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RESEARCH ARTICLE

FINANCIAL STRESS TRANSMISSION FROM SOVEREIGN CREDIT MARKET BEFORE AND AFTER THE TUNISIAN AND EGYPTIAN REVOLUTIONS

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ABSTRACT

Political instability and market reassessment of sovereign credit risk pricing could be considered as being the most relevant determinants of Tunisian and Egyptian sovereign CDS spreads volatility. In fact, after the "Arabic Spring" revolutions, Tunisia and Egypt knew a wave of sovereign credit rating degradations; CDS spreads increases and economic fundamentals deterioration. Under dictatorial political regimes, these two economies seemed to be economically stable despite their worsening macroeconomics fundamentals. We use VAR/VECM models and generalized impulse responses to assess financial stress transmission between the sovereign CDS market, the real economy and financial market before and after revolutions. Results show that, after revolutions, investors revaluated the sovereign credit risk of Tunisia and Egypt. Fundamentals deterioration impact has become stronger and rapid but is not the main cause of sovereign CDS spreads increase.

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INTRODUCTION

After the Subprime Crisis in 2007, the sovereign crisis in the Euro zone emerged and has highlighted the link existing between the sovereign credit risk, the country's indebtedness level and the macroeconomic fundamentals. In fact, studies found that investors do not evaluate the sovereign default probability objectively and that the market psychology plays an important role in the sovereign spreads evolutions. Generally, markets unnoticed the economic fundamentals deteriorations during the phase of financial euphoria and investors ignore default probability during tranquil periods. They underestimate and do not incorporate effectively credit risk in the sovereign prices. After a specific event or a choc, there will be a rapid reevaluation of the sovereign credit default risk, markets become irrational and the global and Specific fundamentals became under observation. Investors run to purchase credit insurance derivatives, sovereign Credit Default Swaps (CDS), for protection and spreads will widen. The sovereign CDS spreads of Tunisia and Egypt were stable for long time, until the revolution on January 2011. Such political events have triggered a series of rating degradation, an unprecedented increasing of CDS spreads and an observable deterioration of these countries macroeconomic fundamentals. We suspect a self-reinforcing feedback loops driving the economic and financial situation in Tunisia and Egypt to get worse. The political instability, the decrease of security, the danger of terrorism were the first negative signals for international market followed by a wave of sovereign credit rating that draw the investors' attention to the deterioration of macroeconomic fundamentals. An outbreak of "fly to quality" to obligations of developed countries and the safety assets implies that investors leak the sovereign risk and overestimate it after the revolution in Tunisia and Egypt.

In this paper, our aim is to contribute to the existing literature on sovereign CDS spreads drivers in developing countries after

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a political instability event. Results show that fundamentals are not the principal determinants of the Tunisian and Egyptian sovereign CDS spreads before and after revolutions. Before revolution, investors did not paid attention to fundamentals relative deterioration to judging sovereign default risk of these two countries. After the revolutions dates, the trigger of CDS spreads widening is essentially the downgrades of sovereign credit rating and the political instability. Fundamentals exert a weak effect on CDS spreads, their level drive investor to evaluate their risk perception but do not explain directly spreads.

The remainder of this paper is structured as follows: section 2 lays out a brief literature overview on the relationship between sovereign CDS spreads and fundamentals in the developed and developing countries. Section 3 presents the methodology followed and a description of data. Section 4: provides the empirical results. Section 5: concludes.

Literature Review

The increasing number of studies that treated CDS spreads during the European sovereign crisis had find relatively near results: the local macroeconomic fundamentals and especially fiscal variables (Aizenman and al.; 2013) are the main determinants of sovereign CDS spreads and global factors related to contagion during an eventual crisis (Groba and al.; 2013). Gibson and al. (2014) show that the sovereign rating downgrades and the political instability are the main drivers of the sovereign Greek spreads during the period 2008-2009. These results are valuables for developed and deeply rooted democratic countries.Some papers has treated similarly the developed and developing countries like Beirne and Frantzscher (2013) how find that the sovereign rating and the sovereign risk market price are related and that sovereign rating reflects the country's fundamentals. However, the study of some emerging countries CDS spreads determinants shows some different characteristic results from developed countries. Wang and al. (2013) find that the Latin American sovereign CDS price movement, after Lehman Brothers bankruptcy, depends principally on American financial markets volatility, regional contagion and little on specific factors (see also Fender and al. (2012)). For Zinna (2013), generally, emerging economies risk premia co-move with advanced economies global factors and especially with US macro variables during tranquil periods. Gibson and al. (2012) thought that sovereign spreads determinants are different from developed and developing countries: in developed countries, macroeconomic and financial economics are the principal determinants while in developing countries economic fundamentals and global markets conditions are most significant. There is generally some dependence of developing countries from developed one especially American market.

In crisis period, emerging economies are decoupled from advanced economies and specific factors became more predictive of risk premium. Kabir Hassan and al. (2015) find that common external factors are the main causes of sovereign credit risk and bond yields changes rather than specific factors for a set of emerging countries. Siklos (2011) says that emerging markets should not been easily studied as a single block. He also suggests the use of institutional variables on specific factors for emerging market bond yield spreads like the central bank transparency indicator. As we study CDS spreads determinants in developing countries like Tunisia and Egypt before and after a political outbreak, it is important to carefully select variables to detect developing CDS spreads determinants. Sottile (2013) affirm that the sovereign risk is a function of political, economic and financial factors. He finds that the political component is decisive distinct from economic and financial risks. This point of view is shared by Balding (2011) how studies the effect of elections, as a political event, in emerging markets and finds that short term investors react rapidly to emergent markets political risks. In facts, elections make the perceived credit risk of emerging market sovereigns higher. Consequently, the price of credit insurance will increase not only for the country concerned but for the all emerging market sovereigns. The herding behavior of short term investors becomes a potential source of instability and causes contagion to other emerging market sovereigns.

Riedel and al. (2013) find that emerging sovereign credit risk determinants depend are credit cycle dependents. During a crisis regime, uncertainty makes determinants moving strongly and become more sensitive then on the other states of the credit cycle. Further to local currency changes, the authors show that spreads credit spreads depend on the parity Euro/American Dollar because of the sovereign debt sustainability.

Econometric methodology

To study the different relationships among sovereign CDS spreads and the different macroeconomic fundamentals, various empirical works integrate estimation methods based on Error Correction Mechanisms and Cointegration Methods to study significant changes among underlying variables. The VAR model has a considerably strong contribution in detecting these relationships. Its advantage consists to be a parsimonious and flexible to specify the VAR model short term dynamic and the VECM model long term dynamic (Granger 1981-1983; Angel and Granger 1987). To test models, we should apply specific stationarity tests to highlight if the series have a trend and if the latter is determinist or stochastic. We adopt the Dickey and Pantula (1987) sequential strategy, the origin of the ADF tests construction. The method consists in testing the series stationarity on the first difference. If the series are stationary, then we test the stationarity in level.

Technically, we consider a (P) order univariate process under following alternatives:

Model without constant and without determinist trend:

$$x_t = {}_1 x_{t-1} + {}_2 x_{t-2} + \quad + {}_p x_{t-p} + \varepsilon_t \qquad (1)$$

Model with constant and without determinist trend:

$$x_t = {}_1 x_{t-1} + {}_2 x_{t-2} + \quad + {}_p x_{t-p} + \theta + \varepsilon_t \qquad (2)$$

Model with constant and with determinist trend:

$$x_t = {}_1 x_{t-1} + {}_2 x_{t-2} + \quad + {}_p x_{t-p} + \theta + \gamma t + \varepsilon_t \qquad (3)$$

With $\varepsilon_t \sim$iid and P, the chosen optimal lag order.

One time series is d order integrated when it is d times differentiated before being stationary. The ADF strategy consists on: if the null hypothesis is accepted H0: $_1$=1 in one of the previous models, in this case, the process is not stationary. Consider the equation (3), if we accept the alternative H1 : $_1$<1 and if the coefficient γ is statistically significant so it imply that we have a TS non stationary process. By contrast, when the trend is not significant, we should test the model under the version (2). In this case, if the constant is not significant, we test the model's version (1). We test, thus, the non-stationarity by the use of the (1), (2) and (3) models transformation with the primary difference. We have the following equations:

Model without constant and without determinist trend:

$$x_t = \omega x_{t-1} + \ _1 \ x_{t-1} + \ _2 \ x_{t-2} + \quad + \delta_{p-1} \quad x_{t-p-1} + \varepsilon_t \quad (4)$$

Model with constant and without determinist trend:

$$x_t = \omega x_{t-1} + \ _1 \ x_{t-1} + \ _2 \ x_{t-2} + \quad + \delta_{p-1} \quad x_{t-p-1} + \mu + \varepsilon_t$$
…………………………………………………………………… (5)

Model with constant and with determinist trend:

$$x_t = \omega x_{t-1} + \ _1 \ x_{t-1} + \ _2 \ x_{t-2} + \quad + \delta_{p-1} \quad x_{t-p-1} + \mu + \gamma t + \varepsilon_t \quad (6)$$

The same empirical approach is followed in the (1), (2) and (3) model's versions in this case. If results lead to stationarity, we stop. If not, we transform the (1), (2) and (3) model's versions to the second difference. These models are written as follows:

Model without constant and without determinist trend:

$$^2x_t = \omega x_{t-1} + \ _1 \ ^2x_{t-1} + \ _2 \ ^2x_{t-2} + \quad + \delta_{p-1} \quad ^2x_{t-p-1} + \varepsilon_t$$
……………………………………………………………….(7)

Model with constant and without determinist trend:

$$^2x_t = \omega x_{t-1} + \ _1 \ ^2x_{t-1} + \ _2 \ ^2x_{t-2} + \quad + \delta_{p-1} \quad ^2x_{t-p-1} + \mu + \varepsilon_t \quad (8)$$

Model with constant and with determinist trend:

$$^2x_t = \omega x_{t-1} + \ _1 \ ^2x_{t-1} + \ _2 \ ^2x_{t-2} + \quad + \delta_{p-1} \quad ^2x_{t-p-1} + \mu + \gamma t + \varepsilon_t$$
…………………………………………………………………… (9)

