants settled in urban areas – and not their rural origin area – when they returned to their home country.

These migrant flows from the MENA region have happened in a legal and institutional void. Specifically, the countries of origin and destination have not ventured

into any bilateral agreements aimed at organizing the flow of migrants and specifying their rights and duties. The lack of a legal and institutional framework resulted in harsh dealing with migrants during periods of military conflicts between the countries of origin and destination. For instance, mass migrant expulsion happened in Libya with respect to Egyptian and Tunisian workers, as well as in Iraq with respect to Egyptian workers.

Following the decline in labor demand in Europe, the nature of migration to European countries has been transformed in various respects. As an example, a major portion of migration outflow from the MENA region to European countries happened under family reunion programs. Furthermore, while the migration of labor ready to work at low-paying jobs continued, it mostly took the form of illegal migration.

In parallel, MENA region migrants have been increasingly attracted to countries devising immigration policies which place particular emphasis on skills and qualifications. Among these countries were the United States, Canada, Australia, and New Zealand. However, the number of migrants remains constrained due to quota systems implemented by these destination countries.

Perhaps, the most recent and important trend relating to migration in the MENA region, with an effect still being revealed, has been the competition of foreign workers with the MENA labor force. After remarkable reliance on Arab migrants, most of the European destination countries and Arab oil-exporting countries started varying the foreign manpower in the 1990s. This phenomenon increased the complication of migration movements in the MENA region. Additionally, the varied institutional, socioeconomic, and education profiles in these countries create a dynamic and heterogeneous situation.

By 2012, the cumulative number of migrants from labor-exporting MENA

countries totaled 18.2 million. Egypt constitutes the bulk of these migrants, accounting

for 35.4% of total migrants. It is followed by each of Turkey and Morocco where

migrants in these countries constitute respective shares of 20.6% and 18.5% of the total

migrating population from labor-exporting MENA countries, respectively. They are

followed by Syria, which accounts from 9.1% of migrants, Tunisia (6.1%), Algeria

(5.3%) and Lebanon (3.3%).
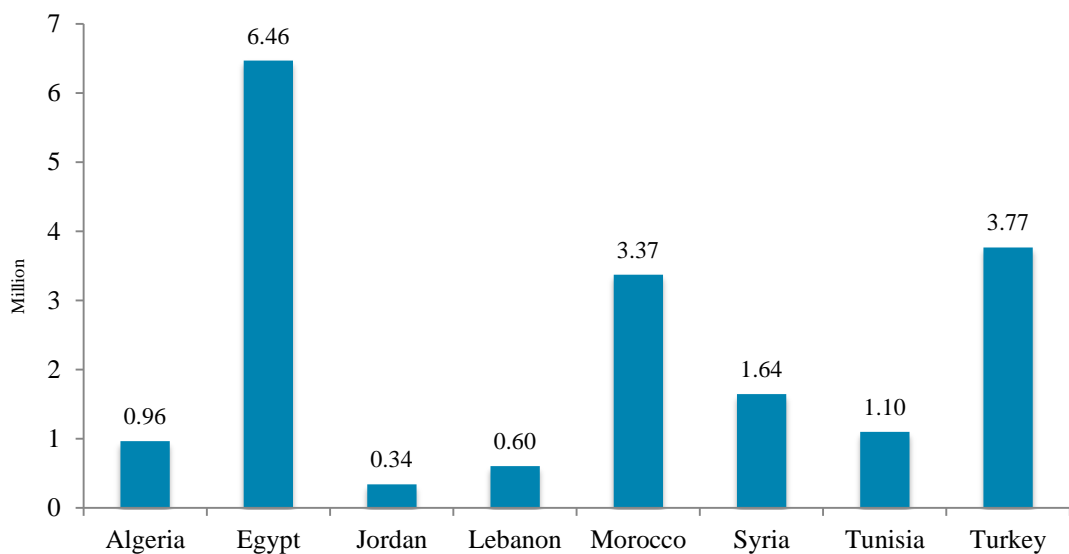
Fig.3.11. Migration Stock in Labor-Exporting MENA Countries (2012)
Source: Migration Policy Centre, Author's Calculation.

Arab countries are considered the largest destination for migrants from labor-

exporting MENA countries. This is true due to the fact that labor-exporting MENA

countries share with Arab countries common language, culture, and history, hence

making it easier for migrant workers to adapt. These countries account for 43.4% of

total migrants' stock in 2012. It is noteworthy, however, that Arab countries attract

temporary migrants only, given that most of these countries do not provide the

possibility of nationality acquisition for long-term residents, nor do they grant

ownership rights. The European Union comes second, attracting 42.2% of total migrants

from labor-exporting MENA countries.
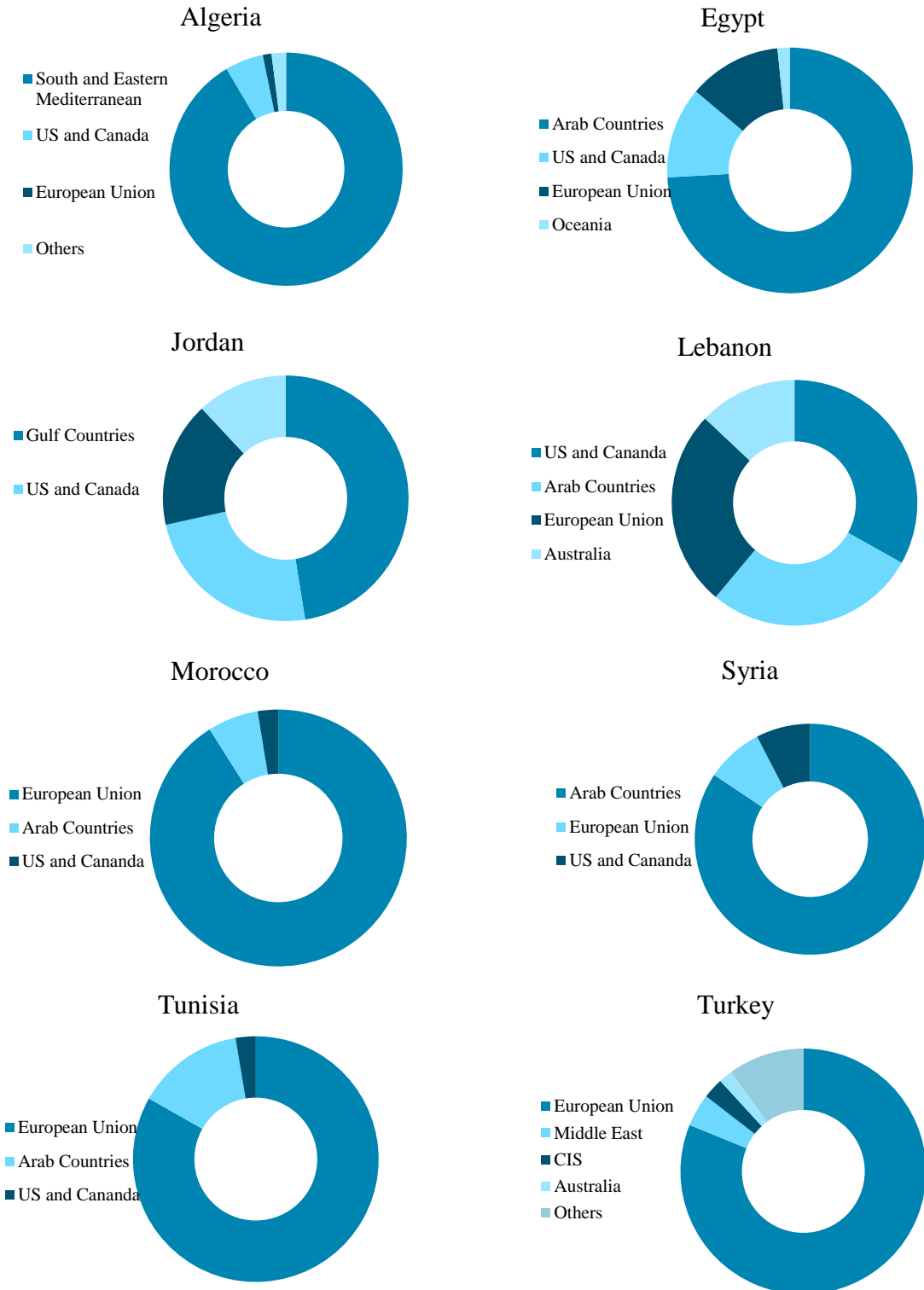
Fig.3. 12. Breakdown of Migration Stock by Destination Country (2012)
Source: Migration Policy Centre, Author's Calculation.

3.2.2. Remittance Inflows

Remittance inflows generated from migration constitute a significant benefit to labor-exporting MENA countries. These inflows are considered a key resource available to these economies. In fact, the importance of remittances inflows is made clear by the fact that remittances' value has by far exceeded the value of official development assistance received by labor-exporting MENA countries. Specifically, the ratio of remittances to official development assistance stood at 104% in 1980, reached 381% in 2000, and further expanded to 445% in 2011.
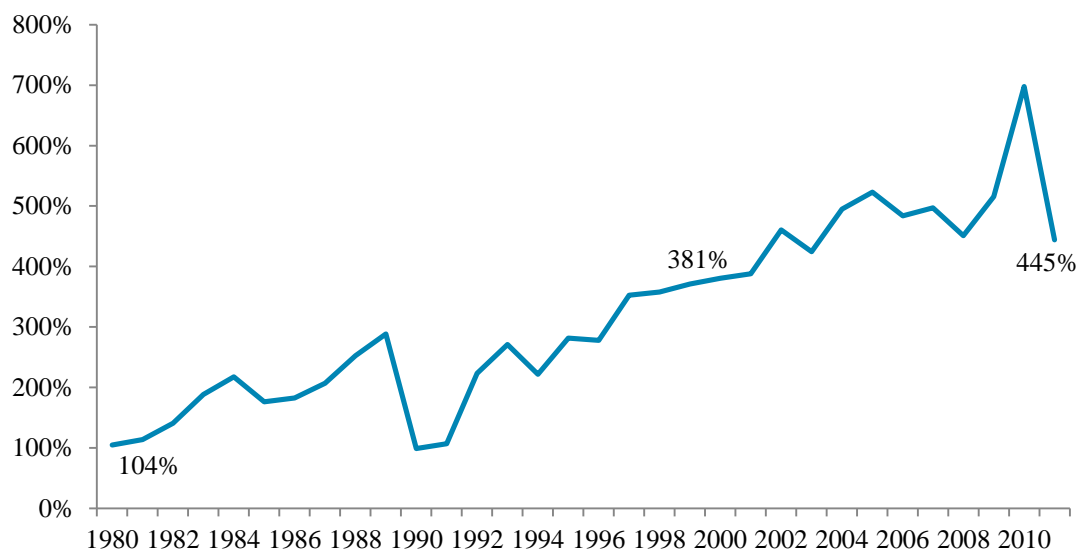
Fig.3.13. Remittances to Official Development Assistance in Labor-Exporting MENA Countries
Source: World Bank Databank, Author's calculation.

The total amount of remittances received by labor-exporting MENA countries has increased from USD 8.1 billion in 1980 to USD 13.2 billion in 2000, and further rose to USD 39.7 billion in 2012, according to World Bank estimates. Yet, the true magnitude of remittance inflows is believed to exceed the official statistics. This is

particularly because official statistics do not consider remittances sent by Palestinian workers to their households in occupied lands. Another reason for the underestimation of remittance inflows to labor-exporting MENA countries is the informal transfer of these flows to countries with exchange limitations like Syria, or with under-develop banking system like Algeria. As such, remittances accumulating to labor-exporting MENA economies may be 30% higher than what official statistics display, according to the World Bank.
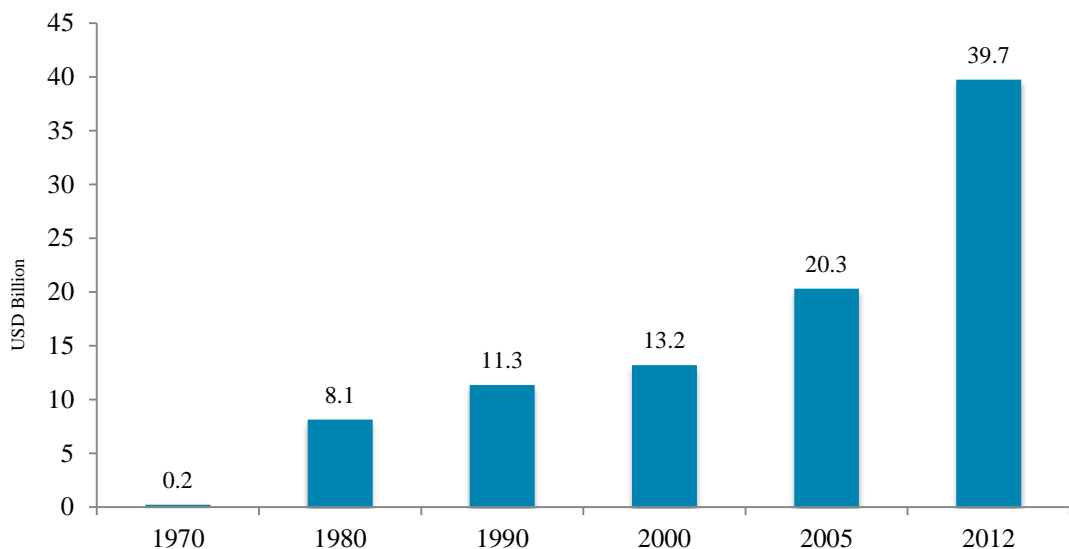
Fig.3.14. Remittance Inflows to Labor-Exporting MENA Region
Source: World Bank Databank, Author's calculation.

Compared to other regions, the MENA region is losing its rank as the prime beneficiary of remittances in the world. In fact, after accounting for 37.5% of world remittance inflows in 1990, the MENA region's share contracted to 16.2% of total remittances in 2000, 12.7% in 2004, and further dropped to 8.7% in 2012. Indeed, East Asia and Pacific region is today the largest beneficiary of remittance inflows, accounting for almost one-third to worldwide remittances. It is followed by South Asia

region which benefits from about one-quarter of total remittance inflows, given the large influx of Asian workers to the Gulf economies. Latin America and the Caribbean region come third given the increased migration to North America in the past decade. As such, the MENA region comes fourth, followed by East Asia and Pacific region with a share of one-fifth of global remittance inflows.
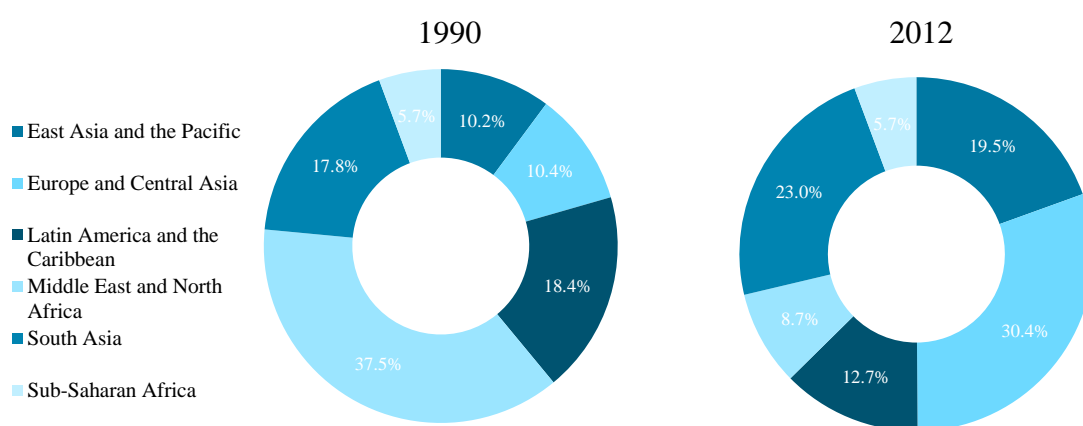
Fig.3.15. Breakdown of World Remittance Inflows by Region
Source: World Bank Databank, Author's calculation.

Currently, remittances constitute a vital income source for labor-exporting MENA countries. These inflows provide support for private sector investments and activities, as well as boost these economies' foreign positions which have deteriorated during periods of political and social unrest. Overall, the diminished unrest in the region coupled with the ongoing expansion in the Gulf region which employ most migrants, should result in higher remittances to these MENA countries. To illustrate, Saudi Arabia ranks among the world's top employers of migrant workers, and sustained government expenditure in the country is likely to translate into rising remittance inflows to labor-exporting MENA countries.

Egypt is one of the world's top remittance recipients, with remittance inflows reaching USD 19.2 billion in 2012, which is equivalent to 7.3% of the country's GDP. As such, remittances continued to play a stabilizing role in the Egyptian economy despite the global economic slowdown and the return of a large number of Egyptian migrants from Libya. About one-half of Egypt's remittance inflows come from the Gulf region. As such, sustained social spending and infrastructure investments in that region should maintain the momentum of remittances flowing to Egypt. Furthermore, the steady economic progress in Libya should re-provide job opportunities to Egyptian migrants.

Lebanon is the second major recipient of remittances among labor-exporting MENA countries, with much of these inflows coming from the Gulf and North America regions. Meanwhile, Lebanon is characterized by the highest remittances-to-GDP ratio in the region, which reached 16.1% in 2012. These inflows have for long constituted an essential pillar on which Lebanon relies to secure a much-needed relief to the country's balance of payments.

Despite the fact that economic slowdown in the Eurozone adversely affected remittance inflows to Morocco, the country is still the third largest recipient of remittances in the region, with remittance inflows totaling USD 6.5 billion in 2012. However, if the layoffs of Moroccan migrants from each of Italy and Spain continue, this could put at risk the country's stable source of foreign income. Furthermore, it could also impact the country's stock market, as equity investments by non-resident Moroccans constitute around one-third of the total stock market value.

Despite the fact that remittance inflows to Jordan have declined during 2011, these inflows recovered in the following year. They reached a total of USD 3.6 billion in 2012, equivalent to 11.5% of GDP. Improved political and security situation across

the region would result in further improvement in remittances flowing into Jordan, especially that these inflows are invested in real estate development in the country.

In Tunisia, the return of migrant from Libya due to the political instability has resulted in a decline in remittance inflows to the country. In 2012, remittances flowing to Tunisia recorded USD 2.3 billon and accounted for 5.0% of GDP. However, the expected recovery in Libya, could lead to a sizable return of Tunisian migrants to Libya, which in its turn would positively affect remittance inflows. This improvement in foreign inflows would also provide a much-needed backing to the falling international reserves.
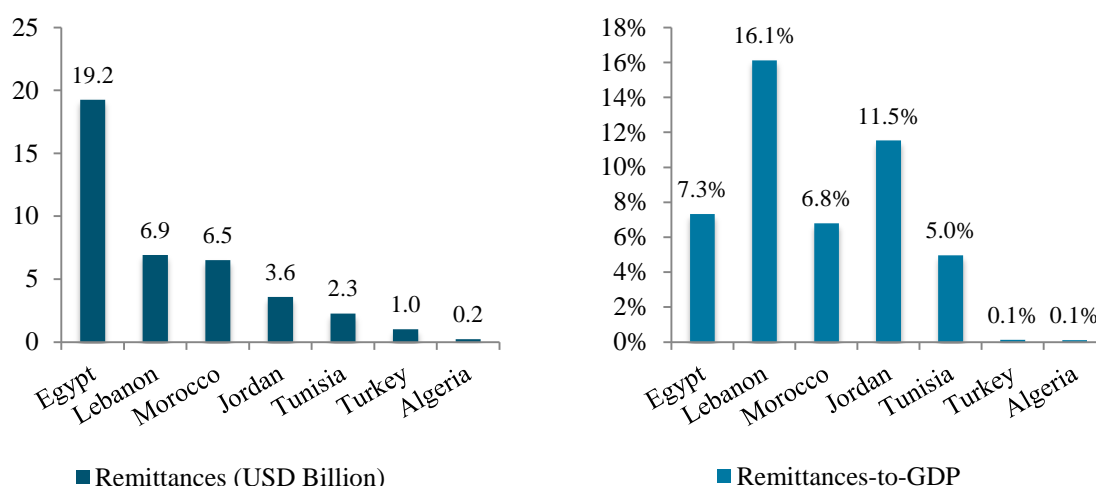
Fig.3.16. Remittance Inflows to Labor-Exporting MENA Countries
Source: World Bank Databank.

3.3. Financial Development

A dynamic and well-developed financial sector is indispensable to attaining sustainable economic growth. Various attempts have been taken in the past decade to enhance the efficiency and performances of the financial sector in labor-exporting MENA countries. Nevertheless, a wide gap still exists when the financial sector in these

countries is compared to that in other emerging and developed regions. Despite the fact that labor-exporting MENA countries differ in the level of financial sector development, some generalizations can be reached. On the whole, the banking industry dominates the financial system, while bond and stock markets are considered a minor alternative for financing.

3.3.1. Banking Sector

Banking sector liberalization in labor-exporting MENA countries was launched in the 1990s, continued in the 2000s, and led in 2004 to the opening of the last protected banking sector in Syria. This liberalization came along with several necessary and essential modernizations including the diversification of services – mirror accounts, internet transactions, and innovative payment systems – as well as the acceleration of banks' penetration rate and the integration of novel technologies. Further, enhancements extended to the compliance with globally recognized international banking norms including anti-money laundering, transparency, corporate governance and Basel agreements.

Banking systems in labor-exporting MENA countries have revealed their solidity and resilience during the various recent financial crises like the 2008 global financial crisis, the 2010 EU crisis, as well as to regional political tensions. This resiliency is mainly a result of the region's low international financial integration, minimal exposure to toxic and risky products and derivatives, and conservative asset management policies. Hence, the continued growth, despite the various adverse shocks to the region's economy provides the suitable conditions for further development of the banking system.

