FINANCIAL MARKET INTEGRATION AND MACROECONOMIC VOLATILITY IN THE MENA REGION: AN EMPIRICAL INVESTIGATION

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Abstract

Using panel data regression models this study examines empirically the impact of regional and international financial integration on macroeconomic volatility in the developing economies of the MENA region over the period 1980-2002. Our empirical results indicate that financial openness is associated with an increase in consumption volatility, contrary to the notions of improved international risk-sharing opportunities through financial integration. Our empirical findings emphasize the role of sound fiscal and monetary policies in driving macroeconomic volatility. In regard to structural reforms, the development of the domestic financial sector is critical, as a high degree of financial sector development is significantly associated with lower macroeconomic volatility. We argue that enhancing regional financial integration might constitute a venue to circumvent the vulnerability of the small open MENA economies to external shocks, and a means to enhance consumption smoothing opportunities, as well as international financial integration.
1. Introduction

Regional and international financial integration is believed to have significant potential benefits in enhancing a proper allocation of capital, and helping MENA (Middle East and North Africa) countries to better share financial risk by reducing consumption and income volatilities. Given their relatively low levels of investment and their inherently greater macroeconomic volatility, coupled with political instability, MENA economies in particular seem to have the most to gain from this process of improved financial intermediation, and regional and international financial integration. As policymakers and academics in MENA economies evaluate the benefits and risks of financial integration, understanding its implications for macroeconomic volatility and growth should receive greater attention.

There has been an intense debate between policymakers and academics about the impact of financial integration on economic growth. The empirical evidence on the long-term benefits of financial integration suggests that, despite the financial crises that have devastated some emerging countries, the more financially integrated economies have done better, on average, than less-integrated economies in terms of improvements in per capita GDP and welfare. Moreover, several recent studies have examined various dimensions of the causal link between financial integration and growth. Although many of these studies conclude that financial integration does generate growth benefits, this relationship is not always found to be robust.

More recently, the debate has shifted to the impact of financial integration on macroeconomic volatility. However, recent discussions seem to be relatively sketchy, since the available empirical evidence on the effects of financial integration on volatility is still very limited. The objective of this study is to shed some light on this issue by studying the impact of regional and international financial integration on macroeconomic volatility in the MENA region. In this context, we will address two questions: First, what are the dynamics of macroeconomic volatility over time and across different groups of MENA countries? And second, is there an empirical link between the degree of international and regional financial integration and macroeconomic volatility in the MENA region?

Understanding the dynamics of macroeconomic volatility has recently come to the fore for a number of reasons. First, the economic literature emphasizes the important role of sound fiscal and monetary policies in driving macroeconomic volatility. Second, a number of studies have documented the declining volatility of GDP in the G7 and some other industrial economies since the mid 1980s, and examined the sources of this change (see Blanchard and Simon (2001), and McConnell and Perez-Quiros (2002)). It is of obvious interest to examine if the phenomenon of declining volatility in the mid-1990s is limited to developed economies or is it the case for the MENA region as well. Third, the welfare implications of volatility in emerging economies have been highlighted by episodes of extreme volatility, i.e. crises, in a number of emerging economies in the 1980s and 1990s. While MENA economies have continued to become more open to trade, the more dramatic developments over this period have been: (1) The surge in the volume of financial flows from the industrialized countries to the MENA region, especially after the events of September 11th in the US; (2) the recent efforts devoted to financially integrate MENA economies with the rest of the world; and (3) the emergence of this region as a potential substitute to East Asia, in the wake of the East Asian financial crisis of the mid 1990s. Hence, a natural question is whether rising financial integration of MENA economies by itself has an impact on macroeconomic volatility.

In order to examine the effects of financial integration, we begin with a classification of selected MENA economies into two groups. The More Financially Integrated MENA Economies (MFIMENAes) of Egypt, Jordan, Morocco and Turkey, and the Less Financially
Integrated MENA Economies (LFIMENAEs) of Saudi Arabia, Kuwait, Bahrain and the UAE. We study the volatility of output and consumption and other macroeconomic variables in these two groups. In order to explore how different sources of volatility affect the ability to smooth consumption in response to a given realization of shocks, we also analyze the volatility of exchange rates, inflation and interest rates. We then present an overview of changes in macroeconomic volatility over time. After documenting these basic results, we employ panel data regression models to analyze what factors, either macroeconomic or structural, are associated with consumption and GDP volatilities and their evolution over time.

The rest of the paper is divided as follows. Section 2 reviews related literature. Section 3 highlights in some detail the major macroeconomic developments in the MENA region over the last 4 decades. The data sample to be used and empirical models and results are all presented in section 4. Section 5 concludes with some policy implications.

2. Review of Related Literature

The finance and growth literature was initially interested in establishing empirically the link between financial developments and growth. Schumpeter (1912) was the first to argue that financial intermediation is essential for technological innovation and economic growth. More recently, Mckinnon (1973) has argued that there is a positive association between financial development and economic growth and that financial repression, such as government controls on interest rates, credit allocation, or restrictions on the trade and capital accounts tend to slow down financial development and economic growth. One important empirical paper is by Levine (1997). Using data for some 80 countries over the period 1960-1989, he tests the hypothesis that financial development induces economic growth. It is shown that financial development is strongly correlated with growth in investment, standards of living, and the efficiency with which economies employ physical capital. It is also shown that financial development is a good predictor of future rates of economic growth, investment and economic efficiency improvements.

Subsequently, the focus has shifted from establishing a statistically significant link between financial developments and economic growth to the impact of financial developments and financial integration on macroeconomic volatility in general, and the volatility of the rate of growth of GDP and consumption in particular. It was shown that sudden changes in the direction of capital flows might induce increased GDP volatility in developing countries, most of which do not have a well-developed financial sector to accommodate the highly volatile nature of short-term capital flows. Aghion, Banerjee and Piketty (1999) and Caballero and Krishnamurthy (2001), construct models, which establish theoretical links between low financial sector development and high output volatility. Using data for a sample of 74 countries over the period 1960-97, Easterly, Islam and Stiglitz (2001) find that a higher level of development of the domestic financial sector is associated with lower GDP volatility.

A close review of this strand of the literature suggests that the impact of financial integration on the volatility of GDP and consumption is ambiguous. According to Baxter and Crucini (1995), the volatility of output increases while the volatility of consumption decreases with rising financial integration. Mendoza (1994) argues that changes in the volatility of output and consumption are relatively small in response to the changes in the degree of financial integration within the context of a stochastic dynamic business cycle model. He also finds that when shocks are larger and more persistent, the volatility of output increases with the degree of financial integration.