We use in this paper the two steps estimation methodology given in Engle and Granger (1987). This methodology is applied generally for cointegrated series of order 1. The necessary cointegration condition is that the different series should being integrated of the same order. The first step of Engle and Granger's methodology serves to estimate the long term relationship between the different couples.

$$Y_t = a + bX_t + z_t$$

With: z_t: error terms

$\widehat{z_t} = Y_t \quad \hat{a} \quad \hat{b} X_t$: The long term relationship estimated residue

Technically, tested assumptions are as follow:

H0: absence of cointegration ⟹ $\widehat{z_t}$ is not stationary

H1: cointegration ⟹ $\widehat{z_t}$ is stationary

VAR and VECM models Estimation:

Before studying Granger Causality, we test causality relationships with VAR and VECM models. VAR model parameters could be estimated for non-stationary series. Equations are estimated independently with OLS or the Maximum Likelihood. Then, we integrate the cointegration's Engle and Granger (1987) procedure before executing the causality test. This method specifies the bivarite VAR model under the following alternatives:

$$X_t = \alpha_x + \sum_{i=1}^{p} \beta_{x,i} X_{t-i} + \sum_{i=1}^{p} \lambda_{x,i} Y_{t-i} + \varepsilon_{x,t} \quad (10)$$

$$Y_t = \alpha_y + \sum_{i=1}^{p} \beta_{y,i} Y_{t-i} + \sum_{i=1}^{p} \lambda_{y,i} X_{t-i} + \varepsilon_{y,t} \quad (11)$$

With:

P: model's lag number determined with AIC and SBC criteria.
Xt: CDS spreads of country i at time t.
Yt: macroeconomic fundamentals vector of the country i at time t.
α_x et α_y are constants.
$\varepsilon_{x,t}$ et $\varepsilon_{y,t}$are the error terms at the instant t
$\beta_{x,i}$: last values parameter of X showing how many this last value could explain the actual value X.
$\lambda_{x,i}$: last value parameter of Y. it shows how many the last values of Y could explain the actual value of X.
$\beta_{y,i}$: last values parameter of Y showing how many this last value could explain the actual value Y.
$\lambda_{y,i}$: last value parameter of X. it shows how many the last values of X could explain the actual value of Y.

When the bivariate VAR model series are stationary, we estimate (10) and (11) equations using OLS. If the series are not integrated of the same order, we estimate VAR model with OLS known that integrated of order 1 is in difference and the variable of order 0 is in level. Contrary, if the VAR model variables are integrated of order 1 (no stationary), we operate as follows:

There is no cointegration, we estimate a VAR model definite by the follows equations:

$$\Delta X_t = \alpha_x + \sum_{i=1}^{k} \beta_{x,i} \Delta X_{t-i} + \sum_{i=1}^{k} \lambda_{x,i} \Delta Y_{t-i} + \varepsilon_{x,t} \quad (12)$$

$$\Delta Y_t = \alpha_y + \sum_{i=1}^{p} \beta_{y,i} \Delta Y_{t-i} + \sum_{i=1}^{p} \lambda_{y,i} \Delta X_{t-i} + \varepsilon_{y,t} \quad (13)$$

There is cointegration, we estimate a VECM established by the follows equations:

$$\Delta X_t = \alpha_x + \sum_{i=1}^{k} \beta_{x,i} \Delta X_{t-i} + \sum_{i=1}^{k} \lambda_{x,i} \Delta Y_{t-i} + \gamma_x ECT_{x(t-1)} + \varepsilon_{x,t} \quad (14)$$

$$\Delta Y_t = \alpha_y + \sum_{i=1}^{k} \beta_{y,i} \Delta Y_{t-i} + \sum_{i=1}^{k} \lambda_{y,i} \Delta X_{t-i} + \gamma_y ECT_{x(t-1)} + \varepsilon_{y,t} \quad (15)$$

Data and preliminary analyses

We use monthly Tunisian and Egyptian CDS prices and a set of macroeconomic and financial variables that can capture competitiveness and fiscal sustainability. These variables were chosen because of their availability. Variables with low frequency are interpolated:

Monthly five -year CDS last prices: is became a well-known proxy of the sovereign credit. Pan and Sangleton (2008) and Fontana and Scheicher (2010) consider that CDS premia as the best risk default measures. Fig (1) (see appendix (A)) shows monthly five-year evolution of the Tunisian and the Egyptian CDS premia from October 2006 to December 2013. The graph illustrates the reaction on sovereign credit markets, first, after Lehman Brothers collapse, then, during the Euro crisis and then following the revolution on January 2011. During the Euro sovereign crisis, we can notice that the Egyptian CDS prices known a remarkable increasing by 174.867% from June 2008 to February 2009 which passed from 227.78 bps to 626.34 bps. The Tunisian market was relatively decoupled and had weakly and briefly reacted to the subprime crisis and to the European crisis. The Egyptian economy has been affected severely because of the strong commercial links with American market. The Tunisian economy is instead oriented to the European partners. The Euro zone crisis has not affected directly the Tunisian economy because of its weak integration to the international financial markets. After the revolution in these two countries, CDS spreads began their increase to reach 920 bps in July 2013 for the Egypt because of the "Coup d'état of the third of July" and 452 bps for Tunisia in June 2013 which coincided with the date delivery of the constitutional project to the National Constitutional Assembly President. Source: CMA Datavision.

The ratio of budget deficit to GDP: fig1. (see appendix (A)) fiscal deficit and public debt have been elevated, approaching, respectively, 14 % and over 100 % of GDP for Egypt and 7 percent and over 45 % of GDP for Tunisia sign of fiscal lassitude. The ratio was stable before 2011 for the two countries. Since 2011, the budget deficit widened further and passed from -8.28 % (-0.87%) in 2010 to -14.08% (-6.8%) in 2013 for Egypt (Tunisia). It is notably that the debt sustainability depends largely on a robust real GDP growth. Source: Tunisian and Egyptian Central Banks web sites.

Stock market index variation: we have respectively, Tunindex index as a reference of the Tunisian stock market and EGX30 the most famous Egyptian stock market index. Tunindex reached his maximum negative monthly variation (-1.2699%) in January 2011. For the EGX30 get worse and were instable since political turmoil in January 2011 which leads to close the bourse many times for weeks to avoid large losses. Financially, Stock market index is a proxy of economic health. The BVMT for Tunindex and the Egyptian Exchange for the EGX30.

Brent Crude barrel Oil price: Tunisia and Egypt have no large oil and gas reserves like their neighbors Libya and Algeria and are petroleum importers which consists a burden to governments. However, Egyptian oil and gas production still larger than Tunisia and profits from Suez Canal fees. Consequently, changes in oil prices have important effects on countries current account balance. Source: www.nasdaq.com

Real GDP growth: A high real growth helps to reduce debt level. Fig (1) shows the Tunisian and Egyptian real GDP growth. We can notice that the Egyptian real GDP growth is cyclical with rates picks in the first quarter every year with an average from 4.94% per year on 2007 to 2.905% on 2013. The Tunisian real GDP is relatively stable with a decrease to -4.9% in Q1 2011. Source: INS Tunisia and CAPMAS Egypt.

Sovereign credit ratings: we use the ratings of the three principal rating agencies: Fitch, Moody's and Standers &Poors. For Tunisia, rating was stable since 1994 into the investment grade (BBB stable for Fitch and S&P and Baa2 stable for Moody's characterized by adequate payment capacity). Downgrades began with revolution events and continue with the increase of terrorist risk, political instability and fundamentals deterioration. The Egypt was always classified in the speculative grade by the three agencies but since the revolution, its credit rating knows a series of downgrades with an accelerated rhythm to the Caa1 (negative perspective) by Moody's, to CCC+ (stable) by S&P and to B- (negative perspective) by Fitch the end of 2013 because of country's political and economic crisis and security threats. To consider the rating changes of the three agencies, we represent their average linear transformation (see Appendix D). Source: Tunisian and Egyptian Central Banks web sites.

Exchange rates to Euro and USD: the Tunisian Dinar and the Egyptian Pound were in continuous devaluation after revolution. The Tunisian dinar made its sharpest decline in 2013. It hits its lowest value against Euro and the American dollar. The Euro was closed at 2.2956 TND while the US Dollar was valued and closed at 1.6776 TND. The Egyptian pound does not far better than the dinar, in 2013, the pound has hit a historical fall against the dollar and the euro since 2003, the pound floating decision date first made. The Euro was closed at 9.56118 and the US Dollar at 7.01948. Given the currency's exchange rate as a mirror image of the health of the economy it represents, the devaluation of the Tunisian dinar and the Egyptian pound could been attributed to various factors. We can quote the series of sovereign credit rating downgrades, political turmoil, lack of domestic and foreign investment, faltering tourism and low growth rates. These factors led to the depletion of these countries foreign reserves and their money devaluation. Source: www.xe.com

Inflation: a rapid increase in prices reflects deterioration of the purchasing power of the currency. The raise of inflation rate affects the country competitiveness. In Tunisia, the inflation rate increased to 6.5% in Juan 2013 to an average of 4.4% in 2010 but still relatively moderate rate. On the contrary, the Egyptian inflation rate is high before and after revolution. It reached 23.2% in August 20081 against 12.97 in November 2013. This persistent and high inflationary pressure relatively to Tunisia is principally due to the increased food and raw materials prices and the incoherent Egyptian monetary policy with the exchange rate regime. Source: INS Tunisia and CAPMAS Egypt.

Political uncertainty PSI: Reflects perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism. It ranges from approximately -2.5 (weak) to 2.5 (strong) governance performances. The Tunisian PSI index begins to decline slowly since 2007 but still positive until 2009. The deterioration rhythm of the index were accelerated by the ouster of the previous political system, the multiplication of sit-in and social protests, political symbols assassination and terrorist attacks (-0.91 in 2013 for). The Egyptian index has always been negative but knew some improvement episodes but it never reached this low level (-1.62 in 2013) because of the unprecedented popular rising against president Mubarek, the Muslim brotherhood protests and government resorting to deadly force to control protests. Source: CESifo political stability index.