Furthermore, growth prospects in labor-exporting MENA countries' banking

sectors are exceptional and a lot of potential is yet to be reaped. In fact, banking penetration ratios are still low in these countries. For example, only one-tenth of Egypt's population had a bank account in 2011 while about 3.7% of the population took a loan during the same year. As for Tunisia, even though almost one-third of the population had a bank account in 2011, only 3.2% of the population had access to credit in the same year. Moreover, the residential credit ratio is low (20% in Turkey in contrast with 100% in Europe) and the access of private sector companies to credit is still limited (5% in Egypt and a 24% maximum in Morocco).
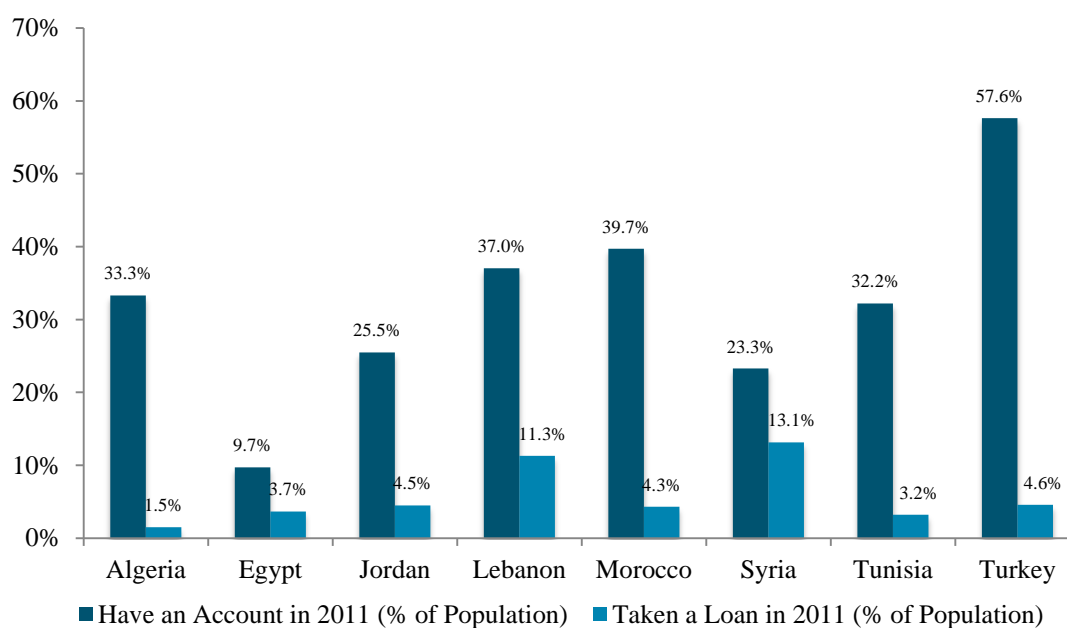
Fig.3.17. Bank Penetration Indicators in Labor-Exporting MENA Countries in 2011
Source: World Bank Financial Inclusion Data.

The banking sector in labor-exporting MENA countries shares some characteristics including the domination of traditional models in commercial banking, preference towards short-term activities, and conservative asset management policies. However, the sector also significantly differs from one MENA country to another. For

instance, in Lebanon, the sector is majorly dominated by the private sector, while it is mainly managed by the public sector in Algeria and Syria, with the government owning 79% and 90% of the banks' assets, respectively. Furthermore, while most MENA countries implement conservative banking strategies, each of Lebanon and Morocco have adopted aggressive banking strategies, confirming the intentions of the two countries to become regional financial hubs. Additionally, despite some similarities in the financial reform processes undertaken in labor-exporting MENA countries, the efficiency of the banking sector varies considerably across markets.

In Algeria, the banking sector remains small-sized and underdeveloped, with banking intermediation still limited. The banking sector in Algeria is largely dominated by the public sector, with public banks controlling about 95% of total bank assets. The country is largely cash-based and the banking sector adopts a cautious attitude in providing credit given the limited access to information required to assess credit risk. Furthermore, consumer credit extended by Algeria's banking sector has been banned since 2007, which further inhibited financial development. Additionally, the banking sector has not yet introduced debit cards or credit cards. As such, the Algerian banking system is classified as one of the most delayed banking sectors in the region, with its weak capacity for innovation, limited technological development, and low-quality infrastructure.

As for Egypt's banking sector, it plays a central role in the country's development process. The Egyptian banking sector includes local and international commercial banks. It consists of specialized banks as well as financial institutions which extend credit for agriculture, housing, industry, and rural development. Banking reform in Egypt was initiated in the 1970s as part of the country's open door policies, where foreign banks' operations became allowed. Later in the 1990s, the banking sector

was fully liberalized, as part of Egypt's financial reform program. While Egypt's banking sector is relatively advanced, the past few years witnessed a worsening in banks' asset quality, due to their increased exposure to sovereign debt, which resulted in consecutive credit ratings downgrades. This has crowded out private sector lending, posing it as a major challenge in the new round of financial sector reform.

Jordan's banking sector is considered a main pillar of the country's economy. Indeed, Jordan is characterized with a bank-based financial system, with banks playing the main role in financing business activities. As Jordan adopted the laissez-faire economic model that fosters private sector involvement, the banking sector is fully owned by the private sector. Further, the banking sector consists of two banking systems: a commercial banking system offering conventional banking services, and an Islamic banking system operating in accordance with Islamic laws. The highly regulated and well-capitalized Jordanian banking sector has shown resilience to various external shocks including the 2008 global financial crisis and the regional turmoil. This has attracted investors and hence facilitated banks' growth and expansion.

As one of the first-born banking sectors in the area, Lebanon's banking system has advanced to become one of the highly sophisticated systems in the region. The banking sector enjoys a record of adherence to international banking regulations including capital allocation, risk management, and anti-money laundering. Banks in Lebanon has long played a chief role in spurring economic growth and maintaining financial stability. The banking system has expanded steadily, with its growth driven by many comparative advantages like a stable currency, skillful workforce, banking secrecy law, and strict regulatory conditions governed by the Central Bank. Despite the unstable local and regional conditions, banks still report decent profits with a solid deposit base and total assets exceeding three times GDP. Indeed, the banking sector has

gained risk and crisis management experience, and hence has earned the confidence of the international financial community.

Likewise, Morocco's banking system is modern and well-developed. The system is composed of the central bank, commercial banks – most of which operate in partnership with European commercial banks – development banks, and financing companies. Banks in Morocco play an important role in economic growth and development, with their assets exceeding 100 % of GDP. Despite the fact that they operate soundly and maintain adequate capital, high commission fees make banking expensive in Morocco. Further, high non-performing loans pose a major challenge to the sector's development.

Tunisia was one of the first countries in the MENA region to implement financial reforms, after having had a tightly controlled banking system in the 1980s. Today, Tunisia's banking sector encompasses a central bank, commercial banks, merchant banks, and development banks. It is considered the main lender to the Tunisian economy. However, government-owned banks still dominate the system with a share exceeding 50%, hence limiting the growth potentials of the banking sector. The country's revolution which started in 2011 has had devastating effect on the banking sector. In fact, banks have been suffering since then from considerable lack of liquidity and asset quality deterioration.

On the other hand, Turkey's banking sector plays an active role in shaping the country's dynamic economy and its financial system. In fact, most monetary transactions and money activities are complemented by banks. In particular, private and state-owned commercial banks have established strong connections with the economy's vibrant economic sectors. Commercial banks in Turkey operate as global banks, providing a range of products and service. In addition to traditional lending and

depository services, Turkish banks also operate in the investment banking field and are engaged in capital market operations. Even though many MENA countries have encountered banking challenges due to various economic and political shocks, the Turkish banking sector continues to develop, recording improvements in profitability performance and expansion of financial support to different business activities.
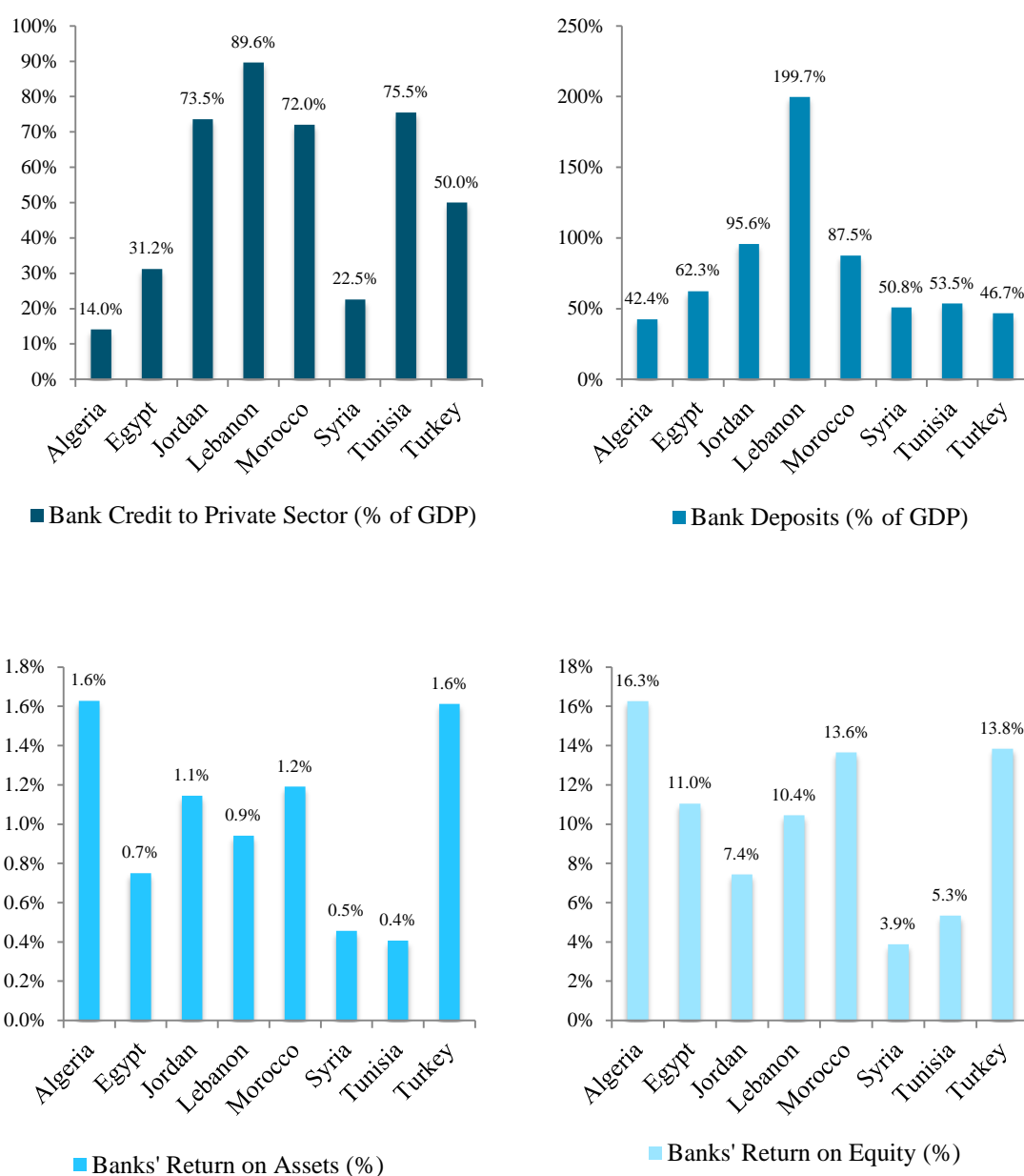
Fig.3.18. Commercial Banks' Indicators in Labor-Exporting MENA Countries in 2011*
*Syria's figures are for the year 2010.
Source: World Bank Global Financial Development Data.

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3.3.2. Capital Market

Capital markets, through which debt and equity instruments are mobilized, are mostly still at an early development stage in most labor-exporting MENA countries. In particular, the stock markets in these countries are relatively new, with listed companies, market capitalization, and value traded still low compared to developed economies. Generally, stocks and bonds issuance is still a minor means of raising capital in labor-exporting MENA countries, which leaves the banking sector in the region unchallenged.

Despite the fact that capital markets are still under-developed, most labor-exporting MENA countries have implemented financial and capital reform as well as structural adjustment programs in the past decades. At the core of these programs was the establishment or resurrection of these countries' stock markets. Consequently, stock exchanges in these countries became more important to the world economy and their role in the global financial system significantly improved. Furthermore, major shifts in the global financial system have made MENA markets of interest to foreign investors.

The progress recorded in labor-exporting MENA countries' capital markets can be made clear by observing the progress in financial market indicators. Specifically, between 1990 and 2000, the market capitalization in labor-exporting MENA markets expanded by 6.7 times and reached USD 126.6 billion. This expansion continued with the total market capitalization of these countries recording USD 420.5 billion in 2012. Additionally, the value traded also significantly increased by more than threefold between 2000 and 2012, reaching USD 441.8 billion in 2012. This suggests that these markets have been following a fast growth track in the past decades. Moreover, these countries have embarked on institutional regulations like developing investors' protection policies, security regulations, as well as trading rules.
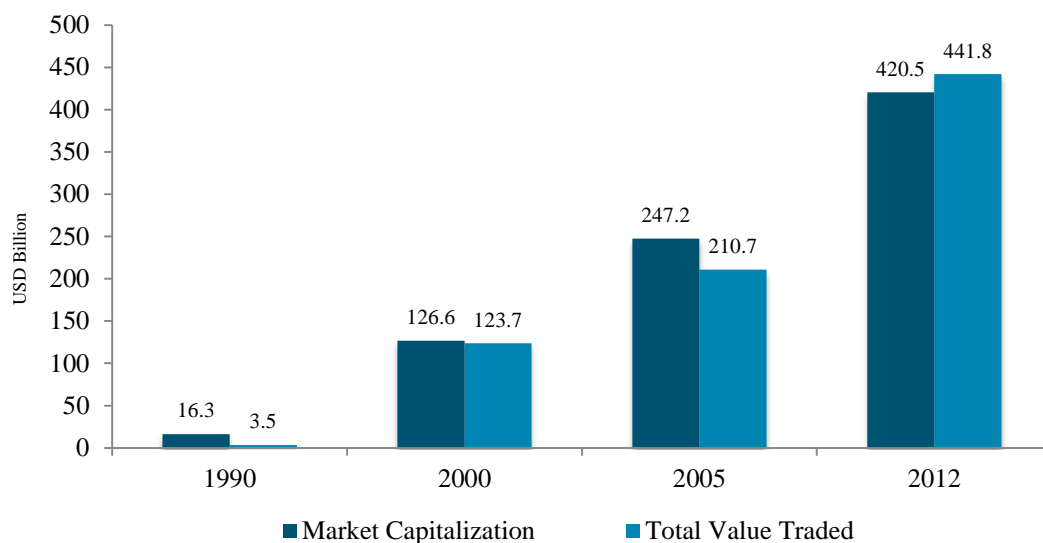
Fig.3.19. Capital Market Development in Labor-Exporting MENA Countries
Source: World Bank Global Financial Development Data, Author's Calculation.

Nonetheless, the development in the capital market in labor-exporting MENA countries differs across countries. For instance, Jordan's capital market has outperformed other countries' capital markets. In contrast, Turkey's capital market witnessed modest expansion. Hence, country-by-country analysis is necessary for an understanding of capital market developments.

Algeria's capital market is one of the newest financial markets in the world. The stock exchange was established in 1999, but has been growing progressively ever since. The late establishment is mainly due to the slow development of lending services in Algeria. By 2013, the market capitalization of companies listed on Algeria's stock exchange reached USD 168 million, accounting for about 0.2% of the country's GDP, an insignificant share by emerging market standards. Furthermore, the stock exchange does not reflect all economic activities in Algeria, with most of market capitalization pertaining to four listed public firms. About 98% of investment activity in the country is concentrated in the corporate bonds market, with public companies' debt issuance

securing one of the few viable investment opportunities.

In contrast, Egypt's capital market is considered as one of the oldest markets in the MENA region, dating back to 1888 when the Alexandria Stock Exchange was formed, followed by the establishment of Cairo Stock Exchange in 1903. Egypt's capital market has undergone several structure changes and serious reforms were implemented in 1997. Ever since, the stock market has grown by an average annual rate of 40%. In 2007, the two stock exchanges were merged into one government-owned exchange titled the Egyptian Stock Exchange. The Egyptian revolution has weighed heavily on the capital market's performance, with the market's index dropping by 16% on the second day of the revolution, resulting in an 8-week shutdown. By 2012, the Egyptian stock market lost 23% of its market capitalization, but recovered in the following year to record a market capitalization of USD 64 billion in 2013.

Jordan's capital market was founded in 1999, as the consequence of Jordan's financial market restructuring plan. The country's capital market is a private and non-profit organization, characterized by financial and legal independence. Observing the financial structure of Jordan's financial market, reveals that the market is heavily dependent on the equity market, which constitutes 42% of total financial assets. This market did not emerge unscathed from the 2008 global financial crisis, with its capitalization falling by 23% over the period 2008-2010. The stock market also failed to recover given the ramifications of the regional political and social unrest witnessed in neighboring countries. As such, the stock market's capitalization reached USD 25.8 billion with 240 listed companies. On the other hand, Jordan's bond market depends heavily on public debt securities, including Treasury bills and bonds, which constitute a total of 21% of total financial assets in the country. On the other hand, corporate debt securities constitute only 0.2% of total financial assets. Hence, Jordan does not have an

active bonds market, but instead depends on the equity market and the banking sector as sources of financing.

Lebanon's financial sector is one of the mail pillars of the economy, absorbing a sizable share of the labor force and contributing to economic growth. Yet, the development of more effective financial system is a task still undertaken by the private sector to date. A major step was taken as a result of ratification of the capital market law which established the proper regulatory, legal, and institutional framework, aiming at enhancing financial services and facilities. Today, Lebanon has one equities market, the Beirut Stock Exchange. This exchange has seen interest from foreign investors, particularly after emerging unaffected from the global financial crisis. Nonetheless, the equities market remains small, illiquid and inadequately regulated. As such Lebanon's capital market is considered one of the sick children of the MENA's markets, with market capitalization not exceeding USD 11 billion and a daily traded volume averaging USD 2 million. Additionally, since the onset of regional political unrest, the traded volumes only became thinner, inducing investors' complaint about the lack of liquidity in the market.

Morocco's capital market was formed in 1929 and has considerably developed over the years. Since, its establishment, the capital market underwent several reforms. The most important ones were those of 1993 and 1997 which led to the development of the market known today. In 2007, Morocco's stock market witnessed further reforms and several innovative measures were adopted including the launch of an advanced electronic trading system, the adoption of a new clearing system, and the application of novel listing requirements. The market is characterized by its openness to foreign investors, where it places no restrictions on foreign investment. As such, foreign investors own about one-third of the market capitalization and account for about 20% of

the traded volume. As for the sectorial distribution of market capitalization, the banking sector constitutes one-third of the total, followed by telecommunication and real estate which account for 21% and 10% of the market capitalization, respectively.

In comparison, the Tunisian financial market has a capital equal to one-tenth of Morocco's stock market, but has a larger trading volume. The Tunisian capital market is endowed with advanced judicial and technological structures which are in line with international standards. Yet, when it comes to market capitalization, Tunisia's stock market still lags behind, explaining its non-dynamic presence in the international financial market. In fact, the market is worth about USD 8 billion, a value far below the threshold for international visibility. Furthermore, the market still faces several barriers relating to past protectionism. However, it is noteworthy that despite the economic slowdown in light of the Tunisian revolution, stock prices did not plunge as in Egypt's stock market, which reflects the resiliency of the capital market.

A noticeable improvement in Turkey's capital market was witnessed in the early 1980s, where a legislative and institutional framework set the stage for rigorous capital movements. However, despite various encouraging reforms, the capital market is still in the catch-up phase given the legal structure it operates in. On the equity front, about only 12% of the top 1000 Turkish firms are listed on Turkey's stock market and most of these firms have a low free-float percentage, making them unattractive to investors. On the debt front, most firms prefer raising capital using conventional methods like bank loans. This is reflected in the fact that Turkey's bond market is untapped, with government debt constituting 99% of the market. As such, Turkey's capital market has witnessed modest growth when compared to other labor-exporting MENA countries' financial markets.
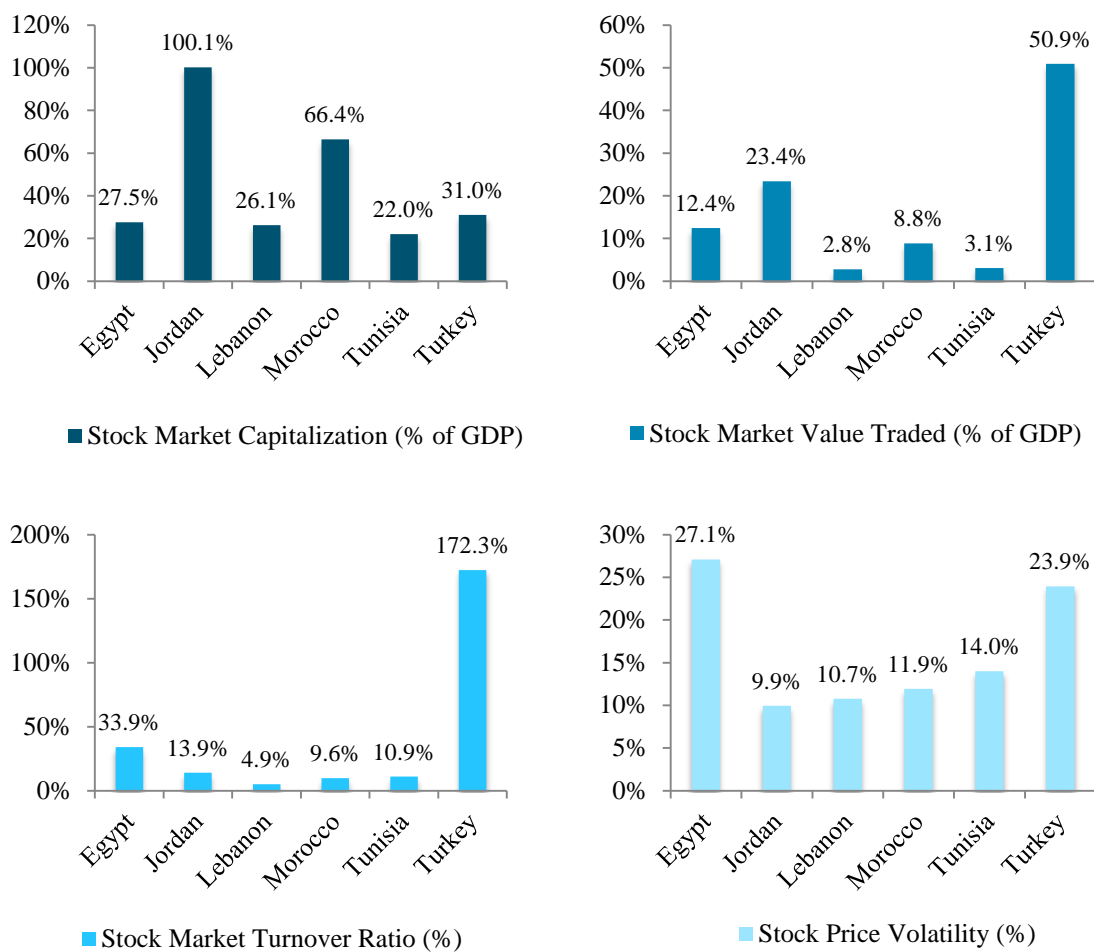
Fig.3.20. Stock Market Indicators in Labor-Exporting MENA Countries in 2011
Source: World Bank Global Financial Development Data.

CHAPTER 4

EMPIRICAL MODEL

Despite their role as a major contributor to economic growth and development, remittance inflows can have an appreciation effect on the receiving economy's real exchange rate. This phenomenon, which came to be termed as the Dutch Disease, is a direct consequence of the fact that these inflows are usually spent on consumption of goods and services. However, this project proposes that the existence of a developed financial sector, which can channel remittances into productive investment activities or contribute to government debt financing, would reduce or even prevent currency appreciation.

