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The Impact of Exchange Rate Volatility on Trade Integration among North and South Mediterranean Countries

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The Impact of Exchange Rate Volatility on Trade Integration among North and South Mediterranean Countries

Abstract

The volatility of exchange rates leads to reduction of the international trade volume, mainly in the emerging economies in which all the Mediterranean South countries belong to. Thus, this study discussed the impact of exchange rate issue on South- North trading flow, which comes timely after increasing volatility between Euro and Arab national currencies during the last few years, and after the 2008 financial crisis which led to a sharp reduction of trading in 2008. Therefore, this paper investigates the impact of exchange rate volatility on trading between South- North parts, using monthly time series data for the last ten years from 2000 up to 2011. We use a Vector-Autoregressive Regression model with exogenous variables (VARX) in order to find the reactions of exports and import to point out the impact of the currencies on trade volume between North and South Mediterranean countries. A sample of three South Arab countries is selected including Egypt, Jordan, and Morocco. The causality test was conducted to examine the hypotheses.

The study found that the exports of goods from the Egypt to the EU decreases in comparison with the baseline by about 3% as they have become more expensive. The imports from the EU, on the contrary, become cheaper. For Morocco, the increase in imports from the EU in reaction to a 10%-appreciation of the Moroccan dirham increases even by almost 20%. Jordan exports fall sharply in case of a 10% appreciation of the Jordan dinar vis-à-vis the euro. The exports seem less sensitive to an appreciation. Finally, we can conclude that the exchange rate changes can be quite high.

1: Introduction: The countries at the southern rim of the Mediterranean have weathered the global and economic situation very well. They have shown their resilience to the external heavy shocks that hit their economies. There is thus a catching up process going on; the southern Mediterranean countries are succeeding in closing the welfare gap with the developing countries at a rapid speed during and just after the global economic and financial crisis of 2008 and 2009. However, further trade and financial integration into the world economy in general and to EU in particular are still needed. The degree of financial integration is quite low. Stock markets are being developed at the national level, but there is ample room for increasing portfolio investments across borders. Similarly, the degree of cross-border banking is low. Potentially, tapping the financial opportunities from cross-border banking can help the business sector in finding access to financial funds.

Generally speaking, the opening of financial sector in the Southern part is still limited; thus international trading to the Northern Mediterranean is at a low level and relatively restricted. During the period 2000-2006, total southern Mediterranean exports to the EU grew by 10 per cent annually. The European Commission has identified Algeria and Egypt as the main drivers of this growth (17 per cent), followed by Tunisia, the Syrian Arab Republic and Jordan (6 per cent), while during the same period, southern Mediterranean imports from the EU remained around 4% (Adamo and Garonna, 2009). Various reasons and factors may be responsible for the low volume of goods and services flowing among North- South Mediterranean countries. This includes trade liberalization, customs and indirect tax policies, incentives factors, fund transfer regulations, exchange rates among related countries, technical aspects, cost of transportation, infrastructure and product diversifications. The dream of free trade of goods and services among the Mediterranean North and South has not been accomplished yet. The southern Mediterranean region sheltered due to its low trade and financial integration in the world economy; it is this trade and financial integration potential that can help to boost economic growth even further. Thus, this study is aimed at examining whether the

financial aspects in general and exchange rate systems and volatility in particular are obstacles for enhancing inter- trading between North and South Mediterranean countries. As mentioned in the literature increase in exchange rate volatility reduces the volume of international trade as trading firms are risk averse as reported by Günter Franke (1991), Gagnon (1993), and Arize, (1997), and Arize, (1995).

2: Significance and Purposes of this Study:

To the best of our knowledge, studies on the issue of currency systems and exchange rates and trading flow among North and South Mediterranean countries do not exist. In addition, this proposed study comes after increasing volatility between Euro and Arab currencies. It comes after new bilateral agreements between North and South as well as among South and South Mediterranean countries. Moreover, it comes after the financial crisis of 2008, in which international trading faced severe problems. Accordingly, the proposed study is aimed to accomplish the following purposes:

First: To explore the issue of inter- and intra-trading and financial integration of and between South and North Mediterranean Partnership Countries.

Second: To point out the exchange rate systems of the selected sample of the South Mediterranean countries, and to point out whether the present national currency exchange rate is overvalued; thus, in relation to the trade with the Euro region.