Until January 2011, Tunisian and Egyptian spreads are more volatile and more sensitive to deterioration fundamentals. Is the political shocks has drown investors to reevaluate their sovereign risk perception? When investors begin to pay more attention to fundamentals? Which fundamentals? Are variables like credit ratings and political uncertainty having significant effect on spreads added to the economic and financial fundamentals? To answer these questions, we now turn to formal analysis.

In all the tables, we represent the pair-wise relationships between CDS spreads and the other variables.

The ADF-test is displayed in Table (1). From this table, all series are stationary, I(0) and no stationary, I (1).

EMPIRICAL RESULTS

To study relationships between the different variables and sovereign CDS spreads, we propose to establish a comparison between causal links before and after revolutions dates.

Before January's revolution date

Empirical finding from Tunisia

From October 2006 to December 2010, the variable Tunisian CDS spreads is cointegrated with all the variables of the sample and all the variables were integrated with it so the CDS spreads is not an exogenous variable and we can explore its determinants. The analysis of the VAR/VECM model results provides the following results: the main variables which cause at long term Tunisian CDS spreads are: oil price, BD, RGDP, inflation rate, Eur_TND, Usd_TND and PSI. We can notice that economic fundamentals were relevant of the Tunisian economic situation rather than financial variables. In fact, the decrease of the real GDP, the increase of the BD and inflation rate, devaluation of the Dinar face to Euro and American Dollar and the rising oil price are signals for investors about the debt sustainability. But in the case of Tunisia, any movement in these variables has a relatively weak effect on sovereign CDS spreads. The impulsion responses analysis (in the appendix, we illustrate the impulsion responses of CDS spreads. The reaction of fundamentals are not reported in the appendix, they are available upon request) shows that a one standard deviation of the inflation rate increased CDS spreads immediately by 3 bps and continue to increase over time to reach 7 bps. A one standard deviation BD improvement has a weak tighten effect on CDS spreads that increase some days after. The RGDP improvement reduces the Tunisian CDS spreads by 1.77 bp then spreads will rise for three months and shrink by 6 bp six months after the choc. The widening of spreads did not exceed 10 bps. The depreciation of the Tunisian dinar face to Euro and USD dollar raised CDS spreads: with the Euro by 1.43 bp immediately, 8.76 bp after 5 months and with the Dollar immediately by 1.4 bp and 5.02 ten months later. The oil price increases CDS spreads by 1.77 bps one month later and PSI by 5.71 bps after three months of the choc. In the other sense, the Tunisian sovereign CDS spreads widening has weak effect on BD, inflation rate, RGDP, Eur_TND and Tunindex because of the relatively small and stable sovereign credit Tunisian market, the Tunisian CDS market was not an active one. So, the relative economic fundamentals degradation before revolution has a feeble effect on Tunisian sovereign CDS spreads because of the political stability and the low default risk investor's perception.

Crossing causality relationship between the variables we can notice that the main determinants of Tunisian CDS spreads before the revolution are inflation, Eur_TND and BD. The BD and inflation have bidirectional causality relationship infuenced by the level of the RGDP. These macroeconomic informations have direct impact on the financial variables: Tunindex, Eur_TND and CDS spreads. So before revolution the Tunisian economic situation was prevalent for investors to evaluate the credit sovereign risk. These variables are in interaction and influence each other.

Table (2) reports the empirical results of the Engle and Granger (1987) procedure from October 2006 to December 2010, to consider the period before January's revolution date for Tunisia and Egypt.

Table (3) reports the VECM and VAR results to specify between the type of causality: short run or long run for both countries.

1The very strong increase in 2008 is due to the president Moubarak decision of raising the set of salaries by 30 % to answer the sharp rise of raw materials in May, 2008.

Table 1. Stationarity results

	ADF-test		Critical value (5%)		
country	Level	First difference	Level	First difference	I(d)
CDS_tun	------	-9,2632*	------	-1,9446	I(0)
Tunindex	-7,9616*	------	-1,9446	------	I(0)
Db_tun	-6,1931*	------	-3,4716	------	I(0)
USD_TND	------	-8,6365*	------	-1,9446	I(1)
Eur_tnd	------	-7,2521*	------	-2,8959	I(0)
Inflation_tun	------	-9,3823*	------	-1,9447	I(1)
Oil_price	------	-4,6862*	------	-1 ,9463	I(1)
PIB_tun	-3,1417*	------	-2,9001	------	I(0)
Psi_tun	------	-10,1199*	------	-1,9447	I(1)
Rating_tun	------	-9,7944*	------	-1,9447	I(1)
CDS_egy	------	-6,2558*	------	-1,9447	I(0)
EGX30	-6,3338*	------	-1,9447	------	I(0)
Db_egy	-9,1651*	------	-1,9446*	------	I(0)
Eur_egp	------	-6,1190*	------	-3,4635*	I(0)
USD/EGP	------	-5,2912*	-----	-1,9446	I(1)
Inflation_egy	------	-6,1060*	------	-1,9446	I(1)
PIB_egy	-4,5033*	------	-3,4700	------	I(0)
Psi_egy	------	-10,1199*	------	-1,9447	I(0)
Rating_egy	------	-6,9872*	------	-2,8959	I(1)

Note: (*) denote the significance at 5%

Table 2. Engle and Granger (1987) estimate results

Tunisia							
	Cointegration				Causality		
Pair of variables	ADF	Critical value (5%)	p-value	decision	fisher	p-value	Decision
Cds_tun→db_tun	-6,1685*	-1,947816	0,0000	YES	0,0117	0,8949	NO
Cds_tun→infation_tun	-6,2535*	-1,947816	0,0000	YES	0,0050	0,9434	NO
Cds_tun→tunindex	-6,0611*	-1,947816	0,0000	YES	1,7708	0,1896	NO
Cds_tun→eur_tnd	-6,1603*	-1,947816	0,0000	YES	0,5716	0,4533	NO
Cds_tun→usd_tnd	-6,1257*	-1,947816	0,0000	YES	0,5365	0,5885	NO
Cds_tun→pibr_tun	-6,2704*	-1,947816	0,0000	YES	5,7411**	0,0205	YES
Cds_tun→psi_tun	-6,1832*	-1,947816	0,0000	YES	8,1248*	0,0064	YES
Cds_tun←db_tun	-2,24953**	-1,94752	0,0250	YES	3,1899***	0,0805	YES
Cds_tun←inflation_tun	-6,2720*	-1,947665	0,0000	YES	0,3632	0,7798	NO
Cds_tun←oil_price	-4,0685*	-1,947665	0,0001	YES	0,3043	0,8732	NO
cds_tun←Tunindex	-7,2166*	-1,947665	0,0000	YES	0,0373	0,9901	NO
cds_tun←Eur/Tnd	-5,5859*	-1,947665	0,0000	YES	3,0040***	0,0896	YES
cds_tun←usd/Tnd	-6,6355*	-3,50433	0,0000	YES	0,4418	0,8161	NO
cds_tun←Pibr_tun	-4,3670*	-1,947816	0,0000	YES	3,1013**	0,0264	YES
cds_tun←Psi_tun	-3,9775**	-3,50433	0,0160	YES	1,1022	0,3767	NO
EGYPT							
	Cointegration				Causality		
Pair of variables	ADF	Critical value (5%)	p-value	decision	fisher	p-value	Decision
cds_egy→db_egy	-1,9763**	-1,947665	0,0469	YES	3,4048***	0,0713	YES
Cds_egy→infation_egy	-7,5325*	-1,947816	0,0000	YES	6,0869**	0,0173	YES
Cds_egy→rating_egy	-4,7375*	-1,947665	0,0000	YES	1,1186	0,2956	NO
Cds_egy→egx	-6,2475*	-1,947665	0,0000	YES	1,2907	0,2900	NO
Cds_egy→eur_egp	-2,0536**	-1,947665	0,0395	YES	1,8819	0,1766	NO
Cds_egy→usd_egp	-3,2592*	-1,947665	0,0016	YES	0,4375	0,7273	NO
Cds_egy→pibr_egy	-2,0435**	-1,947816	0,0404	YES	0,3180	0,5754	NO
Cds_egy→psi_egy	-2,0361**	-1,947816	0,0411	YES	36,5983*	0,0000	YES
cds_egy←db_tun	-0,7439	-3,502373	0,9638	NO	0,6023	0,5519	NO
cds_egy←inflation_egy	-4,2375*	-1,947665	0,0000	YES	2,6278	0,0404	NO
cds_egy←oil_price	-4,4074*	-1,947665	0,0000	YES	10,6478*	0,0020	YES
cds_egy←rating_egy	-2,1974*	-1,94752	0,0000	YES	0,0595	0,8082	NO
cds_egy←egx30	-5,2792*	-1,94752	0,0000	YES	20,7972*	0,0000	YES
cds_egy←Eur_Egp	-2,1883*	-1,94752	0,0000	YES	1,3976	0,2571	NO
cds_egy←usd_Egp	-3,9928*	-1,947665	0,0002	YES	12,8608*	0,0008	YES
cds_egy←Pibr_egy	-11,155*	-2,935001	0,0000	YES	3,4405*	0,0124	YES
cds_egy←Psi_egy	0,2863	-2,922449	0,9752	NO	0,9221	0,4389	NO

Note: *, ** and *** denote the significance at 1%, 5% and 10%.