The theoretical impact of trade integration on macroeconomic volatility depends greatly on patterns of trade specialization and the nature of shocks. Krugman (1993) argues that if trade
openness is associated with increased inter-industry specialization across countries, and industry specific shocks are important in driving business cycles, the result could be a rise in output volatility. If these shocks are highly persistent, then they could increase the volatility of consumption as well. However, Razin and Rose (1994) suggest that if increased trade is associated with increased intra-industry specialization across countries, which leads to a larger volume of intermediate inputs trade, then the volatility of output could decline. These results indicate that the impact of trade integration on volatility is also theoretically ambiguous.

More recent theoretical studies, based on the Redux model of Obstfeld and Rogoff (1995), employ dynamic stochastic sticky-price models to study the impact of financial openness on macroeconomic volatility. Buch, Dopke and Pierdzioch (2002) Sutherland (1996) and Senay (1998), consider the role of sound monetary and fiscal policy shocks in driving macroeconomic volatilities. They find that macroeconomic shocks determine the impact of financial integration on the volatility of output and consumption. They argue that in the presence of monetary policy shocks, the volatility of output increases, while the volatility of consumption decreases as the degree of financial integration increases. However, in the presence of fiscal policy shocks, the volatility of output decreases, while the volatility of consumption increases as the degree of financial integration increases.

The relationship between financial openness and macroeconomic volatility could also be affected by the structural characteristics of the oil producing small open MENA economies, which make them more vulnerable to shocks originating in other countries. First, limited diversification of exports and imports make some of these countries particularly susceptible to sudden fluctuations in terms of trade and foreign demand shocks. Using dynamic small open economy models, Kose (2002) finds that terms of trade shocks can explain a sizable fraction of volatility, and Senhadji (1998) shows the important role played by foreign demand shocks.

Country size is also an important factor and MENA economies are relatively much smaller than industrialized countries. Within this context, sudden changes in world interest rates might cause substantially large business cycle fluctuations in highly indebted MENA countries, like Egypt, Turkey and Jordan and to a lesser extent Saudi Arabia. Head (1995) and Crucini (1997) show that business cycles fluctuations in large developed economies can have a significant impact on the dynamics of business cycles in small open developing countries. Kose and Prasad (2002) find that both terms of trade shocks and foreign aid flows are particularly important in accounting for highly volatile macroeconomic fluctuations in small countries, which seem to exhibit higher degrees of trade and financial openness than do other developing countries.

While the sources of recent financial crises in the emerging market economies of South East Asia and South America are numerous, a number of such crises have occurred following financial liberalization programs (see Kaminsky and Reinhart (1999) and Glick and Hutchison (1999)). These crises have often coincided with a sudden loss of access to world financial markets, and resulted in highly volatile fluctuations in output and consumption.¹

Unlike the intensive empirical literature focusing on the impact of financial openness on economic growth, there are only a limited number of empirical studies establishing the links between financial openness and macroeconomic volatility. Moreover, existing studies have generally been unable to document a clear empirical link between openness and volatility. Razin and Rose (1994) study the impact of trade and financial openness on the volatility of output.¹

¹ However, Arellano and Medonza (2002) find that the possibility of sudden stops due to borrowing constraints does not induce any sizable changes in the volatility of output and consumption.
output, consumption and investment for a sample of 138 countries over the period 1950-88. They find no significant empirical link between openness and the volatility of these variables. However, Easterly, Islam and Stiglitz (2001) find that a higher level of development of the domestic financial sector is associated with lower volatility. In addition, an increase in the degree of trade openness leads to an increase in the volatility of output, especially in developing countries. Their results indicate that neither financial openness nor the volatility of capital flows has a significant impact on output volatility.

Using data for 25 OECD countries, Buch, Dopke and Pierdzioch (2002), examine the link between financial integration and the volatility of GDP. Their empirical findings report no consistent relationship between financial integration and the volatility of GDP. However, Gavin and Hausmann (1996) report a significant positive association between financial integration proxied by capital flows and GDP volatility. Using data for 93 countries over the period 1971-94, Denizer et al (2002) examine the sources of GDP volatility in developing economies. Their empirical findings suggest that a higher degree of financial integration is associated with lower output volatility in OECD countries, and higher output volatility in non-OECD countries. In addition, countries with more developed financial sectors are able to reduce GDP volatility through financial integration. However, Bekaert, Harvey, and Lundblad (2002) report that capital account openness increases the volatility of output and consumption in emerging market countries.


Over the last two decades a non-stable macroeconomic environment has plagued the MENA region with negative implications on the growth of GDP and consumption smoothing efforts. MENA countries have experienced several episodes of monetary and fiscal instability, hindering their efforts to integrate their financial markets into the world economy. On the monetary side, exchange rates have been in general fixed to the US dollar and the success of the policy of nominal pegged regimes to the dollar has not been homogenous across the region. Although some of these countries adopt a fixed exchange rate regime, domestic inflation has experienced episodes of high rates coupled with a loose expansion of the supply of money. This subsequently led to a steady appreciation of the region’s average real exchange rates.

On the fiscal side, the conduct of fiscal policy in MENA has recently become critical in determining MENA countries’ future economic and fiscal situation due to the accumulation of a sizable level of debt. MENA’s financial markets are still under-developed and the various governments have been the only bodies currently borrowing domestically and from the international bond market, whether to finance their current expenditures or to repay foreign debt. Financing budget deficits via borrowing has had a direct bearing on the region’s interest rates, inflation and exchange rates, on the rate of growth of GDP and on the rates of private and public consumption. Deficit financing has also affected private sector’s growth directly by crowding out private consumption and investment.

3.1 Exchange Rate Policies in the MENA Region: 1960-2002

Inflation-prone Less Developed Countries (LDC) in general and MENA economies in particular, have often used a nominal exchange rate anchor as a mean of achieving ‘inflation convergence’. By pegging their currencies to a relatively low-inflation currency such as the US dollar or recently the Euro, and relying on high interest rate policies to defend the exchange rate, they have attempted to contain and roll back inflationary pressures. Even

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2 For a detailed discussion of the introduction of the Euro currency and its impact on the MENA region, see Neaime and Paschakis (2002), Colton and Neaime (2003), and Neaime (2001, 2002).
though this policy has helped them reduce inflation substantially relative to low inflation countries, it has also generated persistent real exchange appreciations, losses in international competitiveness, fluctuations in GDP, losses in consumption and investment, large trade and budget deficits, and in some instances serious currency crises. Some MENA examples in the 1990s are Turkey and Egypt. In most of these cases, a rigid nominal exchange rate regime combined with strict anti-inflation policies led to cumulative real exchange rate overvaluations followed by the steep devaluation of the Egyptian Pound in 2001-2002, and the Turkish Lira over the same period.\(^3,4\)