To test this argument, an empirical model is applied on a panel of eight labor-exporting MENA countries, namely Algeria, Egypt, Jordan, Lebanon, Morocco, Syria, Tunisia, and Turkey. The model investigates the interaction between the real exchange rate, remittances, and financial sector development, while controlling for other determinants of the real exchange rate. The empirical evidence is expected to reveal that while remittance inflows tend to exert upward pressure on the real exchange rate, the appreciation effect is attenuated when financial sector development is incorporated in the model.

4.1. Methodology

In order to test the stated hypothesis, three panel estimation techniques are employed: Ordinary Least Squares Fixed Effects, Two-Stage Least Squares, and Generalized Method of Moments.

4.1.1. Ordinary Least Squares Fixed Effects Estimation

Ordinary Least Squares Fixed Effects estimation is one of the most common panel data estimation techniques. The Fixed Effects model is widely used in empirical literature due to its ability to control for undetected heterogeneity in the panel dataset. As opposed to the standard Ordinary Least Squares estimation, the Fixed Effects model allows for correlation between the time-invariant component in the error term and the dependent variables in the model. The basic idea behind the Fixed Effects technique is: given that unobserved heterogeneity is time-invariant, then it can be eliminated through first differencing. As an illustration, consider the following Unobserved Effects model,

$$y_{it} = ß\, x_{it} + u_{it} \qquad\qquad (4.1)$$

it can be observed that the error tern u_{it} is composed of two components as follows:

$$u_{it} = \alpha_i + \varepsilon_{it} \qquad\qquad (4.2)$$

where ε_{it} is the component uncorrelated with x_{it} and α_i is the time-invariant component correlated with x_{it}. As such, the coefficient vector ß can be consistently estimated by differencing the model for individual means, hence eliminating the time-invariant components α_i as follows:

$$(y_{it} - \bar{y}_i) = ß\,(x_{it} - \bar{x}_i) + (\varepsilon_{it} - \bar{\varepsilon}_i) \qquad\qquad (4.3)$$

Ordinary Least Squares Fixed Effects estimation removes unobserved, time-invariant, and individual-specific effects, thus focusing only on time-variant effects. The main restriction of this estimation technique is that time-invariant variables cannot be included in the model for they are eliminated through differencing. However, this limitation is compensated by the ability to control for individual-specific effect, and thus correcting for omitted variable bias.

In the context of this project, the Ordinary Least Squares Fixed Effects technique is applied on the following three models by controlling for country-specific

effects:

- Model I: $y_{it} = ß\,x_{it} + \gamma\,r_{it} + \alpha_i + \varepsilon_{it}$ (4.4)

- Model II: $y_{it} = ß\,x_{it} + \gamma\,r_{it} + \delta\,r_{it} * f_{1it} + \theta\,f_{1it} + \alpha_i + \varepsilon_{it}$ (4.5)

- Model III: $y_{it} = ß\,x_{it} + \gamma\,r_{it} + \delta\,r_{it} * f_{2it} + \theta\,f_{2it} + \alpha_i + \varepsilon_{it}$ (4.6)

where y denotes the logarithm of the real effective exchange rate index, x denotes a set of independent explanatory variables, r denotes remittance inflows as a percentage of GDP, f_1 denotes commercial banks' deposits as a percentage of GDP, f_2 denotes commercial banks' credit as a percentage of GDP, and α represents country-specific effect.

As such, Ordinary Least Squares Fixed Effects estimation would allow for better estimator efficiency compared to the standard Ordinary Least Squares estimation given that it can control for omitted variable bias which results from the inherent differences between the countries considered in the study and which are not accounted for. Given the possibility that there may be significant determinants of the real exchange rate which are not considered in the model, the Fixed Effects technique will allow the minimization of the effects of time-invariant variables, thus producing better estimates.

However, this technique does not take into consideration the possibility that remittance inflows might also be determined by the real effective exchange rate. If this is the case, then simultaneity bias will render Ordinary Least Squares Fixed Effects estimators biased.

4.1.2. Two-Stage Least Squares Estimation

Two-Stage Least Squares (2SLS) estimation is mainly utilized in structural equations' analysis. This technique extends Ordinary Least Squares estimation in order to deal with the correlation between the error terms of the dependent variable and the

explanatory variable. To implement Two-Stage Least Squares technique, one or more

instruments must be identified satisfying two conditions: (1) the instrument must be

correlated with the explanatory variable, and (2) the instrument must be uncorrelated

with the error term. As an illustration, considering the following standard Ordinary

Least Squares model:

$$y_{it} = ß\, x_{it} + u_{it} \tag{4.7}$$

then if x_{it} is correlated with u_{it}, the estimators will be biased and inconsistent. As

such, when appropriate instruments z_{it} are identified, Two-Stage Least Squares

technique runs the following two equations using Ordinary Least Squares Estimation:

$$x_{it} = \eta\, z_{it} + \varepsilon_{it} \tag{4.8}$$

$$y_{it} = ß'\, \hat{x}_{it} + u_{it} \tag{4.9}$$

In the context of this project, while remittance inflows are utilized to explain

the behavior of the real exchange rate, these inflows themselves might be determined by

the real value of the currency. If migrants take into consideration the value of real

exchange rate when they remit, then Ordinary Least Squares Fixed Effects estimation

will yield biased results. Consequently, Two-Stage Least Squares estimation is applied

using two instruments for remittances. The first instrument is primary school enrollment

rate which is expected to be positively correlated with remittance inflows given that the

higher the remittances received, the more likely it is that children belonging to

remittance-receiving households are enrolled in primary schools. The second instrument

is the main host region's per capita income which can be positively correlated with

remittance inflows given that the more prosperous the host country is, the higher

migrants' income is and the higher remittances are. On the other hand, a negative

relation can exist between remittance inflows and the host region's per capita GDP due

to the fact that higher income would induce a surge in prices, thus reducing the

migrant's ability to remit. Alongside, both instruments are expected to be uncorrelated with the real exchange rate of the remittance-receiving country.

Two-Stage Least Squares technique is applied on the following three models by controlling for country-specific effects:

- Model IV: $r_{it} = \eta_1 z_{1\,it} + \eta_2 z_{2\,it} + u_{it}$ (4.10)

$$y_{it} = \text{\ss}' x_{it} + \gamma' \hat{r}_{it} + \alpha_i + \varepsilon_{it} \tag{4.11}$$

- Model V: $r_{it} = \eta_1 z_{1\,it} + \eta_2 z_{2\,it} + u_{it}$ (4.12)

$$y_{it} = \text{\ss}' x_{it} + \gamma' \hat{r}_{it} + \delta' r_{it} * f_{1\,it} + \theta' f_{1\,it} + \alpha_i + \varepsilon_{it} \tag{4.13}$$

- Model VI: $r_{it} = \eta_1 z_{1\,it} + \eta_2 z_{2\,it} + u_{it}$ (4.14)

$$y_{it} = \text{\ss}' x_{it} + \gamma' \hat{r}_{it} + \delta' r_{it} * f_{2\,it} + \theta' f_{2\,it} + \alpha_i + \varepsilon_{it} \tag{4.15}$$

where y denotes the logarithm of the real effective exchange rate index, x denotes a set of independent explanatory variables, r denotes remittance inflows as a percentage of GDP, f_1 denotes commercial banks' deposits as a percentage of GDP, f_2 denotes commercial banks' credit as a percentage of GDP, z_1 denoted primary school enrollment rate, z_2 denotes host regions' per capita GDP, and α represents country-specific effect.

Two-Stage Least Squares estimation would allow for better estimator efficiency compared to the Ordinary Least Squares Fixed Effects estimation if the model exhibits simultaneity bias which results from the possibility that remittance inflows are affected by the real exchange rate. Yet, this model does not deal with the potential endogeneity of all the explanatory variables, which may render the estimators biased and inconsistent. Therefore, this potential endogeneity is dealt with using the Generalized Method of Moments technique.

4.1.3. Generalized Method of Moments Estimation

Generalized Method of Moments (GMM) estimation is one of the main estimation tools for panel datasets. In fact, Generalized Method of Moments technique has become very common in econometric studies due to its framework which incorporates several statistical methods including Ordinary Least Squares, Instrumental Variables, and Maximum Likelihood.

There are two main sources of endogeneity which may result in biased estimates of how the dependent variable is determined by explanatory variables: simultaneity and unobservable heterogeneity. Another source of endogeneity stems from the relationship among a cross-section's characteristics is dynamic. In that case, the issue of endogeneity, which is usually associated with panel data analysis, can be resolved by using Generalized Method of Moments technique. This methodology eliminates the bias which arises due to ignoring dynamic endogeneity, while concurrently accounting for simultaneity.

For illustration, the linear regression equation is considered as follows:

$$y_{it} = \text{ß} \, x_{it} + u_{it} \tag{4.16}$$

where x_{it} is vector of explanatory variables and u_{it} is a random error term. This equation allows for the possibility that elements of x_{it} might be correlated with the error term. If this is the case, then x_{it} contains endogenous variables which render the estimators biased and inconsistent. Therefore, Generalized Method of Moments estimation considers a vector z_{it} of instrumental variables, which could contain all or some of the explanatory variables in x_{it}. Additionally, one important condition is the order condition where the number of instruments must be at least equal to the number of explanatory variables.

In the context of this project, a country's current remittance inflows will affect

its future real exchange rate and this may, in turn, impact future remittance realizations. This leads to dynamic endogeneity. Additionally, there is potential that all explanatory variables are endogenous; rendering any estimation that does not recognize the potential endogeneity biased and inconsistent. Hence, Generalized Method of Moments technique is applied on three models by controlling for country-specific effects, using second-difference independent variables and lagged first-difference independent variables as instruments:

- Model VII: $y_{it} = \text{ß}'' x_{it} + \gamma'' r_{it} + \alpha_i + \varepsilon_{it}$ (4.17)

- Model VIII: $y_{it} = \text{ß}'' x_{it} + \gamma'' r_{it} + \delta'' r_{it} * f_{1\,it} + \theta'' f_{1\,it} + \alpha_i + \varepsilon_{it}$

(4.18)

- Model IX: $y_{it} = \text{ß}'' x_{it} + \gamma'' r_{it} + \delta'' r_{it} * f_{2\,it} + \theta'' f_{2\,it} + \alpha_i + \varepsilon_{it}$

(4.19)

where y denotes the logarithm of the real effective exchange rate index, x denotes a set of independent explanatory variables, r denotes remittance inflows as a percentage of GDP, f_1 denotes commercial banks' deposits as a percentage of GDP, f_2 denotes commercial banks' credit as a percentage of GDP, and α represents country-specific effect.

4.2. Data and Summary Statistics

This project employs an unbalanced panel dataset consisting of eight labor-exporting MENA countries over the period 1960–2012. The countries were selected based on two criteria: (1) that the country is a net remittances receiver, and (2) that the country has data on remittance inflows available for at least ten consecutive years. Although the dataset contains 280 country-year observations with data on remittances, the sample sizes in the models are smaller depending on the availability of data on the

included covariates.

4.2.1. Data

The real effective exchange rate (REER) index is used as a measure of the real exchange rate. The real effective exchange rate is computed by adjusting the nominal effective exchange rate (NEER) index – a ratio of the currency's average exchange rate to the geometric weighted average of exchange rates of selected countries – for the relative variation in consumer prices. Given that the real effective exchange rate index quotes the prices of domestic goods in terms of the prices of foreign goods, then an increase in the REER index signals real exchange rate appreciation while a decrease in the REER index indicated real exchange rate depreciation.

Remittances as a percentage of GDP (REMIT) are considered to study the interaction of these inflows with the real exchange rate. It is expected that an increase in remittances as a percentage of GDP will translate into higher spending on consumption of goods and services, which will consequently result in real exchange rate appreciation. As such, a positive and significant correlation is expected between the real effective exchange rate and remittances-to-GDP, confirming that the Dutch Disease phenomenon is exhibited.

Money supply (M2) can exert upward pressure on non-tradable goods' prices, thus producing inflationary pressure which in turn results in real exchange rate appreciation. As such, money supply is a determinant of the real exchange rate and hence money supply as a percentage of GDP is incorporated as an explanatory in the model.

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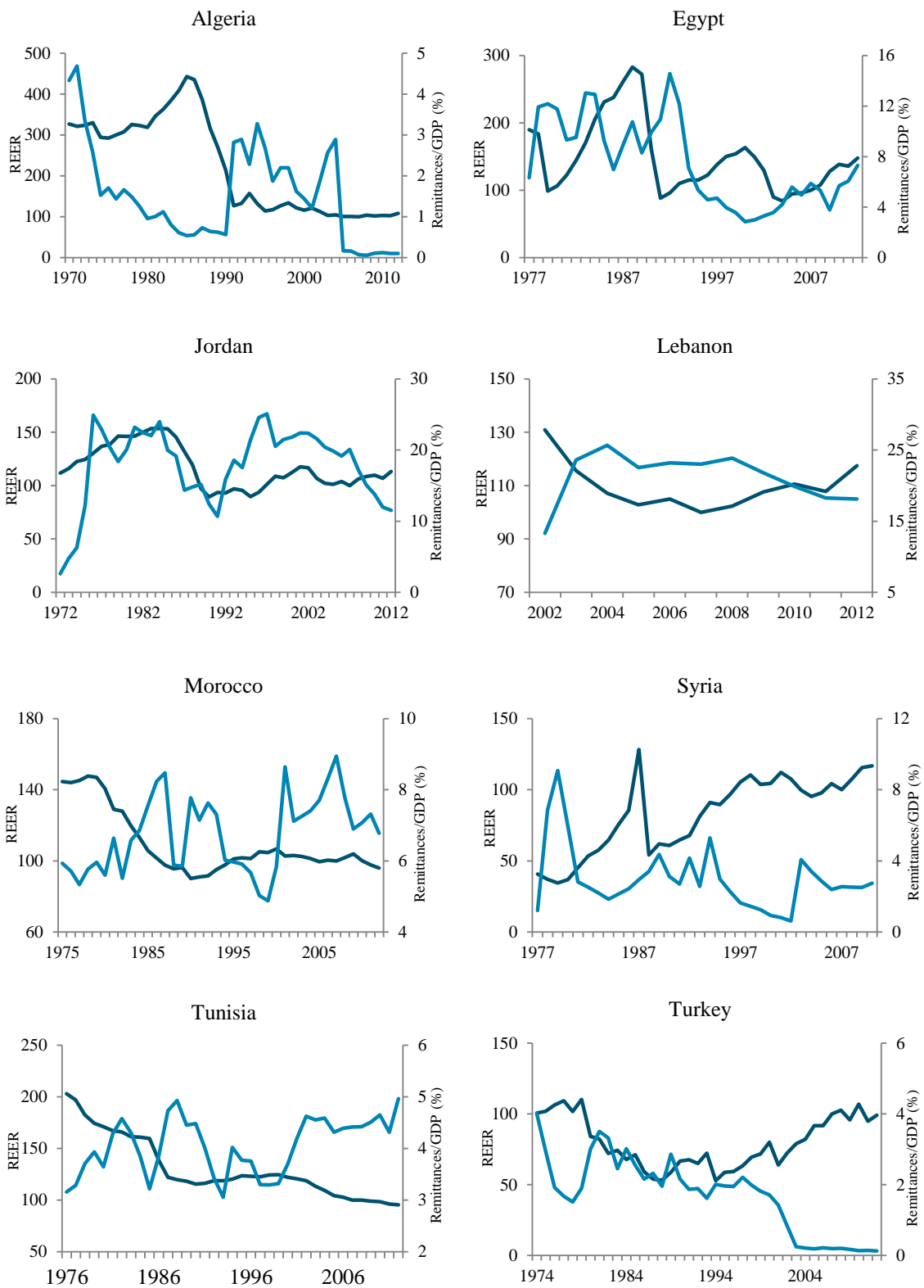
Fig. 4.1. Remittances and Real Effective Exchange Rate in Labor-Exporting MENA Countries
Source: World Bank Development Indicators; Darvas (2012).

Trade openness (TRADE) also influences the prices of non-tradable goods and consequently affects the real exchange rate. For example, increasing import tariffs would raise imported goods' prices, which can subsequently impact non-tradable goods' prices through two effects: the income effect and the substitution effect. Through the income effect, higher prices of imports would reduce purchasing power and thus decrease the demand for all goods including non-tradable goods. This would result in a drop in the prices of non-tradable goods and hence depreciate the real exchange rate. On the other hand, the substitution effect would raise the demand for non-tradable goods given the higher import prices, leading to the increase in their prices and so appreciate the real exchange rate. In that context, the effect of trade openness on the real exchange rate depends on which effect dominates, with most previous studies arguing that the substitution effect likely dominates the income effect. Hence, it is expected that trade openness – measured as the ratio of total imports and exports to GDP – is positively correlated with the real effective exchange rate.

Furthermore, an increase in GDP per capita (GDPPC) is expected to improve purchasing power, thus boosting the demand for non-tradable goods and leading to real exchange rate appreciation. Yet, some emerging economies have revealed evidence that rising levels of per capita income would boost import demand when GDP growth is robust. In that sense, the model accounts for GDP per capita and GDP growth (GROWTH) in order to pick up the dynamics of the impact of higher purchasing power on the real effective exchange rate.

In order to incorporate financial development into the model, two proxies are considered: commercial banks' deposit-to-GDP (DEPOSIT) and commercial banks' credit-to-GDP (CREDIT) ratios. These two measures of the development of the financial sector are allowed to interact with remittances in order to examine their effect

on the real exchange rate. It is expected that the interaction between remittances and each of deposit-to-GDP ratio and credit-to-GDP ratio will negatively affect the real exchange rate. In fact, it is hypothesized that the financial sector can channel deposits into financing public debt and can extend credit to the private sector, thus contributing to productive activity in the economy, which will alleviate real exchange rate appreciation.

4.2.2. Descriptive Statistics

Descriptive statistics provide a better understanding of the distribution of the dataset considered. Hence, the basic statistical features of the dataset are examined including: mean, median, maximum and minimum, standard deviation, skewness, kurtosis, and normality.

The mean is the first moment or the average of the distribution, while the median is the middle value in the distribution. As for the maximum and minimum, they indicate the highest and the lowest values in the distribution, respectively. Meanwhile, the standard deviation reveals the extent to which the values in the distribution diverge from the mean.

Additionally, measures of higher moments of the distribution enable the description of its shape. Skewness reveals the extent of asymmetry from a normal distribution. A dataset is considered symmetric if it has the same shape to the right and to the left of the mean. Skewness is measured according to the formula:

$$S = \frac{\sum_{i=1}^{N}(X_i - \overline{X})^3}{N\sigma^3} \tag{4.20}$$

where $\overline{X}$ denotes the mean, σ denotes the standard deviation, and N denotes the number of data points. A normal distribution is characterized by a zero skewness measure;

hence symmetric datasets would have a skewness measure close to zero. In contrast, negative skewness designate that the distribution is left-skewed, while positive skewness indicates that the distribution is right-skewed.

Kurtosis describes the sharpness of the distribution's peak. It indicates whether the dataset is peaked or flat in comparison to the normal distribution. A high kurtosis shows that the distribution is characterized by a distinct peak close to the mean, has heavy tails, and is thus termed leptokurtic. Meanwhile, datasets with low kurtosis are flat near the mean, and are hence termed platykurtic. Kurtosis is measured according to the formula:

$$K = \frac{\sum_{i=1}^{N}(X_i - \overline{X})^4}{N\sigma^4} \qquad (4.21)$$

where $\overline{X}$ denotes the mean, σ denotes the standard deviation, and N denotes the number of data points. A normal distribution has a kurtosis of 3. As such, a kurtosis higher than 3 reveals a peaked distribution while a kurtosis lower than 3 designated a flat distribution.

A further measure of normality is the Jarque Bera statistic. This statistic is a measure of the goodness-of-fit, hence indicating whether a distribution is characterized by skewness and kurtosis similar to those of a normal distribution. Jarque Bera statistic is measured according to the formula:

$$JB = \frac{N}{6}\left[S^2 + \frac{1}{4}(K - 3)^2 \right] \qquad (4.22)$$

where N denotes the number of data points, S denotes the skewness, and K denotes the kurtosis. Jarque Bera statistic has a chi-squared distribution with 2 degrees of freedom. Accordingly, this statistic is employed to test the null hypothesis that a dataset possesses a normal distribution.

The variable Log (REER) has a mean value of 4.705, which refers to a real

effective exchange rate index of 110.515. The maximum value of this variable is 6.093, referring to Algeria's real effective exchange rate index of 443.064 in 1985. Meanwhile, the minimum value of the variable is 3.263, which relates to Lebanon's 1987 real effective exchange rate index of 26.129. Log (REER) is characterized by a skewness of 0.001, indicating that the distribution is insignificantly right-skewed. Additionally, the kurtosis of this variable is 3.488, indicating a slightly leptokurtic distribution. Besides, the Jarque Bera test statistic has a probability value of 0.145, verifying that the variable possesses a normal distribution.

The variable REMIT has a mean value of 6.904, indicating that the average value of remittances-to-GDP ratio is 6.904%. The maximum value of this variable is Lebanon's remittances-to-GDP ratio of 25.661% in 2004. As for the minimum value of the variable, it is Algeria's 2008 remittance-to-GDP ratio of 0.061%. REMIT is characterized by a skewness of 1.341, revealing a right-skewed distribution. Moreover, the kurtosis of this variable is 3.634, signifying that the distribution is slightly leptokurtic. Further, the Jarque Bera test statistic has a probability value of 0.000, attesting that the variable does not possess a normal distribution.

The variable Log (M2) has a mean value of 4.053, which refers to a money supply-to-GDP ratio of 57.605%. The maximum value of this variable is 5.512, which refers to Lebanon's 247.824% money supply-to-GDP ratio in 2010. Meanwhile, the minimum value of the variable is 2.681, relating to Turkey's 1963 money supply-to-GDP ratio of 14.597%. Log (M2) is characterized by a skewness of 0.219, revealing that the distribution is slightly right-skewed. Further, the kurtosis of this variable is 3.038, indicating a slightly leptokurtic distribution. Besides, the Jarque Bera test statistic has a probability value of 0.241, confirming that the variable is normally distributed.

The variable Log (TRADE) has a mean value of 3.784, which refers to a trade

openness index of 44.031. The maximum value of this variable is 5.043, which refers to Lebanon's 1982 trade openness index of 155.045. As for the minimum value of the variable, it is 1.808, relating to Turkey's 1961 trade openness index of 6.102. Log (TRADE) has a skewness of -0.854, showing that the distribution is left-skewed. Additionally, the kurtosis of this variable is 4.278, designating a leptokurtic distribution. Also, the Jarque Bera test statistic with a probability value of 0.00 reveals that the variable does not possess a normal distribution.