Third: to indicate the impact of currency exchange rate volatility between the Euro and the respective national currencies on trading flow between South and North Mediterranean countries.

3: Conceptual Framework

The trading flow and export transactions are much connected to financial aspects such as funds transfer procedures, customs and most importantly the exchange rate systems existed among concerned parties. As witness in the last financial crisis in the 2008, there

was a significant sharp and deep reduction in volume of international trading (Gregory, et. al., 2010). For this proposal the conceptual framework is based on the role of financial aspect on South- North trading flow. The exchange rate currencies of the South countries against the Euro will be considered, and may be pointed out as indicated below.

The positive effect of a common currency on trade: It is known that trading with a common currency is higher compared to trading between countries with individual country currencies, as reported by various studies such as Rose (1999, and 2004), as a matter of fact that two countries that share the same currency trade have three times as much as they would with different currencies as reported by Rose (1990).¹ This is also applied to bilateral trade flows, which is significantly stronger regarding trading volume (Yeyati (2003). This concept also applies also to countries who left currency unions; they experienced economically and statistically significant declines in bilateral trade volume as shown by Glick, and Rose (2002). However, the Southern part has a variety of currency systems and rates with no common currency yet. The currency systems in Arab countries include a fixed arrangement against USD, arrangements against a composite of currencies, arrangements against SDR and managed floating systems. In addition the announced official exchange rates may differ than practices such as that in Egypt, Lebanon, and Syria (IMF, 2007; Sabri, 2008). However, the majority of Arab currencies are mainly connected to USD to control inflation and to keep a kind of currency stability.

In addition, various studies supported the concept of currency depreciation as a way to increase exports: This concept is based on the notion that devaluation of national currency will improve the exports, since trading will become cheaper for other countries. For example, Onafowora study (2003) reported that a continued depreciation of the East Asian countries currencies against the US dollar and Japanese yen is likely to lead to an improvement in their trade balance with the US and Japan. On the other side we find various studies indicated that the appreciation of the currency may lead to weaken the

¹ On the other hand, recent developments in the periphery of the euro area (Greece, Italy, Portugal) show that a common currency is no longer beneficial in terms of trade if adjustments via prices are not at the discretion of the nations and no real exchange rate depreciations via nominal wage occur, while a fiscal union is not yet in place.

imports due to increase the cost of traded products. Nabli *et al.*, (2004) indicated that, during the 1970s and 1980s, MENA economies were characterized by a significant overvaluation of their currencies; this overvaluation has had cost them in terms of competitiveness, and thus reduced their exports. This is applied to US Dollars in the eighties (Glick and Hutchison, 1990) and to RMB revaluation in China (Whalley, and Wang, 2007).

Finally, it is known that currency exchange rate volatility has an adverse impact on trade, especially in an emerging economy, such as that of the South Mediterranean countries. For example Clark, *et al.*, (2004) found that the impact of exchange rate volatility on trade appear to be more damaging for developing countries than for advanced economies. Esquivel and Felipe (2002) also reported that the G-3 exchange rate volatility has a significantly negative impact on developing countries' exports. A one percentage point increase in G-3 exchange rate volatility decreases real exports of developing countries by about 2 per cent, on average. Finally, Ozturk, (2006) found that increased exchange rate volatility inhibits the growth of foreign trade.

4: Literature Review

5.1: Literature Related Mediterranean trade integration: Many studies discussed the integration process between the EU countries and the Mediterranean countries regarding goods and services trading, financial integrations, and movement of people and found that in spite of the various associations and agreements as well as the various bilateral trading treatments, the integration process is still limited especially between South and North. For example, Cvikl report (2008) found that although association agreements have been concluded between the EU and the Mediterranean countries, the creation of an actual regional market is still hindered, mostly because of the slow integration among the Mediterranean countries. He reported that the main barriers to regional integration among the Mediterranean countries are related to insufficient size of the local markets, lack of industry diversification, high tariff protection and drawbacks in infrastructure. Another recent study (El-Rayyes, 2007) examined the nature of intra-Mediterranean Countries

partnership, in order to determine obstacles of enhancing trade flows. It found that the trading flow is improving but may slow down for various reasons, and found that the geographical factor is a critical factor, such as Turkey and Morocco are closer to Europe, which make trading flow much better than Jordan for example. In addition, the last final report of Economic Integration in the Euro-Mediterranean Region (De Wulf and Maliszewska, 2009) found that the trade between the MED economies is very low but is exhibiting positive growth. For North-South trade relations, by 2006 for most of the partner countries the process of liberalizing their tariffs with respect to the EU was far from complete, and therefore it is too early to find evidence of a trade impact for beyond 2010. Finally Adamo and Garonna (2009) reported that the southern Mediterranean countries still display a high level of protection and trade barriers such as in the Syrian Arab Republic, and Egypt.

