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THE ROOT CAUSES OF CAPITAL FLIGHT IN TUNISIA: AN EMPIRICAL INVESTIGATION

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ABSTRACT

In this paper we analyze the root causes of Capital flight in Tunisia. So we determine whether there is a relationship between capital flight and some institutional and macroeconomic variables by using annual data between 1984 and 2014. The capital flight was used as dependent variable, measured by the Bank Deposit Approach which adopts an indirect proxy of capital flight in the sense of private wealth held abroad by resident as reported by the Bank for International Settlements. For estimation purposes, we use Ordinary Least Squares estimation method, co-integration test and ECM methods. Our results indicate that the major incentives for capital movement were corruption, political events, exchange rates overvaluation, and external debts use. This study opens up new insights for policies markers to implement the appropriate mechanisms in order to stop the massive capital outflows, repatriate flight capital and promote good governance for sustainable economic development.

Keywords: Capital flight, Bank Deposit Approach, Ordinary Least Squares, co-integration test, ECM methods

JEL Classification: F29, F39, O11

1. INTRODUCTION

One of the key macroeconomic objectives of any nation is to achieve accelerated growth and development. But capital flight has been regarded as a major factor contributing to the mounting foreign debt problem and inhibiting growth and development effort in developing countries.

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In Tunisia, capital flight represents a severe problem causing heavy losses in government revenue, forgone investment, and lost output. In fact, the total amount of capital outflow grew from $0.975 billion in 1994 to $2.006 billion in 2014. The largest amount of capital outflow occurred in the year 2004, 3.077 billion USD, which is equivalent to 9.8% of GDP and 72% of loans from international banks (BIS 2015). These developments have led to discussions about importance capital flight in Tunisia and how we could be back this capital from abroad.

However, there is no generally accepted definition of capital flight, even though its activities have been identified for periods dating back to the seventeenth century. The variety of capital flight definitions makes it difficult to separate normal capital out flows and flight capital out flows. For instance, Morgan Guaranty Trust Company (1986) provides a broader definition to capital flight. To them, it is "reported and unreported acquisition of foreign assets by non-bank's sector". For John T. Cuddington (1986) it is short-term private capital outflow that response not only to political crisis but also to economic policy failure. Nyong (2003) noted that capital flight should be seen as any form of abnormal capital outflows from a developing country by economic agents (private or public). Such abnormal capital outflows are responses to political pressures at home coupled with domestic economic policy distortions such as heavier taxes, capital control, and overvaluation of the exchange rates (Forgha, 2008).

Several studies have looked at the reasons of capital flight in Latin American countries (e.g., Cuddington, 1987; Dooley, 1988; Pastor, 1990; Muscatelli and Hallet, 1992), Asian countries (e.g., Chunhachinda and Sirodom, 2007) and sub-Saharan African countries (e.g., Murinde and al., 1996; Hermes and Lensink, 1992; Lensink andal. and Ndikumana, 1998; Boyce, 2002 a, 2008). The opportunity for political reforms in Tunisia brought along by the revolution in 2011 is enormous and unprecedented (Afef Mnif Trabelsi, 2017). However, a major political event like this can also have an explosive effect on capital flight because of its economic and social implications.

In this paper, we attempt to identify the reasons of capital flight in Tunisia. Specifically, we seek to address the following questions: There is a relationship between capital flight and some institutional and macroeconomic variables? What are the root causes of capital flight in Tunisia? Have the corruption and political events in the Tunisian economy increased the intensity of capital flight?

This paper adds to the growing literature studying the root causes of capital flight in some ways. Firstly, whilst increasing evidence showing that the main factors driving capital flights are economic instability coupled with corruption, political instability and natural resource availability (e.g., Ondo and Taylor, 2012), most earlier studies in this field consider as political

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events, the change in political rights dispensation, military wars and terrorist attacks. Little research has conducted on the potential influence of an important source of political uncertainty arising from overthrown or changes in government as a result of civil uprisings. Considering the Tunisian revolution, this article represents an attempt to assess the effect of political turbulence on the extent of capital flight.

Secondly, from a methodological standpoint, this paper modifies and extends on the method used in prior studies (e.g., Hermes and Lensink, 1992; Collier and al., 2001; Ndikumana and Boyce, 2008, 2014). Most of the studies use the residual or balance of Payment approaches to measure capital flight. We use the Bank Deposit Approach and take the total stock of non-bank resident assets from foreign banks, as provided by the BIS data, as a proxy of capital flight. The Bank Deposit Approach is a creditor-reporting method based on the accumulation of deposits in international banks by the domestic non-banking private sector. The BIS publishes both amounts outstanding as well as exchange rate adjusted changes in stocks. It is believed that BIS data are generally reliable and accurate in particular observations on capital flows for developing countries including Tunisia, in contrast to balance of payment data which are incomplete and often inaccurate.

