



Capital Account Liberalization and External Debt

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ABSTRACT: This paper examines the impact of capital account liberalization on the external debt of South Mediterranean Countries (SMCs). We use 5 models to explain the growth of external debt by macroeconomics variables and especially by variables reflecting the capital liberalization. Using panel data for 8 countries from 1971 to 2015, we find that capital account liberalization is negatively correlated with external debt. We also find that the macroeconomic instability has an important role in the rise of external debt.

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I- Introduction

Recently, many international financial organizations warning that debt levels were not just high but rising. The world debt level was more than twice the size of the global economy and an unprecedented as a proportion of GDP.

The negative implications of excessive debt for growth and financial stability are well documented in literature, underscoring the need for private sector deleveraging in some countries. The current low-nominal-growth environment, however, is making the adjustment very difficult, setting the stage for a vicious feedback loop in which lower growth hampers deleveraging and the debt overhang exacerbates the slowdown (Buttiglione and others 2014; McKinsey Global Institute 2015; Gaspar, Obstfeld, and Sahay 2016). The past three decades have also been associated with greater openness in global financial markets. There has been a steady decline in the number of restrictions that countries impose on cross-border financial transactions. Many index of capital account openness show an increase, on average, in all income groups, with a particularly significant

rise occurring at the beginning of the 1990s (Bekaert and Harvey, 2000; Henry, 2000; Chinn and Ito, 2014).

The advocates of capital account liberalization argue that the integration of countries with the world financial system can have many benefits, particularly for emerging economies with segmented financial markets. In a global financial environment, firms from financially underdeveloped economies gain access to mature financial markets, which are liquid and offer long-term financing. This integration also helps to develop the domestic financial systems. Therefore, the cost of capital decreases and financing constraints are relaxed. Furthermore, by issuing debt in foreign jurisdictions, with better contract enforcement institutions, the level of risk for creditors decreases and debtors become more able to borrow long term. All these potential advantages have prompted most emerging economies to liberalize their financial systems around the first half of the 1990s and among them the SMCs (Schmukler and Vesperoni, 2006).

These last years, several critics are formulated against the processes of liberalization. These



critics touch, for example, the increase of the external debts of the developing countries. This phenomenon is also remarkable for the countries of our analysis. These countries have begun the liberalization of their financial systems since decades and recently lived political revolutions which have ruined their economies.

It appears interesting to study this relationship between capital account liberalization and external debt. This study seems to be more significant for the region of South Mediterranean, these countries made many reforms in the way of capital flows liberalization and the same period is accompanied with a rise on their external debts¹. This paper seeks to add to the current literature on the association between account liberalization and external debt by examining a panel data for 8 south Mediterranean countries (SMCs) from 1971 to 2015.

The paper is organized as follows. In the first section, we review studies which must treat the aspects connecting capital account liberalization with the rise of external debts. Also, we analyze the evolution of reforms of capital controls and external debt in SMCs. In the second section, we specify our models. These models were inspired by the model Boyce (1992). We made some adjustments to this model and we diversified our methods of estimation to have more robust results. The variables are divided into control variables and others reflecting capital account liberalization. The last section summarizes the main findings and discusses policy implications needed to reduce the ratio of external debt and to achieve the process liberalization in these countries.

¹The analysis of the IMF (2016) concern all sort of debts. Here we focus the analysis on external debts because we don't have a statistic for all debts in the SMC.

II- Capital account liberalization and external debt

1- Theoretical Review

The relationship between external debt and capital flight has been well documented in literature, which recognizes that capital flight is quantitatively large in high-debt countries.

Theory suggests that the capital flows liberalization can lead to the financial development through several channels to oppose the financial repression and an increase of the real interest rate (McKinnon, 1973; Shaw, 1973). Also, this liberalization will allow the participants on the domestic and external financial systems to find the necessary funds to their investments and especially at a lower cost.