4.2: Literature related to impact of currency exchange rate and trade: The impact of exchange rate volatility as well as currency systems on trading flows including exports and imports of both goods and services is well documented, especially in the last two decades. This applied for regional markets as well as for bilateral markets. In addition, it's also applied to developed economies as well as to emerging and developing economies. However, it is clearer in emerging economies compared to developed economies. For example, the related literature survey of Ozturk, (2006) reported that a larger number of studies appear to favor the conventional assumption that exchange rate volatility depresses the level of trade. Doganlar (2002), examined the impact of exchange rate volatility on the exports of five Asian states by using an Engle-Granger residual-based cointegrating technique, it indicated that the exchange rate volatility reduced real exports for these countries. Nabli et. al., (2004) found that in MENA countries' the estimation of an export equation has shown that manufactured exports have been significantly affected by the overvaluation of their currencies. Baak, et. al., (2007) indicated that exchange rate volatility has negative impacts on exports in short-run as well as in the long-run, using cointegrating tests and estimations of error correction models. Arize' studies (1995, and 1997) found that increases in the volatility of the real exchange rate exert a significant negative effect export demand in both short and long

run. Caporale, and Doroodian (1994) shown that exchange rate uncertainty has a negative and statistically significant effect on trade flows. Chowdhury (1993) examined the impact of exchange rate volatility on the trade flow of the g-7 using error- correction mode and found that it was a negative impact on the volume of exports in each of the seven states. Finally, similar findings were reported by Schnab (2007), Clark (2004), Kandil and Dincer (2008), and Baak *et al.*, (2007).

5: Research Methodology

In order to accomplish the stated purposes of this proposed study various research instruments will be used. First: An overview of the related literature was conducted regarding trading flow and attached financial aspects between South and North Mediterranean sides. Second: The related associations and agreements occurred in the last decade between the South and North for trading for the selected sample of South Mediterranean countries were examined and reported. Third: The exchange rates for the selected South countries against the Euro explored to indicate the volatility existed between the national south currencies and the Euro, which is the currency of the EU economy. Fourth: In order to examine the impact of the currency exchange rate volatility on trade flows to the North part. We use an exports model that is a Vector-Autoregressive Regression model with exogenous variables (VARX) in order to produce Econometric estimation results of the exports and imports model and to find the reactions of exports to a 10% appreciation of the exchange rate to point out the impact of the currencies on trade volume between North and South Mediterranean countries.

There are about twenty seven Members of the EU and ten southern Mediterranean States. From the Southern part three Arab countries will be selected. They are Egypt, Jordan, and Morocco. Thus, three different national currencies will be included in the study against the Euro. For trading, the individual trades for each of the South countries from and to the EU were considered. The monthly exchange rates volatility against the Euro for a period of ten years from the beginning of the year sample period is January 2000 until June

2011. were used. Monthly time series data from exports and imports to the individual three South countries to the EU related using the UNCTAD and IMF related data from 2000 to 2011 (UNCTAD, 2011, and IMF, 2011). For currency exchange rates Forex database and Oanda.com database were used to get the monthly national exchange rates against Euro.

6: Findings of the Study

6.1: Euro-Mediterranean Trade Cooperation and activity

A trade cooperation between South and North Euro-Mediterranean partnership started since 1995, at the date of Barcelona declaration, and thereafter up to now, which includes also individual agreements and programs. For Egypt, there are three agreements including first one signed in June 2001, and the Agadir Agreement (with Jordan, Morocco and Tunisia signed with EU in 2004), in 2010, signed a protocol establishing a dispute settlement mechanism. And Egypt also engaged with The European Neighborhood and Partnership Instrument Program. (EU, 2011, and 2010). The Mediterranean economic Partnership with Jordan also started after Barcelona Declaration and assigned the association agreement in 1997, and followed by Agadir Agreement which included also Tunisia, Morocco, Jordan, and Egypt. The Morocco also signed the association agreement based on Barcelona Declaration, Agadir agreement, and included in the European Neighborhood Program.