Table 3. Causality results

TUNISIA					EGYPT				
	VAR		VECM			VAR		VECM	
Direction of the relationship	Chi-square	P-value	ϒ	t-student	Direction of the relationship	Chi-square	P-value	ϒ	t-student
Cds_tun→db_tun	0,6382	0,4243	-0,2827*	[-3,0071]	cds_egy→db_egy	0,0970	0,7553	-0,0509*	[-1,9620]
Cds_tun→infation_tun	0,0448	0,8323	-0,1609*	[-2,3006]	Cds_egy→infation_egy	1,8863	0,1696	-0,0904*	[-3,6400]
Cds_tun→rating_tun	-----	-----	-----	-----	Cds_egy→rating_egy	0,0068	0,9341	-0,0311	[-1,0648]
Cds_tun→tunindex	0,2754	0,5997	-0,0197	[-0,7892]	Cds_egy→egx	32,003*	0,0000	-0,0009	[-0,0391]
Cds_tun→eur_tnd	0,0430	0,8357	-0,2856*	[-3,1562]	Cds_egy→eur_egp	0,3943	0,5300	-0,0090*	[-2,0618]
Cds_tun→usd_tnd	1,9812	0,3714	0,0610	[-1,5320]	Cds_egy→usd_egp	9,2949**	0,0256	0,0322*	[-4,3802]
Cds_tun→pibr_tun	5,5640***	0,0619	0,0015	[0,0612]	Cds_egy→pibr_egy	1,6972	0,1926	-0,0092*	[-2,3538]
Cds_tun→psi_tun	6,1547**	0,0131	-0,2289*	[-3,1025]	Cds_egy→psi_egy	3,0379***	0,0813	-0,0935*	[-2,5954]
cds_tun←db_tun	0,2355	0,6275	-0,0049	[-1,1235]	cds_egy←db_egy	2,3427	0,3099	1,2788*	[9,0162]
cds_tun←inflation_tun	1,1917	0,7550	-0,1792*	[-3,8765]	cds_egy←inflation_egy	10,7384***	0,0568	-0,3850*	[-3,5615]
cds_tun←oil_price	9,6739**	0,0463	-0,1302*	[-2,4061]	cds_egy←oil_price	0,4038	0,5251	-0,0553	[-1,1969]
cds_tun←rating_tun	-----	-----	------	-----	cds_egy←rating_egy	0,0627	0,8022	-0,1009	[-1,6996]
cds_tun←tunindex	3,1068	0,3754	-1,2001*	[-3,5292]	cds_egy←egx	3,0184***	0,0823	-1,0432*	[-4,1958]
cds_tun←Eur/Tnd	1,1946	0,2744	-0,0738	[-1,6032]	cds_egy←Eur/Egp	0,7598	0,8590	-0,2053*	[-2,6295]
cds_tun←usd/Tnd	15,7138*	0,0077	0,0624*	[-3,0796]	cds_egy←usd/Egp	1,6505	0,1989	0,0438	[0,1294]
cds_tun←Pibr_tun	1,3459	0,8535	-0,8486*	[-4,9555]	cds_egy←Pibr_egy	6,3857	0,2705	-0,8750*	[-5,4928]
cds_tun←Psi_tun	20,9463*	0,0008	0,1115*	[4,7099]	cds_egy←Psi_egy	3,0242	0,3879	0,3873*	[2,6260]

Note: *, ** and *** denote the significance at 1%, 5% and 10%.

Empirical finding from Egypt

Before revolution and in the Egyptian case, the variables causality hierarchy is different from the Tunisian one. We note that the variable Egyptian CDS has higher relevence then Tunisian CDS because of the speculative class that it occupies and because of its high prime explained by its risky grade with regards to Tunisian one. So investors buy CDS to protect them from eventual default risk. Egyptian CDS spreads are cointegrated with all the variables and 7 variables on 9 are cointegated with CDS spreads. We can conclude that CDS spreads could be treated as endogenous.

The study of VAR/VECM model shows that variables that had causality relationship with the Egyptian sovereign CDS spreads are both financial and macroeconomic ones: inflation rate, oil_price, Eur_EGP, rating and EGX30. The impulsional responses analysis shows more intensive reactions for Egyptian variables with regards to the Tunisian variables. The study of an eventual transmission of stress between the sovereign Tunisian and Egyptian markets indicates the absence of any connection or causality links. The inflation rate decreased CDS spreads by 9 bps that continue its rising with time. Egypt benefits from rise in oil and gas prices that helps in lowering CDS spreads. We can interpret this result by facts that in spite of its low productive capacity, the Suez Canal geostrategic position is vital for the international market equilibrium. Eur_EGP has causality relationship with CDS spreads and increase them slowly and sensitively at the moment of the choc. Then, the effect became stronger (20 bps after six months and 58.34 after ten months). We can explain that result by the Union sovereign crisis and its impact on the international financial climate. EGX30 has a mitigating effect on Egyptian spreads instantaneously by 15 bps and by 35 bps one month later. The stock market index is an active and relatively performer one compared to Tunindex and reflects the economic activity so an increasing index implies an improvement of the financial conditions. The credit sovereign Egyptian rating has a decreasing effect on spreads. An eventual rating upgrade declined spreads by 11.17 bp and the decrease continue with time. In the other hand, the variables that a standard deviation of CDS spreads can affect are: an increasing in Usd_EGP and inflation rates, a decreasing in EGX30 and an insignificant fall in rating and PSI. The Egyptian CDS spreads increasing affected directly the financials variables and not the macroeconomic ones. The causality relationships between variables show that for the Egyptian CDS spreads, financial variables are dominant in evaluating the credit risk. The stock market variation EGX30, the Egyptian Pound evaluation faced to the USD and the Euro and the credit rating are the principal drivers of the Egyptian sovereign CDS spreads and are all in direct causality interaction. The inflation is the economic determinant of spreads. Before revolution, and contrary to the Tunisian case, the financial sphere is more explicative of spreads and on their part; spreads variations have a stress transmitter role in the country financial and economic variables.So we notice that despite the apparent Egyptian economic fundamental deterioration, investors paid little attention to them and concentrate on financial one to evaluate sovereign risk. Table (2) reports the empirical results of the Engle and Granger (1987) procedure from October 2006 to December 2010, to consider the period before February revolution date for the two countries.

After January revolutions

Empirical finding from Tunisia

After social tensions for dignity and economic solutions, political troubles lead to the Tunisian dictatorial regime fall. After "Jasmine revolution" the fundamentals degradation became more rapid because of unending set-ins and claims, political troubles, the length of the transition period and particularly terrorist attacks (the political assassination[2]). In these unfavorable conditions, Tunisian CDS spreads begin their increasing since the end of 2010 incessantly. The variable Tunisian CDS spreads still cointegrated with all the variables. An eventual contagion is verified by a causality link between the CDS spreads of Tunisia and Egypt. In fact, we find that the

[2] Political Assassination of ChokriBelaid in 6 February 2013 and Mohamed Brahmi in 25 July 2013

Egyptian CDS spreads transmits stress to the Tunisian CDS market. The impulsional response is not strong and the Tunisian CDS spreads increased only by 5.87 bps to one standard deviation of the Egyptian CDS spreads. We can conclude that contagion from Egypt is not the principal factor explaining the Tunisian CDS spreads amplifying. Consequently, there was not contagion or spillovers between these countries that explains CDS spreads widening. The representation of causality relationships with CDS spreads shows variables hierarchy changing comparing to the first period before January 2011. We can observe a more important position of financial variables like PSI and rating which had a marginal effect before revolution. The main variables causing Tunisian CDS spreads during the second period of the sample are: inflation rate, Usd_TND and Tunindex. Inflation rate reaction is immediately stronger comparing to the first period by 6.82 bp against 3 bp before revolution. CDS spreads impulsional response to inflation variation is strong at the choc moment and decrease with time but before revolution they react sparsely and increase with time. CDS spreads has the same behavior to the Tunisian Dinar face to the American Dollar also the Euro has not the correct sign. So we can conclude that the Dinar depreciation does not have any effect on Tunisian sovereign CDS spreads. Tunindex rising, as a mirror of the country's economic and political climate, has a mitigating effect on CDS spreads that decreases by 4.82 bps. Rating are causing CDS spreads but with the impulsional response we obtain first an immediate rising in CDS spreads by 6 bp for improvement of credit sovereign rating then spreads will decline with time but the effect is weak (only -2 bp) we can conclude that its effect is immediate and of short impact. PSI improvement also has an increasing effect on CDS spreads by 2 bp and 4 bp one month later. The effect is weak, moreover, ϒPSI = 0.0038 >0 meaning that negative shocks has more considerable effects then positive ones. For BD we have, first, an increase in CDS spreads after an improvement in BD rate. Then, CDS spreads fall but the ϒBD = 0.0155>0 meaning that a deterioration on BD to GDP rate is more informative then positive reactions. In the other hand, a Tunisian sovereign CDS spreads increase by one standard deviation rises inflation rate by 0.379% (against 0.079 % before revolution), devaluates the Tunisian Dinar face to the American Dollar by 0.0038 dinars and decreases Tunindex by 0.0111%.

The analysis of ralationships between variables shows that after revolution, the financial determinants of soveiegn CDS spreads became more important. Tunindex variations and the Usd_TND are the most relevant drivers. Inflation is still the economic determinant of spreads and its effect is more pertinent after revolution. So the interaction between the economic situation and the financial variables reactions (the stock market losses and the Dinar devaluation face to the USD) makes spreads more volatile. We can explicate the domination of the USD after revolution in determining CDS spreads by the fact that the Euro and other currencies declined face to USD, also, the Tunisian debt structure since 2011 explained by the drawing acceleration of multilateral organisms denominated in this currency. So, the Tunisian financial sphere is more in interaction with the economic one after revolution. Any trouble causes a chain reaction between variables in interaction and the widening CDS spreads exercise more tension. Then financial stress will be transmitted to the local financial market and the economic one also. So, we can conclude that, after the revolution, investors do not judge Tunisian sovereign risk objectively despite the country non catastrophic economic situation but it seems that they observe the events and fear the worst. Without real positive signals, Tunisia cannot convince investors to come and create economic projects that could reduce the unemployment rate that has rise after revolution especially for young university graduated. In exchange, investors will not being convinced by the political willpower and will being discouraged to buy Tunisian obligations. The empirical results of the Engle and Granger (1987) methodology are displayed in Table (4). It reports the causality relationships between CDS spreads and the rest of variables for Tunisia and Egypt, after the revolutions.