The recent fluctuations of the US dollar have also put more pressure on MENA’s real exchange rate, and this has been very harmful in terms of lost exports, forgone consumption and economic growth.\(^5\) Many MENA countries, including Turkey, Jordan and Egypt, continue to suffer because the burden of adjustment is borne by macroeconomic fundamentals. A more flexible exchange rate arrangement, as is now the case in Egypt may help these countries “release pressure” generated by internal and external macroeconomic imbalances and shocks. However, it may not be a viable alternative for some MENA countries like Saudi Arabia, Kuwait, Bahrain and the UAE, in light of the absence of an independent monetary policy and a well-developed and integrated financial market. Some form of fixed arrangement may continue to be relevant to most of these countries. Underdeveloped monetary, political and policy-making institutions undermine the effectiveness of discretionary monetary policy and render the adoption of US or EU monetary policy a more attractive option. As these countries become more integrated with global financial markets, they should start moving towards more flexibility. Nonetheless, a real exchange rate peg to the Euro may be more appropriate than a dollar peg to those MENA countries with significant trade with the EU. As long as the fixed exchange rate arrangements continue, fiscal discipline, management of debt and foreign reserves and avoidance of currency appreciation are crucial to the avoidance of exchange rate or financial crises.

Monetary and exchange rate instability in Egypt and Jordan has led to several episodes of devaluations against the dollar. After a period of exchange rate stability, Egypt was pressured recently to float its exchange rate.\(^6\) This was due to monetary pressures and the mismanagement of fiscal and monetary policies. The Jordanian Dinar (JD) and the Egyptian Pound (EP) were both devalued in 1988 after years of poor macroeconomic conditions in

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3 Analysts agree that the appreciation of the real exchange rate was the main cause behind the EMS currency realignments and the devaluation of the Markka and the Peso. See, for example, Dornbusch (1989), Bruno (1995), and Edwards (1996), among others.

4 It has frequently been suggested (Dornbusch 1989) that countries with higher than average inflation rates could have escaped the problems posed by pegged nominal exchange rates if they had pursued a fixed real exchange rate policy. Had these countries adjusted the nominal exchange rate according to the difference between foreign and domestic inflation so as to maintain a constant but competitive real exchange rate, they would have avoided real exchange rate overvaluations and high interest rates, and they would only have experienced moderate inflation. This suggestion is directed more towards inflation-prone EMS countries such as Italy, Greece, Portugal, and Spain, and also MENA countries with high inflation rates and currency pegs, such as recently in Turkey and Egypt, and Jordan in the early 1990s.

5 However, the very recent appreciation of the Euro against the dollar since January of 2003 will help reduce MENA’s real exchange rates appreciation.

6 This move was perceived by policy makers in the MENA region as a step in the right direction in light of continuing financial and monetary globalization and the latest emerging market crisis since the mid 1990s. Since then the trend has been for emerging economies to move away from intermediate exchange rate regimes, as was the case in Egypt before adopting full flexibility, toward floating regimes and in very few instances toward full fixity. The impressive evolution of Egypt’s exchange rate regime reflects its changing role in the conduct of an independent national monetary policy and the degree to which the country is integrating into the world financial system. Thus, given the greater access for Egyptian investors to international capital markets, Egypt has certainly gained greater monetary policy autonomy.
both countries. In Egypt, the depreciation of the Pound reached about 300 percent edging up against the dollar from about parity to the dollar in 1988 to about EP 4 per USD in 1991. Similarly, Jordan’s currency also experienced a 200 percent devaluation during the same period edging up against the dollar from JD 0.35 in 1988 to about JD 0.75 per dollar in 1991. The Dinar has stabilized since then, but the Egyptian Pound devalued again in 2000 and 2001 (See Figure 1).

Unlike the above MENA countries, Turkey and Morocco have adopted, to varying degrees, a flexible exchange rate system since the early 1980s. Since then, both countries have also experienced various episodes of devaluation. In Morocco the Dirham has been determined to some extent on the foreign exchange market through the forces of supply and demand since the early 1980s. However, The central bank intervenes occasionally in the market to maintain the exchange rate within some specified exchange rate bands, floating around a central parity. This central parity is linked to a weighted basket of currencies reflecting Morocco’s trade patterns. With the exception of the early and mid 1980s, where the Moroccan Dirham (MD) experienced some significant devaluation, (from about MD 4.33 to the USD in 1980 to about MD 9.62 to the USD in 1985) the central bank has been successful in avoiding large swings in the nominal exchange rate (Figure 1).

After two decades of exchange rate stability, the Turkish Lira (TL) experienced in the 1990s a sharp depreciation. The Lira stands now at about TL 1,500,000 per USD. Although the exchange rate crisis of the 1990s appear to have been somehow contained, further future devaluations cannot be ruled out (see Figure 1).

In the LFIMENAEs, it is clear that exchange rate arrangements in practice can be classified as rigid and fixed to the USD with very narrow fluctuation margins. Kuwait has an exchange rate peg to a basket of currencies where the US dollar is given the highest weight. In other words, the Kuwaiti Dinar (KD) has been effectively pegged to the US dollar since the early 1970s. From KD 0.35 to the dollar in the early 1960s, the Dinar appreciated to about 0.28/USD in 1980, and has kept on oscillating within a very narrow margin of KD 0.27-0.31/USD over the last two decades (Figure 1). The Saudi Rial (SR) has been officially fixed to the SDR but in practice the fix is to the US dollar. After being pegged to the US dollar in the 1960s at SR 4.5/USD, the Rial appreciated by about 40 percent to SR 3.3/USD between 1970 and 1980. After a slight depreciation in the 80s to SR 3.7/USD, the Saudi currency has been fixed to the dollar at SR 3.7, since 1985 (Figure 1). In the UAE and Bahrain, the Dirham and Dinar were also fixed to the dollar since 1980 at about UAED 3.7 and BD 0.38, per USD respectively (Figure 1). The respective currencies had appreciated against the USD from UAED 4.8 to 3.6/USD and from BD0.48 to 0.38/USD, during the 60s and 70s. The official peg in the UAE and Bahrain is also to the SDR.

3.2 Interest and Inflation Rate Policies in the MENA Region: 1960-2002

The periods of currency devaluations were coupled with rising inflationary pressures. In Egypt and Jordan inflation rates were at about 20 percent during the mid 1980s, but have since been on the decline standing currently at 5 percent in Egypt and 4 percent in Jordan (see Figure 2). These rates had peaked in Jordan in 1991 to about 22 percent, and in Egypt in the late 1980s to about the same level. The monetary authorities in Egypt and Jordan have been successful in controlling the inflationary pressures of the early 1990s through a monetary policy rule of nominal exchange rate targeting. By targeting the nominal exchange rate, the inflation rate has been below 5 percent since the late 1990s.