The impact of the above common and individual agreements in increasing the volume of trading is still modest as shown in the last decade. For example, EU exports to Egypt in 2010 was about €14.8 billion including mainly machinery, and imported about €7.2 billion mainly energy. The EU exported goods to Jordan in 2009 with a value of €2.6 billion, while its imported only €200 million. The share of EU export to Jordan is still about .002 from 1999 to 2010. The trade between EU and Morocco increased to, trade volumes grew by over 80% in the last decade €8.4 billion Euro export to EU in 2008, but it decreased by 20% In 2009. In general, the EU exports to the Southern Mediterranean region was Euro 119 billion in 2009 and imported from the Southern Mediterranean

region was €105 billion in the same year, comparing to the total amount of EU trades with all partners. However, it should be noted that the North EU region exports to the South countries more than it imports as expressed by values of goods and services during the whole period. In addition, the annual change of Jordan EU trading is varied. The annual changes in trading with EC are varied. For example, the share of EU exports to Morocco is ranged between 1% to 1.1%, during the last decade, while the share of EU exports to Egypt ranged from 0.8% to 1.1% during the period from 2000 to 2010 (EC, 2011; EC 2004; and Eurostat, 2010).

6.2: The volatility existed between the national south currencies and the Euro, which is the currency of the EU economy.

The Arab currencies may belong to various exchange rate systems. The majority of the currency regimes of Arab countries are pegged to the \$US, that is the United Arab Emirates, Jordan, Lebanon, Bahrain, Saudi Arabia, Oman. The rest of the Arab currencies witnessed significant devaluation in their values against \$US between 1994 and 2004 such as in Egypt, Sudan, Mauritania, Yemen, Libya, Tunis, and Algeria currencies. Some of these currencies lost more (Sabri, 2009, and IMF, 2007). For the selected sample, the Jordanian dinar is fixed to the US\$, thus it witnessed a high volatility during the last decade. It ranged between 0.5883 per EUR as a minimum to 1.1303 as a maximum. For Egypt it witnessed high devaluation and ranged between 3.006 and 8.8499 per ERO. However, the Morocco dirham is more constant against EUR, it ranged between 9.3 and 11.6 (Oanda, 2011).

6.3: Econometrically estimating exports and imports related to currencies:

This section presents the impact of currency exchange rate between national individual currencies and Euro in the export and import activities using Vector-Autoregressive

Regression with exogenous variables. In order to explore we will give the reaction of the exchange rates on exports and imports using the parameter estimates.

The exports model is a Vector-Autoregressive Regression with exogenous variables (VARX) of order p , that reads as

$$x_t = \sum_{i=1}^p A x_{t-i} + \Gamma e_t + \varepsilon_t \quad (1)$$

with

$$x_t := \begin{bmatrix} d \log X_t^{Egypt} \\ d \log X_t^{Jordan} \\ d \log X_t^{Morocco} \end{bmatrix}$$

$$e_t := \begin{bmatrix} d \log E_t^{Egypt} \\ d \log E_t^{Jordan} \\ d \log E_t^{Morocco} \end{bmatrix}$$

X_t represents the bilateral exports of the European Union to the respective countries Egypt, Jordan and Morocco and E_t the nominal bilateral exchange rate of Egypt, Jordan and Morocco vis-à-vis the euro, all at time t . As follows, the exports and exchange rates are measured in $d \log$'s or growth rates. We will take 12th –order differences to be able to eliminate monthly seasonal effects. ε_t is a 3×1 vector that contains the disturbances of the exports equations for respectively Egypt, Jordan and Morocco. These disturbances are assumed to be normally distributed with a zero mean and covariance matrix that is not necessarily diagonal to allow for unobserved factors that affect exports of Egypt, Jordan and Morocco.