Boyce (1992) gives indirect linkages between capital flight and external debt. He gives two ways of causality. First, capital liberalization leads to the rise of external debt, second, the external debt leads to a more liberalization of capital flows. Boyce suggests that Capital outflows may drive a country into external indebtedness where debt essentially replaces the funds lost because capital flight. He notes that foreign creditors may be willing to fill the vacuum created by flight if they perceive a "comparative advantage" in risk and return. In this context, Lessard & Williamson (1987, p. 217) suggest that disparities in taxation, interest rate ceilings and risk pooling may lead to systematic differences in risk-adjusted returns to resident and non-resident capital.

One view of the debt-flight linkage maintains that the association between the two variables may be attributable to poor economic management and track records of debtor governments. Chipkatti and Rishi, (2001) contend that indirect factors such as low growth regimes, overvalued exchange



rates and poor fiscal management by third world governments not only cause capital flight but also generate demand for foreign credit. Also, McKinnon and Pill (1997) investigate the macroeconomic forces driving the over-borrowing phenomenon. They highlight the interactions among successful real-side reform, flows of international financial capital, and possible market failure in the domestic banking and financial system as it is liberalized. Their work outlines a model in which short-run deviations from sustainable behavior are caused by financial market failure.

Stock market liberalization seems to be determinant for external debt by reducing the cost of equity capital. Through a decision of a country's government, foreigners can, more easily, purchase shares in that country's stock market (Henry 2000). Standard International Asset Pricing Models (IAPMs)² predict that stock market liberalization may reduce the liberalizing country's cost of equity capital by allowing for risk sharing between domestic and foreign agents (Stapleton and Subrahmanyam (1977), Errunza and Losq (1985), Eun and Janakiramanan (1986), Alexander, Eun, and Janakiramanan (1987)). Stultz (1999), examine the impact of globalization on the cost of equity capital. He argues that the cost of equity capital decreases because of globalization. He finds that the liberalization

process usually increases the efficiency level of the financial system by weeding out inefficient financial institutions and creating greater pressure for a reform of the financial infrastructure (Claessens et al., 2001; Stultz, 1999; Stiglitz, 2000). The existing empirical evidence is consistent with the theoretical prediction that globalization decreases the cost of capital, but the documented effects are lower than theory leads us to expect.

Another perspective on the association between external debt and capital account liberalization emerged, especially when capital account liberalization led to a build-up of short-term external debt, which in turn was a robust predictor of the East Asian crises. A short-term external debt to reserves ratio of more than one or a sharp increase in the ratio makes a country prone to a crisis because of the risk for sudden and massive reversibility of those flows for rational or irrational reasons (Furman and Stiglitz, 1998; Rodrik and Velasco 1999). Rapid liberalization, without enhancing prudential regulations and bank supervision, results in increased risk-taking behavior by banks when new ones enter and competition increases. Implicit government guarantees create the problem of moral hazard. High short-term external debt is found to be a crucial factor that can easily lead to a crisis in a liberalized capital account regime, because it can be reversed at short notice. According to Krugman (1999), high foreign-currency-denominated private external debt because of capital account liberalization, combined with self-fulfilling panic led to currency depreciation. Krugman (1999) argues that firms should be discouraged from taking on foreign-denominated debt of any maturity.

²The standard IAPM makes a salient prediction about an emerging country that does not allow foreigners to purchase shares in its stock market: The country's aggregate cost of equity capital will fall when it opens its stock market to foreign investors. Equivalently stated, holding expected future cash flows constant, we should see an increase in an emerging country's equity price index when the market learns of an impending future stock market liberalization.



As we have seen, several studies treat the opportunities offered by capital flight to the borrowers. But, few are interested by the direct relationship between capital account liberalization and the rise of the external debt. This paper contributes to these studies; we introduce some innovations on this subject: we treat the causal effect from capital account liberalization to external debt; the case of SMC is analyzed for the first time and our analysis is focus precisely on the capital account liberalization.

2- The case of SMCs

Capital account liberalization can bring significant benefits to a country, including increased access to international capital markets, broader opportunities for risk sharing, greater FDI inflows and greater discipline in the exercise of economic policy (Eichengreen and al. 1998). Southern Mediterranean countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Turkey, Syria and Tunisia) stand to gain considerably from the benefits that capital account liberalization is purported to offer. The objective is not to quote all approaches taken by the SMCs to liberalizing their capital account. We give more interest on the main reforms taken and we analyze the variations of Chinn and Ito index³ (also noted KAOPEN index) (graph 1).