Turkey has been plagued by very high inflation rates since the 1970s. Monetary policy has not yet succeeded in controlling inflation, and the Turkish economy has experienced tremendous pressures on its national currency emanating from a weak financial sector and
fiscal pressures, caused by a high debt to GDP ratio and rising fiscal deficits. Inflation rates are currently hovering between 40 and 60 percent putting further strains on the country’s real exchange rate (Figure 2). Unlike Turkey, Morocco has been successful in keeping inflation rates below the acceptable 4.5 percent level. From about 2.5 percent in the early 60s, the inflation rate stands currently at about 4.5 percent.

Similar dynamics are observed in the LFIMENAEs. In Bahrain and Saudi Arabia, inflationary pressures of the mid 1970s appear to have been fully contained and current inflation rates are around 1 percent. Similar dynamics are observed for the UAE. In Kuwait, inflation rates stand a little higher at about 2 percent, after a significant hike during the Gulf War in Kuwait (see Figure 2). Due to the downward trend in the overall inflation rates, inflationary pressures in MENA appear to be heading towards containment in the next few years.

Over the past decades, significant changes have been introduced not only in the design of monetary policies but also in its instruments, intermediate targets and final goals. Targeting the inflation rate as opposed to the growth of GDP has been gaining tremendous popularity among policy makers not only in developed central banks but also in many developing economies. This recent shift has been documented by robust empirical evidence pointing to the fact that high and uncontrolled inflation rates tend to distort the private sector’s incentives to save, consume, invest and produce, and this subsequently leads to slower growth in GDP. Many MENA countries are moving in that direction in general. In the MFIMENAEs, inflation rates appear to have been recently contained, and monetary policy appears to be gradually geared towards price stability. The same is true for the LFIMENAEs where again the inflationary pressures of the 1980s appear also to have been contained.

Any macroeconomic policy can at best accommodate only two elements of the impossible trinity of (1) full capital account liberalization; (2) a fixed exchange rate; and (3) an independent monetary policy geared towards domestic objectives. Thus, a country following a floating exchange rate regime can enjoy a fully effective monetary policy and freedom of international capital movement across its borders. By contrast, a country following a fixed exchange rate regime can depart from foreign interest rates and run an independent monetary policy, provided international capital movements across its borders are prohibited. If the exchange rate is fixed and cross-border capital movements are free, then monetary policy is powerless to achieve domestic goals since any attempt by the monetary authorities to tighten the money supply will also prompt them to sterilize capital inflows in order to prevent the exchange rate from appreciating.

It was argued earlier that for the LFIMENAEs, exchange rates have been in general fixed to the US dollar. At the same time, these economies have not yet liberalised their capital accounts and financial markets, and cross-border capital is restricted to the repatriation of workers remittances. Portfolio inflows are strictly prohibited, and the same is true for Foreign Direct Investment (FDI). Thus, the LFIMENAEs have been able to effectively use monetary policy to preserve their US dollar peg. This is not the case for the MFIMENAEs. Jordan’s exchange rate has been fixed in general, with relatively short episodes of exchange rate volatility. At the same time, capital movements are free to flow in Jordan, rendering the effectiveness of monetary policy rather weak. Egypt’s exchange rate regime has been generally fixed over the past two decades with a fully liberalized capital account. This has rendered monetary policy ineffective, and has been a major source of macroeconomic

\footnote{For a detailed discussion of exchange rate policies, see Mansoorian and Neaime (2002, 2003), and Neaime (2000).}
instability for the Egyptian economy. However, the recent float of the exchange rate in Egypt has meant that Egypt is able to enjoy all the benefits of a fully effective monetary policy.

3.3 Private Consumption and GDP Developments in the MENA Region

In the MFIMENAEs, rising inflation rates coupled with the steep devaluation of the Egyptian Pound, the Turkish Lira and the Jordanian Dinar in the early and late 1990s have led to increases in the volatility of consumption. The recurrent currency devaluations and high inflation rates in Turkey have translated into very high consumption volatility since the late 1980s. Consumption fell during the 1994-95 period by about 40 percent. The same is also true for the 2001-02 period, where consumption fell by more than 40 percent. Turkey has always had a financial market that is integrated with world financial markets. The financial integration of the Turkish market did not contribute to the lowering of consumption volatility.

From around USD 12 billion in the late 1980s, the private sector’s consumption fell to about USD 5 billion in Egypt in early 1990. A similar scenario is observed in Jordan where we also see a 50 percent decline in private consumption in late 1980s and early 1990s. Both Egypt and Jordan have, since the early 1990s, devoted considerable efforts to integrate their financial markets into the world economy. This translated into a very moderate reduction in consumption volatility since the early 1990s. Private consumption in both countries is rising smoothly over the last decade. Morocco is in similar situation where the volatility in consumption has remained relatively high despite the fact that its financial market has always been regionally and internationally integrated (Figure 3).

In the LFIMENAEs, consumption volatility appears to be lower than that of the MFIMENAEs. In Bahrain and the UAE, consumption is relatively smooth over the last three decades with very low volatilities. In Kuwait, The Gulf War had a negative impact on private consumption in early 1990. In Saudi Arabia, consumption volatility is more obvious and is directly related to fluctuations in oil prices and revenues over the period under consideration (Figure 3). The adoption of a fixed exchange rate regime, coupled with an effective monetary policy with significant restrictions on the flow of capital into the LFIMENAEs appear to have contributed significantly to the observed low volatilities in consumption.

The volatility dynamics of GDP appear to be quite similar to the consumption volatilities across the two MENA sub-groups. For the MFIMENAEs, the periods of high consumption volatility were also accompanied by rising GDP volatility. The volatility of Turkish GDP has been remarkably high since the mid 1980s. This is also the case for Morocco but to a relatively lesser extent. However, the volatilities of real GDP for both Egypt and Jordan are significantly lower than those of their two MENA counterparts (Figure 4).

In the LFIMENAEs, GDP volatilities are relatively lower over the period under consideration. Bahrain and Kuwait exhibit the lowest volatilities since the early 1980s. Saudi Arabia and the UAE are in similar situation, where the GDP volatilities appear to be highly correlated with oil price fluctuations. However, both exhibit a containment of GDP volatilities since the early 1990s (Figure 4).

Thus, the impact of greater financial market integration appears to have very different effects on the two MENA sub-groups. In particular, the divergence in the dynamic evolution of private consumption and GDP volatilities of the MFIMENAEs runs exactly counter to the notion that financial integration increases risk sharing and consumption smoothing opportunities. This is especially the case for Turkey and Morocco, where despite the fact that their financial markets have been regionally and internationally integrated, the volatilities of both consumption and GDP seem to be the highest among all MENA countries. This is also the case for Egypt and Jordan prior to 1990. Financial integration per se appears not to bring the expected consumption and income smoothing benefits to the MFIMENAEs. These
countries should devote more efforts to reform their macroeconomic policies before venturing into increased integration of their financial markets. In addition, the link between the degree of international and regional financial integration and macroeconomic volatility in the MENA region appears to be weak relative to other emerging regions of the world.