Empirical finding from Egypt

The cointegration relationship of Egyptian CDS spreads with the other variables shows a cointegration with all the variables and 8 on 9 variables are cointegrated with spreads (only the variable rating is not cointegrated with spreads but spreads are cointegrated with rating). The Granger causality shows that rating causes Egyptian CDS spreads. We investigate now the VAR/VECM results and, at first glance, we can note that now Egyptian CDS spreads establish more bidirectional causality relationships with macroeconomic fundamentals. The impulsional responses analysis shows that CDS spreads react to variations in these variables: inflation rate, oil_price, rating, EGX30 and PSI. Inflation rate increases CDS spreads by 6 bps at the shock moment that continues its surge to 20 bps one month later. Oil_price plays his mitigating role to reduce spreads by 35.80 bps. An eventual sovereign credit rating upgrading has downgrade effect on spreads by 8.26 bps. Rating has a weaker and at short term impact after revolution may be because of degradations wave of the Egyptian sovereign credit. PSI upgrading has not, first, any effect on spreads because it does not influence them directly, the effect is at long term. Then they decrease by 5.23 bps one month later against a neutral effect before revolution. Positive variation of EGX30 decreases spreads by 33.22 bps its enhancement constitutes a positive signal after several days of degradations and suspensions. In the other sense, CDS spreads transmit stress to other variables and spreads widening causes larger BD/GDP rate, increases inflation rate, devaluates the Egyptian Pound face to the American dollar, downgrades sovereign rating and PSI.

Before revolution, CDS spreads did not impact BD, but after January 2011, they increase the deficit rate with time by 0.01% immediately and by 0.29% ten months later. Inflation increases, too, after sovereign CDS spreads rising by 0.06 % but less heavily then before revolution (0.48%). The Egyptian pound devaluates face to the American Dollar by 0.03 of its value. Rating downgrades after an increasing CDS spreads more than 3 times before rating prerevolutionary reaction. PSI downgrades after CDS spreads increases. The reaction is stronger then prerevolutionary period, but takes some time, one month; to start.After exploring all the causality relationships between Egyptian variables since January 2011, we notice that Egyptian CDS spreads, EGX30, PSI and inflation are the most prevalent variables interacting in loop.

Table 4. Engle and Granger (1987) estimate results

TUNISIA							
		Cointegration			Causality		
Pair of variables	ADF	Critical value (5%)	p-value	decision	fisher	p-value	Decision
Cds_tun→db_tun	-4,1140*	-1,9506	0,0001	YES	0,0210	0,8854	NO
Cds_tun→infation_tun	-3,6273**	-3,5442	0,0418	YES	0,3234	0,8929	NO
Cds_tun →rating_tun	-2,5992**	-1,9506	0,0109	YES	2,3362	0,1362	NO
Cds_tun→tunindex	-4,2481*	-3,5442	0,0099	YES	1,2508	0,2717	NO
Cds_tun→eur_tnd	-3,7424**	-3,5742	0,0352	YES	1,8509	0,1627	NO
Cds_tun→usd_tnd	-4,0457**	-3,5484	0,0164	YES	1,3148	0,2907	NO
Cds_tun→pibr_tun	-3,5673**	-3,5442	0,0476	YES	1,5985	0,2137	NO
Cds_tun→psi_tun	-3,2936*	-1,9510	0,0017	YES	2,5001	0,1236	NO
Cds_tun←db_tun	-3,9966*	-1,9506	0,0002	YES	5,2233**	0,0115	YES
Cds_tun←inflation_tun	-3,5964*	-1,9506	0,0007	YES	0,0016	0,9675	NO
Cds_tun←oil_price	-3,2575*	-1,9513	0,0019	YES	0,0445	0,9985	NO
Cds_tun ←rating_tun	-2,0950**	-1,9506	0,0369	YES	2,3756	0,1108	NO
cds_tun←Tunindex	-8,0047*	-3,5442	0,0000	YES	0,0342	0,9664	NO
cds_tun←Eur_Tnd	-5,4824*	-1,9513	0,0000	YES	0,3239	0,8080	NO
cds_tun←usd_Tnd	-5,1468*	-1,951	0,0000	YES	2,0500	0,1469	NO
cds_tun←Pibr_tun	-6,0457*	-1,951	0,0000	YES	1,7934	0,1645	NO
cds_tun←Psi_tun	-3,9141*	-1,951	0,0003	YES	6,3355**	0,0170	YES
EGYPT							
		Cointegration			Causality		
Pair of variables	ADF	Critical value (5%)	p-value	decision	fisher	p-value	Decision
Cds_egy→db_egy	-5,0435*	-1,9513	0,0000	YES	0,1232	0,9855	NO
Cds_egy→infation_egy	-4,9869*	-1,9513	0,0000	YES	1,0417	0,4207	NO
Cds_egy→oil_price	-4,7738*	-1,9524	0,0000	YES	0,4487	0,6433	NO
Cds_egy→rating_egy	-4,9576*	-1,9513	0,0000	YES	1,5690	0,2142	NO
Cds_egy→egx	-4,7958*	-1,9529	0,0000	YES	0,9990	0,4127	NO
Cds_egy→eur_egp	-4,9219*	-1,9513	0,0000	YES	0,3060	0,7387	NO
Cds_egy→usd_egp	-4,8735*	-1,9513	0,0000	YES	1,3088	0,2999	NO
Cds_egy→pibr_egy	-4,9627*	-1,9513	0,0000	YES	0,2518	0,7790	NO
Cds_egy→psi_egy	-4,9214*	-1,9513	0,0000	YES	0,0074	0,9316	NO
cds_egy←db_tun	-4,2940*	-3,5484	0,0090	YES	0,2484	0,6215	NO
cds_egy←inflation_egy	-5,2882*	-1,9513	0,0000	YES	0,4023	0,5303	NO
cds_egy←oil_price	-3,9460*	-1,9524	0,0000	YES	0,9178	0,4976	NO
cds_egy←rating_egy	-1,0825	-2,9511	0,7113	NO	2,5974***	0,0916	YES
cds_egy←egx	-5,6008*	-1,9524	0,0000	YES	0,9927	0,4546	NO
cds_egy←Eur_Egp	-4,7197*	-1,9513	0,0000	YES	1,4435	0,2383	NO
cds_egy←usd_Egp	-3,4675*	-1,9513	0,0000	YES	3,3699***	0,0757	YES
cds_egy←Pibr_egy	-5,4883*	-1,9529	0,0000	YES	0,1965	0,9601	NO
cds_egy←Psi_egy	-2,932***	-2,9511	0,0520	YES	2,2045	0,1473	NO

Note: *, ** and *** denote the significance at 1%, 5% and 10%.

Table (5) reports the VECM and VAR results to specify between the types of causality: short run or long run for Tunisia and Egypt after the revolutions dates.

Table 5. Causality results

TUNISIA					EGYPT				
	VAR		VECM			VAR		VECM	
Direction of the relationship	Chi-square	P-value	ϒ	t-student	Direction of the relationship	Chi-square	P-value	ϒ	t-student
cds_tun→db_tun	0,3746	0,5405	-0,7041*	[-3,3867]	cds_egy→db_egy	3,8582	0,5700	-0,3868*	[-3,0734]
Cds_tun→infation_tun	33,7036*	0,0000	0,0482*	[1,9725]	Cds_egy→infation_egy	14,1532**	0,0147	-0,3744*	[-3,9461]
Cds_tun→rating_tun	3,1298***	0,0769	-0,1261	[-1,3973]	Cds_egy→rating_egy	5,1336	0,3998	-0,5994*	[-3,6721]
Cds_tun→tunindex	0,1880	0,6645	-0,0011	[-0,0934]	Cds_egy→egx	4,4709	0,2149	0,0101*	[2,2010]
Cds_tun→eur_tnd	10,3263**	0,0160	0,0399	[0,5598]	Cds_egy→eur_egp	1,1145	0,5728	-0,1449	[-1,8808]
Cds_tun→usd_tnd	2,8429	0,4165	0,1332	[-1,3355]	Cds_egy→usd_egp	17,9589*	0,0030	0,0751*	[-3,9015]
Cds_tun→pibr_tun	7,8446**	0,0493	-0,0170*	[-2,4456]	Cds_egy→pibr_egy	0,0478	0,9763	0,0008	[0,0964]
Cds_tun→psi_tun	0,4896	0,4841	-0,0946	[-1,1194]	Cds_egy→psi_egy	0,0877	0,7671	-0,2359*	[-2,9796]
cds_tun←db_tun	0,7239	0,6963	0,0155	[0,8059]	cds_egy←db_egy	0,1850	0,6670	0,0547*	[3,3340]
cds_tun←inflation_tun	0,0274	0,8684	-0,7260*	[-3,9120]	cds_egy←inflation_egy	0,0825	0,7739	0,0057	[0,1439]
cds_tun←oil_price	4,1497	0,5281	-0,0968	[-1,4685]	cds_egy←oil_price	3,2679	0,6587	-0,5961	[-1,5915]
cds_tun←rating_tun	21,0046*	0,0000	-0,1441*	[-2,6514]	cds_egy←rating_egy	5,9109***	0,0521	0,9221*	[5,2074]
cds_tun←tunindex	1,7301	0,4210	-0,9286*	[-3,4161]	cds_egy←egx	14,7022**	0,0117	-3,1466*	[-4,2402]
cds_tun←Eur_Tnd	1,0693	0,7845	-0,0190*	[-3,3969]	cds_egy←Eur_Egp	0,6893	0,4064	-0,0157	[-0,4116]
cds_tun←usd_Tnd	1,9717	0,3731	0,1019*	[-2,2661]	cds_egy←usd_Egp	0,0209	0,8848	0,0325	[1,7422]
cds_tun←Pibr_tun	1,4721	0,8316	-0,5313*	[-3,0317]	cds_egy←Pibr_egy	4,5111	0,4784	-1,1096*	[-5,5176]
cds_tun←Psi_tun	0,7245	0,3947	0,0038*	[2,9393]	cds_egy←Psi_egy	0,2008	0,6540	-0,0781	[-1,2862]

Note: *, ** and *** denote the significance at 1%, 5% and 10%.

The financial variables still the more explicative and more influencing spreads specially the PSI index showing that the sovereign spreads are sensitive to political instability and terrorism attacks risk.So, we can conclude that the market psychology plays an important role in the CDS premia variation. More investors run to liquidate their positions; more the sovereign debt markets will been contagious and has effect on the credit sovereign debt and the countries fundamentals.