The variable DEPOSIT has a mean value of 49.224, indicating that the average value of commercial banks' deposits-to-GDP ratio is 49.224%. The variable reaches its maximum value at Lebanon's deposits-to-GDP ratio of 282.251% in 2012. It reaches its minimum value at Lebanon's 1980 deposits-to-GDP ratio of 0.335%. DEPOSIT has a skewness of 2.750, indicating a right-skewed distribution. Further, the kurtosis of this variable is 11.783, showing that the distribution is significantly leptokurtic. As for the Jarque Bera test statistic, which has a probability value of 0.000, it attests that the variable is not normally distributed.

The variable CREDIT has a mean value of 63.467, designating an average commercial banks' credit-to-GDP ratio is 63.467%. The maximum value of this variable is Lebanon's credit-to-GDP ratio of 191.165% in 2006. As for the minimum value of the variable, it is Algeria's credit-to-GDP ratio of -12.623% in 2008. CREDIT is characterized by a skewness of 1.196, indicating that a distribution is right-skewed. Also, the kurtosis of this variable is 5.251, suggesting that the distribution is leptokurtic. Further, the Jarque Bera test statistic has a probability value of 0.000, which confirms that the variable's distribution is not normal.

The variable Log (PCGDP) has a mean value of 7.640, which refers to a GDP per capita of USD 2,079.779. The maximum value of this variable is 9.261, referring to

Turkey's 2012 per capita income of USD 10,526.793. On the other hand, the minimum value of the variable is 6.312, which relates to Egypt's 1980 per capita GDP of USD 551.645. Log (PCGDP) is characterized by a skewness of 0.528, indicating that the distribution is skewed to the right. Furthermore, the kurtosis of this variable is 2.961, revealing a leptokurtic distribution. As for the Jarque Bera test statistic which has a probability value of 0.0022, it shows that the variable does not possess a normal distribution.

The variable GROWTH has a mean value of 3.981, indicating that the average GDP growth rate is 3.981%. The variable reaches its maximum value at Lebanon's exponential GDP growth of 44.479% in 1984. It reaches its minimum value also at Lebanon's 1989 negative GDP growth of -42.195%. GROWTH has a skewness of -0.986, indicating a left-skewed distribution. Moreover, the kurtosis of this variable is 21.128, showing that the distribution is significantly leptokurtic. When it comes to the Jarque Bera test statistic which has a probability value of 0.000, it attests that the variable is not normally distributed.

Table 4.1. Descriptive Statistics of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Mean	4.705155	6.904296	4.053608	3.784898	49.22447	63.46681	7.640017	3.981031
Median	4.687317	4.338000	4.015024	3.843524	37.41500	57.73600	7.542209	4.292500
Maximum	6.093715	25.661167	5.512719	5.043717	282.2518	191.1657	9.261679	44.47900
Minimum	3.263051	0.061000	2.680847	1.808567	0.335241	-12.62303	6.312905	-42.19500
Deviation	0.499662	6.679544	0.567181	0.522086	47.02453	35.05330	0.623002	6.988866
Skewness	0.001997	1.341922	0.219394	-0.854095	2.750804	1.196343	0.528167	-0.986076
Kurtosis	3.488597	3.634154	3.038505	4.278176	11.78372	5.250950	2.961714	21.12849
Jarque-Bera	3.859685	88.41012	2.845598	71.30914	1472.569	158.2786	12.91725	3630.135
Probability	0.145171	0.000000	0.241038	0.000000	0.000000	0.000000	0.002246	0.000000
Observations	388	279	352	376	329	352	262	262

Source: Author's estimation

4.2.3. Correlation

The correlation is a common and useful statistics to describe the relation between variables. The correlation coefficient – also known as the cross-correlation coefficient – is a measure that depicts the extent of relationship between two variables. This measure does not only indicate the strength of the linear relationship between two variables, but also describes the direction of this relationship. The sample correlation coefficient is defined as the ratio of the sample covariance of the considered variables to the product of their sample standard deviations. The sample correlation coefficient is computed according to the formula:

$$r_{xy} = \frac{\sum_{i=1}^{N}(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^{N}(X_i - \bar{X})^2 \sum_{i=1}^{N}(Y_i - \bar{Y})^2}} \tag{4.23}$$

where X_i and Y_i denote two variables, while $\bar{X}$ and $\bar{Y}$ denote their means. The sample correlation coefficient can take a value between +1 and -1, inclusive. A value of +1 indicates that the linear relationship between the variables is perfectly positive while a value of -1 implies that the linear relationship between these variables is perfectly negative. On the other hand, a value of zero signifies that no linear relationship exists between the two variables. It is noteworthy that the correlation coefficient can only detect linear relationships. As such, if the relationship between two variables is non-linear, the correlation coefficient would not indicate the type of this non-linear relationship.

A correlation matrix is a matrix displaying the sample correlations between all pairs of variables. In the context of this project, the correlation matrix is constructed for the variables considered in the empirical model. This matrix reveals that there is a strong positive correlation between Log (M2) and DEPOSIT ($r = 0.833$), DEPOSIT and CREDIT ($r = 0.8331$), Log (M2) and CREDIT ($r = 0.813$), as well as REMIT and Log

(M2) ($r = 0.724$). Meanwhile, there exists a weaker positive relation between REMIT and DEPOSIT ($r = 0.667$), REMIT and CREDIT ($r = 0.661$), as well as Log (M2) and Log (TRADE) ($r = 0.419$). Additionally, the correlation matrix shows that the correlation coefficient between Log (REER) and REMIT reaches 0.123, hence providing evidence that Dutch Disease phenomenon is exhibited in labor-exporting MENA countries if indicators of financial development are not considered. On the other hand, weak negative relationship is observed between Log (REER) and Log (GDPPC) ($r = - 0.064$), and between Log (REER) and GROWTH ($r = - 0.086$). It is important to note that given that none of the sample correlation coefficients exceed 0.9 level, the model would not suffer from pair-wise mutli-collinearity.

Table 4.2. Correlation Matrix of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Log(REER)	1.000000	0.123301	0.290619	0.049214	0.114319	0.257953	-0.064852	-0.086264
REMIT	0.123301	1.000000	0.724305	0.429096	0.667358	0.660893	-0.007716	0.112961
Log(M2)	0.290619	0.724305	1.000000	0.419036	0.833153	0.813457	0.132843	0.013133
Log(TRADE)	0.049214	0.429096	0.419036	1.000000	0.270265	0.185136	0.194584	0.147961
DEPOSIT	0.114319	0.667358	0.833153	0.270265	1.000000	0.816927	0.405940	0.031108
CREDIT	0.257953	0.660893	0.813457	0.185136	0.816927	1.000000	0.170825	0.001751
Log(GDPPC)	-0.064852	-0.007716	0.132843	0.194584	0.405940	0.170825	1.000000	0.019313
GROWTH	-0.086264	0.112961	0.013133	0.147961	0.031108	0.001751	0.019313	1.000000

Source: Author's estimation

Furthermore, the correlation between REMIT and other variables is constructed for each country. REMIT is positively correlated with Log (REER) in Algeria ($r = 0.338$), Egypt ($r = 0.531$), Jordan ($r = 0.307$), Morocco ($r = 0.357$), and Tunisia ($r = 0.611$). Further, REMIT reveals a positive correlation with Log (M2) and Log (TRADE) in some countries (Egypt, Lebanon, and Turkey) and negative correlation in

others. Meanwhile, positive correlation is exhibited between REMIT and CREDIT in most countries, with the most significant positive relations revealed in Algeria ($r = 0.727$) and Egypt ($r = 0.393$).

Table 4.3. REMIT Correlation with Other Variables

	Log(REER)	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
REMIT Algeria	0.338039	-0.046457	-0.726206	-0.094867	0.727194	-0.724990	-0.136571
REMIT Egypt	0.531603	0.099606	0.629750	-0.606025	0.393076	-0.431110	-0.000631
REMIT Jordan	0.307297	-0.614779	-0.058793	-0.316184	-0.684282	-0.308697	0.271903
REMIT Lebanon	-0.766167	0.181480	0.272651	-0.120138	0.086477	-0.224982	0.327029
REMIT Morocco	0.357055	0.277133	0.272273	0.285291	0.123469	0.202223	-0.012861
REMIT Syria	-0.471909	-0.238852	0.241989	-0.329122	0.174875	-0.121709	0.263374
REMIT Tunisia	0.611440	0.729360	0.495085	0.642347	0.128400	0.336845	-0.278007
REMIT Turkey	-0.643348	-0.843732	-0.783050	-0.885907	-0.725188	-0.884789	-0.095950

Source: Author's estimation

4.2.4. Panel Unit Root Test

In order to better assess the dataset, it is essential to determine whether unit roots exist in the data series. The main difference between panel unit root testing and time-series unit root testing is that in panel datasets, the asymptotic behavior of time-series dimension and cross-section dimension must be considered. In the context of this project, two panel unit root tests are performed: the Im-Pesaran-Shin test and the Levin-Lin-Chu test.

The Im-Pesaran-Shin (IPS) test examines the presence of unit roots in panel datasets, through combining information from both, the time series and the cross section dimensions. As such, fewer observations are necessary to give power to the test. IPS test specifies a separate Augmented Dickey-Fuller (ADF) regression for each cross-section in the panel data series. This ADF regression includes individual effects but does not

incorporate a time trend:

$$\Delta y_{i\,t} = \alpha_i + \rho_i y_{i\,t-1} + \sum_{j=1}^{p_i} \beta_{i\,j} \Delta y_{i,t-j} + \varepsilon_{i\,t} \tag{4.24}$$

IPS test employs distinct unit root tests for each cross-section. After these separate ADF regressions are estimated, the t-statistic is computed by averaging this statistics for the p_i individual ADF regressions:

$$t_{IPS} = \frac{1}{N} \sum_{i=1}^{N} t_{p_i} \tag{4.25}$$

where N denoted the number of cross-sections and t_{p_i} denotes the t-statistic from individual ADF regressions. The $\bar{t}_{IPS}$ statistics is standardized, thus converging to a standard normal distribution for large samples.

In the IPS test, the null hypothesis examines whether all cross-sections follow a unit root process and are hence non-stationary. As for the alternative hypothesis, it considers if some (but not all) cross-sections possess a unit root:

$$H_0: \rho_i = 0$$

$$H_1: \begin{cases} \rho_i \neq 0 \ \ for \ i = 1, 2, \dots, N_1 \\ \rho_i = 0 \ \ for \ i = N_1 + 1, \dots, N \end{cases}$$

Meanwhile, the Levin-Lin-Chu (LLC) test runs the following ADF regression for each cross-section:

$$\Delta y_{i\,t} = \rho_i y_{i\,t-1} + \sum_{j=1}^{p_i} \beta_{i\,j} \Delta y_{i,t\,j} + \alpha_{mi} d_{mt} + \varepsilon_{i\,t} \tag{4.26}$$

Afterwards, two auxiliary regressions are performed to obtain the estimated residual series:

$$\Delta y_{i\,t} = \gamma_1 \Delta y_{i,t-j} + \gamma_2 d_{mt} + e_{i\,t} \tag{4.27}$$

$$y_{i\,t-1} = \delta_1 \Delta y_{i,t-j} + \delta_2 d_{mt} + v_{i\,t} \tag{4.28}$$

The residual series are then standardized through dividing each series by the standard deviation of $\varepsilon_{i\,t}$:

$$\tilde{e}_{i\,t} = \frac{\hat{e}_{i\,t}}{\hat{\sigma}_{\varepsilon_{i\,t}}} \tag{4.29}$$

$$\tilde{v}_{i\,t} = \frac{\hat{v}_{i\,t}}{\hat{\sigma}_{\varepsilon_{i\,t}}} \tag{4.30}$$

Subsequently, the following pooled OLS regression is performed:

$$\tilde{e}_{i\,t} = \rho\,\tilde{v}_{i\,t-1} + \tilde{\varepsilon}_{i\,t} \tag{4.31}$$

The Levin-Lin-Chu test examines the null hypothesis that each time series contains a unit root while the alternative hypothesis that each time series is stationary. Hence, in comparison with the IPS test, this hypothesis is considered restrictive and thus does not allow for the possibility that some cross-sections have a unit root while other don't.

$$H_0: \rho_i = 0$$

$$H_1: \rho_i \neq 0$$

The Im-Pesaran-Shin test and the Levin-Lin-Chu test are applied on the variables in this project. The IPS test and the LLC test both reveal that the variable Log (REER) is non-stationary at level and thus has a unit root. In contrast, when these tests are performed on the first-difference of the variable, no evidence of unit root is observed. As such, Log (REER) is said to be integrated of order one.

Applying these unit root tests on the variable REMIT, reveal that the IPS test shows that the variable doesn't have a unit root at 1% significance while the LLC test indicates that the variable is stationary at levels of significance higher 10%. This indicates that some of the cross-sections have a unit root while others don't. When the first-difference of the variable is tested for unit root, the null hypothesis is rejected and the variable is hence stationary at first difference also. As for the variables Log (M2) and Log (TRADE), they both appear to be non-stationary at level and hence have a unit root.

Further, when the unit root tests are applied on the three variables DEPOSIT, CREDIT and Log (GDPPC), they reveal that the null hypothesis cannot be rejected and thus these variables are non-stationary at level. Meanwhile, performing the tests on the first-difference of these variables shows that the variables do not have a unit root when differenced. Therefore, DEPOSIT, CREDIT, and Log (GDPPC) are integrated of order one. In contrast, the variable GROWTH is revealed to be stationary at level even at 1% significance level and hence does not have a unit root.

Table 4.4. IPS and LLC Panel Unit Root Tests

Variable	Level		First-Difference	
	IPS Test	LLC Test	IPS Test	LLC Test
Log(REER)	-0.05130	-1.06630	-8.60786***	-10.0538***
	(0.4795)	(0.1431)	(0.0000)	(0.0000)
REMIT	-2.48664***	-1.31901*	-9.76114***	-6.57488***
	(0.0064)	(0.0936)	(0.0000)	(0.0000)
Log(M2)	1.01717	-0.78822	-8.14585***	-7.80643***
	(0.8455)	(0.2153)	(0.0000)	(0.0000)
Log(TRADE)	-1.20719	-1.11255	-10.8184***	-9.67556***
	(0.1137)	(0.1330)	(0.0000)	(0.0000)
DEPOSIT	4.31118	3.65142	-6.07524***	-3.93048***
	(1.0000)	(0.9999)	(0.0000)	(0.0000)
CREDIT	2.18991	1.67661	-8.18282***	-4.33183***
	(0.9857)	(0.9532)	(0.0000)	(0.0000)
Log(GDPPC)	3.10627	1.58352	-7.0253***	-6.52536***
	(0.9991)	(0.9433)	(0.0000)	(0.0000)
GROWTH	-7.95262***	-4.65028***	-15.4866***	-8.55355***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Note 1: Probability values are shown in parentheses.
Note 2: ***, ** and * indicate rejection of null hypothesis at 1%, 5% and 10% level of significance, respectively.
Source: Author's estimation

4.3. Empirical Results

The different estimation techniques discussed are applied to examine the interaction between the real exchange rate, remittances, and financial development.

4.3.1. Ordinary Least Squares Fixed Effects Estimation

Table 4.5 presents the results of Ordinary Least Squares Fixed Effects Estimation. The dependent variable is the logarithm of the real effective exchange rate index (Log(REER)), while the explanatory variables include: remittances as a percentage of GDP (REMIT), deposits as a percentage of GDP (DEPOSIT), credit as a percentage of GDP (CREDIT), the logarithm of money supply-to-GDP ratio (Log(M2)), the logarithm of trade openness index (Log(TRADE)), the logarithm of GDP per capita (Log(GDPPC)), and GDP growth (GROWTH). Additionally, the model is estimated as an autoregressive process of order one (AR(1)) in order to adjust for serial correlation. A positive coefficient reveals that a rise in the related variable would result in the appreciation of the real exchange rate.

The first column presents model I where measures of financial development are ignored. This model shows that a one percentage point increase in remittances-to-GDP ratio would generate a 0.013% appreciation in the real exchange rate. Yet, this coefficient is not statistically significant at 10% level. Furthermore, other covariates reveal the expected signs, with all of them being statistically significant except the measure of trade openness. In particular, a 1% increase in money supply-to-GDP ratio would lead to a 0.18% real exchange rate appreciation. Likewise, GDP per capita exerts upward pressure on the real exchange rate which appreciates by 0.58% for every 1% increase in per capita income.

In the second column, model II is presented where commercial banks' deposits-to-GDP ratio is introduced as a measure of financial development. This variable is added both individually and interacted with remittances-to-GDP ratio. The appreciation effect of remittance inflows on the real exchange rate is statistically significant in this model, where a one percentage point rise in remittances-to-GDP ratio generates an estimated 1.43% increase in the real effective exchange rate index. However, the interaction between remittances and deposits at commercial banks tends to have a negative impact on the real exchange rate. For instance, a rise in remittances-to-GDP ratio of one percentage point in a country characterized by a deposits-to-GDP ratio of 20% would generate a currency depreciation of 0.99% (0.0143-0.00121*20). Meanwhile, the same increase in remittance inflows in a country characterized by a deposits-to-GDP ratio of 40% would cause the real exchange rate to fall by 3.41% (0.0143-0.00121*40).

The third column presents model III where commercial banks' credit-to-GDP ratio is considered as a measure of financial development. In this case, the interaction between remittances and credit extended by commercial banks has a negative and statistically significant effect on the real exchange rate. For illustration, a rise in remittances-to-GDP ratio of one percentage point in a country characterized by a credit-to-GDP ratio of 20% would generate a currency appreciation of 1.04% (0.0159-0.000136*20), compared to a 1.59% (0.0159-0.000136*0) appreciation in a country with an inactive commercial banking sector.

As such, it can be inferred that while remittance inflows tend to appreciate the real exchange rate, this effect is attenuated or even reversed is countries with a developed financial sector as measured by commercial banks' deposits and extended credit.

Table 4.5. Ordinary Least Squares Fixed Effects Estimation Results

	Ordinary Least Squares Fixed Effects Estimation		
	I	II	III
Dependent Variable	Log(REER)	Log(REER)	Log(REER)
REMIT	0.000139 (0.004531)	0.014346* (0.007395)	0.015992* (0.008830)
DEPOSIT		0.006872*** (0.001543)	
DEPOSIT*REMIT		-0.00121** (0.000057)	
CREDIT			0.004181*** (0.001268)
CREDIT*REMIT			-0.000136* (0.0000736)
Log(M2)	0.180242** (0.078896)	0.007295 (0.086979)	0.029194 (0.090940)
Log(TRADE)	0.026845 (0.041664)	0.004250 (0.040930)	0.026649 (0.041056)
Log(GDPPC)	0.581108*** (0.0488406)	0.596993*** (0.047478)	0.573179*** (0.047763)
GROWTH	-0.002919** (0.001234)	-0.001925 (0.001238)	-0.002421** (0.001222)
AR(1)	0.969534*** (0.016516)	0.976092*** (0.015902)	0.964088*** (0.017172)
Constant	-1.505313* (0.904552)	-1.675083 (1.211114)	-0.923937 (0.789566)
Country Fixed Effect	Yes	Yes	Yes
Observations	232	224	232

Note 1: Standard errors are shown in parentheses.
Note 2: ***, ** and * indicate significance at 1%, 5% and 10% level of significance, respectively.
Source: Author's estimation

4.3.2. Two-Stage Least Squares Estimation

Table 4.6 presents the results of the first-stage regression in Two-Stage Least Squares Estimation. The dependent variable is the remittances-to-GDP ratio (REMIT), while the instruments include: primary school enrollment rate (SCHOOL) and host region's per capita income (HOST). The regression shows that both primary school enrollment and host region's per capita income are significantly related to remittance inflows. Specifically, rise in remittance inflows results in higher school enrollment due to higher purchasing power of migrants' households. Meanwhile, as host region's per capita income rises, remittance inflows decrease. This can be explained by the fact that as the host region prospers, the price level rises and hence reduces the migrant's ability to remit.

Table 4.6. First-Stage Regression Results

First-Stage Regression	
Dependent Variable	REMIT
SCHOOL	0.068477** (0.034242)
HOST	-0.000159* (0.000095)
AR(1)	0.819951*** (0.035836)
Constant	1.945623 (3.518012)
Country Fixed Effect	Yes
F-Statistic	570.45***
Observations	232

Note 1: Standard errors are shown in parentheses.
Note 2: ***, ** and * indicate significance at 1%, 5% and 10% level of significance, respectively.
Source: Author's estimation

Given that the first-stage regression verifies the validity of the instruments considered, the fitted values of remittances-to-GDP (REMIT(HAT)) are employed in the second-stage regression shown in Table 4.7. The dependent variable is the logarithm of the real effective exchange rate index (Log(REER)), while the explanatory variables include: fitted remittances as a percentage of GDP (REMIT(HAT)), deposits as a percentage of GDP (DEPOSIT), credit as a percentage of GDP (CREDIT), the logarithm of money supply-to-GDP ratio (Log(M2)), the logarithm of trade openness index (Log(TRADE)), the logarithm of GDP per capita (Log(GDPPC)), and GDP growth (GROWTH). Moreover, the model is estimated as an autoregressive process of order one (AR(1)) in order to correct for serial correlation.

In the first column, model IV is presented where financial development is not incorporated. The results reveal that a one percentage point increase in remittances-to-GDP ratio would general a 0.622% appreciation in the real exchange rate. Even though the effect is larger than when Ordinary Least Squares Fixed Effects is applied, the coefficient is still not statistically significant at 10% level. In this model, money supply and GDP per capita are revealed to be significant determinants of the real exchange rate. Specifically, money supply could appreciate the real exchange rate by 0.16% for every 1% rise in money supply-to-GDP ratio. Further, a 1% increase in per capita income would result in 0.58% appreciation in the real exchange.

The second column presents model V which incorporates commercial banks' deposits-to-GDP ratio in order to account for the degree of financial development. The variable is introduced both individually and interacted with remittances-to-GDP ratio. In this model, remittance inflows tend to have a significant appreciation effect on the real exchange rate, with a one percentage point increase in remittances-to-GDP ratio generating 2.5% rise in the real effective exchange rate index. On the other hand, a

negative impact on the real exchange rate is caused by the interaction between remittances and deposits. This shows that financial development can result in lessening or reversing the upward pressure on the currency which is caused by remittance inflows. For illustration, as remittances-to-GDP ratio rises by one percentage point in a country with a deposits-to-GDP ratio of 20%, the real exchange rate currency appreciated by only 2.14% (0.025-0.00017*20). This same increase in remittance inflows would attenuate currency appreciation to 1.42% (0.025-0.00017*60) in a country characterized by a 60% deposits-to-GDP ratio.

Model VI, which considers commercial banks' credit-to-GDP ratio as an explanatory variable, is presented in the third column. Here again, this measure of financial development is added both individually and interacted with remittances-to-GDP ratio. The model reveals that while remittances have a significant appreciation effect on the real exchange rate, the interaction between remittances and credit extended by commercial banks has an opposite and statistically significant effect. This shows that channeling remittances into credit would attenuate the appreciation effect of these inflows. For instance, a one percentage point increase in remittances-to-GDP ratio would generate a 1.78% (0.025-0.00017*40) appreciation in the real exchange rate in a country characterized by a 40% credit-to-GDP ratio. This compares to a 2.5% (0.025-0.00017*0) currency appreciation in a country with absent credit facilities.