As far as capital account liberalization is concerned, all SMCs, except for Lebanon, had significant controls in place in the early 1990s. Indeed, at the end of 2015, only Jordan maintained a few minor restrictions on the movement of capital, respectively, in contrast to

other countries, where extensive controls still exist. Most SMCs followed a fixed peg regime, at least to some extent, capital controls. Egypt which had more liberalized capital flows moved towards more flexible exchange rate regimes, while the case of Jordan demonstrates that it is possible to advance capital account liberalization while maintaining a fixed peg regime.

The FDI inflows, which in general operate within a liberalized environment, Gibson and Vlassopoulos (2007) show that, despite liberalization, there is evidence that some Mediterranean countries are not performing to potential and should be attracting more FDI. This indicates that there is scope for national and regional policies which could help boost FDI flows in these countries. SMC have been gradually increasing trade links and flows since 1999, and there is room to further expand the openness of trade. Since 2003, Mediterranean countries have recorded an increase in FDI flows, which has helped accelerate structural reforms. And all countries managed to increase their foreign exchange reserves, reflecting the increase in FDI flows, at least since 2003.

Turning to the banking systems in SMC, which are the main source of financial intermediation, the evidence is that up to now there has been limited domestic liberalization and the financial systems remain underdeveloped. More specifically, despite strong credit growth observed over the last few years the overall low level of credit to the private sector points to underdeveloped financial systems; especially in Syria. Accordingly, it is expected that Mediterranean countries will further develop their financial sectors before proceeding with more capital account liberalization.

Most SMCs had negative values of KAOPEN at the beginning of the period of analysis (see Graph

³Chinn and Ito index is scaled in the range between -2.5 and 2.5, with higher values standing for larger degrees of financial openness. This index is the main component of four binary variables in IMF's (AREAER) and it takes higher values for more open financial regimes.



1). These values became positive in last decade, for some countries (Egypt and Jordan). The remaining countries still have negative values for the rest of the analysis period (Lebanon, Syria, Algeria, Tunisia, Morocco and Turkey).

Turning to external debt, and for the all period, there is a general increase pace for most of these countries. As we stated in introduction (IMF 2016), it acts of a phenomenon which has touched most of emergent economies for several decades and the countries of our analysis are part of this report. About graph 1, we find a rise of the debt ratio since 2000 for Tunisia, Turkey, and Lebanon. This rise is accompanied with a rise of KAOPEN, especially for Turkey and Lebanon. Tunisia presents a fixed KAOPEN index at the value of -1.18 for most of years of analysis. For Jordan, Syria and Morocco, we have little fluctuations of debt ratio, since 2000. Egypt and Algeria have a decline in its debt ratio over the last decade, but at the beginning of the period, they had both a big amount of external debt.

While being based on graph 1, it appears difficult to establish causality between the external debt and the liberalization of the capital account. We turn to empirical analysis to establish our assumption that there will be a positive impact of the capital account liberalization on external debt (Boyce and al. (1992, 2001 and 2011)).

III- Model specification

Boyce (1992) gives a model composed from a causal relationship between capital flight and external debt: $KF = f(KF_1, DD, RES, GDPGR, INT, BS, MEXD)$

$DD = f(DD_1, KF, RES, GDPGR, INT, BS, MEXD)$

where KF = annual capital flight (KF_1 : first lag of KF) ; DD = net debt disbursements (DD_1 :

first lag of DD); RES = the level of the country's official foreign exchange reserves; $GDPGR$ = the percentage growth rate of gross domestic product; INT = the real US Treasury bill rate minus the real time deposit rate in the Philippines. ; BS = the government budget surplus as a percentage of gross domestic product; and $MEXD$ = a dummy variable to allow for the impact of the Mexican debt crisis, taking the value zero prior to 1983 and one thereafter.

We use the second relationship to explain the growth of external debt and we make some changes on this model. We complete the model of Boyce (1992) with other variables presented in the analytical framework based on the Exceptional Fiscal Performance Approach of IMF (2013). This study of the IMF tries to forecast an external debt path based on assumptions about variables including the contribution of the effective real interest rate, the contribution of the real GDP growth, the contribution of the real exchange rate, the contribution of primary balance and other factors.