However, recent efforts devoted in Egypt and Jordan to integrate their financial markets seem to have contributed somehow to the lowering of consumption and GDP volatilities since the early 1990s. In addition, and with the exception of Turkey and Morocco, the dynamic volatilities also show that the phenomenon of declining volatilities in the early and mid-1990s is not limited to developed economies, but is also the case for the MENA region, and that enhanced financial integration of MENA economies has a limited impact on macroeconomic volatility in the region. This is also the case for the LFIMENAEs where we see a containment of volatilities over the last decade.

The descriptive macroeconomic dynamics presented in this section, while important in terms of depicting a broad characterization of volatility dynamics overtime, are of course only suggestive. Even within each MENA sub-group of countries, there are substantial differences in terms of the degree of financial integration and how this has evolved over time. For instance, among the MFIMENAEs, the financial markets of Turkey and Morocco have and since the early 1970s always been highly integrated with the world economy. The financial markets of Egypt and Jordan have only become financially integrated since the early 1990s. In the LFIMENAEs none of the financial markets under consideration are regionally or globally financially integrated. However, these oil producing Gulf Cooperation Council (GCC) countries have devoted remarkable efforts to mutually integrate their financial and goods markets since the inception of the Council in 1981. This might have translated into improved financial risk sharing and consumption smoothing opportunities among member countries since the early 1980s. Hence, we now proceed in the next section with a more rigorous econometric analysis of volatility dynamics.

4. Data Methodology and Empirical Results

In this section, we provide a more formal econometric analysis to understand the main determinants of macroeconomic volatility in the two MENA sub-groups. Our sample comprises 8 MENA countries: Egypt, Jordan, Morocco and Turkey—considered to be the more financially integrated economies—and the less financially integrated economies of Saudi Arabia, Kuwait, Bahrain and the UAE. The data set is for the period 1980-2002. Real GDP, private consumption and general government consumption, all in USD, are from the National Accounts Studies of the ESCWA Region, Bulletins No.17-23 and from the World Bank’s World Development Indicators. Consumers and producers’ price indices, government spending and revenues, imports and exports of goods and services in current US dollars and Money and Quasi-Money (M2) as a percentage of GDP, are from the International Monetary Fund’s International Financial Statistics and Direction of Trade Statistics and the World Bank’s World Development Indicators. Capital inflows and outflows as a percent of GDP, terms of trade, trade and capital account restrictions are from the World Bank’s World

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8 On May 25th, 1981, the leaders of the United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait met in Abu Dhabi to discuss the establishment of the Gulf Cooperation Council aimed at reaching coordination, integration and inter-connection among the Member States in all fields and to achieve unity at a later stage. The six member countries have a lot in common in terms of cultural, historical, social and religious values. These factors along with the geographic entity facilitated interaction and discussion and created homogenous values and characteristics. The objective of the GCC is to strengthen coordination, integration and ties between their peoples. The GCC also aims at conforming some fields such as economy, finance, trade, tourism, legislation, administration, agriculture and others among the member countries.
Development Indicators and the International Monetary Fund’s International Financial Statistics.

Our choice of the 8 MENA economies stems from the fact these countries can be divided into two groups with two distinct and polar characteristics. On one hand, we have Egypt, Morocco, Turkey and Jordan, which are the most open and financially integrated, and the least regulated markets in MENA. On the other, we have Bahrain, Saudi Arabia, Kuwait and the UAE, considered to be relatively closed and the least financially integrated, and highly regulated financial markets. Consequently, this study sheds light on the relationship between the markets that are relatively open and those that are relatively closed with as objective to provide a thorough understanding of these relationships being the first step in making sound economic policies.

4.1 Empirical Methodology

In this section, panel data econometric models are used to highlight the main determinants of macroeconomic and financial volatility in the MENA region. In particular, we examine the roles of trade and financial openness in driving cross-sectional and time series patterns of macroeconomic and financial volatility. Two measures of trade openness—a dummy variable to capture restrictions on current account transactions and a standard trade openness ratio—are used. To measure financial openness, we use another dummy variable to capture restrictions on capital account transactions, and also a measure of gross capital flows to GDP, where the latter is analogous to the trade openness ratio. The restrictiveness variables can be considered as measures of *de jure* trade and financial openness, while the flow measures capture *de facto* openness. This distinction is of particular importance in understanding the effects of financial integration, as many MENA economies that have maintained controls on capital account transactions have found them ineffective in many circumstances, particularly in the context of episodes of capital flights.

We also include in our empirical analysis a number of variables drawn from the empirical literature that has examined various aspects of financial and macroeconomic volatility. In addition to the above measures of trade and financial openness, our core set of explanatory variables includes the standard deviation of the terms of trade, the ratio of M2 to GDP and its volatility, the rate of inflation and the volatility of the fiscal balance.

The general version of the model takes the form:

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\sigma_{i,t} = \alpha_i + \beta CAR_{i,t} + \theta TO_{i,t} + \delta CPAR_{i,t} + \phi FO_{i,t} + \varphi \sigma_{TOT,i,t} \\
+ \mu(M_{2,i,t} / GDP_{i,t}) + \mu_i \sigma_{M2,i,t} / GDP_{i,t} + \eta \ln f_{i,t} + \kappa \sigma_{FP,i,t} + u_{i,t,1}.
\]

where \(i = 1,2,\ldots,N\) cross sections and periods \(t = 1,2,\ldots,T\), with \(N=8\) MENA countries and \(T=22\) years, spanning the sample period 1980-2002. And where \(CAR_{i,t}\) is a dummy variable capturing current account restrictions for country \(i\) at time \(t\); \(TO_{i,t}\) is trade openness for country \(i\) at time \(t\); \(CPAR_{i,t}\) is a dummy variable capturing capital account restrictions for country \(i\) at time \(t\); \(M_{2,i,t} / GDP_{i,t}\) is the ratio of M2 to GDP and its volatility, the rate of inflation and the volatility of the fiscal balance.

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9 This is a dummy variable, which takes on the value of 1 in the presence of trade restrictions and 0 otherwise.

10 The measure of trade openness used is defined as the ratio of total exports plus imports divided by GDP.

11 This is a dummy variable, which takes on the value of 1 in the presence of capital account restrictions and 0 otherwise.

12 Capital flows are defined as foreign direct investment plus portfolio flows.

13 Terms of trade for a given MENA country \(i\) are measured as the ratio of country \(i\)’s Producers Price Index (PPI) to proxy the price of exports, and the Consumer Price Index (CPI) to proxy the price of imports.