Hence, financial sector development plays a vital role in transferring remittance inflows to deposits and channeling these funds into credit extended to the private sector. This weakens the appreciation effect of these foreign inflows on the real exchange rate.

Table 4.7. Two-Stage Least Squares Estimation Results

| | Two-Stage Least Squares Estimation | | |
	IV	V	VI
Dependent Variable	Log(REER)	Log(REER)	Log(REER)
REMIT(HAT)	0.006224	0.025974***	0.025003**
	(0.005527)	(0.008470)	(0.010535)
DEPOSIT		0.007878***	
		(0.001634)	
DEPOSIT*REMIT(HAT)		-0.000179***	
		(0.000061)	
CREDIT			0.004183*
			(0.001269)
CREDIT*REMIT(HAT)			-0.000178*
			(0.000092)
Log(M2)	0.168762**	-0.020712	0.025229
	(0.082891)	(0.090881)	(0.094073)
Log(TRADE)	0.009125	-0.013268	0.012624
	(0.044262)	(0.043110)	(0.043733)
Log(GDPPC)	0.580104***	0.584814***	0.567103***
	(0.049013)	(0.047192)	(0.047798)
GROWTH	-0.003017**	-0.001866	-0.002666**
	(0.001257)	(0.001251)	0.001244
AR(1)	0.961892***	0.968394***	0.954409***
	(0.017534)	(0.016751)	(0.018353)
Constant	-1.252245	-1.168063	-0.692069
	(0.812938)	(0.936494)	0.735947
Country Fixed Effect	Yes	Yes	Yes
Observations	224	217	224

Note 1: Standard errors are shown in parentheses.
Note 2: ***, ** and * indicate significance at 1%, 5% and 10% level of significance, respectively.
Source: Author's estimation

4.3.3. Generalized Method of Moments Estimation

Generalized Method of Moments Estimation results are presented in Table 4.8. The dependent variable is the logarithm of the real effective exchange rate index (Log(REER)), while the independent variables include: remittances as a percentage of GDP (REMIT), deposits as a percentage of GDP (DEPOSIT), credit as a percentage of GDP (CREDIT), the logarithm of money supply-to-GDP ratio (Log(M2)), the logarithm of trade openness index (Log(TRADE)), the logarithm of GDP per capita (Log(GDPPC)), and GDP growth (GROWTH). Also, the model is estimated as an autoregressive process of order one (AR(1)) in order to correct for serial correlation.

As with the previous estimation techniques, the first column presents model VII where financial development is ignored. The model reveals that while the effect of remittance inflows on the real exchange rate is insignificant at 10% level, there is a positive relation between the two variables. In particular, a one percentage point rise in remittances-to-GDP ratio would result in a 0.33% real exchange rate appreciation. Additionally, each of money supply and per capita GDP are statistically significant and reveal the expected signs. In particular, a 1% increase in money supply-to-GDP ratio would lead to a 0.16% real exchange rate appreciation. Meanwhile, GDP per capita exerts upward pressure on the real exchange rate which appreciates by 0.58% for every 1% increase in per capita income.

Afterwards, financial sector development is incorporated in model VIII where commercial banks' deposits-to-GDP ratio is introduced as a measure of financial development. This model is shown in the second column. In contrast to the previous model, the results of this estimation show that the appreciation effect of remittance inflows on the real exchange rate is statistically significant. Specifically, a one percentage point increase in remittances-to-GDP ratio generates an estimated 1.93% rise

in the real effective exchange rate index. Nevertheless, the interaction between remittance inflows and deposits at commercial banks appears to negatively impact the real exchange rate, hence reducing the upward pressure on the currency resulting from the inflow of remittances. As an illustration, when the remittances-to-GDP ratio rises by one percentage point in a country having a 20% deposits-to-GDP ratio, this would lead to a 1.54% (0.0193-0.00019*20) currency appreciation. As for a country characterized by a 60% deposit-to-GDP ratio, the same increase in remittances would result in a smaller 0.76% (0.0193-0.00019*60) real exchange rate appreciation.

In the third column, model IX is presented. In this model commercial banks' credit-to-GDP ratio is incorporated as a measure of financial development. Here also, this variable is introduced both individually and interacted with remittances-to-GDP ratio. In this case, while the interaction between remittances and credit extended by commercial banks is not a statistically significant determinant of the real exchange rate at 10% level, the variable still has a negative effect on the currency value. For instance, as remittances-to-GDP ratio rises by one percentage point in a country characterized by a credit-to-GDP ratio of 40%, the real exchange rate would appreciate by of 1.10% (0.0165-0.000137*40). In comparison, the same increase in the aforementioned ratio would raise the real effective exchange rate index by 1.65% in a country with inactive credit operations.

Therefore, it has been verified that despite the upward pressure exerted by remittances on the real exchange rate, a developed financial sector can actively weaken this effect through channeling the inflows into productive activity by extending credit or through increasing its deposit base to finance government debt.

Table 4.8. Generalized Method of Moments Estimation Results

| | Generalized Method of Moments Estimation | | |
	VII	VIII	IX
Dependent Variable	Log(REER)	Log(REER)	Log(REER)
REMIT	0.003311 (0.005344)	0.019341** (0.009047)	0.016504* (0.010045)
DEPOSIT		0.007617*** (0.001811)	
DEPOSIT*REMIT		-0.000195* (0.000103)	
CREDIT			0.004117*** (0.001409)
CREDIT*REMIT			-0.000137 (0.000106)
Log(M2)	0.166156** (0.082971)	-0.026707 (0.093348)	0.009754 (0.096312)
Log(TRADE)	0.012090 (0.044298)	-0.010799 (0.043867)	0.012045 (0.043986)
Log(GDPPC)	0.584501*** (0.049419)	0.595470*** (0.048174)	0.573937*** (0.048393)
GROWTH	-0.003070** (0.001258)	-0.001909 (0.001275)	-0.002579** (0.001252)
AR(1)	0.964060*** (0.017317)	0.970870*** (0.016755)	0.957397*** (0.018102)
Constant	-1.315273 (0.844227)	-1.294936 (1.037053)	-0.699340 (0.763087)
Country Fixed Effect	Yes	Yes	Yes
Observations	224	216	224

Note 1: Standard errors are shown in parentheses.
Note 2: ***, ** and * indicate significance at 1%, 5% and 10% level of significance, respectively.
Source: Author's estimation

4.4. Theoretical Interpretation

In order to analyze the dynamics behind the attenuation of the impact of remittance inflows on the real exchange rate in the presence of a developed financial sector, it's essential to analyze the Dutch Disease model in the Salter-Swan framework.

The assumptions of the core Dutch Disease model, which was developed by Corden and Neary, include: full employment of factors of production, mobile factors of production, and perfectly elastic tradable goods demand. Figure 4.2 illustrates this core model. It is assumed that the economy uses labor units to produce two commodities: tradable goods and non-tradable goods. Remittance inflows would affect both goods by increasing aggregate expenditure, hence affecting the real exchange rate. At first, the economy's production and consumption activities happen in the lower-right quadrant at point B, the tangency point between the production possibility frontier PPF and the indifference curve ID. The upper-left quadrant illustrates the tradable good's market where the demand curve D_T is assumed to be perfectly elastic. At point C, the initial intersection between the supply curve S_T and the demand curve D_T, the trade balance is zero. The upper-right quadrant illustrates the non-tradable good's market where the initial equilibrium is at point M (Nkusu 2004).

Remittance inflows induce the demand for non-tradable good to increase. This translates into a rightward shift in the demand for the non-tradable good from D_{NT} to D_{NT}'. As a result, the new equilibrium in this market becomes point M', while the price of non-tradable good increases from P_{NT} to P_{NT}'. Given that the price of the tradable good is fixed at P_T, the real exchange rate would appreciate. Consequently, the appreciation of the currency would render domestic tradable goods expensive and would discourage their production. This would subsequently result in a transfer of labor from the contracting tradable good's market to the expanding non-tradable good's

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market. This resource reallocation is illustrated by the move from point B to point B' on the PPF shown in the lower-right quadrant. It is also reflected in the upper-left quadrant where the supply of the tradable good shifts to the left from S_T to S_T', and in the upper-right quadrant where the supply of the non-tradable good shifts to the right from S_{NT} to S_{NT}'. Assuming that both commodities are non-inferior, the increase in the non-tradable good's price, along with the rise in real income due to remittance inflows, would reduce the demand for the tradable good from Q_T to Q_{DT}, thus shifting the economy's equilibrium to point B'' on the new indifference curve ID'. Further, the trade balance would deteriorate from zero to a deficit of C'C'', as shown in the upper-left quadrant (Nkusu 2004).
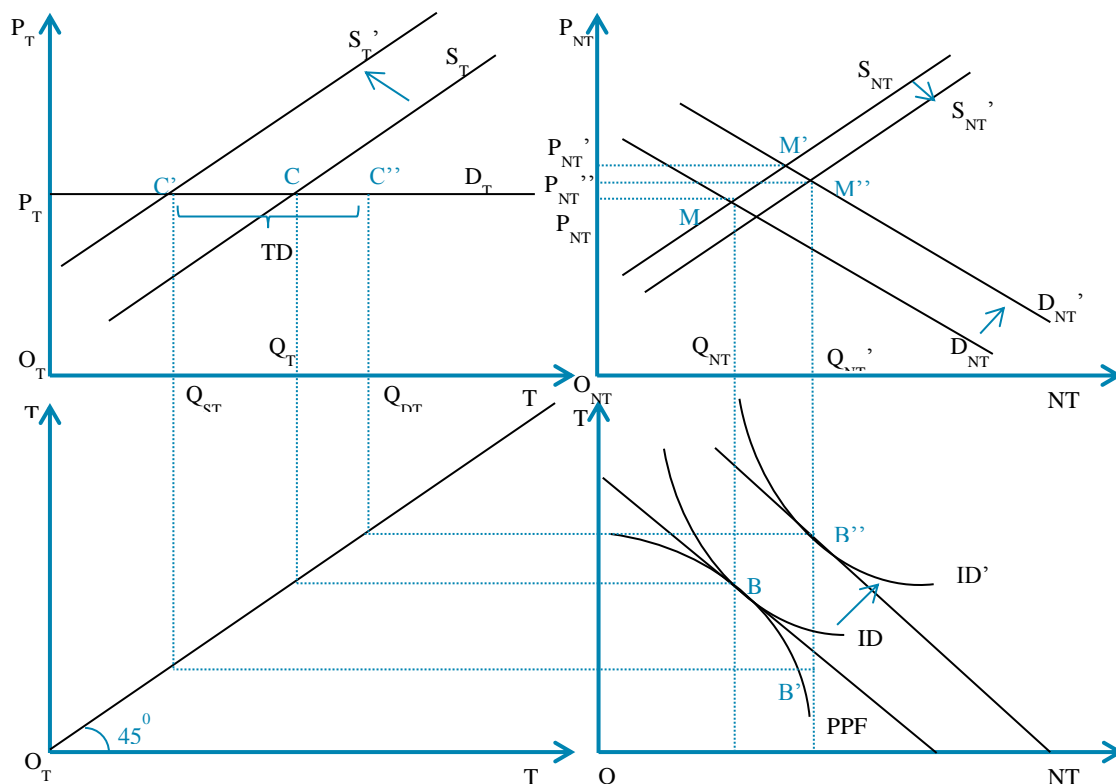
Fig. 4.2. Core Dutch Disease Model
Source: Nkusu 2004. Reproduced by Author.

However, the presence of a developed financial sector, especially in labor-exporting MENA countries which do not operate at full-capacity and exhibit potential to improve productivity, entail a necessary modification of the core Dutch Disease model. Figure 4.3 illustrates the modified Dutch Disease model where the assumption of inelastic demand for tradable good is relaxed. Initially, the economy produces at point A, a point within its PPF, indicating that the economy does not produce at full potential. Meanwhile, consumption in this economy happens at point B on indifference curve ID. The total tradable good's supply is comprised of home supply, H_{ST}, and imports which are equal to the trade deficit TD. The initial market clearance in the tradable good's market is at point C which the clearance in the non-tradable good's market is at point M. At this equilibrium, the prices of tradable good and non-tradable good are equivalent, which results in a unit real exchange rate.

Remittance inflows would induce additional spending on the non-tradable good. This would shift the demand for the non-tradable good to the right from D_{NT} to D_{NT}' and would result in an increase in the price of this good from P_{NT} to P_{NT}'. As the available resources increase due to remittance inflows, the economy would now consume at point B' on the higher indifference curve ID'. In contrast to the core model, the presence of a developed financial sector would channel those inflows into productive activities, thus increasing the use of factors of production and hence raising output to point A' on the PPF.

The increase in production is reflected in the rightward shift of the tradable good's supply curve form H_{ST} to H_{ST}' and in a rightward shift in the supply of the non-tradable good from S_{NT} to S_{NT}'. Meanwhile, the rise in consumption is reflected in the rightward shift of the demand for the tradable good from D_T to D_T'. This results in a rise in the price of tradable good to P_T' and leads to a new trade deficit equivalent to TD', a

narrower deficit compared to the initial one. As for the non-tradable good's market, equilibrium would now take place at point M'', with the price of the non-tradable good rising to P_{NT}'. Given that the price of the non-tradable good is expected to rise more than the price of the tradable goods, the real exchange rate is expected to appreciate. However, compared to the core Dutch Disease mode, the modified model reveals that when financial development is considered, the appreciation is attenuated. Even more, if the non-tradable good's supply curve is highly elastic – i.e. flatter – the real exchange rate may not appreciate.
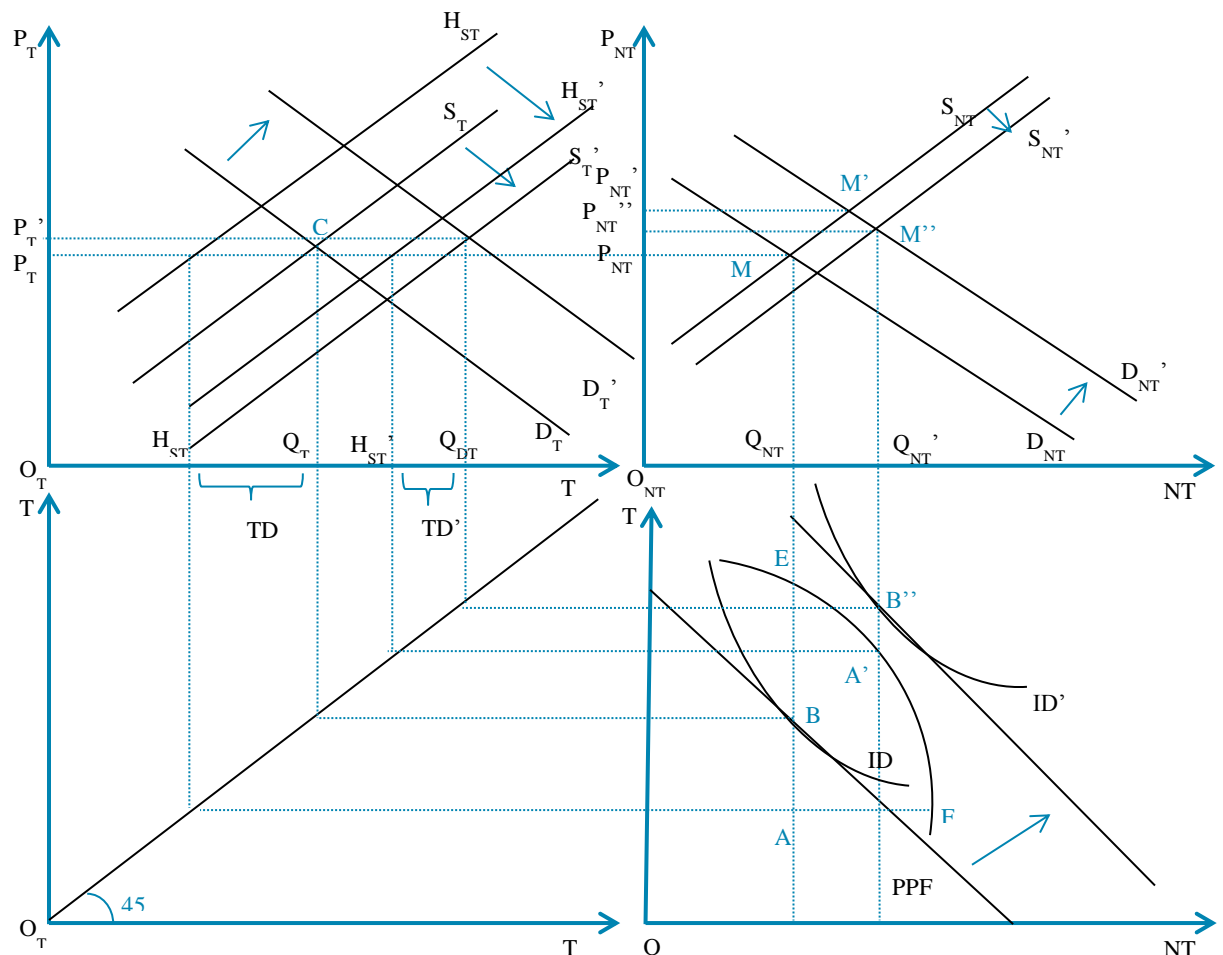
Fig. 4.3. Modified Dutch Disease Model
Source: Nkusu 2004. Reproduced by Author.

CHAPTER 5

CONCLUSION

In this project, the impact of remittances on the real exchange rate is studied conditional on the financial sector development and maturity. Like other studies in remittances' literature, the project contends that remittances do impose an appreciation pressure on the real exchange rate. However, it argues that currency appreciation depends on how developed and sophisticated is the financial sector. Developed financial markets provide the medium for channeling remittances into productive investment activities. Thus, financial sector development plays an important role in attenuating the impact of remittance inflows on the real exchange rate.

The project proceeds with a literature review on the consequences of remittances and their interaction with the real exchange rate and financial sector development. Literature greatly contributes to the understanding of the consequences of remittances in labor-exporting countries. On the microeconomic level, various studies have revealed that remittances can create a disincentive to work, yet they favorably impact entrepreneurship activity, improve educational attainment, secure an income source for financing health spending, alleviate poverty, and contribute to equality. On the macroeconomic level, and while there is a debate on the effect of remittances on the overall economic performance, researchers agree that remittance inflows play a fundamental role in social insurance, cause inflation, contribute to improved creditworthiness, and enhance fund raising in international capital markets. Although remittance inflows could have micro- and macroeconomic benefits, they can result in the appreciation of the receiving country's currency which may lead to lower external

competitiveness, given the rise in export costs.

Afterwards, the project explores the interaction between remittances, the real exchange rate, and financial sector development in eight labor-exporting MENA countries: Algeria, Egypt, Jordan, Lebanon, Morocco, Syria, Tunisia, and Turkey. As mentioned earlier, the MENA region has witnessed numerous migration waves since the onset of the nineteenth century. Remittance inflows generated from migration constitute a significant benefit and are considered a key resource to these economies. In fact, the importance of remittances inflows is made clear by the fact that remittances' value has by far exceeded the value of official development assistance received by labor-exporting MENA countries. The project states that remittances provide support for private sector investments and activities, as well as boost labor-exporting MENA countries' external positions which have deteriorated during periods of political and social unrest. Additionally, the project discussed financial sector development. On the whole, the banking industry dominates the financial system in the MENA region, while bond and stock markets are considered a minor alternative for financing.

Subsequently, the project proposes that the existence of a developed financial sector, which channels remittances into productive investment activities or contribute to government debt financing, would reduce or even prevent currency appreciation. To test the hypothesis, an empirical model is applied on the panel of eight labor-exporting MENA countries. This model examines the interaction between the real exchange rate, remittances, and financial sector development, while controlling for other determining factors of the real exchange rate. Three panel estimation techniques are employed: Ordinary Least Squares Fixed Effects, Two-Stage Least Squares, and Generalized Method of Moments.

To account for the level of financial maturity, commercial banks' deposits-to-

GDP ratio and credit-to-GDP ratio are introduced. These variables are added both individually as well as interacted with remittances-to-GDP ratio. The appreciation effect of remittance inflows on the real exchange rate is revealed to be statistically significant in the model. However, the interaction between remittances and commercial banks' deposits and credits appears to have a negative impact on the real exchange rate, thus weakening or even reversing the upward pressure exerted by remittance inflows on the currency. As such, empirical support for the project's hypothesis is found, with the results being robust to the variety of financial measures and the different specifications of econometric models.

Hence, it can be concluded that financial sector development plays a vital role in transferring remittance inflows to deposits and in channeling these funds into credit extended to the private sector. This moderates the appreciation effect of these foreign inflows on the real exchange rate.

This project reveals that migrant workers' role is not only limited to the remittance flows they transfer, but also extends to ensuring investment opportunities to their home country. These findings are relevant to scholars and policymakers interested in aggregate financial inflows, their distributional significances, and their role in exchange rate determination. Additionally, the fact that financial sector development is shown to play a key role in managing Dutch Disease effect highlights the necessity for devising policy for advancing financial markets, especially in labor-exporting MENA countries.

APPENDIX 1

STATISTICAL DATA

Table A1.1. Algeria's Statistical Data

	Algeria					
	2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (DZD billion)	11,077	10,007	12,034	14,481	16,115	17,460
Nominal GDP (USD billion)	172	138	162	199	208	211
Nominal GDP Growth (%)	18.1	-9.7	20.3	20.3	11.3	8.3
Real GDP (DZD billion)	5,669	5,765	5,973	6,115	6,269	6,478
Real GDP Growth (%)	2.0	1.7	3.6	2.4	2.5	3.3
GDP Per Capita (USD)	4,990	3,943	4,567	5,528	5,694	5,683
Average Consumer Prices (%)	4.9	5.7	3.9	4.5	8.9	5.0
Population (million)	34.4	34.9	35.4	36.0	36.5	37.0
Government Finances						
Total Revenues (DZD billion)	5,191	3,676	4,393	5,790	6,375	6,519
Total Expenditures (DZD billion)	4,191	4,221	4,440	5,853	6,804	6,728
Overall Fiscal Balance (DZD billion)	999	-545	-47	-63	-429	-209
Fiscal Balance (% of GDP)	9.0	-5.4	-0.4	-0.4	-2.7	-1.2
Gross Debt (DZD billion)	894	1,046	1,334	1,604	1,595	1,565
Gross Debt (% of GDP)	8.1	10.5	11.1	11.1	9.9	9.0
Balance of Payments						
Total Imports (USD billion)	27.6	39.5	39.3	40.5	47.2	47.5
Total Exports (USD billion)	60.2	79.3	45.2	57.1	73.5	71.9
Overall Trade Balance (USD billion)	32.5	39.8	5.9	16.6	26.2	24.4
Current Account Balance (USD billion)	34.5	0.4	12.1	19.8	12.3	12.8
Current Account Balance (% of GDP)	20.1	0.3	7.5	10.0	5.9	6.1
Exchange Rate						
USD/DZD Average Rate	67.8	70.5	73.0	76.0	78.2	78.5

Source: IMF World Economic Outlook Database October 2013; EIU Country Report.