By using these two analyses (Boyce and IMF), we can specify our model to explain the evolution of external debt in SMC by the following control variables:

GDP growth: The debate about the relation between external debt and GDP growth has been animated by a growing series of empirical papers. One of the most influential analyses on the topic is the one of Reinhart and Rogoff (2010, 2012). These authors argue that there is a threshold effect whereby external debt above 90 percent of GDP is associated with dramatically worse growth outcomes. The causal impact between external debt and GDP growth is moderate, usually it's interpreted according to the level reached by the external debt.



Real interest rate: An excess of investment over saving could lead to rise in the real interest rate and hence to an inflow of external financial resources (S. Manzocchi, 1997). Lane and Milesi-Ferreti (2001) find evidence of an inverse relationship between interest rates on government bonds and net foreign asset positions such that a 20-percentage point increase in the ratio of net foreign liabilities to exports position is associated with a 50-basis point increase in real interest rates. (see also Rose (2010) and Cheung (2013)). We expect a positive impact of real interest rate on external debt⁴.

Current Account Balance: Many developed and developing economies run current account deficits. Very poor countries typically run large current account deficits, in proportion to their gross domestic product (GDP), that are financed by official grants and external debt. The relationship between external debt and the current account balance seems to be evident and it is verified in many studies (P. Wachtel, 1998; S. M. A. Abbas, J. Bouhga-Hagbe, A. Fatás, P. Mauro, and R. C. Velloso, 2011).

Real exchange rate: Devereux and Lane (2001) suggests that external debt is one of the significant determinants of exchange rate fluctuations and their research finding showed that there was a negative relationship between exchange rate volatility and external debt stock. Besides, Begg (1996) argues that the behavior of the real exchange rate matters for pattern of capital flows in transition economies, as it affects the current account and the external debt.

⁴In the Boyce Model, the dummy variable for the impact of the Mexican debt crisis haven't any role on the case of SMC. We replace it by the real interest rate.

Inflation rate: high inflation reduces domestic saving propensities and hence encourages increased foreign borrowing for the financing of domestic investment needs (T. Gylfason, 1991). This link is reinforced by the feedback effect of debt accumulation on domestic money supply and inflation. We add this variable to our model; it is also used in many studies trying to explain the external debt (B. Akitoby, T. Komatsuzaki, and A. Binder (2014)).

We add to these control variables two other variables reflecting the capital account liberalization. The most important of these variables is the KAOPEN index (Chinn and Ito (2014)). This index replaces the variable "capital flight" in the model of Boyce (1992).

Since the mid-1990s, south Mediterranean countries have engaged in a process of trade liberalization with the EU, aiming at creating a free trade area in the region by 2020. This process has been pursued in the framework of bilateral association agreements between the EU and each of its partners in the MENA (Middle-East and North Africa) region. Thus, the second variable added is the trade openness ratio to our model (OPEN). KAOPEN index and trade openness ratio are added to answer to our hypothesis that rise of external debt in SMCs is justified by the capital account liberalization.

Concerning the foreign direct investment and the portfolio investment, certainly, they represent the capital flows but the data of these two variables are little. Major studies on the capital flows in SMCs suggest little attraction of foreign capital flows for these countries (Gibson, 2007). We expect an insignificant impact on external debt. For these reasons, we don't insert these variables in our research.



The implicit form of the model⁵ shall be:

$$GDEBT_{i,t/t-1} = \text{Cons.} + \alpha X_{i,t} + \beta Y_{i,t} + \lambda IDEBT + \eta_i + \varepsilon_{i,t}$$

Where:

GDEBT: growth in external debt (% GDP);

IDEBT: first lag of DEBT,

$X_{i,t}$: represents a vector of control variables including GDP: growth in gross domestic product; RATE: real interest rate; INF: inflation rate; EXC: variation of the real exchange rate; CAB: current account balance (% of GDP);

$Y_{i,t}$: represents a vector of variables reflecting the capital account liberalization including KAOPEN: index of Chinn & Ito and OPEN: trade openness ratio.