The imports model reads also as a VARX, this time of order q , that is

$$m_t = \sum_{j=1}^q B m_{t-j} + \Lambda e_t + \omega_t \quad (2)$$

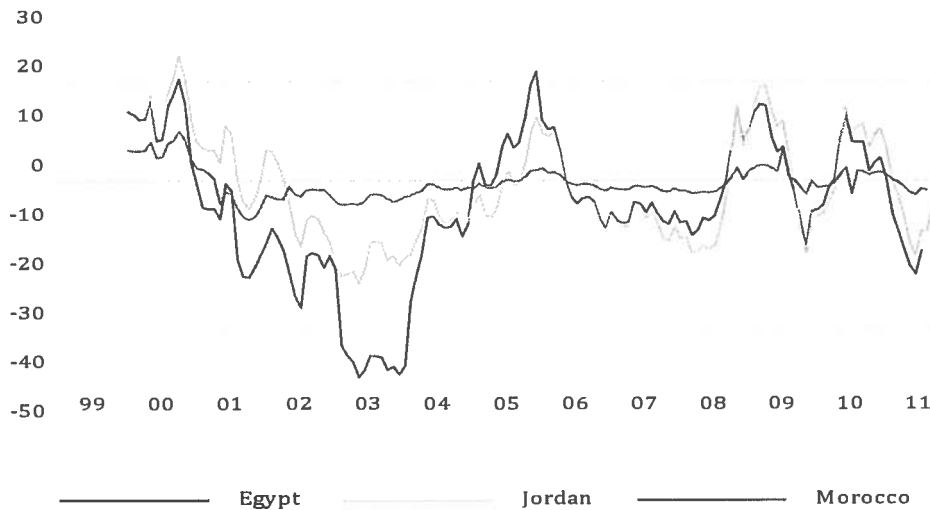
with

$$m_t := \begin{bmatrix} d \log M_t^{Egypt} \\ d \log M_t^{Jordan} \\ d \log M_t^{Morocco} \end{bmatrix}$$

and M_t representing the imports of the European Union to the respective countries at time t . In this case the disturbance vector is denoted by ω_t and assumed normally distributed with the same properties as the disturbance vector in model (1).

The symbols A and B are 3x3 matrices that each contain nine parameters that we will estimate. The parameters on the diagonal of matrix A will indicate the persistence in exports for each of the three countries. The off-diagonal parameter estimates will indicate to what extent exports are interrelated across the three countries. The same holds for the parameter matrix associated with the lagged dependent variable in the imports' equations. In a similar vein, Γ and Δ are matrices of the same size with parameters to estimate. These parameter estimates will give the reaction of the exchange rates on exports and imports.

Figure 1 Bilateral exchange rate of Egypt, Jordan and Morocco vis-à-vis the euro
annual, %



Note: A decrease indicates a depreciation of the currency vis-à-vis the euro.

Source: *International Monetary Fund International Financial Statistics*.

As figure 1 shows, the Moroccan dirham vis-à-vis the euro was quite stable during the period January 1999 until June 2011. The Egyptian pound, on the contrary, depreciated

sharply until 2003 but thereafter recovered. The global financial crisis that started in September 2008 with the bankruptcy of Lehman Brothers in the United States, gave rise to an appreciation of the Egyptian pound due to the flight of additional capital into Egypt. The Egyptian pound and the Morocco dirham depreciated vis-à-vis the euro in the course of 2009, due to the fact that the financial crisis also hit their domestic economies.

Also the exports reflect the recession in 2009. Figure 21 shows that annual growth in nominal exports to the European Union fell from more than 40% in 2008 to -10% in 2010 in Egypt, Jordan and Morocco. Striking in the growth patterns is the synchronous behavior. As imports from the European Union depend more on domestic factors, that differ across Egypt, Jordan and Morocco, the growth pattern is far less synchronous. The 2-years moving averages that are shown in Figure 2b show that the top growth of more than 80% was reached by Jordan in 2004. Egypt had a high growth of more than 40% in 2004 to 2006. Morocco, on the other hand, had lower growth over the whole period. As the Egyptian, Jordan and Moroccan economies were hit by the global financial crisis in 2010 their imports from the European Union dropped, to around 20% for each of the three countries.

We estimate the models (1) and (2) by Seemingly Unrelated Regressions. The orders of the VARs, that is the P and the Q are determined by preforming Likelihood Ratio tests. According to these tests, $p=1$ and $q=2$. Table 1 reports the estimation results.

As in figures 1 and 2, the sample period is January 1999 until June 2011. Due to the loss of twelve observations by taking twelve-period growth rates for seasonal adjustment, and due to the second and first order VAR we remain with 136 and 137 observations, respectively. This is still a large number, so there are sufficient degrees of freedom for estimating the parameters efficiently.