Table A1.2. Egypt's Statistical Data

	Egypt 2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (EGP billion)	896	1,042	1,207	1,371	1,542	1,720
Nominal GDP (USD billion)	162	189	218	236	257	265
Nominal GDP Growth (%)	20.2	16.4	15.8	13.6	12.5	11.5
Real GDP (EGP billion)	521	546	574	584	597	609
Real GDP Growth (%)	7.2	4.7	5.1	1.8	2.2	2.0
GDP Per Capita (USD)	2,160	2,453	2,776	2,930	3,112	3,146
Average Consumer Prices (%)	11.7	16.2	11.7	11.1	8.6	8.2
Population (million)	75.2	76.9	78.7	80.4	82.5	84.2
Government Finances						
Total Revenues (EGP billion)	251	289	303	302	349	444
Total Expenditures (EGP billion)	323	360	403	436	515	637
Overall Fiscal Balance (EGP billion)	-72	-72	-100	-134	-166	-194
Fiscal Balance (% of GDP)	-8.0	-6.9	-8.3	-9.8	-10.7	-11.3
Gross Debt (EGP billion)	629	761	883	1,051	1,236	1,466
Gross Debt (% of GDP)	70.2	73.0	73.2	76.6	80.2	85.2
Balance of Payments						
Total Imports (USD billion)	37.1	48.4	44.9	52.9	62.2	69.3
Total Exports (USD billion)	19.2	26.2	23.1	26.4	31.6	29.4
Overall Trade Balance (USD billion)	-17.9	-22.2	-21.9	-26.5	-30.7	-39.9
Current Account Balance (USD billion)	0.9	-4.4	-4.3	-6.1	-7.9	-5.5
Current Account Balance (% of GDP)	0.5	-2.3	-2.0	-2.6	-3.1	-2.1
Exchange Rate						
USD/EGP Average Rate	5.5	5.5	5.8	6.0	6.4	7.0

Source: IMF World Economic Outlook Database October 2013; EIU Country Report.

Table A1.3. Jordan's Statistical Data

	Jordan					
	2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (JOD billion)	15.6	16.9	18.8	20.5	22.1	24.2
Nominal GDP (USD billion)	22.0	23.8	26.4	28.9	31.2	34.1
Nominal GDP Growth (%)	24.9	8.5	10.9	9.1	8.1	9.2
Real GDP (JOD billion)	9.3	9.8	10.0	10.2	10.5	10.9
Real GDP Growth (%)	7.2	5.5	2.3	2.6	2.8	3.3
GDP Per Capita (USD)	3,757	3,987	4,326	4,618	4,879	5,207
Average Consumer Prices (%)	13.9	-0.7	5.0	4.4	4.8	5.9
Population (million)	5.9	6.0	6.1	6.3	6.4	6.5
Government Finances						
Total Revenues (JOD billion)	4.7	4.5	4.7	5.4	5.1	6.3
Total Expenditures (JOD billion)	5.4	5.9	5.7	6.8	6.9	7.4
Overall Fiscal Balance (JOD billion)	-0.7	-1.4	-1.0	-1.4	-1.8	-1.2
Fiscal Balance (% of GDP)	-4.3	-8.5	-5.6	-6.8	-8.2	-4.8
Gross Debt (JOD billion)	9.4	11.0	12.6	14.5	17.6	20.3
Gross Debt (% of GDP)	60.2	64.8	67.1	70.7	79.6	83.9
Balance of Payments						
Total Imports (USD billion)	13.7	17.0	14.2	15.6	18.9	20.7
Total Exports (USD billion)	5.7	7.9	6.4	7.0	8.0	7.9
Overall Trade Balance (USD billion)	-8.0	-9.1	-7.9	-8.5	-10.9	-12.8
Current Account Balance (USD billion)	-2.0	-0.8	-1.4	-3.5	-5.6	-3.4
Current Account Balance (% of GDP)	-9.3	-3.3	-5.3	-12.0	-18.1	-10.0
Exchange Rate						
USD/JOD Average Rate	0.7	0.7	0.7	0.7	0.7	0.7

Source: IMF World Economic Outlook Database, October 2013, EIU Country Report.

Table A1.4. Lebanon's Statistical Data

	Lebanon					
	2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (LBP billion)	44,748	52,235	55,965	58,812	62,327	66,092
Nominal GDP (USD billion)	29.7	34.7	37.1	39.0	41.3	43.8
Nominal GDP Growth (%)	19.5	16.7	7.1	5.1	6.0	6.0
Real GDP (LBP billion)	36,710	40,014	42,815	43,457	44,109	44,991
Real GDP Growth (%)	8.6	9.0	7.0	1.5	1.5	2.0
GDP Per Capita (USD)	7,795	8,983	9,501	9,856	10,311	10,793
Average Consumer Prices (%)	10.8	1.2	4.5	5.0	6.6	6.7
Population (million)	3.8	3.9	3.9	4.0	4.0	4.1
Government Finances						
Total Revenues (LBP billion)	10,741	12,804	12,802	13,846	14,598	15,423
Total Expenditures (LBP billion)	15,068	17,126	17,129	17,425	20,182	21,832
Overall Fiscal Balance (LBP billion)	-4,327	-4,321	-4,327	-3,578	-5,584	-6,409
Fiscal Balance (% of GDP)	-9.7	-8.3	-7.7	-6.1	-9.0	-9.7
Gross Debt (LBP billion)	70,888	77,112	79,298	80,887	86,963	93,417
Gross Debt (% of GDP)	158.4	147.6	141.7	137.5	139.5	141.3
Balance of Payments						
Total Imports (USD billion)	12.3	16.8	16.6	18.5	20.8	21.9
Total Exports (USD billion)	3.6	4.5	4.2	5.0	5.7	5.6
Overall Trade Balance (USD billion)	-8.7	-12.3	-12.4	-13.4	-15.1	-16.3
Current Account Balance (USD billion)	-2.8	-3.4	-3.6	-4.9	-6.6	-7.0
Current Account Balance (% of GDP)	-9.3	-9.8	-9.6	-12.5	-16.1	-16.1
Exchange Rate						
USD/LBP Average Rate	1,497.8	1,491.4	1,490.9	1,505.5	1,504.0	1,503.5

Source: IMF World Economic Outlook Database, October 2013, EIU Country Report.

Table A1.5. Morocco's Statistical Data

Morocco	2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (MAD billion)	689	732	764	803	840	899
Nominal GDP (USD billion)	89	91	91	99	98	107
Nominal GDP Growth (%)	11.9	6.3	4.3	5.0	4.7	7.0
Real GDP (MAD billion)	585	613	635	667	687	718
Real GDP Growth (%)	5.6	4.8	3.6	5.0	3.0	4.5
GDP Per Capita (USD)	2,851	2,885	2,850	3,082	2,999	3,260
Average Consumer Prices (%)	3.9	1.0	1.0	0.9	1.3	2.5
Population (million)	31.2	31.5	31.9	32.2	32.5	32.9
Government Finances						
Total Revenues (MAD billion)	224	214	210	223	233	254
Total Expenditures (MAD billion)	219	228	244	278	296	303
Overall Fiscal Balance (MAD billion)	5	-13	-33	-55	-63	-49
Fiscal Balance (% of GDP)	0.7	-1.8	-4.4	-6.8	-7.5	-5.5
Gross Debt (MAD billion)	332	351	392	437	501	550
Gross Debt (% of GDP)	48.2	48.0	51.3	54.4	59.6	61.2
Balance of Payments						
Total Imports (USD billion)	32.0	42.4	32.9	35.4	44.3	44.8
Total Exports (USD billion)	15.3	20.3	14.1	17.8	21.7	21.4
Overall Trade Balance (USD billion)	-16.7	-22.0	-18.8	-17.6	-22.6	-23.4
Current Account Balance (USD billion)	-4.6	-4.9	-3.7	-8.1	-9.4	-7.5
Current Account Balance (% of GDP)	-5.2	-5.4	-4.1	-8.1	-9.6	-7.0
Exchange Rate						
USD/MAD Average Rate	8.0	7.8	8.3	8.6	8.5	8.2

Source: IMF World Economic Outlook Database, October 2013, EIU Country Report.

Table A1.6. Syria's Statistical Data

	Syria					
	2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (SYP billion)	2,445	2,521	2,792	N/A	N/A	N/A
Nominal GDP (USD billion)	53	54	60	N/A	N/A	N/A
Nominal GDP Growth (%)	13.6	3.1	10.8	N/A	N/A	N/A
Real GDP (SYP billion)	1,342	1,421	1,470	N/A	N/A	N/A
Real GDP Growth (%)	4.5	5.9	3.4	N/A	N/A	N/A
GDP Per Capita (USD)	2,554	2,557	2,803	N/A	N/A	N/A
Average Consumer Prices (%)	15.2	2.8	4.4	N/A	N/A	N/A
Population (million)	20.6	21.1	21.4	N/A	N/A	N/A
Government Finances						
Total Revenues (SYP billion)	491	601	609	N/A	N/A	N/A
Total Expenditures (SYP billion)	561	674	742	N/A	N/A	N/A
Overall Fiscal Balance (SYP billion)	-70	-73	-133	N/A	N/A	N/A
Fiscal Balance (% of GDP)	-2.9	-2.9	-4.8	N/A	N/A	N/A
Gross Debt (SYP billion)	915	791	821	N/A	N/A	N/A
Gross Debt (% of GDP)	37.4	31.4	29.4	N/A	N/A	N/A
Balance of Payments						
Total Imports (USD billion)	18.1	15.4	17.6	N/A	N/A	N/A
Total Exports (USD billion)	15.4	10.9	12.8	N/A	N/A	N/A
Overall Trade Balance (USD billion)	-2.7	-4.6	-4.8	N/A	N/A	N/A
Current Account Balance (USD billion)	-0.7	-1.6	-1.7	N/A	N/A	N/A
Current Account Balance (% of GDP)	-1.3	-2.9	-2.9	N/A	N/A	N/A
Exchange Rate						
USD/SYP Average Rate	46.6	44.8	45.8	54.2	71.0	141.5

Source: IMF World Economic Outlook Database, October 2013, EIU Country Report.

Table A1.7. Tunisia's Statistical Data

	Tunisia					
	2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (TND billion)	55.3	58.8	63.4	65.1	71.7	79.4
Nominal GDP (USD billion)	44.9	43.5	44.3	46.3	45.6	49.5
Nominal GDP Growth (%)	10.9	6.3	7.8	2.8	10.0	10.8
Real GDP (TND billion)	49	51	52	51	53	55
Real GDP Growth (%)	4.5	3.1	3.1	-1.9	3.6	4.0
GDP Per Capita (USD)	4,345	4,169	4,198	4,335	4,232	4,533
Average Consumer Prices (%)	4.9	3.5	4.4	3.5	5.6	6.0
Population (million)	10.3	10.4	10.5	10.7	10.8	10.9
Government Finances						
Total Revenues (TND billion)	16.5	17.4	19.0	20.4	21.9	24.7
Total Expenditures (TND billion)	16.9	18.1	19.6	22.6	25.4	29.1
Overall Fiscal Balance (TND billion)	-0.3	-0.7	-0.6	-2.2	-3.5	-4.4
Fiscal Balance (% of GDP)	-0.6	-1.2	-0.9	-3.4	-4.9	-5.6
Gross Debt (TND billion)	23.9	25.2	25.6	28.8	31.9	34.5
Gross Debt (% of GDP)	43.3	42.9	40.5	44.2	44.5	43.5
Balance of Payments						
Total Imports (USD billion)	19.1	24.6	19.1	22.2	24.0	24.4
Total Exports (USD billion)	15.2	19.3	14.4	16.4	17.8	17.0
Overall Trade Balance (USD billion)	-3.9	-5.3	-4.7	-5.8	-6.1	-7.4
Current Account Balance (USD billion)	-1.7	-1.2	-2.1	-3.4	-3.7	-3.6
Current Account Balance (% of GDP)	-3.8	-2.8	-4.8	-7.4	-8.0	-7.3
Exchange Rate						
USD/TND Average Rate	1.3	1.3	1.4	1.5	1.6	1.6

Source: IMF World Economic Outlook Database, October 2013, EIU Country Report.

	Turkey					
	2008	2009	2010	2011	2012	2013
Macroeconomic Indicators						
Nominal GDP (TRY billion)	950.5	952.6	1,098.8	1,298.1	1,427.1	1,569.9
Nominal GDP (USD billion)	730.3	614.4	731.3	774.3	794.5	851.8
Nominal GDP Growth (%)	12.7	0.2	15.4	18.1	9.9	10.0
Real GDP (TRY billion)	102	97	106	115	118	122
Real GDP Growth (%)	0.7	-4.8	9.2	8.5	2.6	3.4
GDP Per Capita (USD)	10,272	8,528	10,017	10,471	10,609	11,236
Average Consumer Prices (%)	10.4	6.3	8.6	6.5	8.9	6.6
Population (million)	71.1	72.1	73.0	74.0	74.9	75.8
Government Finances						
Total Revenues (TRY billion)	301.3	309.0	364.1	447.5	494.6	559.3
Total Expenditures (TRY billion)	323.4	362.4	389.1	452.5	515.4	593.2
Overall Fiscal Balance (TRY billion)	-22.1	-53.3	-25.0	-5.0	-20.8	-33.9
Fiscal Balance (% of GDP)	-2.3	-5.6	-2.3	-0.4	-1.5	-2.2
Gross Debt (TRY billion)	380.4	439.3	466.0	509.4	519.2	557.3
Gross Debt (% of GDP)	40.0	46.1	42.4	39.2	36.4	35.5
Balance of Payments						
Total Imports (USD billion)	170.1	202.0	140.9	185.5	240.8	236.5
Total Exports (USD billion)	107.3	132.0	102.1	113.9	134.9	152.5
Overall Trade Balance (USD billion)	-62.8	-69.9	-38.8	-71.7	-105.9	-84.1
Current Account Balance (USD billion)	-41.5	-13.4	-45.4	-75.1	-46.9	-57.9
Current Account Balance (% of GDP)	-5.7	-2.2	-6.2	-9.7	-5.9	-6.8
Exchange Rate						
USD/TRY Average Rate	1.5	1.5	1.6	1.9	1.8	2.1

Source: IMF World Economic Outlook Database, October 2013, EIU Country Report.

APPENDIX 2

DATA DESCRIPTION

Table A2.1. Data Definition, Coverage, and Sources

Variable	Definition and Construction	Coverage		Source
		Country	Years	
Real Effective Exchange Rate	The real effective exchange rate is computed by adjusting the nominal effective exchange rate (NEER) index for the relative variation in consumer prices.	Algeria	1969 - 2012	Darvas Z. (2012). "Real Effective Exchange Rates for 178 Countries: A New Database". *Bruegel working paper 2012/06.*
		Egypt	1960 - 2012	
		Jordan	1969 - 2012	
		Lebanon	1969 - 2012	
		Morocco	1960 - 2012	
		Syria	1960 - 2012	
		Tunisia	1969 - 2012	
		Turkey	1960 - 2012	
Remittances-to-GDP	Remittances are personal transfers in cash or in kind received by resident households from non-resident households. As such, remittances-to-GDP is the ratio of these transfers to the Gross Domestic Product.	Algeria	1970 - 2012	World Bank's World Development Indicators Database.
		Egypt	1977 - 2012	
		Jordan	1972 - 2012	
		Lebanon	2002 - 2012	
		Morocco	1975 - 2012	
		Syria	1970 - 2010	
		Tunisia	1976 - 2012	
		Turkey	1974 - 2012	
Money Supply-to-GDP	Money supply (M2) is money and quasi money including currency, demand deposits, savings, and foreign currency deposits. Money supply-to-GDP is the ratio of these variables to the Gross Domestic Product.	Algeria	1969 - 2012	World Bank's World Development Indicators Database.
		Egypt	1965 - 2012	
		Jordan	1969 - 2012	
		Lebanon	1988 - 2012	
		Morocco	1965 - 2012	
		Syria	1965 - 2010	
		Tunisia	1969 - 2012	
		Turkey	1960 - 2012	
Trade Openness	Trade openness is measured as the ratio of the sum of imports and exports to GDP. Hence, it is measured as total trade inflows and outflows to the Gross Domestic Product.	Algeria	1969 - 2012	World Trade Organization Database, Author's calculation.
		Egypt	1960 - 2012	
		Jordan	1969 - 2012	
		Lebanon	1980 - 2012	
		Morocco	1960 - 2012	
		Syria	1960 - 2012	
		Tunisia	1969 - 2012	
		Turkey	1961 - 2012	
Commercial Banks' Deposits-to-GDP	Banks' deposits are private sector deposits at banks: demand deposits, time, foreign and savings deposits. Banks' deposit-to-GDP is the ratio of these deposits to Gross Domestic Product.	Algeria	1975 - 2012	World Bank's World Development Indicators Database.
		Egypt	1961 - 2012	
		Jordan	1977 - 2012	
		Lebanon	1980 - 2012	
		Morocco	1961 - 2012	
		Syria	1960 - 2010	
		Tunisia	1988 - 2012	
		Turkey	1970 - 2012	

Commercial Banks' Credit-to-GDP	Banks' credit is credit granted by the banking sector: all gross credit to several sectors, except credit to the government. Banks' credit-to-GDP is the ratio of the extended credit to the Gross Domestic Product.	Algeria Egypt Jordan Lebanon Morocco Syria Tunisia Turkey	1969 - 2012 1965 - 2012 1969 - 2012 1988 - 2012 1965 - 2012 1965 - 2010 1969 - 2012 1960 - 2012	World Bank's World Development Indicators Database.
GDP Per Capita	GDP per capita is the ratio of gross domestic product to the mid-year population. GDP is the gross value added by all producers in an economy plus taxes and less subsidies and transfers.	Algeria Egypt Jordan Lebanon Morocco Syria Tunisia Turkey	1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2010 1980 - 2012 1980 - 2012	IMF World Economic Outlook Database, October 2013.
GDP Growth	GDP growth is the year-on-year percentage change in gross domestic product. GDP is the gross value added by all producers in an economy plus taxes and less subsidies and transfers.	Algeria Egypt Jordan Lebanon Morocco Syria Tunisia Turkey	1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2010 1980 - 2012 1980 - 2012	IMF World Economic Outlook Database, October 2013.
Primary School Enrollment	Primary school enrollment is the ratio of total enrollment in primary school, regardless of age, to the population at official primary education age.	Algeria Egypt Jordan Lebanon Morocco Syria Tunisia Turkey	1971 - 2012 1971 - 2012 1971 - 2012 1971 - 2012 1971 - 2012 1971 - 2012 1971 - 2012 1970 - 2012	World Bank's World Development Indicators Database.
Host Region's GDP Per Capita	Host country's GDP per capita is the gross domestic product per individual in the region to which the majority of migrants from the remittance receiving country migrate to.	Algeria Egypt Jordan Lebanon Morocco Syria Tunisia Turkey	1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012 1980 - 2012	IMF World Economic Outlook Database, October 2013.

Source: Author's Construction.