Conclusion

After comparing causality relationships between fundamentals and sovereign CDS spreads, before and after the Tunisian and Egyptian revolution, we have draw the following conclusions: revolution and political events had have a destabilizing effect on the sovereign credit market and increased sovereign CDS spreads of the two countries. The old dictatorial political regimes in theses developing counties were like guarantor of stability and creditworthiness despite perceptible fundamentals deterioration. After revolutions, investors had reevaluated their default risk perceptions and run to buy insurance instrument to protect their sovereign risk exposure what explain the increasing CDS price since January 2011. Since this political destabilization, the real economy activity slowdowns, sovereign credit rating and political instability index downgrades, macroeconomic fundamentals deterioration had created a self reinforcing negative feedback loops with CDS spreads. Rising levels of violence become a real threat to tourism, an important economic sector for employment and primary source of foreign exchange. This situation discourages Direct Foreign Investors who run to liquidate their positions to purchase more safety assets (developed sovereign obligations). This "flight to quality" leads to drying the foreign reserves and makes the domestic currency more vulnerable and deficit widened further. To escape to negative feedback loops the Tunisian and Egyptian policymakers and new governments should ensure political stability, economic stability and social cohesion on their fragile countries to reduce tensions and to have the necessary willingness and energy to make the war against terrorism.

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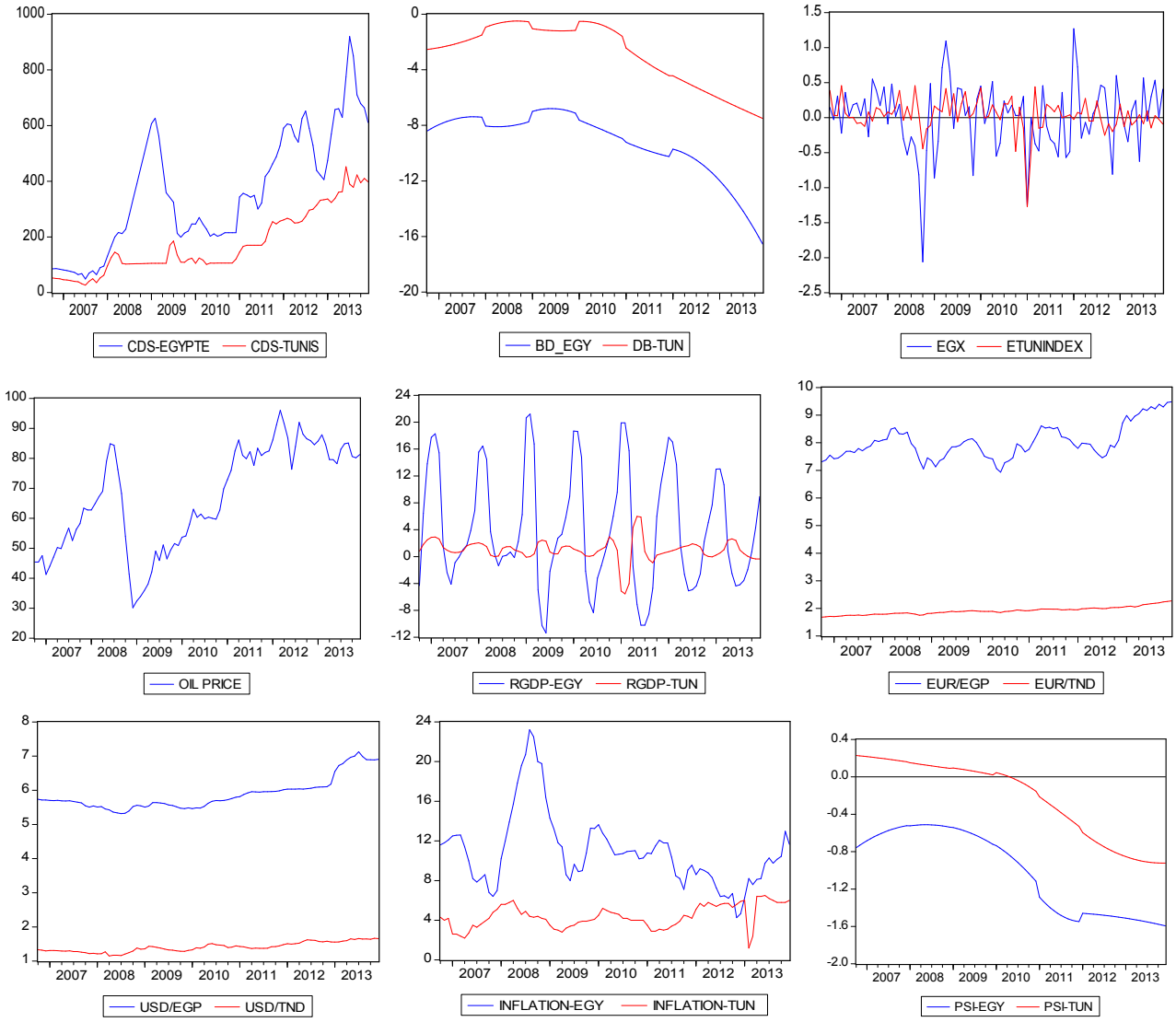
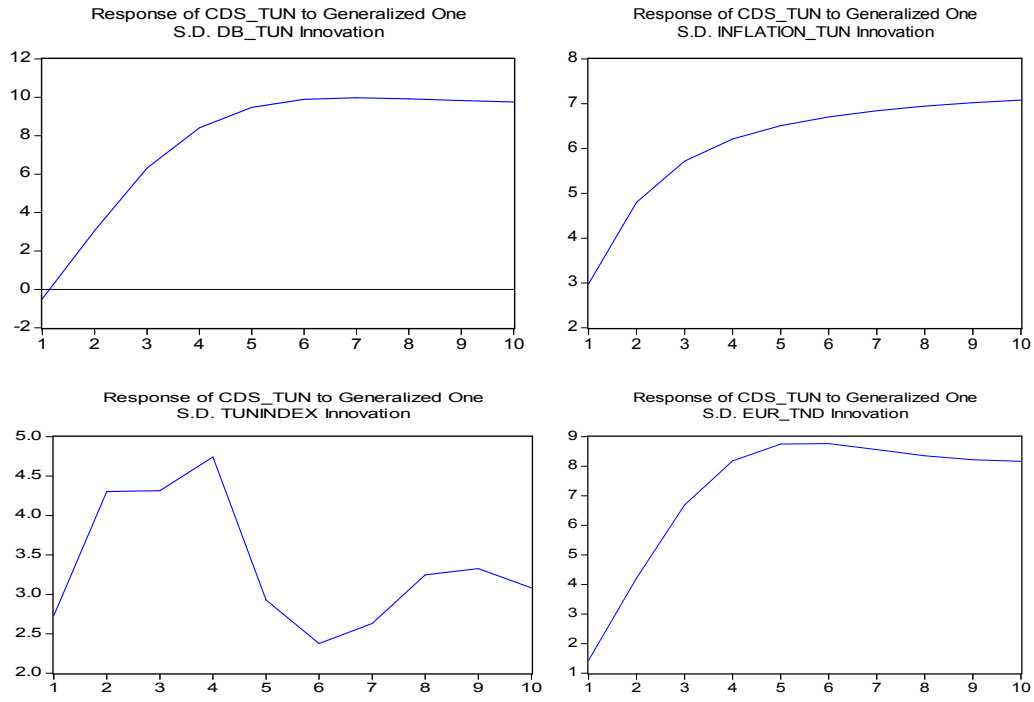
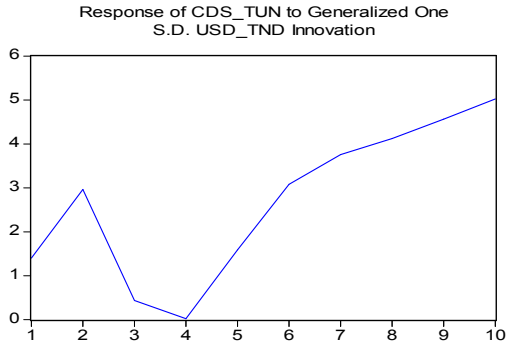
Appendix (A): The variables evolution during the sample period from October 2006 to December 2013

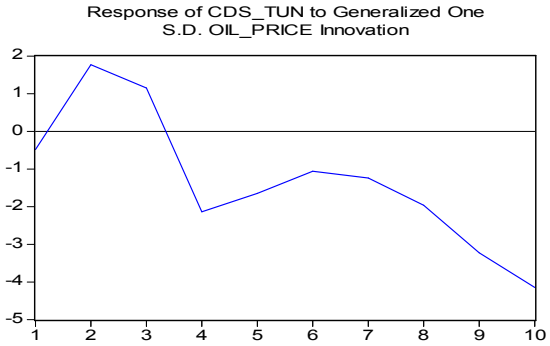


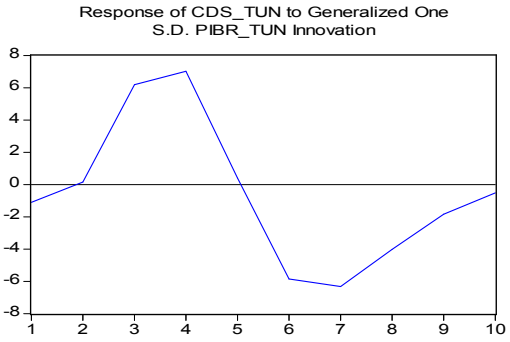
Appendix (B): Impulsionnel responses of sovereign CDS spreads before revolution