14 Fiscal balance is defined as the difference between government spending (inclusive of debt service) and government revenues.
country \(i\) at time \(t\); \(FO_{i,t}\) is financial openness for country \(i\) at time \(t\); \(\sigma_{TOT,i,t}\) is the terms of trade volatility for country \(i\) at time \(t\); \(\sigma_{M2/GDP,i,t}\) is the volatility of M2/GDP for country \(i\) at time \(t\); \(\text{inf}\) is inflation for country \(i\) in period \(t\); and \(\sigma_{FP,i,t}\) is the volatility of fiscal policy for country \(i\) at time \(t\).

We estimate three different versions of the above model for each MENA sub-group: the MFIMENAEs and the LFIMENAEs. The dependent variable \(\sigma_{i,t}\) for each one of these different versions will represent respectively: (1) The volatility of the growth rate of GDP, (2) The volatility of the growth rate of consumption \(C\); And (3) the volatility of the growth rate of total private and public consumption \((C+G)\), as follows:

\[
\sigma_{i,t}^y = \alpha_i + \beta \text{CAR}_{i,t} + \theta TO_{i,t} + \delta \text{CPAR}_{i,t} + \phi FO_{i,t} + \phi \sigma_{TOT,i,t} + \mu (M_{2,i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t/GDP_{i,t}} + \eta \text{inf}_{i,t} + \kappa \sigma_{FP,i,t} + u_{i,t}. \tag{2}
\]

\[
\sigma_{i,t}^C = \alpha_i + \beta \text{CAR}_{i,t} + \theta TO_{i,t} + \delta \text{CPAR}_{i,t} + \phi FO_{i,t} + \phi \sigma_{TOT,i,t} + \mu (M_{2,i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t/GDP_{i,t}} + \eta \text{inf}_{i,t} + \kappa \sigma_{FP,i,t} + u_{i,t}. \tag{3}
\]

\[
\sigma_{i,t}^{C+G} = \alpha_i + \beta \text{CAR}_{i,t} + \theta TO_{i,t} + \delta \text{CPAR}_{i,t} + \phi FO_{i,t} + \phi \sigma_{TOT,i,t} + \mu (M_{2,i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t/GDP_{i,t}} + \eta \text{inf}_{i,t} + \kappa \sigma_{FP,i,t} + \lambda \sigma_{oil} + u_{i,t}. \tag{4}
\]

The intercept \(\alpha\) is a country fixed effect that controls for country specific factors that do not vary over time. White heteroscedasticity-consistent standard errors and co-variances are computed. The independent variables have been selected on the basis of their potential relevance to this model, and because of their importance in depicting the impact of financial volatility on macroeconomic volatility. The residual covariance matrix for this set of equations is given by

\[
\Omega = E(u'u) = \sigma^2 I_N \otimes I_T. \tag{5}
\]

To account for the fact that the LFIMENAEs are oil economies, Models (2)-(4) are modified to include an additional variable, the volatility of oil prices, \(\sigma_{oil}\), to capture the effects of oil price fluctuations on the macroeconomic variables in this MENA subgroup, as follows:

\[
\sigma_{i,t}^y = \alpha_i + \beta \text{CAR}_{i,t} + \theta TO_{i,t} + \delta \text{CPAR}_{i,t} + \phi FO_{i,t} + \phi \sigma_{TOT,i,t} + \mu (M_{2,i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t/GDP_{i,t}} + \eta \text{inf}_{i,t} + \kappa \sigma_{FP,i,t} + \lambda \sigma_{oil} + u_{i,t}. \tag{6}
\]

\[
\sigma_{i,t}^C = \alpha_i + \beta \text{CAR}_{i,t} + \theta TO_{i,t} + \delta \text{CPAR}_{i,t} + \phi FO_{i,t} + \phi \sigma_{TOT,i,t} + \mu (M_{2,i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t/GDP_{i,t}} + \eta \text{inf}_{i,t} + \kappa \sigma_{FP,i,t} + \lambda \sigma_{oil} + u_{i,t}. \tag{7}
\]

\[
\sigma_{i,t}^{C+G} = \alpha_i + \beta \text{CAR}_{i,t} + \theta TO_{i,t} + \delta \text{CPAR}_{i,t} + \phi FO_{i,t} + \phi \sigma_{TOT,i,t} + \mu (M_{2,i,t} / GDP_{i,t}) + \mu_1 \sigma_{M2,i,t/GDP_{i,t}} + \eta \text{inf}_{i,t} + \kappa \sigma_{FP,i,t} + \lambda \sigma_{oil} + u_{i,t}. \tag{8}
\]

4.2 Empirical Results

Table 1 reports the panel regression results for the volatilities of the MFIMENAEs’ rate of growth of GDP and private consumption, and total private and public consumption. The capital and current account restrictions are both significantly associated with the volatilities.

\(^{15}\) Oil prices are obtained from the OPEC Statistical Bulletin 2003, and from the Survey of Economic and Social Developments in the ESCWA Region, various issues.
of GDP, private and total consumption. Indicating that the more open the MFIMENAEs are, the higher the volatility of GDP and consumption. This is in line with our earlier findings, indicating that the absence of capital and current account restrictions is not associated with a decline in consumption volatilities.\footnote{Bekaert, Harvey, and Lundblad (2002) report that capital account openness increases the volatility of output and consumption in emerging market countries.}

Financial openness, as proxied by gross capital flows to GDP, has a positive and significant effect on GDP and on private and total consumption.\footnote{Gavin and Hausmann (1996) report a significant positive association between financial integration proxied by capital flows and GDP volatility.} Increasing financial integration appears not to be associated with declining volatilities of consumption. Thus, the MFIMENAEs with gross capital flows that amount to a higher fraction of GDP have not yet started to benefit from capital market integration in terms of consumption smoothing possibilities.

Trade openness is significantly positively associated with GDP and consumption volatilities. This may be explained by the fact that the small open MFIMENAEs are extremely vulnerable to external shocks. This is also in line with Denizer et al (2002), and Easterly, Islam and Stiglitz (2001), who suggested that an increase in the degree of trade openness leads to an increase in the volatility of output, especially in developing countries. The coefficient on the terms of trade is also significant, indicating greater vulnerability to shocks to global exchange and inflation rates. The ratio of M2/GDP and its volatility, which proxy financial sector developments, are in fact associated with lower output and consumption volatilities. Thus, the depth of domestic financial markets has a crucial impact on volatility. Our results are again in line with Denizer et al (2002) and Easterly, Islam and Stiglitz (2001), who argued that a higher level of development of the domestic financial sector is associated with lower volatility.

Although the fiscal volatility measure does not seem to affect significantly the volatilities of either consumption or GDP, domestic inflation is associated with a significant increase in the volatilities of private and total consumption, but affects insignificantly the volatility of GDP.