As follows, the adjusted R^2 's range from 0.44 for the exports of Jordan to even 0.84 for the imports of Morocco. Therefore, the fit of the equations is quite good. Striking is the fact that not all cross-diagonal parameter estimates are significant. However, many off-diagonal parameter estimates have small t -values, so the interrelation of exports across countries is significant, as well as the interrelation of imports across countries. Possibly this is due to the fact that these three countries compete with each other in their export to the EU. Similarly, some imported goods from the EU compete with goods from these countries.

Figure 2a Exports of Egypt, Jordan and Morocco to the European Union
24-months moving average of annual growth, in euro, %

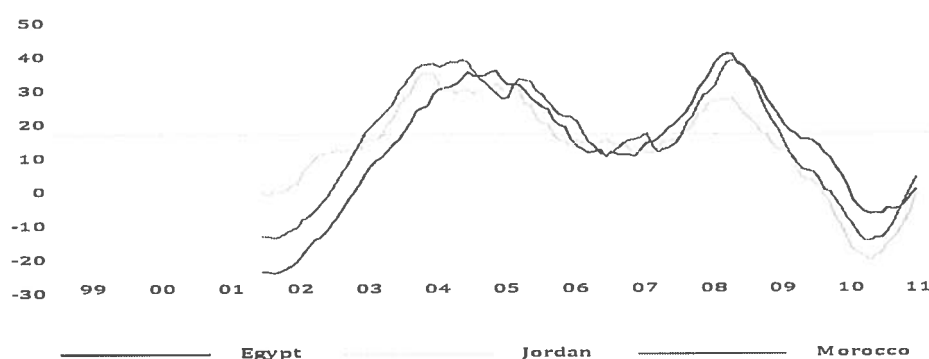
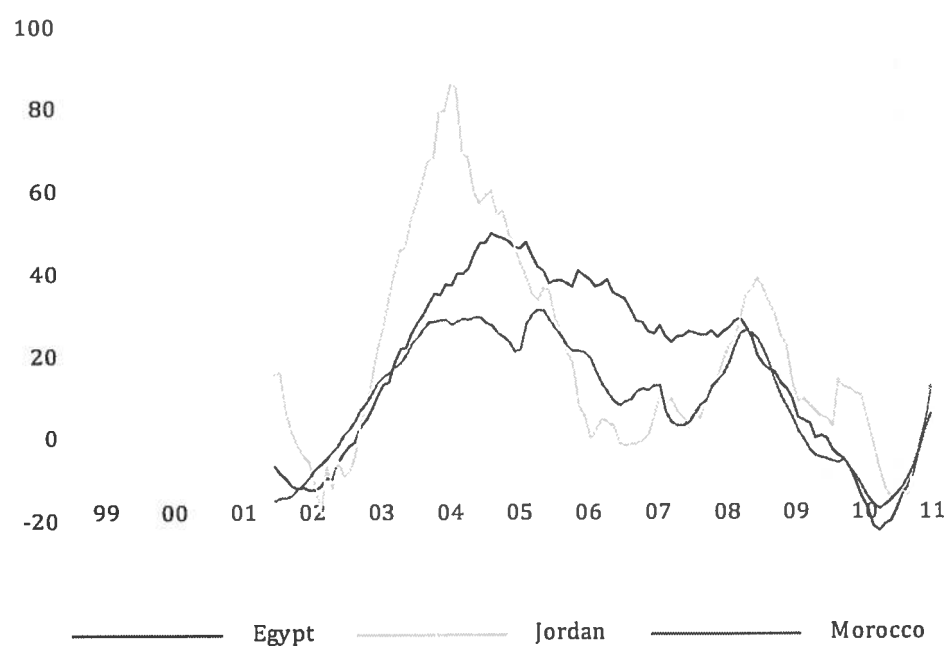


Figure 2b Imports of Egypt, Jordan and Morocco from the European Union



Source: International Monetary Fund Directorate of Trade Statistics, 2011 (DoTS).