η_i is a country-specific intercept representing unobservable individual country characteristics, and ε is a white-noise error term. CONS: a constant term.

In addition to country-specific fixed effects, Boyce (1992) control for outliers by using the robust ordinary least squares (OLS) estimation technique. But, the OLS can lead to *biased estimates* of coefficients with the presence of errors *heteroscedasticity* and errors autocorrelation. We contribute to fill this lack by doing the *heteroscedasticity* and autocorrelation errors tests, also we do some other tests: the individual effects test, the Hausman test. These tests help us to choose the adequate estimators⁶.

⁵ The variables of this model are summarized in table 1.

⁶ The test of individual effect allows using a panel data instead pooling data. The fixed effects are choosing instead the random about Hausman test. The Fisher test for *heteroscedasticity* and the Wooldridge test for autocorrelation of errors show the presence of these two problems. The results of these tests are summarized in table 2.

To correct the problems of errors *heteroscedasticity* and autocorrelation, we use four different types of estimation: Regression with Driscoll-kraay standard errors (regression 1), within fixed effects with variance (cluster id) (regression 2), fixed effects with robust standard deviations of Eicker/white (regression 3), FGLS estimator with option of correction *heteroscedasticity* and autocorrelation of errors (regression 4).

The relationship between capital account liberalization and external borrowing can run both ways (Boyce 1992). We account for this potential two-way causality by using estimation with double least square with instrumental variable (where KAOPEN is considered endogenous and OPEN is instrumental variable⁷). These techniques allow us to test the robustness of the regression results (regression 5).

IV- Results and policy implications

The models show a negative and significant impact of the KAOPEN index on the growth of external debt. All five regressions confirm our hypothesis⁸. The regression (3) of fixed the effect with robust standard deviations (Eicker/White) gives a more significant coefficient of this index⁹. However, this impact is very weak like as showed when we analyzed the graph 1. The trade openness ratio also has negative and significant impact for two regressions ((1) and (5)), this impact is also weak.

⁷“OPEN” is the most correlated variable with the KAOPEN index (see table 2).

⁸ The results of the 5 regressions are presented in table 4.

⁹We note that regression (2) and (3) give the same coefficients values but with different levels of significance. This is due that “Clustered errors” (regression 2) is an example of Eicker-Huber-White-robust treatment of errors (regression 3).



About these results, we find an opposite result to the work of Boyce (1992). This report can be explained in two ways: first, the negative values of KAOPEN index in the major of SMCs. Although most of the countries in the southern Mediterranean have taken, to various extents, steps towards capital account liberalization, they still have some distance to cover before reaching a position of effectively free capital flows. In several studies, these countries are still qualified as “financially repressed systems”, despite the recent efforts to liberalize their financial systems. Under these conditions, it is difficult to establish a positive impact of capital account liberalization on external debt.

Second, the rise of external debt in SMCs is explained by some control variables especially with the inflation rate and the real interest rate. The result of these two variables is closed to theory presented previously ((T. Gylfason, 1991, S. Manzocchi, 1997 and Kraay 1998). These variables have positive and significant coefficients in all regressions. This result confirms that increase in inflation rate or in real interest rate can lead to the rise of external debt. On other hand, we see a satisfactory GDP growth rate allows to reduce the ratio of external debt. For all regressions, the GDP growth is negatively correlated with external debt (Kose, Prasad, and Terrones, 2008).

Two control variables are insignificant for all regressions, current account balance and real exchange rate. Only the variable “current account balance” shows a positive and significant impact on the last regression using instrumental variable. The lagged variable of debt has a negative impact on external debt. This result is predictable since when we have a rise of external debt in the

previous year, the growth of debt becomes less in the current year.