On the other hand, Table 2 reports the panel regression results for the volatilities of the LFIMENAEs’ rate of growth of GDP, private consumption and total private and public consumption. Current account restrictions are associated with a reduction in the volatilities of GDP and consumption, indicating that these MENA oil exporting countries will fare better in terms of consumption smoothing opportunities in the presence of restrictions on their oil exports. Capital account restrictions are, however, not associated with a decline in consumption and GDP volatilities.

Trade openness is significantly positively associated with GDP and consumption volatilities. This may be explained by the fact that oil producing MENA economies are extremely vulnerable to external shocks, mainly shocks to global demand, and global exchange and interest rates. Oil exports constitute about 80 percent of total exports in the LFIMENAEs. Therefore, any fluctuations in these exports will have a direct bearing on GDP and private and total consumption. The volatility in oil prices has a positive and significant impact on the volatilities of GDP, consumption and total consumption. This indicates an important exposure of these countries to oil price fluctuations. Thus, oil producing MENA countries should diversify their economies away from the oil sector into the services and industrial sectors. This will reduce their excessive trade openness and reduce their excessive vulnerability to the fluctuations in oil prices and oil revenues.
The coefficients on the terms of trade variable are slightly significant, indicating some vulnerability to shocks to global exchange and inflation rates. In addition, financial openness, as proxied by gross capital flows to GDP, has an insignificant effect on private and total consumption and on the volatility of GDP.

The ratio of M2/GDP, which proxies financial sector developments is also insignificant, indicating the low levels of financial developments of the respective financial market in the LFIMENAEs. However, the fiscal volatility measure does seem to affect significantly the volatility of consumption and GDP. These dynamics are in line with economic intuition, and reflect the high share of oil revenues in the budgetary structures of these countries. Domestic inflation is associated with an insignificant impact on the volatilities of private and total consumption, but affects significantly the volatility of GDP.

Finally, in terms of goodness of fit, we see that for both sets of regressions for the two MENA sub-groups, the coefficients of determination, $R^2$, are estimated at 78, 82 and 62 percent respectively for the MFIMENAES, and at 67, 65 and 55 percent respectively for the LFIMENAEs, which are quite high for cross section regressions and are indicative of good explanatory power of the estimated models.

5. Conclusions and Policy Implications

Since the early 1980s, monetary and fiscal developments in the MENA region have shown signs of weakness. Deteriorations in the global economic outlook, coupled with regional political tensions, have contributed in heightening and amplifying the already deteriorating monetary and fiscal environment in the region. Oil prices and revenues, interest and exchange rates have all been volatile, and many of the LFIMENAEs of the region have moved from little debt to high levels of foreign debt and accumulated budget deficits. At the same time many countries in the MENA region are moving towards greater participation in the global economy. The increasing trend towards financial globalization is presenting the region with several challenges both at the fiscal and monetary levels. Greater monetary and fiscal coordination and cooperation within MENA may turn out to be instrumental for the region to avert any type of monetary or fiscal crisis in the future, to better cope with the costs of greater financial market integration both regionally and internationally and to enhancing consumption smoothing opportunities.

Assessing the benefits and costs associated with financial globalization requires a clear understanding of the impact of international financial integration on macroeconomic volatility. This paper has attempted to shed light on the effects of financial integration on macroeconomic volatility in the MENA region. It was shown that financial openness—as measured by gross capital flows as a ratio to GDP—is associated with an increase in consumption volatility, contrary to the notions of improved international risk-sharing opportunities through financial integration. The inherently unstable macroeconomic environment, as well as unsound monetary and fiscal policies in the region may explain this empirical irregularity.

On the other hand, the empirical results point to the fact that countries may be less susceptible to foreign financial shocks if the domestic market is larger and/or more regulated. This is consistent with what economic theory would suggest and it has policy implications. In

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18 An important fiscal development in oil-producing MENA countries is that some of these countries have moved during the early 1990s into the category of debtor countries due to the increase in their external debts and deficits. For example, in Saudi Arabia the budget deficit in the last five years has averaged 4.5 percent of GDP, and the total government debt is now at about 95 percent of GDP. With a budget deficit that is due mainly to public salaries and debt service payments, the Saudi government will feel the pressure of any decrease in oil-prices.
reality, some MENA countries have chosen to impose capital controls to deal with financial market crises since it appears that the “culprit” is international capital flow although this policy practice may have undesirable long-term economic consequences.

One policy recommendation of the study is that MENA countries need to be more, not less, integrated into world financial markets to be able to reap the benefits of financial integration in terms of improved risk sharing, and consumption smoothing opportunities. This conclusion will however require further analysis, as international financial integration is associated with a variety of risks in the MENA region. To minimize these risks, MENA countries would need to implement sound macroeconomic and structural frameworks prior to further integration. For example, our findings have emphasized the role of sound fiscal and monetary policies in driving macroeconomic volatility. With regard to structural reforms, the development of the domestic financial sector is critical, as a high degree of financial sector development is associated with lower macroeconomic volatility.

MENA countries should improve their macroeconomic policy coordination to cope effectively with the impact of greater financial integration. This can be achieved for example through enhancing regional economic and financial integration. The establishment of an Arab free trade zone will not only stimulate and enhance growth, but will also enhance intra-MENA trade, thereby, reducing considerably the reliance on trade with the rest of the world, and controlling for the excessive exposure of these small open economies to macroeconomic developments in the more mature economies. The literature shows that large economies can better absorb and neutralize the effects of external shocks. Controlling for the effects of shocks, however, is particularly difficult in the case of developing economies, which are usually smaller in size and nearly dependent on export of one commodity (e.g. oil, in the case of oil-producing MENA countries). A direct consequence of an integrated capital market within the MENA region will be to reduce the risks associated with greater international integration, and to dampen the vulnerability of MENA countries, especially those with high levels of debt, to the effects of fluctuations in world interest rates. A larger financial market in MENA would lower the cost of raising capital, and would allow MENA firms to rely more on the local market rather than tapping world markets to raise capital. Lower costs of raising capital will subsequently translate into more investment, consumption and GDP growth rates in the region.

The MENA region should accelerate the process of trade, financial and economic integration in order to better absorb the negative effects of external political, financial and/or economic shocks. Efforts should also be exerted to speed up the implementation of the fiscal and monetary reforms so as to improve the inflow of portfolio and FDI into the region.
References


Figure 1: Dynamics of MENA Countries Nominal Exchange Rates: 1960-2002

A- MFIMENAEs

(a) Egypt

(b) Jordan

(c) Morocco

(d) Turkey
Figure 1: Cont’d.

**B-LFIMENAEs**

(a) Bahrain                     (b) Kuwait

(e) Saudi Arabia                   (f) United Arab Emirates

Notes: Exchange rates are determined as the respective national currency per one US dollar.
Figure 2: Dynamics of MENA Countries Inflation Rates: 1960-2002, (in percent)

**A-MFIMENA Es**

(a) Egypt

(b) Jordan

(c) Morocco

(d) Turkey
Figure 2: Cont’d.