Table 1 Econometric estimation results of the exports and imports model

Egypt	Jordan	Morocco
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<i>exports</i>			
$d \log X_{t-1}^{Egypt}$	0.3*	-0.2	-0.1
$d \log X_{t-1}^{Jordan}$	0.0	0.3*	-0.1
$d \log X_{t-1}^{Morocco}$	0.0	0.1	0.5*
<i>constant</i>	9.6*	9.0*	7.3*
$d \log E_{t-1}^{Egypt}$	0.6*	-0.1	0.2
$d \log E_{t-1}^{Jordan}$	-2.4*	-1.6*	-1.9*
$d \log E_{t-1}^{Morocco}$	0.7	1.9*	1.3*
$R^2 - adj$	0.72	0.44	0.81
<i>Log likelihood</i>	-561.9	-609.8	-550.4
<i>imports</i>			
$d \log X_{t-1}^{Egypt}$	0.4*	0.1	-0.0
$d \log X_{t-1}^{Jordan}$	0.2*	0.1	-0.0
$d \log X_{t-1}^{Morocco}$	-0.0	0.1*	0.0
$d \log X_{t-2}^{Egypt}$	0.0	0.1*	-0.0*
$d \log X_{t-2}^{Jordan}$	-0.0	-0.1	0.5*
$d \log X_{t-2}^{Morocco}$	-0.0	0.7*	0.1
<i>constant</i>	8.5*	-1.4	3.9*
$d \log E_{t-1}^{Egypt}$	-0.2	-1.7*	-0.0
$d \log E_{t-1}^{Jordan}$	-1.6*	-1.0	-1.3*

$d \log E_{t-1}^{Morocco}$	2.8*	12.0*	0.9
$R^2 - adj$	0.51	0.62	0.83
Log likelihood	-638.5	-705.6	-536.8

Note: Seemingly Unrelated Regressions determine the estimates of the parameters. A star indicates that the parameter estimate is significant.

Source: Authors' calculations on the basis of the data as presented in figures 1 and 2.

Figure 3a Impulse reactions of exports to a 10% appreciation of the exchange rate

in % deviation from the baseline

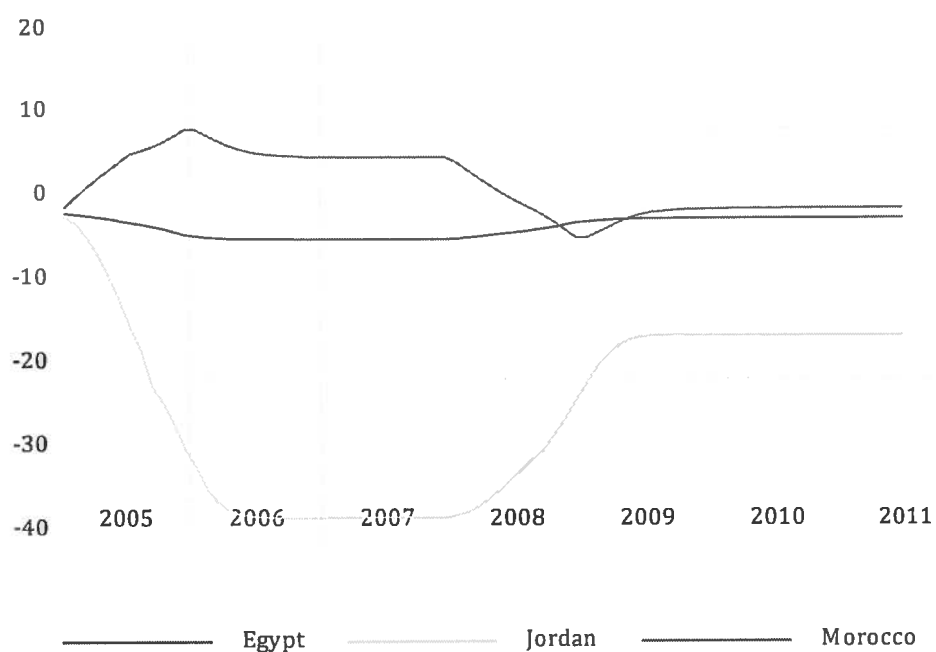
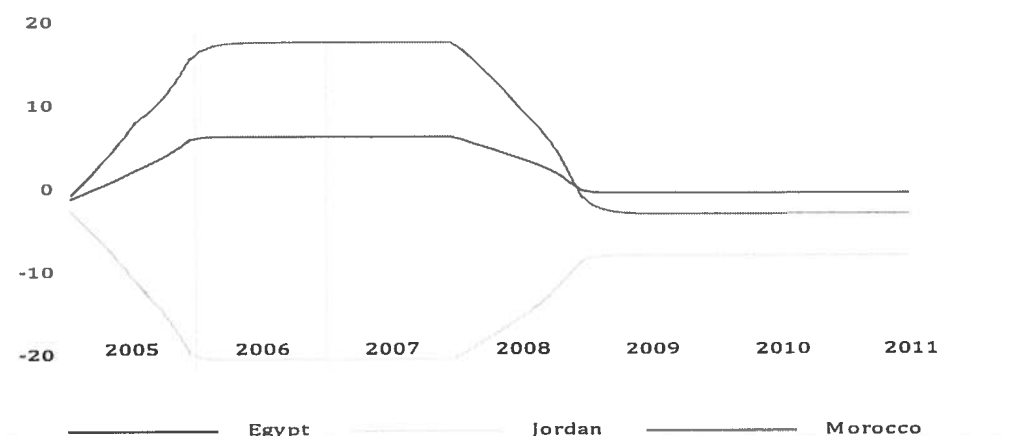