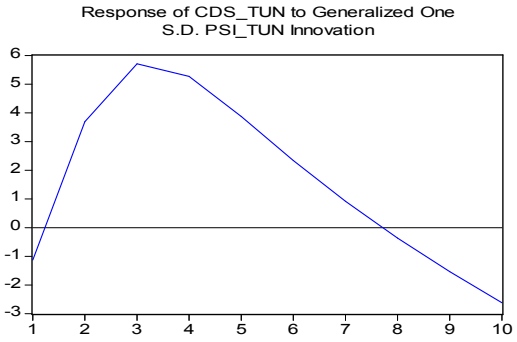
Tunisia



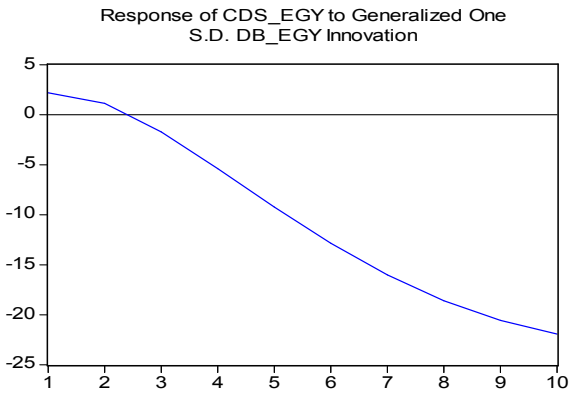

Response of CDS_TUN to Generalized One S.D. USD_TND Innovation

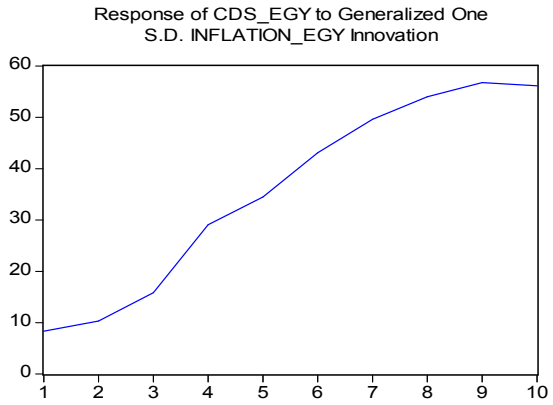

Response of CDS_TUN to Generalized One S.D. OIL_PRICE Innovation

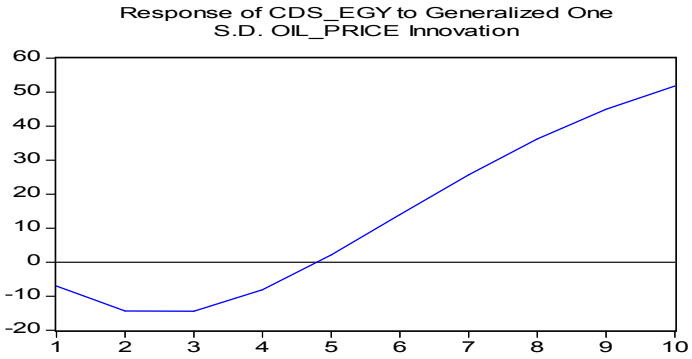

Response of CDS_TUN to Generalized One S.D. PIBR_TUN Innovation


Response of CDS_TUN to Generalized One S.D. PSI_TUN Innovation

Egypt

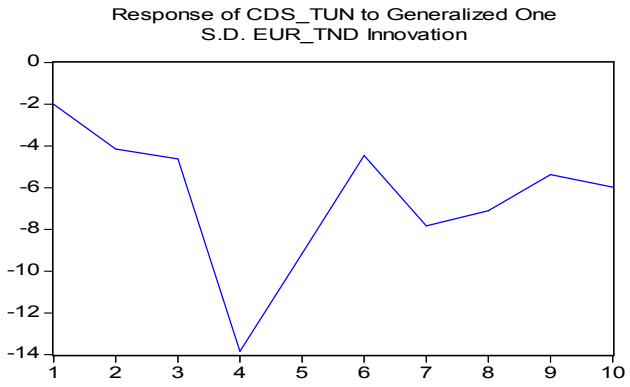

Response of CDS_EGY to Generalized One S.D. DB_EGY Innovation

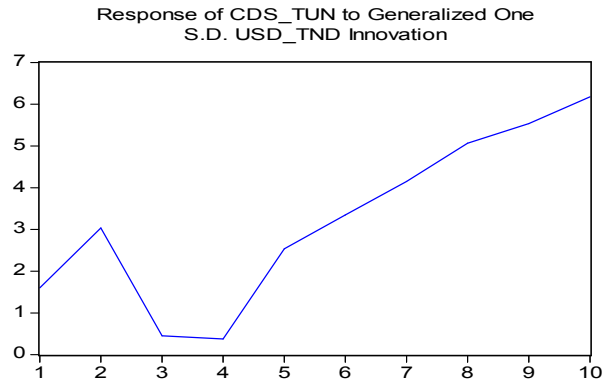

Response of CDS_EGY to Generalized One S.D. INFLATION_EGY Innovation

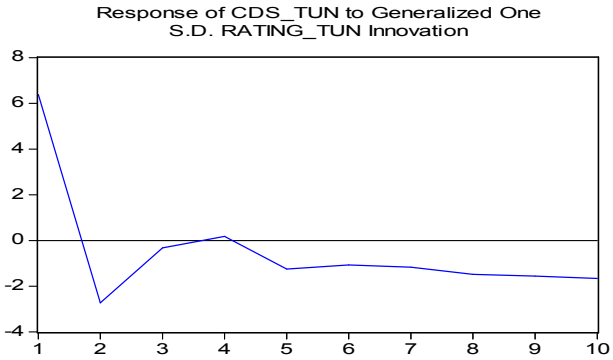

Response of CDS_EGY to Generalized One S.D. OIL_PRICE Innovation

Appendix (C):Impulsionnel responses of sovereign CDS spreads after revolution

Tunisia







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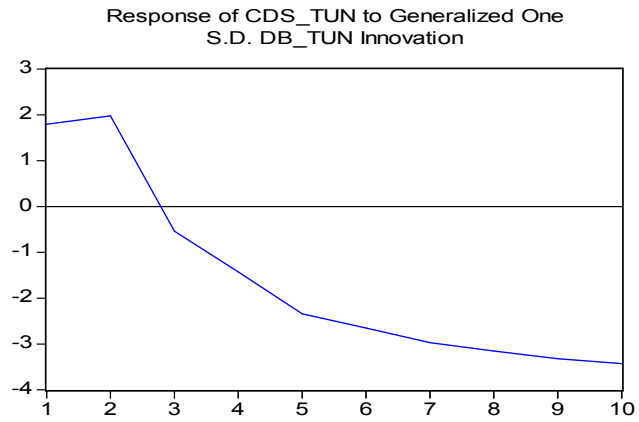
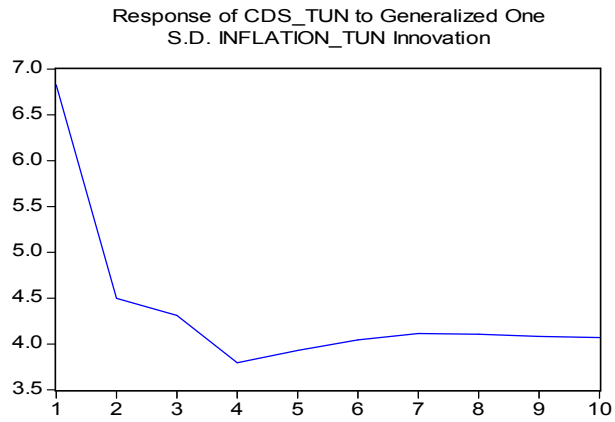
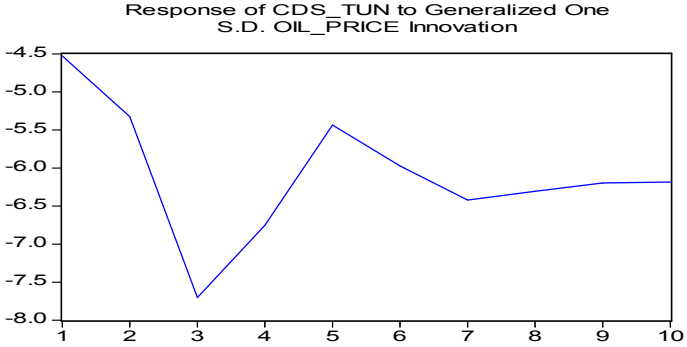
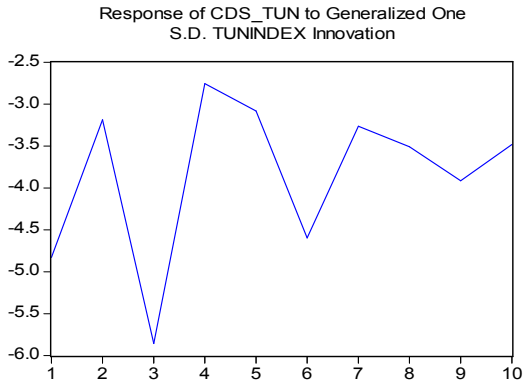
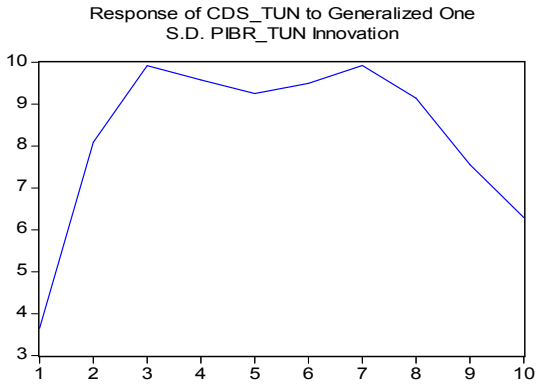