B-LFIMENAEs

(a) Bahrain

(b) Kuwait

(e) Saudi Arabia

(f) United Arab Emirates

Notes: Inflation rates computed from the respective Consumer Price Indices (CPI), 1995=100.

Figure 3: Dynamics of MENA Countries Consumption: 1980-2002, (In USD Million)

A-MFIMENAEs

(a) Egypt  
(b) Jordan  
(c) Morocco  
(d) Turkey
Figure 3: Cont’d.

**B-LFIMENAEs**

(a) Bahrain  
(b) Saudi Arabia  
(c) Kuwait  
(d) United Arab Emirates

Notes: All nominal consumption values in local currencies were converted to the USD at current nominal exchange rates.

Source: National Accounts Studies of the ESCWA Region, Bulletins No.17-23.
Figure 4: Dynamics of MENA Countries Real GDP (In USD Billion)

MFIMENAEs

(a) Egypt (USD Million)                  (b) Jordan (USD Million)

(c) Morocco     (d) Turkey
Figure 4: Cont’d.

B-LFIMENAEs

Notes: Real GDP in constant 1995 Prices.

Table 1: Panel Regression: MFIMENAes, 1980-2002

<table>
<thead>
<tr>
<th>Exogenous Variable</th>
<th>( \sigma^*_\text{Y} )</th>
<th>( \sigma^*_\text{C} )</th>
<th>( \sigma^{C+G}_\text{} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.02</td>
<td>0.04*</td>
<td>-0.32</td>
</tr>
<tr>
<td>t-stat.</td>
<td>(1.09)</td>
<td>(2.26)</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Current Account Restrictions (CAR)</td>
<td>-0.04*</td>
<td>-0.21**</td>
<td>-0.08*</td>
</tr>
<tr>
<td>t-stat.</td>
<td>(-2.21)</td>
<td>(-3.31)</td>
<td>(-2.03)</td>
</tr>
<tr>
<td>Trade Openness (TO)</td>
<td>0.03**</td>
<td>0.25**</td>
<td>0.42</td>
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<tr>
<td>t-stat.</td>
<td>(2.98)</td>
<td>(4.6)</td>
<td>(1.79)</td>
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<tr>
<td>Capital Account Restrictions (CPAR)</td>
<td>-0.01**</td>
<td>-0.08*</td>
<td>-0.05</td>
</tr>
<tr>
<td>t-stat.</td>
<td>(-3.2)</td>
<td>(-2.23)</td>
<td>(-1.3)</td>
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<td>Financial Openness (FO)</td>
<td>0.002**</td>
<td>0.09*</td>
<td>0.2**</td>
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<tr>
<td>t-stat.</td>
<td>(3.05)</td>
<td>(2.36)</td>
<td>(3.5)</td>
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<tr>
<td>Terms of Trade Volatility (TOT)</td>
<td>0.36*</td>
<td>0.24**</td>
<td>0.36</td>
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<tr>
<td>t-stat.</td>
<td>(2.01)</td>
<td>(2.95)</td>
<td>(1.65)</td>
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<tr>
<td>M2/GDP</td>
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<td>-0.85**</td>
<td>0.35</td>
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<td>(-5.31)</td>
<td>(-3.6)</td>
<td>(1.25)</td>
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<td>Volatility of M2/GDP</td>
<td>-0.24**</td>
<td>-0.75**</td>
<td>-0.94**</td>
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<td>t-stat.</td>
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<td>(-3.14)</td>
<td>(-4.23)</td>
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<tr>
<td>Inflation</td>
<td>0.89</td>
<td>0.56**</td>
<td>0.005*</td>
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<tr>
<td>t-stat.</td>
<td>(1.36)</td>
<td>(3.56)</td>
<td>(2.08)</td>
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<tr>
<td>Volatility of Fiscal Policy (FP)</td>
<td>0.02</td>
<td>0.001</td>
<td>0.36</td>
</tr>
<tr>
<td>t-stat.</td>
<td>(0.25)</td>
<td>(0.56)</td>
<td>(1.35)</td>
</tr>
<tr>
<td>R Squared</td>
<td>0.78</td>
<td>0.82</td>
<td>0.62</td>
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<tr>
<td>Total Panel (Unbalanced) Observations</td>
<td>88</td>
<td>88</td>
<td>88</td>
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</table>

Notes: 1-White Heteroscedasticity-Consistent Standard Errors & Covariance. 2-The numbers in parenthesis are t-statistics. 3- A * indicates significance at the 5 percent level, while a ** indicates significance at the 1 percent level. 4- The panel estimation is carried out using the Seemingly Unrelated Regression (SUR) Method. Source: Author’s Estimates.
Table 2: Panel Regression: LFIMENAEs, 1980-2002

<table>
<thead>
<tr>
<th>Exogenous Variable</th>
<th>( \sigma_{i,j} )</th>
<th>( \sigma_{i,j}^C )</th>
<th>( \sigma_{i,j}^{C+G} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.23</td>
<td>0.98</td>
<td>1.65</td>
</tr>
<tr>
<td>t-stat.</td>
<td>(2.6)</td>
<td>(0.36)</td>
<td>(1.23)</td>
</tr>
<tr>
<td>Current Account Restrictions (CAR)</td>
<td>-0.23*</td>
<td>-0.36**</td>
<td>-0.001</td>
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<td>t-stat.</td>
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<td>(-0.96)</td>
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<td>t-stat.</td>
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<td>(-0.96)</td>
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<tr>
<td>Financial Openness (FO)</td>
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<td>0.09</td>
<td>0.07</td>
</tr>
<tr>
<td>t-stat.</td>
<td>(1.55)</td>
<td>(1.66)</td>
<td>(1.85)</td>
</tr>
<tr>
<td>Volatility of Terms of Trade (TOT)</td>
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<td>0.04*</td>
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<tr>
<td>t-stat.</td>
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<td>(2.06)</td>
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<td>M2/GDP</td>
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<td>0.23</td>
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<td>Volatility of M2/GDP</td>
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<td>0.12*</td>
</tr>
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<td>t-stat.</td>
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<td>Volatility of Fiscal Policy (FP)</td>
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<td>(4.68)</td>
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<td>R Squared</td>
<td>0.67</td>
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<td>Total Panel (Unbalanced) Observations</td>
<td>88</td>
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Notes: 1-White Heteroscedasticity-Consistent Standard Errors & Covariance. 2-The numbers in parenthesis are t-statistics. 3- A * indicates significance at the 5 percent level, while a ** indicates significance at the 1 percent level. 4- The panel estimation is carried out using the Seemingly Unrelated Regression (SUR) Method. Source: Author’s Estimates.