The main findings of our investigation can be summarized as follows. First, our results show that the major incentives for capital movement in Tunisia during 1984-2014 periods were corruption and political events followed by significant exchange rates over valuation, and external debts use. Second, our analysis shows that the capital flight seems significant and even higher for the post-revolution period.

The remainder of this paper is structured as follows. Section 2 presents the research background with a review of the related literature and an overview of the measurement of the capital flight phenomenon. Section 3 describes the data and the model specification. Section 4 presents the methodologies employed and discusses the empirical results. Finally, Section 5 concludes the paper with a summary of main findings and their practical implications.

2. RESEARCH BACKGROUND

2.1 Literature review: The root causes of capital flight

There is no theoretical consensus about the underlying roots of capital flight. The literature has considered the issue from four angles of analysis. First, the capital flight is the by-product of portfolio choice (e.g., Lessard, D. and Williamson, 1987; Kindleberger, 1987; Ajayi, 1992). It is considered as foreign investment without any normative consideration. Second, capital flight is a symptom of bad economic policies, including mismanagement of interest and exchange rates,

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excessive tax burden, inflation, budget deficit, and an excessive public sector borrowing requirement resulting in crowding out private sector's access to financing (e.g., Dooley, 1988; Pastor, 1990; Hermes and Lensink, 2001). Third, capital flight is a symptom of distrust in the country's macroeconomic and socio-political environment (e.g., Ndikumana and Boyce, 2003, 2008, 2011; Le and Rishi, 2006; Ajayi, 2007). Finally, capital flight raises doubt regarding the usefulness of official development aid flows. (Cerra and al., 2008; Ndikumana and Boyce, 2013; Forgha, 2008).

There are many of studies and research papers examined the reasons of capital flight in developing countries. Ndikumana and Boyce (2012) demonstrate that, while the countries of North Africa have achieved high levels of development relative to their sister nations south of the Sahara, they too have suffered from financial hemorrhages through capital flight. The burden on their economies is substantial in terms of lost investment and foregone government revenue, with adverse effects on economic growth and social service delivery. Although reliable and comprehensive data does not exist on the magnitude of capital flight from these countries, it is believed that capital flight particularly from Tunisia has been substantial (Ndikumana and Boyce, 2012).

The Commission for Africa assumes a likely link between corruption and capital flight and it suggests measures to enhance laws and practices in both developing and developed countries (Williams, 2005). Bai and Wei (2000) find that bureaucratic corruption makes formal tax collection more difficult, and as a result: "the government has difficulty in collecting revenue through formal tax channels and hence has to rely more on capital controls and financial repression". Collier (2001) analyses capital flight from 43 emerging market countries throughout the 1980s period, concluding that corruption is positively related to capital flight measured by the residual approach. Le and Meenakshi's econometric analysis (2006) finds that, holding other determinants of capital flight constant, corruption does have a positive and significant impact on capital flight.

Arezki and Brückner (2001) find that increases in oil rents significantly increase corruption and deteriorate political rights. The correlation between oil revenues, corruption and capital outflows is illustrated by Boyce and Ndikumana's research (2013). They show that revenues from the extraction of natural resources can be a major source of flight capital, hence a "black gold faucet." Regarding oil revenues that country officials have transferred overseas in personal banking accounts, a 2002 IMF report on Angola found that more than $900 million in oil revenues was missing from state coffers in 2001 – roughly three times the total value of humanitarian aid to Angola – and that $4 billion had gone missing over the previous five years of the study (Boyce, 2003). A substantial share of developing countries' oil revenues remains

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outside the state budget and is confiscated by corrupt intermediaries, with little positive socio-economic impact on the national population (Talahite, 2000). Ndikumana and Boyce (2003) examined with their seminar paper which way the relationship between capital flight and external borrowing has in African countries between 1970 and 1996. One of important result of their study is that external borrowing effects significant and positively to capital flight. Another important finding from Boyce (1992) shows that capital escapes a country in response to economic circumstances attributable to external debt. Ljuing wall and Wang (2008) confirmed also that external borrowing can be an explanation for capital flights in china. In their study, balance of payment data between 1993 and 2003 are used.