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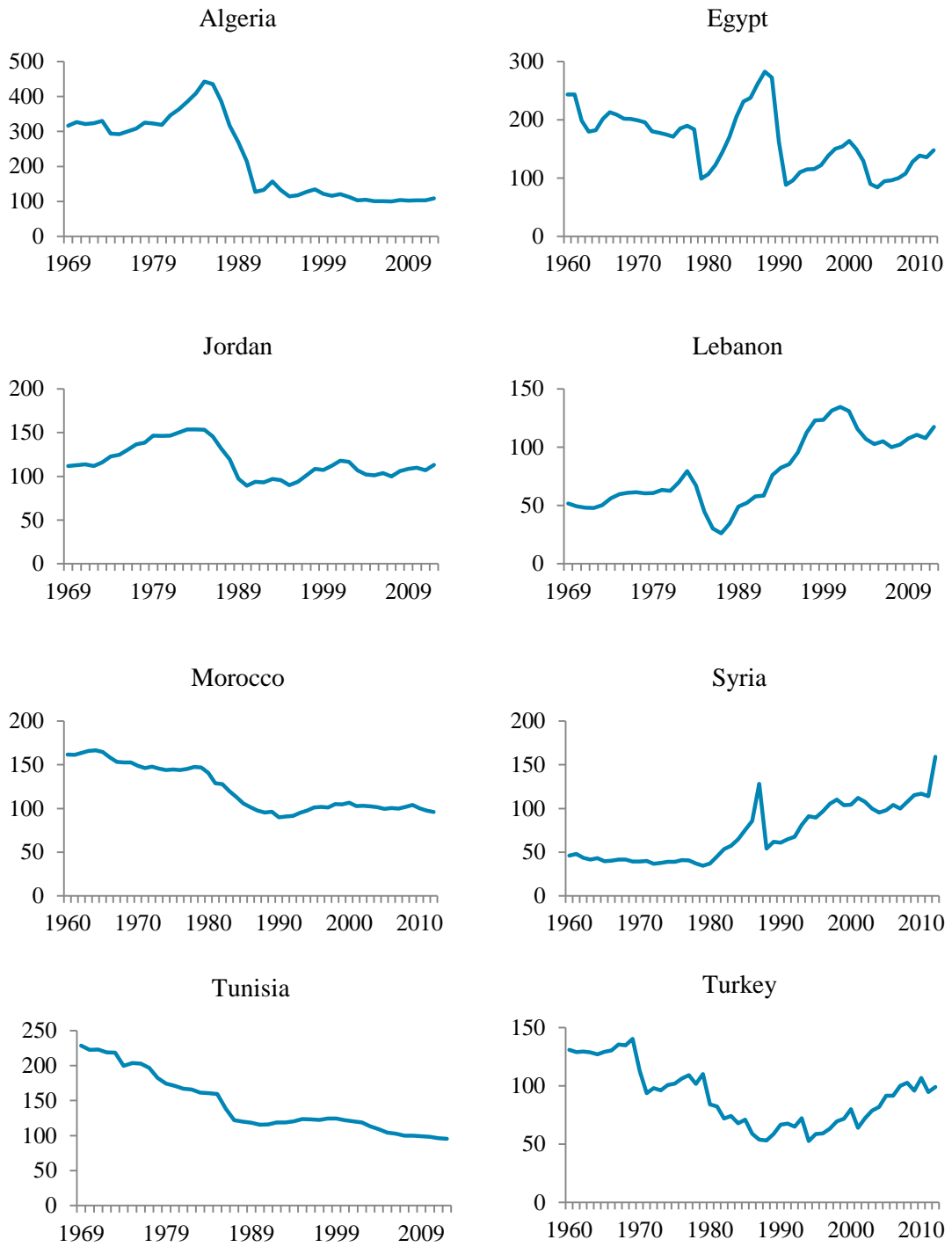
Fig .A2.1. Real Effective Exchange Rate in Labor-Exporting MENA Countries
Source: Darvas (2012).
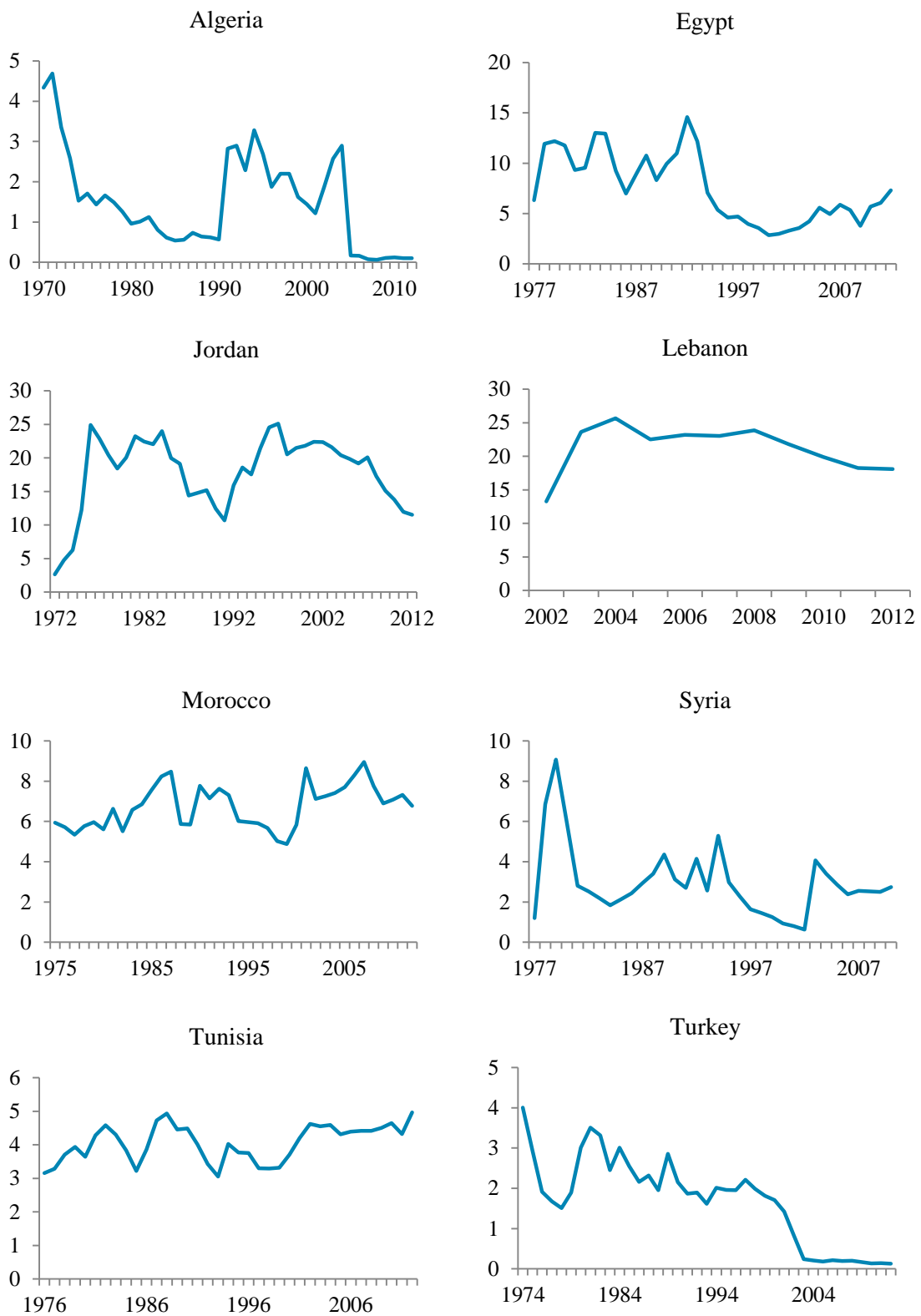
Fig. A2.2. Remittances-to-GDP (%) in Labor-Exporting MENA Countries
Source: World Bank Development Indicators.
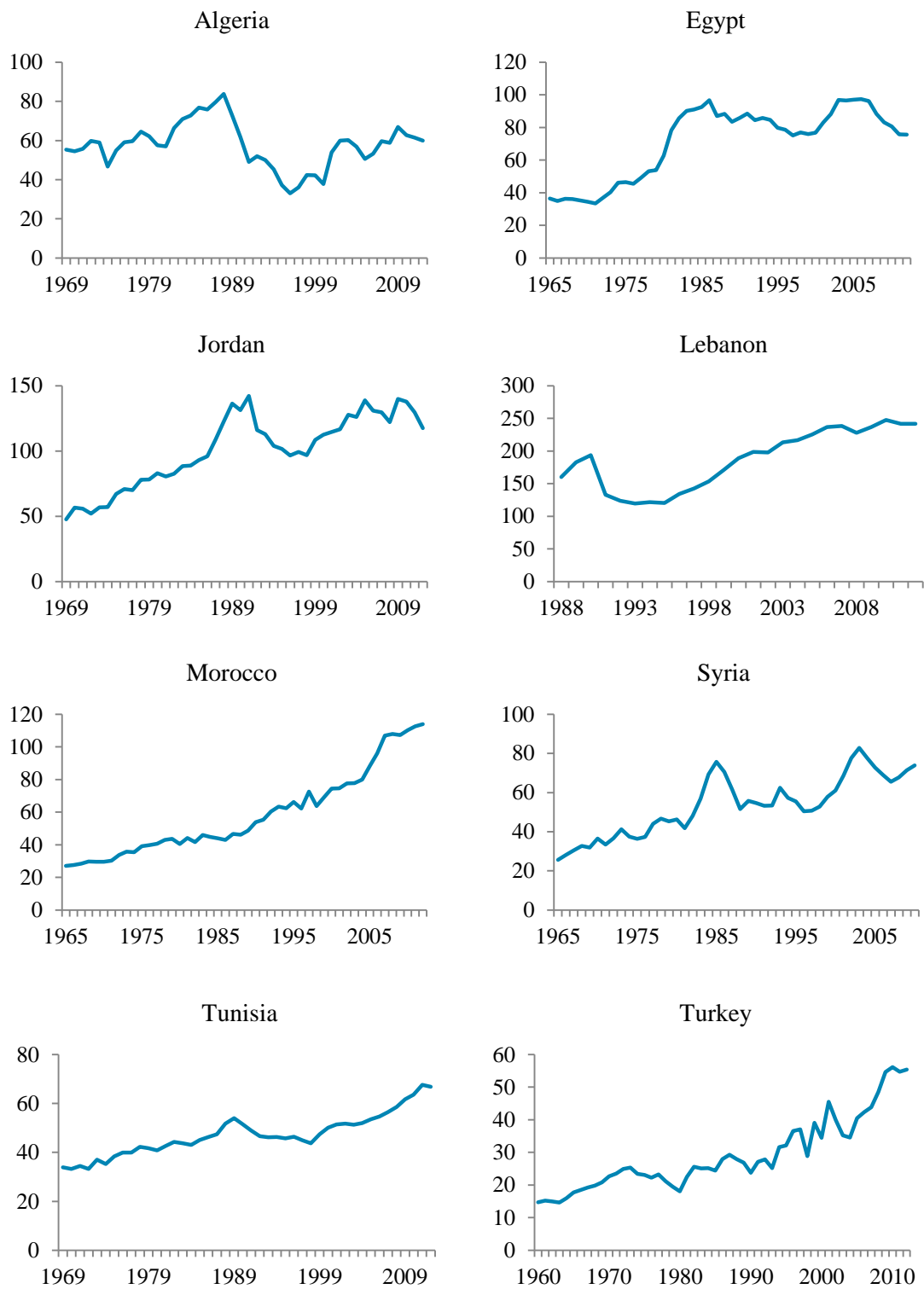
Fig. A2.3. M2-to-GDP (%) in Labor-Exporting MENA Countries
Source: World Bank Development Indicators.
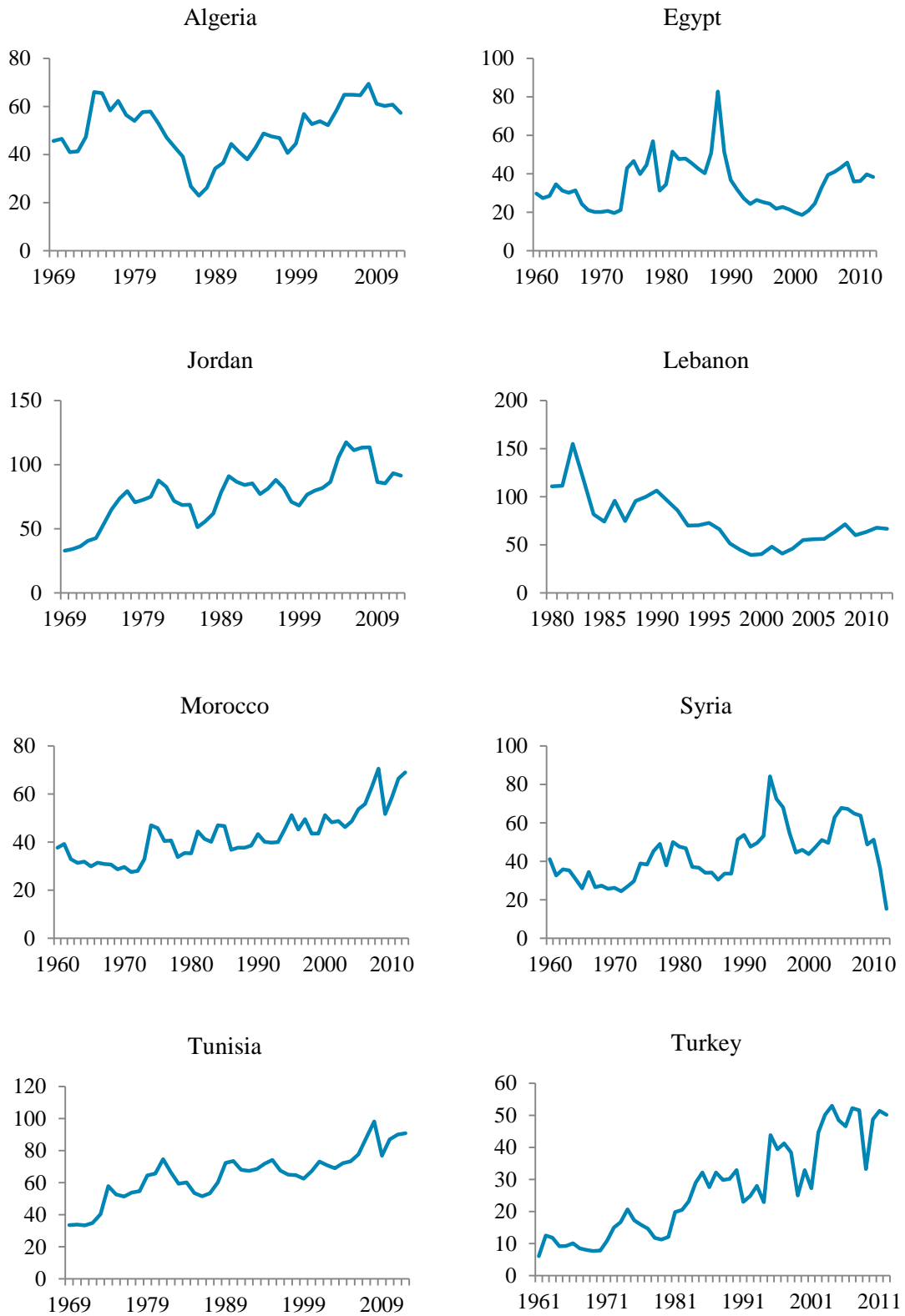
Fig. A2.4. Trade Openness in Labor-Exporting MENA Countries
Source: World Trade Organization.

Algeria

Egypt

Jordan

Lebanon

Morocco

Syria

Tunisia

Turkey
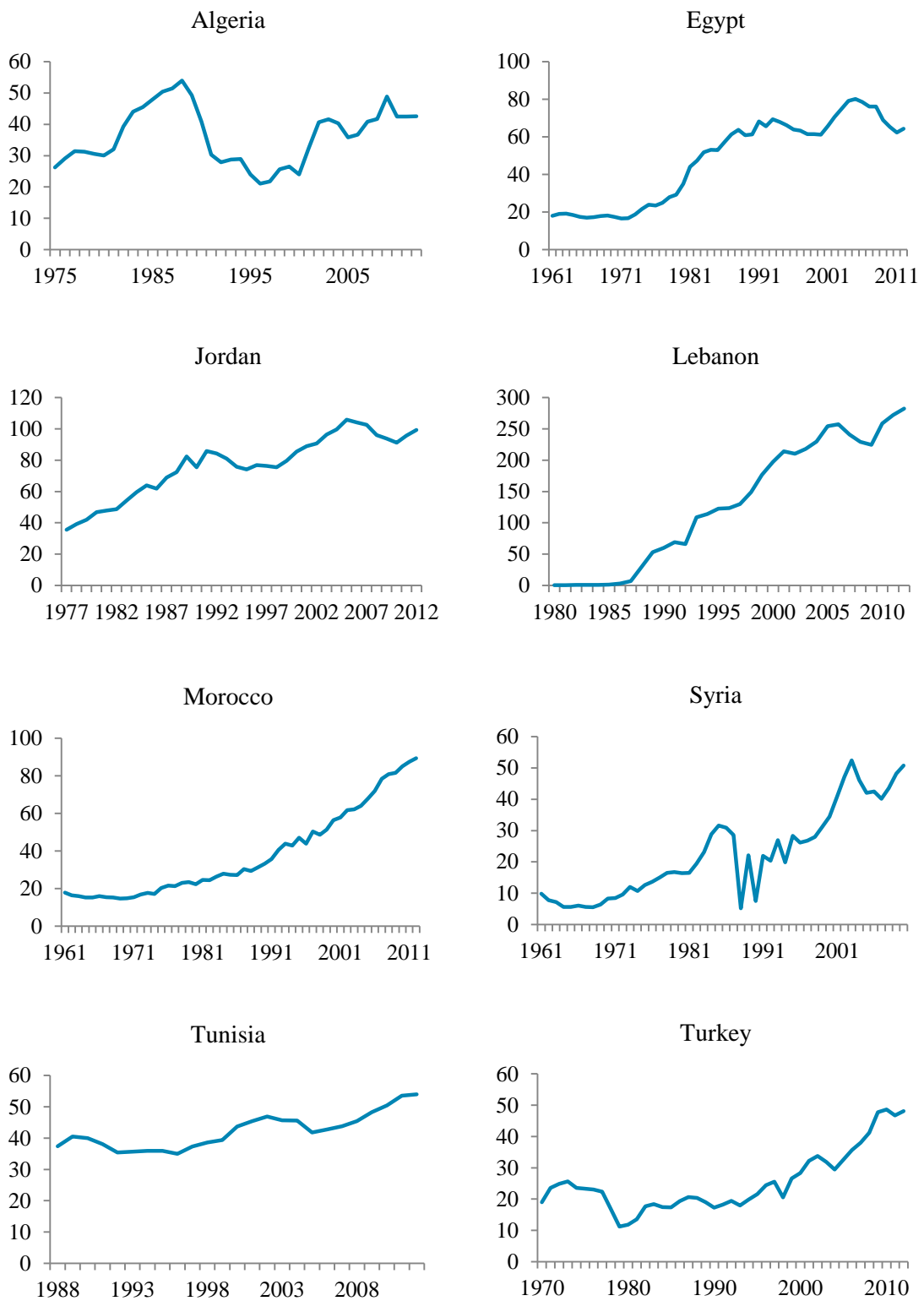
Fig. A2.5. Commercial Banks' Deposits-to-GDP (%) in Labor-Exporting MENA Countries

Source: World Bank Development Indicators.
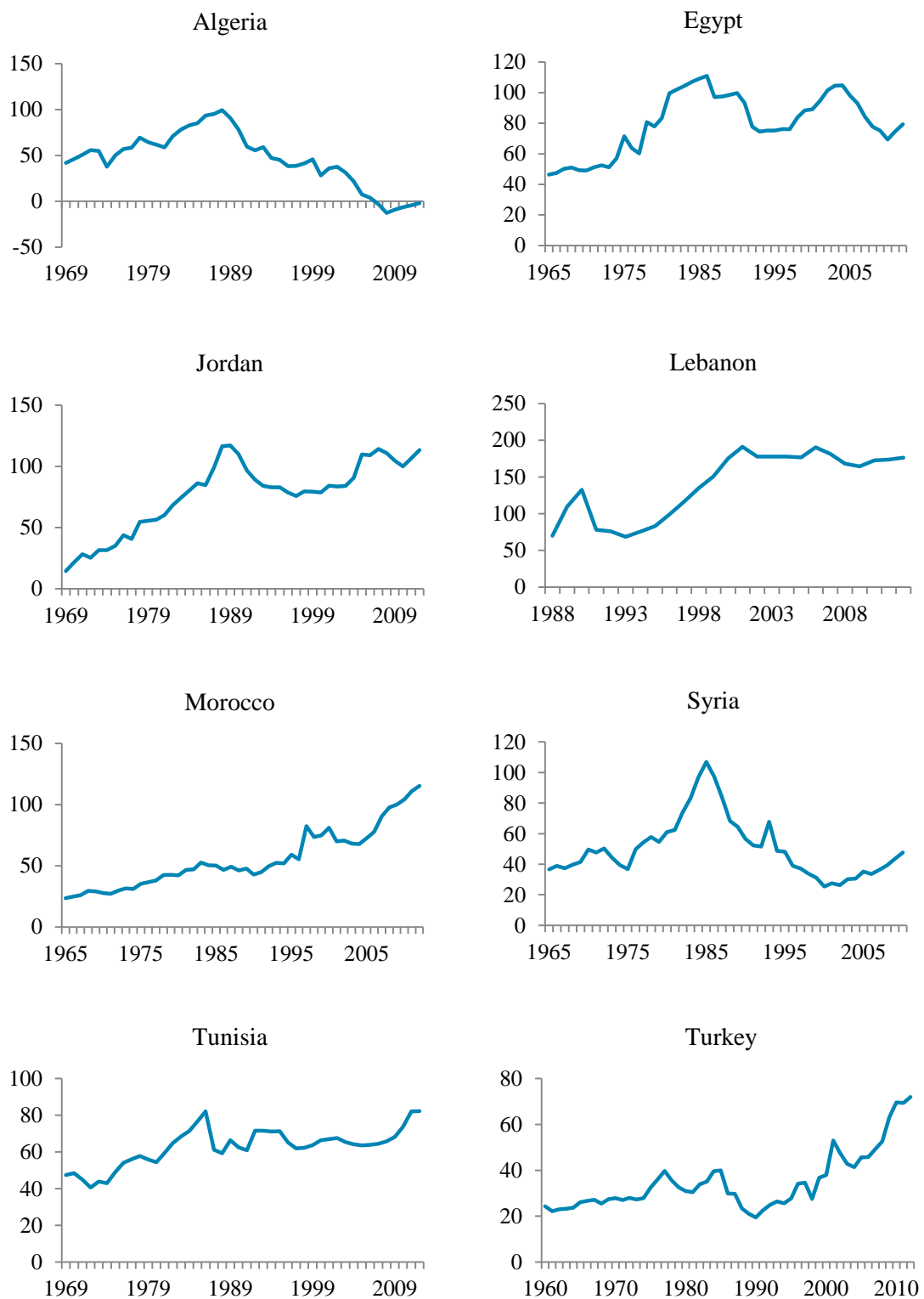
Fig. A2.6. Commercial Banks' Credit-to-GDP (%) in Labor-Exporting MENA Countries
Source: World Bank Development Indicators.