Capital account liberalization is inevitable for countries that wish to take advantage of the substantial benefits - higher investment, faster growth, and rising living standards - of participating in the open world economic system in today’s age of modern information and communication technologies. When macroeconomic and financial sector conditions are sufficient, capital controls could be removed quickly without undue risk. SMCs must accelerate their capital account liberalization, but before all else, it will be important to have sustainable macroeconomic conditions. This macroeconomic stability is also needed to reduce the rise of external debt. As we have just seen, the real interest rate and the inflation rate play a significant role on the rise of external debt; also, when there is a satisfactory GDP growth it can help to reduce the recourse to external debt. For the SMCs, macroeconomic stability can lead to both objectives; first, succeed in the remaining process of capital account liberalization and second reduce the big amounts of external debt.

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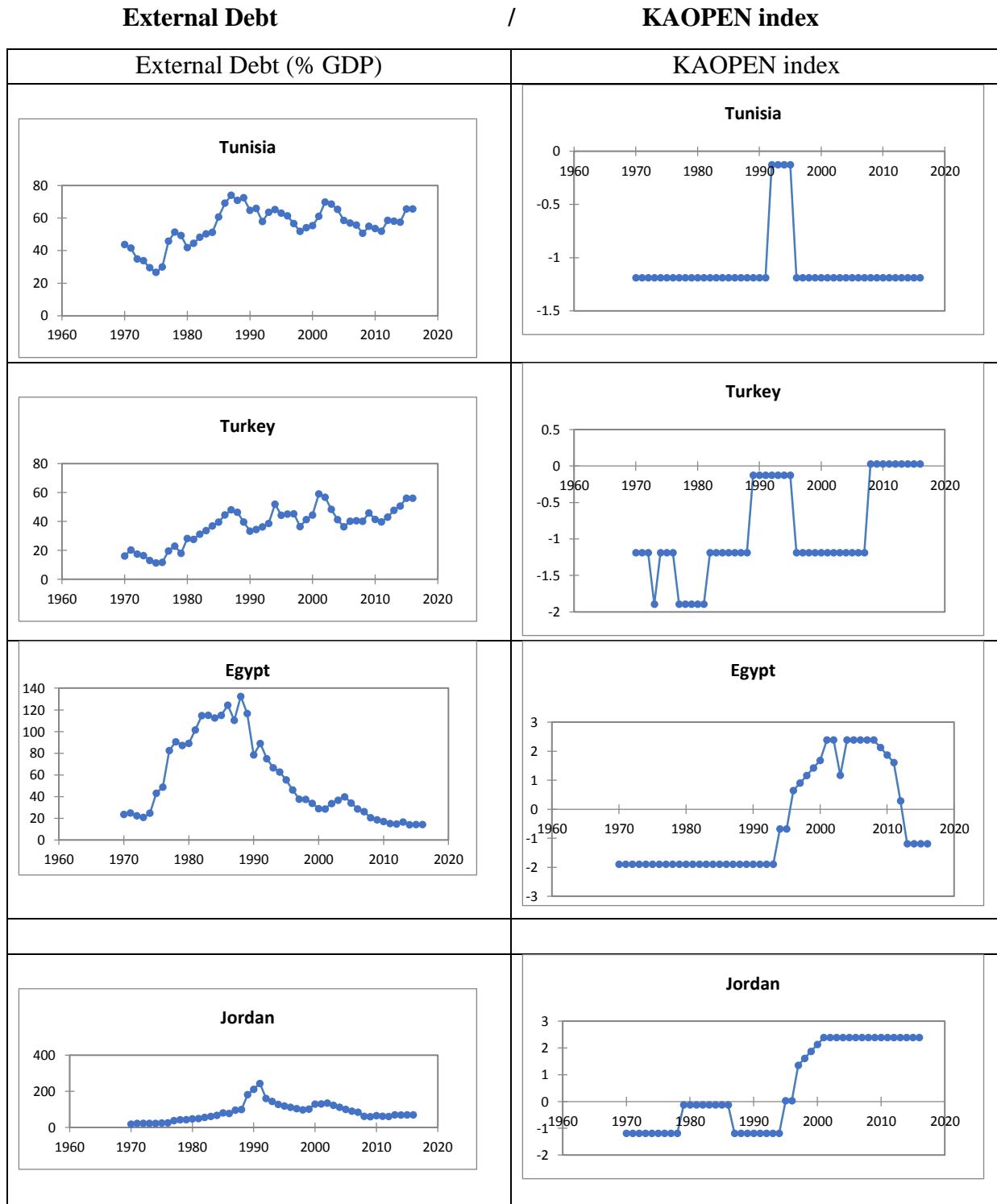
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Annexes:

Graph 1 – Evolution of external debt (%GDP) and KAOPEN index



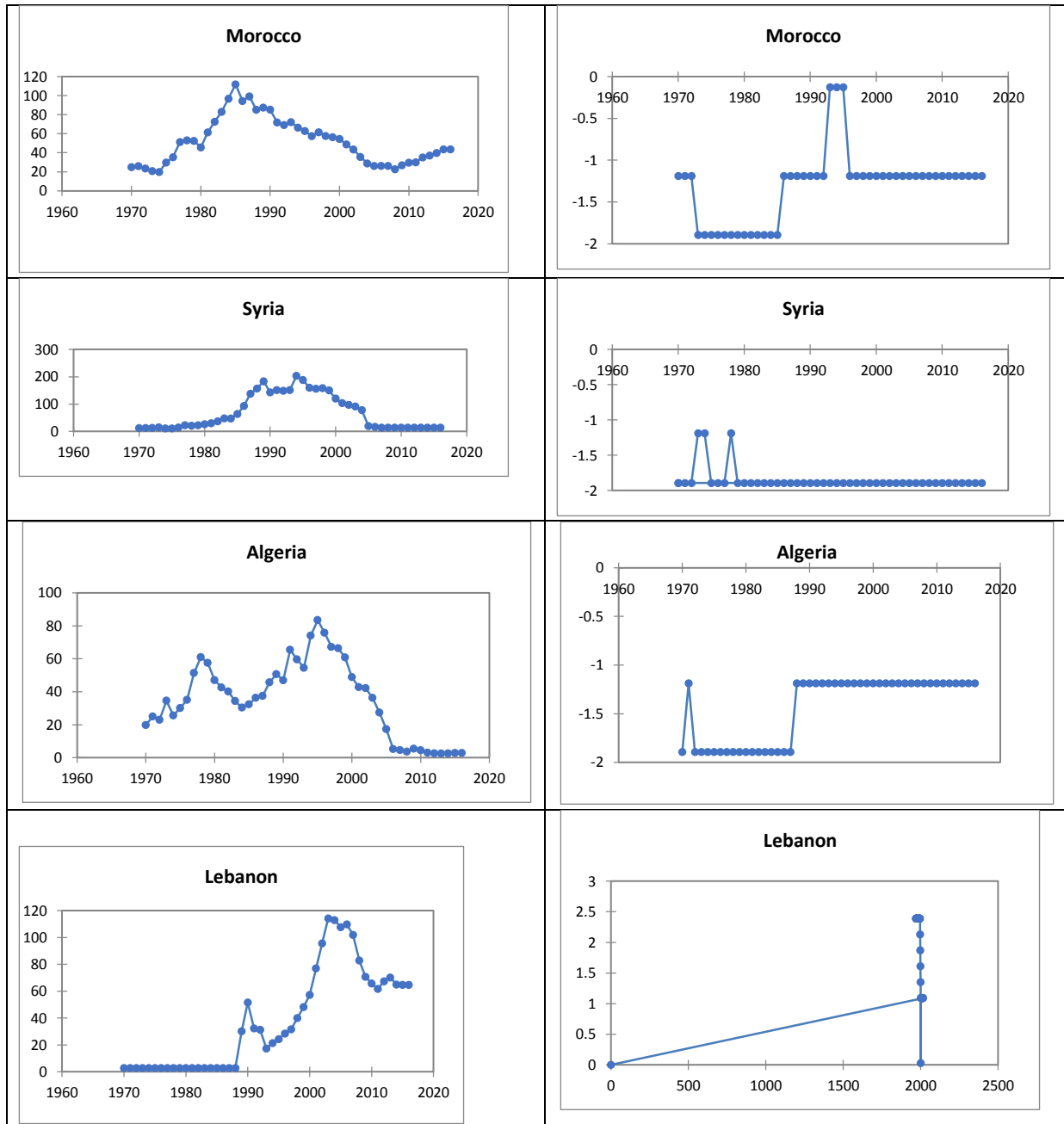


Table 1 – Variables and sources

Variables	definition	Sources
GDEBT	Growth of external debt (%GDP)	Global Economy Database
KAOPEN	Chinn-Ito index	http://web.pdx.edu/~ito/Chinn-Ito_website.htm
OPEN	Trade openness ratio	IFS- International Financial Statistics
IDEBT	First lag of external debt (%GDP)	IFS
GROWTH	GDP constant real	IFS