Another important research of capital flight was conducted by Harrigan and al. (2007). They observed that an overvalued exchange rate leads to increasing expectations of depreciation in the near future. Thus to avoid impending future welfare losses, residents will be motivated to hold at least part of their assets abroad. Another offshoot of exchange rate over-valuation is foreign exchange in the parallel market premium. The presence of high parallel market premium is normally interpreted as a symptom of "sick economy. The finding in essence indicates that an expectation of future depreciation of currency encourages capital flight, an indication of a relationship between the two variables. Alam and Quazi (2003) study the determinants of capital flight in Bangladesh during 1973-1999. Findings indicate that political instability is the most important factor affecting capital flight. Other factors that are proved to be significant include corporate income taxes, higher real interest rate differentials and lower GDP growth rates. Cheung and Qian (2010) examine the empirical determinants of China's capital flight during the period 1999-2008. In addition to the covered interest differentials, their empirical exercise includes a rather exhaustive list of macroeconomic variables and a few institutional factors. Overall, the regression analysis shows that China's capital flight is quite well explained by its own history and covered interest differentials. The other possible determinants offer relatively small additional explanatory power.

2.2 Measurement of Capital Flight

There is no consensus measure of capital flight, but we have three approaches to measurement the capital flight. These approaches are briefly reviewed here.

2.2.1 The Balance of Payment Account Approach

The Balance of Payment Account Approach measured capital flight as the sum of recorded short term capital outflows and unrecorded net flows or net errors and omission (Dooley 1986). Cuddington (1986) further observed that private short-term capital movement is either imprecisely or not reported at all especially in countries which impose capital controls. It

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identifies capital flight as one or more categories of short-term capital outflows and views it as a rapid response to investment risk. It thus involves “hot money”, money that responds quickly to political or financial crisis, to expectations of tighter capital controls or the devaluation of the domestic currency. This is presumably also money that has the potential for returning quickly to the country when conditions change.

However, according to Kant (1996), there have been some criticisms of this method of measurement. First, an investor is free to acquire different types of assets aboard: short-term, long-term, real and financial. The motivations for all such acquisitions, as well as their effects on the investor’s home country, will generally be identical. Even if one wishes to restrict oneself to components of those assets that can flow and reflow quickly, it seems best to look beyond short-term capital flows. Long-term foreign financial assets, for example, are close substitutes to short-term assets, because active and deep secondary markets in long-term assets exist. Then, the errors and omissions line includes not only unrecorded capital flows but also true measurement and rounding errors, unreported imports, and registration delays.

2.2.2 The Residual Approach

The residual approach was developed by the World Bank (1985) and Erbe (1985). It was further modified by Morgan Guaranty Trust (1986).This approach arose out of the feeling that the balance of payment accounts were not sufficient to estimate resident capital outflows. In the World Bank (1985) and Erbe (1985) version of the residual approach, capital flight is calculated as the difference between sources and uses of capital inflows. The sources of capital inflows are increases in external debt and foreign direct investment. However, there has been some criticism of this measure which does not identify capital flight with a sudden response to policy changes. It attempts, instead, to measure the buildup of net foreign claims by the private sector without trying to distinguish between speculative or not speculative flows or between normal and abnormal flows. Even, Boyce and Ndikumana (2001) argue that the residual method is unstable because it does not account for the effect of exchange rate fluctuations on the US dollar value of the end-of-year debt stock insofar as the stock of foreign debt may be affected by exchange-rate revaluations, debt reclassification and relief, and discoveries of existing debt. In response to these criticisms, some authors have chosen to follow the Bank Deposit Approach of estimating capital flight.

2.2.3 The Bank Deposit Approach

As shown by various authors such as Sheets (1995) and Schneider (2003), the main pitfall of these two cited approaches (The Balance of Payment Account Approach and The residual approach), whatever their econometric sophistication, is that they rely on estimates. Then,

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Balance of payments data for developing countries including Tunisia, in particular observations on capital flows, are incomplete and often inaccurate.

The IMF data: The bank deposit approach is not based on the outflow of resident capital from a country in response to economic and political risk in the domestic economy (Schneider 2003), but on the accumulation of deposits in international banks by the domestic non-banking private sector. Hermes and Lensink (1992), Collier et al (2001) and Ndikumana and Boyce (2012), take the total stock of non-bank resident assets from foreign banks, as provided by IMF data, as a proxy of capital flight. For them, this method is a reduced measure of capital flight. This measure may be considered as an indication of the minimum amount of assets held abroad, as residents may hold their assets in other forms than bank accounts, for example, on foreign stock holdings. The IMF, however, provided data on these banking assets until 1994. For recent years, no information is available to implement this measure.

The BIS data: One fruitful source of data stems from the Bank for International Settlements (BIS) quarterly data on privately held deposits in banks by non-bank citizens outside their countries of origin (Bethune 1984, Bouchet, 1986). The BIS publishes both amounts outstanding as well as exchange rate adjusted changes in stocks. This creditor-reporting method adopts a stock approach to private capital outflows. The working hypothesis is that a significant increase in the rate of private capital outflows will be reflected in the accumulation of private external assets held in international banks. These statistics omit mutual funds, private trusts, custodian accounts, and money market funds that hold assets in international banks.