Figure 3b Impulse reactions of imports to a 10% appreciation of the exchange rate



Source: Author's estimations, see Table 1.

We simulate a 10% increase in the bilateral exchange rate of the Egyptian pound, the Jordan dinar and the Moroccan dirham vis-à-vis the euro. These shocks are given during the years 2005 up until 2007, so for three years. As Figure 3a shows, as a reaction, the exports of goods from the Egypt to the EU decreases in comparison with the baseline by about 3% as they have become more expensive. The imports from the EU, on the contrary, become cheaper. As Figure 3b shows, they almost increase by 10%. For Morocco, the increase in imports from the EU in reaction to a 10%-appreciation of the Moroccan dirham increases even by almost 20%. The exports seem less sensitive to an appreciation. Jordan exports fall sharply in case of a 10% appreciation of the Jordan dinar vis-à-vis the euro. Although the sign is sometimes more difficult to interpret due to the interrelations, see also Figures 2a and 2b, we can conclude that the estimated point estimates indicate that the responses to the exchange rate changes can be quite high.

7. Summary and Conclusion

In spite of the various common and bilateral agreements which were signed and implemented in the last fifteen years between North and South Mediterranean Partnership, the integration of trading among the two parts is still limited. This situation may be related to some main barriers including tariff protection, lack of product diversification, high cost of transportation as well as due to financial aspects including fund transfers across borders and to currency exchange rate

issue. It is well known that using one common currency will improve the trading flow in common markets. Accordingly, having a common currency in the North and various national currencies in the South countries may be a critical issue that needs to be investigated. Considering the fact that the majority of Arab currencies are connected mainly to USD, various currency systems such as a fixed arrangement against USD or a managed floating system are being used. The Euro vs. USD as the basis for most of Arab currencies, moving up and down in high volatility in the last decade, it ranged from 0.825 as in October, 2000 as minimum to 1.599 in July, 2008. The volatility of exchange rates leads to reduction of the international trade volume, mainly in the emerging economies in which all the Mediterranean South countries belong to. Thus, this proposal aims to study the impact of exchange rate issue on South- North trading flow, which comes timely after increasing volatility between Euro and Arab national currencies during last few years, and after the 2008 financial crisis which led to a sharp reduction of trading in 2008.

Thus, the study explored the issue of trade and financial linkages in general and currency exchange rate in particular within the South- North Mediterranean context. The impact of exchange rate volatility on trading between South- North parts were investigated, using monthly time series data for the last ten years. A sample of three South Arab countries will be selected including Egypt, Jordan, and Morocco. We use as an exports model a Vector-Autoregressive Regression model with exogenous variables (VARX) in order to produce Econometric estimation results of the exports and imports model and to find the reactions.

The results show that the exports of goods from the Egypt to the EU decreases in comparison with the baseline by about 3% as they have become more expensive. The imports from the EU, on the contrary, become cheaper. For Morocco, the increase in imports from the EU in reaction to a 10%-appreciation of the Moroccan dirham increases even by almost 20%. Jordan exports fall sharply in case of a 10% appreciation of the Jordan dinar vis-à-vis the euro. The exports seem less sensitive to an appreciation. Finally, we can conclude that the exchange rate changes can be quite high.

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