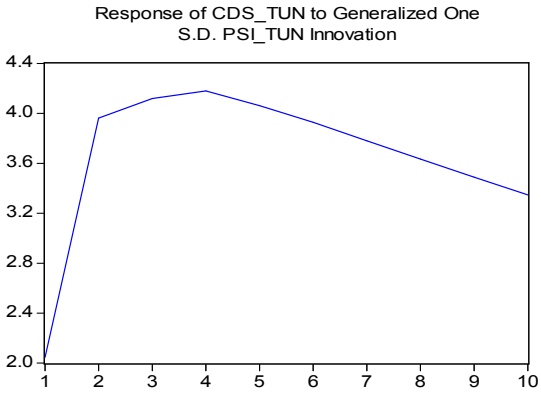




32

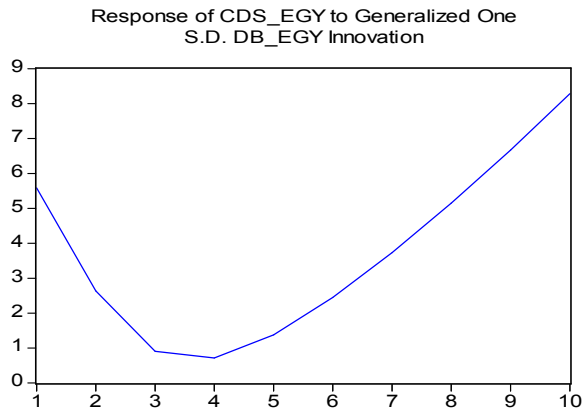

Response of CDS_TUN to Generalized One S.D. TUNINDEX Innovation
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
-5.5
-6.0
1 2 3 4 5 6 7 8 9 10

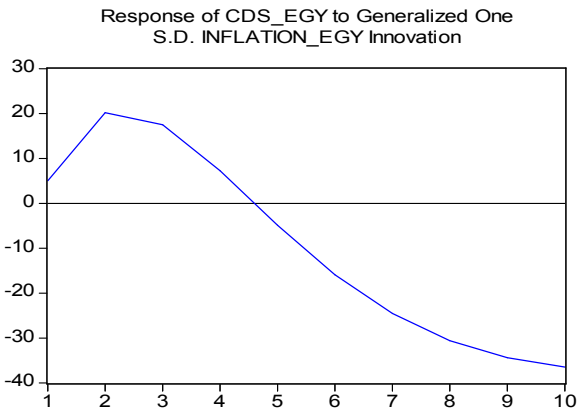

Response of CDS_TUN to Generalized One S.D. PIBR_TUN Innovation
10
9
8
7
6
5
4
3
1 2 3 4 5 6 7 8 9 10

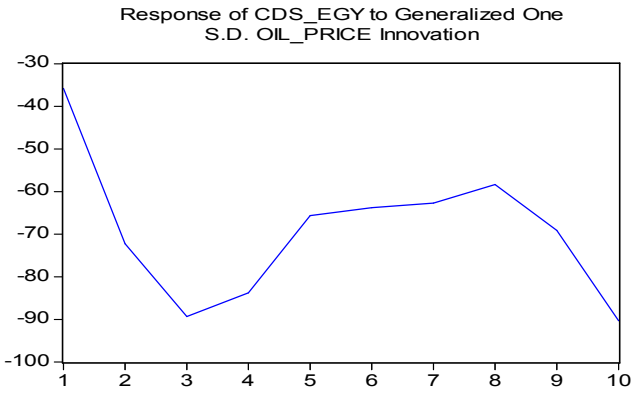

Response of CDS_TUN to Generalized One S.D. PSI_TUN Innovation
4.4
4.0
3.6
3.2
2.8
2.4
2.0
1 2 3 4 5 6 7 8 9 10

34

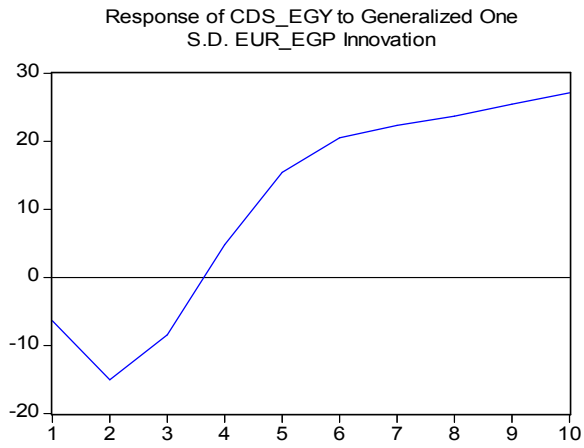
Egypt

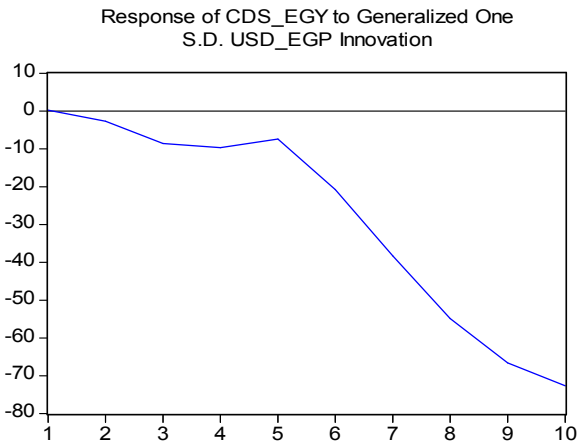

Response of CDS_EGY to Generalized One S.D. DB_EGY Innovation
9
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10

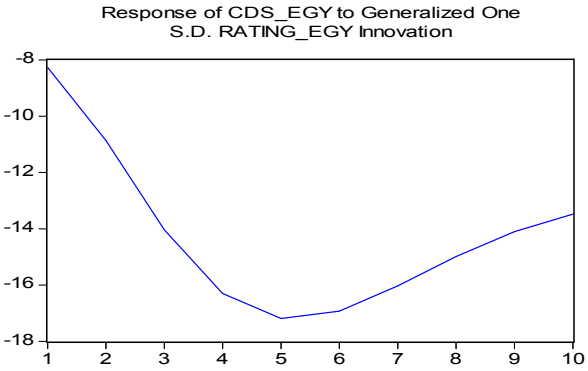

Response of CDS_EGY to Generalized One S.D. INFLATION_EGY Innovation
30
20
10
0
-10
-20
-30
-40
1 2 3 4 5 6 7 8 9 10


Response of CDS_EGY to Generalized One S.D. OIL_PRICE Innovation
-30
-40
-50
-60
-70
-80
-90
-100
1 2 3 4 5 6 7 8 9 10

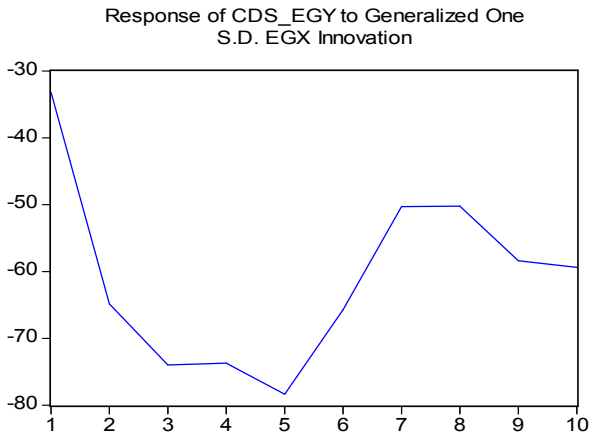
37

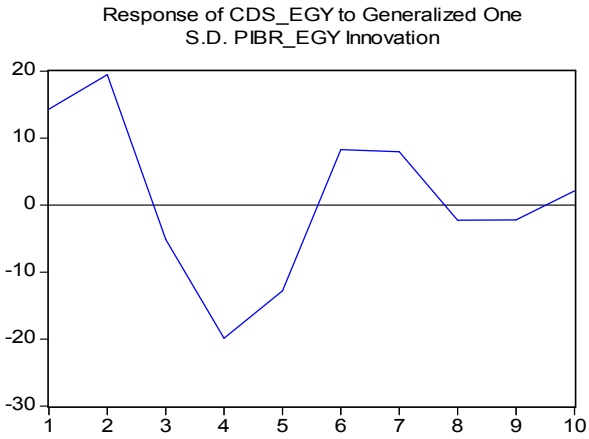

Response of CDS_EGY to Generalized One S.D. EUR_EGP Innovation
30
20
10
0
-10
-20
1 2 3 4 5 6 7 8 9 10

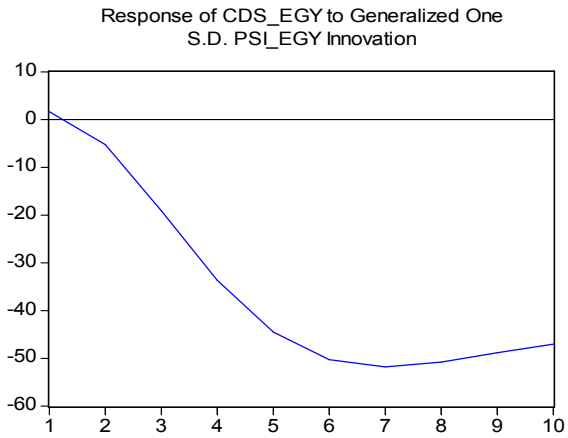

Response of CDS_EGY to Generalized One S.D. USD_EGP Innovation
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1 2 3 4 5 6 7 8 9 10


Response of CDS_EGY to Generalized One S.D. RATING_EGY Innovation
-8
-10
-12
-14
-16
-18
1 2 3 4 5 6 7 8 9 10

38


Response of CDS_EGY to Generalized One S.D. EGX Innovation
-30
-40
-50
-60
-70
-80
1 2 3 4 5 6 7 8 9 10


Response of CDS_EGY to Generalized One S.D. PIBR_EGY Innovation
20
10
0
-10
-20
-30
1 2 3 4 5 6 7 8 9 10


Response of CDS_EGY to Generalized One S.D. PSI_EGY Innovation
10
0
-10
-20
-30
-40
-50
-60
1 2 3 4 5 6 7 8 9 10

39

Appendix (D): Rating linear transformation (see Ferreira and Gama 2007)

Credit Rating (CR)		Credit outlook	
Rating	Numerical Code	Perspective	Add to CR
AAA	20	Positive	+1
AA+	19	CW-Positive	+0.5
AA	18	Stable	0
AA-	17	CW-negative	-0.5
A+	16	negative	-1
A	15		
A-	14		
BBB+	13		
BBB	12		
BBB-	11		
BB+	10		
BB	9		
BB-	8		
B+	7		
B	6		
B-	5		
CCC+	4		
CCC	3		
CCC-	2		
CC/C	1		
SD/D	0		

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