Algeria

Egypt

Jordan

Lebanon

Morocco

Syria

Tunisia

Turkey
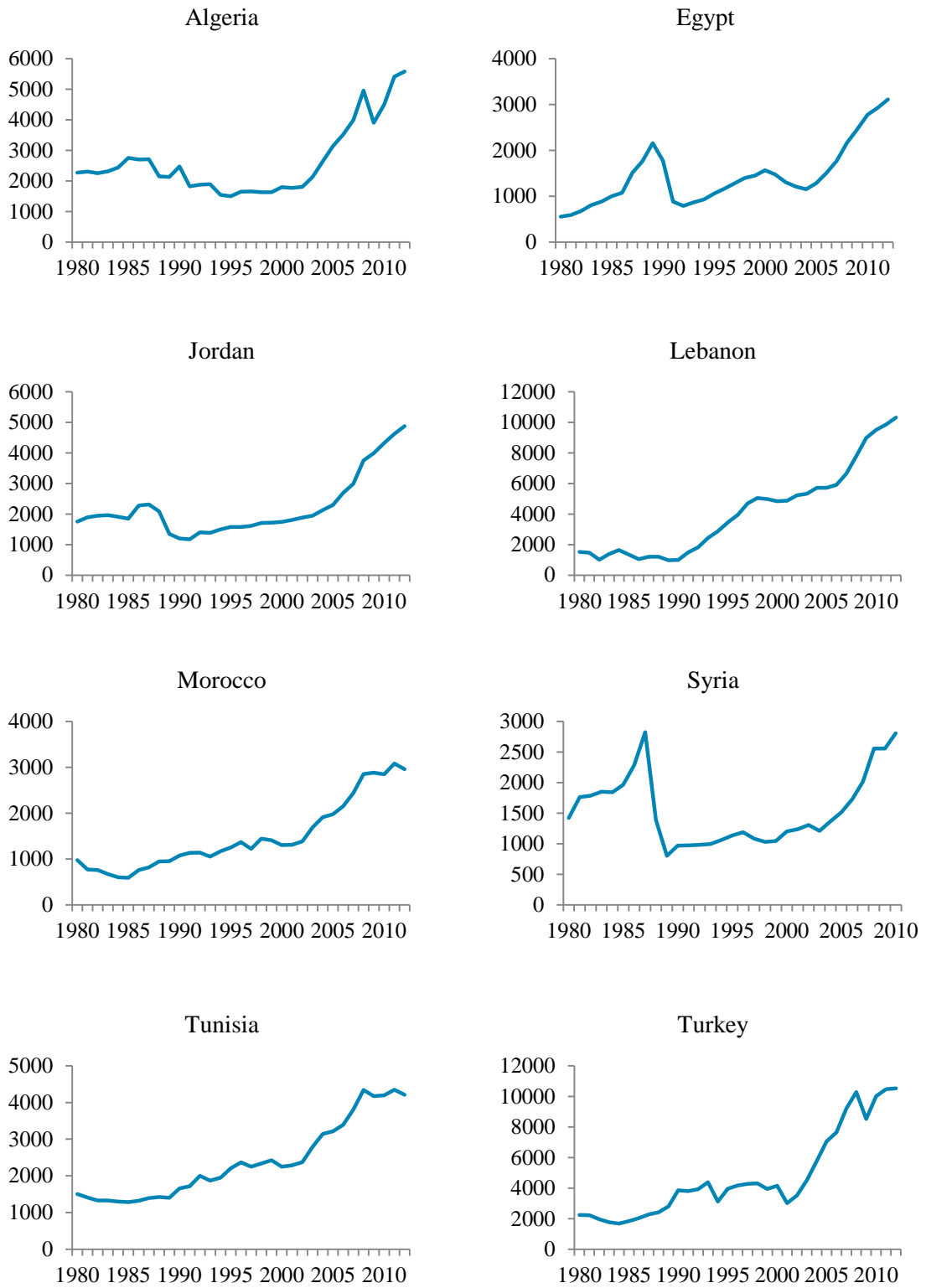
Fig. A2.7. GDP Per Capita (USD) in Labor-Exporting MENA Countries
Source: IMF World Economic Outlook Database, October 2013.
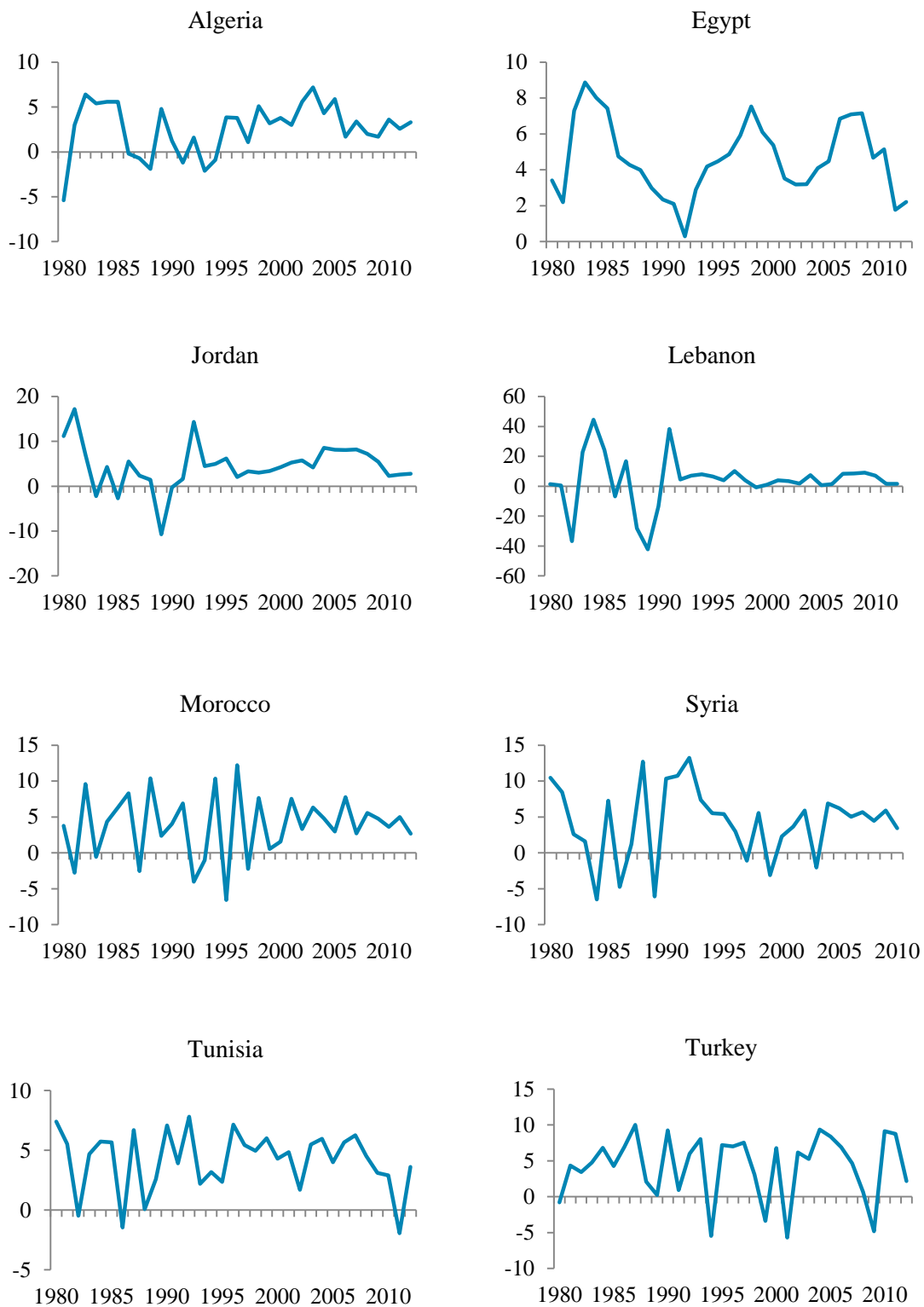
Fig. A2.8. GDP Growth (%) in Labor-Exporting MENA Countries
Source: IMF World Economic Outlook Database, October 2013.

APPENDIX 3

SUMMARY STATISTICS

Table A3.1. Algeria's Descriptive Statistics of Variables

	Algeria							
	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Mean	5.271456	19.876190	4.033535	3.883544	36.29029	46.35196	7.799828	2.617424
Median	5.212082	19.753050	4.076164	3.921376	36.28950	48.64301	7.726921	3.200000
Maximum	6.093715	21.623430	4.428720	4.240817	53.9220	99.35336	8.627454	7.20000
Minimum	4.605170	18.400480	3.496684	3.130025	21.069000	-12.6230	7.312649	-5.40000
Deviation	0.552430	0.793654	0.210779	0.254986	9.13754	29.94585	0.377237	2.85785
Skewness	0.051166	0.293284	-0.59172	-1.035134	0.144426	-0.33046	0.786056	-0.754641
Kurtosis	1.227583	2.225603	3.210030	3.914535	1.89905	2.454190	2.608106	3.25669
Jarque-Bera	5.778542	1.69089	2.648535	9.39104	2.051	1.346994	3.609536	3.222751
Probability	0.055617	0.429366	0.265998	0.009136	0.358575	0.509922	0.164513	0.199613
Observations	44	43	44	44	38	44	33	33

Source: Author's estimation

Table A3.2. Egypt's Descriptive Statistics of Variables

	Egypt							
	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Mean	5.049036	22.092170	4.210129	3.475264	47.73006	79.87889	7.170154	4.629303
Median	5.097838	21.971780	4.372132	3.459497	59.04100	78.61160	7.156774	4.472000
Maximum	5.644707	23.680070	4.578276	4.415981	80.1250	110.9254	8.042979	8.87600
Minimum	4.432228	20.648180	3.510376	2.925412	16.509000	46.38635	6.312905	0.30000
Deviation	0.323981	0.586900	0.364353	0.342585	22.71438	19.50503	0.445725	2.083145
Skewness	-0.182480	0.653664	-0.83990	0.238143	-0.261431	-0.24701	0.124729	0.171693
Kurtosis	2.048441	4.172727	2.097364	2.424239	1.42314	1.904521	2.45414	2.282529
Jarque-Bera	2.293707	4.62659	7.272958	1.23302	5.980	2.888292	0.495265	0.869932
Probability	0.317635	0.098935	0.026345	0.539825	0.050294	0.235947	0.780647	0.647287
Observations	53	36	48	53	52	48	33	33

Source: Author's estimation

Table A3.3. Jordan's Descriptive Statistics of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Jordan				
Mean	4.747088	20.721040	4.568145	4.294465	76.60689	76.70795	7.628602	4.524303
Median	4.718869	20.827270	4.632441	4.367337	78.19050	82.90506	7.545576	4.285000
Maximum	5.034241	22.056690	4.957089	4.766963	105.9150	117.2253	8.492651	17.18300
Minimum	4.492646	16.846610	3.863097	3.497248	35.544000	14.47196	7.068192	-10.73400
Deviation	0.161188	1.162322	0.307007	0.307356	19.73996	28.98092	0.377852	4.924653
Skewness	0.394097	-1.552670	-0.70119	-1.042523	-0.498292	-0.54224	0.90426	-0.24777
Kurtosis	2.068799	5.552223	2.422095	3.751427	2.25993	2.280187	3.051142	5.349599
Jarque-Bera	2.728704	27.60151	4.217850	9.00545	2.311	3.106092	4.500865	7.928493
Probability	0.255546	0.000001	0.121368	0.011079	0.314850	0.211602	0.105354	0.018982
Observations	44	41	44	44	36	44	33	33

Source: Author's estimation

Table A3.4. Lebanon's Descriptive Statistics of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Lebanon				
Mean	4.288143	22.461990	5.199556	4.252476	130.51330	139.8916	8.04126	3.639212
Median	4.226307	22.475810	5.266474	4.248211	123.67790	164.43540	8.281278	3.900000
Maximum	4.901173	22.745890	5.512719	5.043717	282.2518	191.1657	9.240933	44.47900
Minimum	3.263051	21.657180	4.783198	3.677613	0.335241	68.6279	6.878031	-42.19500
Deviation	0.417729	0.318545	0.257921	0.342539	100.22960	44.45584	0.79053	16.97898
Skewness	-0.355557	-1.474437	-0.39861	0.184781	-0.023027	-0.491178	-0.103357	-0.471126
Kurtosis	2.393010	4.708039	1.680506	2.426734	1.49081	1.603526	1.544224	4.950876
Jarque-Bera	1.602555	5.32274	2.475656	0.63967	3.135	3.036627	2.972768	6.453914
Probability	0.448755	0.069852	0.290014	0.726271	0.208597	0.219081	0.226189	0.039678
Observations	44	11	25	33	33	25	33	33

Source: Author's estimation

Table A3.5. Morocco's Descriptive Statistics of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Morocco				
Mean	4.784861	21.411440	3.981052	3.727715	38.21731	55.60893	7.184201	3.813455
Median	4.660428	21.398400	3.864421	3.707091	28.65300	49.48167	7.130983	4.035000
Maximum	5.115808	22.705140	4.735314	4.256379	89.3160	115.3588	8.033446	12.21700
Minimum	4.500218	20.094040	3.299455	3.317917	14.666000	23.63271	6.379024	-6.57900
Deviation	0.209909	0.772473	0.428196	0.235420	23.12716	24.26088	0.483906	4.463332
Skewness	0.280728	0.166355	0.213768	0.249216	0.825180	0.79712	0.269625	-0.330814
Kurtosis	1.389091	2.042477	1.989509	2.530181	2.40990	2.799757	2.149874	2.634842
Jarque-Bera	6.426826	1.62695	2.407757	1.03607	6.656	5.163396	1.393568	0.785253
Probability	0.040219	0.443316	0.300028	0.595689	0.035868	0.075645	0.498185	0.675281
Observations	53	38	48	53	52	48	33	33

Source: Author's estimation

Table A3.6. Syria's Descriptive Statistics of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Syria				
Mean	4.166477	19.890330	3.935210	3.722885	22.62334	50.39579	7.279361	4.245129
Median	4.124305	19.770700	3.976925	3.777772	20.10250	47.68598	7.216342	5.423000
Maximum	5.069693	21.207260	4.416374	4.432169	52.4090	106.867	7.945611	13.24600
Minimum	3.536855	18.342180	3.241608	2.730345	5.193000	25.48987	6.685685	-6.49800
Deviation	0.452347	0.681948	0.304818	0.334701	14.26805	19.37829	0.353634	5.106929
Skewness	0.153493	-0.042045	-0.42816	-0.287177	0.518490	1.198707	0.407091	-0.422979
Kurtosis	1.487909	2.556922	2.240184	3.112309	2.09661	3.958552	2.068076	2.717643
Jarque-Bera	5.257293	0.28814	2.512001	0.75635	3.940	12.7773	1.978029	1.027352
Probability	0.072176	0.865829	0.284791	0.685112	0.139422	0.001681	0.371943	0.598292
Observations	53	34	46	53	50	46	31	31

Source: Author's estimation

Table A3.7. Tunisia's Descriptive Statistics of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Tunisia				
Mean	4.932695	20.301430	3.838253	4.138570	42.24396	62.73643	7.696037	4.14797
Median	4.810985	20.259220	3.835505	4.201727	41.77000	63.97325	7.717773	4.674000
Maximum	5.432476	22.000000	4.213413	4.587613	53.9630	82.20929	8.378008	7.80700
Minimum	4.558023	18.773210	3.502597	3.507557	34.950000	40.60187	7.156469	-1.93700
Deviation	0.275977	0.772883	0.178624	0.262130	5.60758	10.16955	0.414243	2.494819
Skewness	0.472284	0.168965	0.033172	-0.961001	0.519746	-0.281221	0.293598	-0.839922
Kurtosis	1.855364	2.350546	2.672703	3.672025	2.34566	2.830020	1.825673	3.094762
Jarque-Bera	4.037738	0.82631	0.204462	7.60047	1.572	0.632931	2.370285	3.892425
Probability	0.132806	0.661559	0.902821	0.022366	0.455761	0.728720	0.305703	0.142814
Observations	44	37	44	44	25	44	33	33

Source: Author's estimation

Table A3.8. Turkey's Descriptive Statistics of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Turkey				
Mean	4.472594	21.333250	3.308066	3.111339	25.45356	34.8371	8.298839	4.247455
Median	4.518206	21.297630	3.234057	3.216122	23.09600	30.48507	8.279366	5.265000
Maximum	4.943584	22.401480	4.027538	3.971003	48.5990	71.88709	9.261679	10.02700
Minimum	3.965303	20.407180	2.680847	1.808567	11.201000	19.46702	7.425102	-5.69700
Deviation	0.285683	0.542239	0.363610	0.629603	9.83898	12.74674	0.568089	4.446446
Skewness	-0.054684	0.163900	0.279773	-0.328834	1.029133	1.411548	0.283918	-0.874669
Kurtosis	1.865038	1.963545	2.369502	1.905974	3.24700	4.446752	2.042737	2.835831
Jarque-Bera	2.871057	1.92025	1.569285	3.53041	7.700	22.22238	1.703335	4.244806
Probability	0.237990	0.382846	0.456283	0.171152	0.021284	0.000015	0.426703	0.119744
Observations	53	39	53	52	43	53	33	33

Source: Author's estimation

Table A3.9. Algeria's Correlation Matrix of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Algeria				
Log(REER)	1.000000	0.338039	0.594048	-0.608579	0.430924	0.846815	-0.141384	-0.136197
REMIT	0.338039	1.000000	-0.04645	-0.726206	-0.094867	0.727194	-0.724990	-0.136571
Log(M2)	0.594048	-0.04645	1.000000	-0.323721	0.945184	0.342886	0.479456	-0.011531
Log(TRADE)	-0.608579	-0.72620	-0.32372	1.000000	-0.289162	-0.83190	0.385880	0.323254
DEPOSIT	0.430924	-0.09486	0.945184	-0.289162	1.000000	0.197200	0.570501	0.082902
CREDIT	0.846815	0.727194	0.342886	-0.831905	0.197200	1.000000	-0.543901	-0.197158
Log(GDPPC)	-0.141384	-0.72499	0.479456	0.385880	0.570501	-0.54390	1.000000	0.053917
GROWTH	-0.136197	-0.13657	-0.01153	0.323254	0.082902	-0.19715	0.053917	1.000000

Source: Author's estimation

Table A3.10. Egypt's Correlation Matrix of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Egypt				
Log(REER)	1.000000	0.531603	-0.03512	0.413373	-0.444211	0.368096	0.195304	0.205197
REMIT	0.531603	1.000000	0.099606	0.629750	-0.606025	0.393076	-0.431110	-0.000631
Log(M2)	-0.035128	0.099606	1.000000	0.289510	0.551946	0.551781	-0.002579	0.226485
Log(TRADE)	0.413373	0.629750	0.289510	1.000000	-0.221571	0.335003	0.087981	0.139793
DEPOSIT	-0.444211	-0.606025	0.551946	-0.221571	1.000000	-0.195758	0.471990	-0.077637
CREDIT	0.368096	0.393076	0.551781	0.335003	-0.195758	1.000000	-0.327431	0.185741
Log(GDPPC)	0.195304	-0.431110	-0.00257	0.087981	0.471990	-0.327431	1.000000	-0.591250
GROWTH	0.205197	-0.000631	0.226485	0.139793	-0.077637	0.185741	-0.591250	1.000000

Source: Author's estimation

Table A3.11. Jordan's Correlation Matrix of Variables

| Jordan | | | | | | | |
	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Log(REER)	1.000000	0.307297	-0.67135	-0.509820	-0.674596	-0.455276	0.151752	0.069940
REMIT	0.307297	1.000000	-0.61477	-0.058793	-0.316184	-0.684282	-0.308697	0.271903
Log(M2)	-0.671358	-0.614779	1.000000	0.476523	0.859771	0.820264	0.282064	-0.220108
Log(TRADE)	-0.509820	-0.058793	0.476523	1.000000	0.644824	0.350402	0.277604	0.306215
DEPOSIT	-0.674596	-0.316184	0.859771	0.644824	1.000000	0.683951	0.411898	-0.015223
CREDIT	-0.455276	-0.684282	0.820264	0.350402	0.683951	1.000000	0.434116	-0.349972
Log(GDPPC)	0.151752	-0.308697	0.282064	0.277604	0.411898	0.434116	1.000000	0.109969
GROWTH	0.069940	0.271903	-0.22010	0.306215	-0.015223	-0.349972	0.109969	1.000000

Source: Author's estimation

Table A3.12. Lebanon's Correlation Matrix of Variables

| Lebanon | | | | | | | |
	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Log(REER)	1.000000	-0.766167	-0.56417	-0.652977	-0.241493	-0.005643	-0.121030	-0.336040
REMIT	-0.766167	1.000000	0.181480	0.272651	-0.120138	0.086477	-0.224982	0.327029
Log(M2)	-0.564173	0.181480	1.000000	0.845983	0.757780	-0.103907	0.780283	0.130616
Log(TRADE)	-0.652977	0.272651	0.845983	1.000000	0.630499	-0.321262	0.777904	0.309811
DEPOSIT	-0.241493	-0.120138	0.757780	0.630499	1.000000	0.188575	0.620592	-0.412990
CREDIT	-0.005643	0.086477	-0.10390	-0.321262	0.188575	1.000000	-0.533223	-0.487855
Log(GDPPC)	-0.121030	-0.224982	0.780283	0.777904	0.620592	-0.533223	1.000000	0.184596
GROWTH	-0.336040	0.327029	0.130616	0.309811	-0.412990	-0.487855	0.184596	1.000000

Source: Author's estimation

Table A3.13. Morocco's Correlation Matrix of Variables

	Morocco							
	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Log(REER)	1.000000	0.357055	-0.39975	-0.203029	-0.354196	-0.204539	-0.351601	-0.019842
REMIT	0.357055	1.000000	0.277133	0.272273	0.285291	0.123469	0.202223	-0.012861
Log(M2)	-0.399755	0.277133	1.000000	0.867214	0.991548	0.916246	0.958308	-0.001346
Log(TRADE)	-0.203029	0.272273	0.867214	1.000000	0.875761	0.876279	0.795394	0.004968
DEPOSIT	-0.354196	0.285291	0.991548	0.875761	1.000000	0.938070	0.960866	0.035855
CREDIT	-0.204539	0.123469	0.916246	0.876279	0.938070	1.000000	0.878789	-0.021487
Log(GDPPC)	-0.351601	0.202223	0.958308	0.795394	0.960866	0.878789	1.000000	0.087244
GROWTH	-0.019842	-0.012861	-0.00134	0.004968	0.035855	-0.02148	0.087244	1.000000

Source: Author's estimation

Table A3.14. Syria's Correlation Matrix of Variables

	Syria							
	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
Log(REER)	1.000000	-0.471909	0.606926	0.301592	0.734104	-0.505568	0.186637	-0.279641
REMIT	-0.471909	1.000000	-0.23885	0.241989	-0.329122	0.174875	-0.121709	0.263374
Log(M2)	0.606926	-0.238852	1.000000	0.040493	0.826525	-0.122222	0.352750	-0.261902
Log(TRADE)	0.301592	0.241989	0.040493	1.000000	0.254964	-0.671598	-0.310951	0.225174
DEPOSIT	0.734104	-0.329122	0.826525	0.254964	1.000000	-0.457623	0.384714	-0.281599
CREDIT	-0.505568	0.174875	-0.12222	-0.671598	-0.457623	1.000000	0.340543	-0.148065
Log(GDPPC)	0.186637	-0.121709	0.352750	-0.310951	0.384714	0.340543	1.000000	-0.117967
GROWTH	-0.279641	0.263374	-0.26190	0.225174	-0.281599	-0.148065	-0.117967	1.000000

Source: Author's estimation

Table A3.15. Tunisia's Correlation Matrix of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Tunisia				
Log(REER)	1.000000	0.611440	-0.90905	-0.854811	-0.774127	-0.461927	-0.837686	0.208778
REMIT	0.611440	1.000000	0.729360	0.495085	0.642347	0.128400	0.336854	-0.278007
Log(M2)	-0.909050	0.729360	1.000000	0.799003	0.888602	0.839166	0.710549	-0.393843
Log(TRADE)	-0.854811	0.495085	0.799003	1.000000	0.693008	0.569047	0.765749	0.179583
DEPOSIT	-0.774127	0.642347	0.888602	0.693008	1.000000	0.532895	0.751293	-0.325743
CREDIT	-0.461927	0.128400	0.839166	0.569047	0.532895	1.000000	0.444256	-0.425013
Log(GDPPC)	-0.837686	0.336854	0.710549	0.765749	0.751293	0.444256	1.000000	-0.041788
GROWTH	0.208778	-0.278007	-0.39384	0.179583	-0.325743	-0.425013	-0.041788	1.000000

Source: Author's estimation

Table A3.16. Turkey's Correlation Matrix of Variables

	Log(REER)	REMIT	Log(M2)	Log(TRADE)	DEPOSIT	CREDIT	Log(GDPPC)	GROWTH
				Turkey				
Log(REER)	1.000000	-0.643348	0.541465	0.396428	0.701833	0.760954	0.706212	0.076179
REMIT	-0.643348	1.000000	-0.84373	-0.783050	-0.885907	-0.725188	-0.884789	-0.095950
Log(M2)	0.541465	-0.843732	1.000000	0.727040	0.960124	0.839793	0.828957	-0.070903
Log(TRADE)	0.396428	-0.783050	0.727040	1.000000	0.716341	0.549374	0.724890	0.431048
DEPOSIT	0.701833	-0.885907	0.960124	0.716341	1.000000	0.913014	0.863612	-0.018456
CREDIT	0.760954	-0.725188	0.839793	0.549374	0.913014	1.000000	0.677693	-0.025365
Log(GDPPC)	0.706212	-0.884789	0.828957	0.724890	0.863612	0.677693	1.000000	0.086051
GROWTH	0.076179	-0.095950	-0.07090	0.431048	-0.018456	-0.025365	0.086051	1.000000

Source: Author's estimation

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