INF	Inflation rate	IFS
RATE	Real interest rate	Global Economy Database
CAB	Current Account Balance (%GDP)	IFS
EXC	Variation of the real exchange rate	Global Economy Database

Table 2 – Variables Correlations

	GDEBT	KAOPEN	OPEN	GROWTH	INF	RATE
GDEBT	1.0000					
KAOPEN	-0.0992	1.0000				
OPEN	-0.0413	0.4006	1.0000			
GROWTH	-0.1681	0.0004	0.0969	1.0000		
INF	0.1950	-0.2076	-0.4176	-0.0532	1.0000	
RATE	0.0616	0.1943	-0.0388	-0.0227	-0.0662	1.0000

Table 3- Diagnostic tests

Tests	Results
Individual effects	H0 : absence des effets individuels F test that all $u_i=0$: $F(7, 309) = 5.16$ Prob > F = 0.0000 Reject of H0 Conclusion: estimation with panel data
Hausman	Ho: difference in coefficients not systematic Prob>chi2=0.0001 ; p-value <10% Conclusion: panel with fixed effects
heteroscedasticity of errors	H0 : errors are homoscedastics $F(10, 317) = 38.55$ Prob > F = 0.0000 p-value <10% Conclusion: problem of errors heteroscedasticity
Autocorrelation of errors	Wooldridge test for autocorrelation H0: no first order autocorrelation $F(1,7) = 9.907$ Prob > F = 0.0195 p-value <10% Conclusion: problem of errors autocorrelation

Table 4- External debt and capital account liberalization

Variables	Regression with Driscoll-kraay standard errors (1)	Fixed-effects (within) regression (2)	fixed effects with robust standard deviations of Eicker/white (3)	Cross-sectional time series FGLS regression (4)	Instrumental variables (2SLS) regression (5)
KAOPEN	-0.1840 (-1.28)	-0.0403 (-3.62)	-0.0403 (-3.91)	-0.0252 (-2.67)	-0.032 (-1.90)
OPEN	-0.0011 (-2.13)	-0.0002 (-0.28)	-0.0002 (-0.38)	-0.0016 (-3.71)	-



IDEBT	-0.0007 (-1.99)	-0.0012 (-3.07)	-0.0012 (-4.67)	-0.0013 (-4.31)	0.0004 (-1.82)
GROWTH	-0.008 (-2.89)	-0.0084 (-2.81)	-0.0084 (-3.06)	-0.0106 (-4.61)	-0.0085 (-3.10)
INF	0.0033 (3.91)	0.0054 (1.89)	0.0054 (4.35)	0.0036 (3.61)	0.0029 (3.28)
RATE	0.0036 (1.50)	0.0048 (1.21)	0.0048 (2.41)	0.0058 (2.97)	0.0007 (0.37)
CAB	0.0003 (0.12)	-0.0012 (-0.35)	-0.0012 (-0.59)	0.0002 (0.13)	0.0048 (2.03)
EXC	0.0032 (0.92)	0.0048 (1.16)	0.0048 (1.17)	0.0046 (1.13)	0.0045 (1.35)
CONS	-0.3667 (-0.96)	-0.4454 (-1.14)	-0.4454 (-1.08)	0.5255 (-1.46)	-0.3502 (-1.03)
F (with p-value)	7.99 (0.00)	11.45 (0.00)	12.47 (0.00)	Wald khi2(8) = 64.9 (0.00)	15..50 (0.00)
R-squared	0.62	0.65	0.68		0.72
Observations	327	214	105	-	327
group	8	8	8	327 8	-

Notes: The dependent variable is GDEBT (growth rate of external debt); the numbers in parentheses are the p-values