Thus, BIS data are conservative and comprise only one form of capital leakages, hence excluding other types of investments such as real estate, art, antiques, bonds, jewels, cash outside the banking system, and foreign business ventures, all difficult to trace.

3. DATA AND METHODOLOGY

3.1. Data

In this paper we analyze the root causes of Capital flight in Tunisia. So we determine whether there is a relationship between capital flight and some institutional and macroeconomic variables by using annual data between 1984 and 2014. The capital flight was used as dependent variable, measured by the Bank Deposit Approach which adopts an indirect proxy of capital flight in the sense of private wealth held abroad by resident as reported by the Bank for International Settlements (BIS). ICRG corruption index, Polity index, oil rent, interest rate differential, exchange rate, domestic credit, foreign debt and market capitalization were used as independent variables. The data are from the World Development Indicators and IMF's International

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Financial Statistics. For estimation purposes, we use Ordinary Least Squares estimation method, co-integration test and ECM methods.

3.2. Model specification

The following model is employed in the analysis of the determinants of capital flight in Tunisia:

$CF_t = \alpha + \beta_1 ICRG_t + \beta_2 POLITY_t + \beta_3 OIL_t + \beta_4 DOM_t + \beta_5 DEBT_t + \beta_6 MARK_t + \beta_7 DIFINT_t + \beta_8 EXCH_t + \varepsilon_t$ **(1)**

Where, t = l, 2, …, T: the time index,

$\varepsilon_{it:}$ a random error term,

Capital Flight (CF): We use the BIS method,

ICRG: corruption index,

Political stability (POLITY): polity score, proxy of governance,

Oil rent (OIL): measured as total oil rent divided by GDP,

Domestic credit (DOM): measured as domestic credit allocated to the private sector divided by GDP,

External Debt (DEBT): measured as change in external debt divided by GDP,

Exchange rate (EXCH): the yearly average of exchange rate of one US dollar in Tunisia,

Differential Interest Rate (DIFINT): measured as foreign interest rate minus the domestic interest rate,

Stock quotation (MARK): Market capitalization derived from the Tunisian stock market.

In the study, determinant of capital flight is investigated with both ordinary least squares and an Error Correction model for mutual relationship between these variables. Error Correction Model is introduced by Engle and Granger (1987) for examining cointegration for long-run relationship between variables.

The Error Correction Model can be expressed as follow.

$\Delta x_t = \alpha + B(L)\, \Delta x_{t-1} + d'(e_{t-1}) + ŋt$ (2)

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Where;

Δx_t= n × t: vectors of variables,
α = n ×1: vectors of constants,
B(L) = n × n: matrices of the polynomial expression in the lag operator,
d' = n ×1: vectors of constants,
e_{t-1}= n ×t: vectors of error correction terms,
ŋt= n ×t: vectors of residuals.

4. EMPIRICAL RESULTS

The regression of a non-stationary time series on another non-stationary time series may produce a spurious regression. In order to produce a meaningful estimate, it is important to conduct a unit root test. Testing for the existence of unit roots is a principal concern in the study of time series models and co-integration. The presence of a unit root implies that the time series under investigation is non-stationary; while the absence of a unit root shows that the stochastic process is stationary. The Augumented Dickey-Fuller test as presented in Dickey and Fuller (1979) is an important tool for doing this. To test the null hypothesis of a unit root, the t-statistic and the asymptotic critical values were taken from Davidson and MacKinnon (1993). This outcome is presented in (Table 1).

Table 1: Unit root tests (ADF)

Variable	ADF test						
	Level			First difference			
	ADF Statistics	Critical value at the 5%	p-value	ADF Statistics	Critical value at the 5%	p-value	
CF /GDP	-1.220829	-2.967767	0.6515	-4.908390	-2.971853	0.0005	I(1)
ICRG	-1.538037	-2.967767	0.5006	-5.099020	-2.971853	0.0003	I(1)
POLITY	0.094803	-2.967767	0.9598	-4.928493	-2.971853	0.0005	I(1)
OIL	-2.378148	- 2.967767	0.1563	-5.512075	-2.971853	0.0001	I(1)
EXCH	-0.717021	- 2.967767	0.8270	-4.907490	-2.971853	0.0005	I(1)
DIFINT	-1.435434	- 1.953381	0.1378	-4.476100	-2.976263	0.0015	I(1)
DEBT	-2.174217	-2.967767	0.2193	-4.469106	-2.971853	0.0015	I(1)
DOM	-2.697342	-2.981038	0.0880	-3.265876	-2.986225	0.0278	I(1)
MARK	-2.106093	-2.625121	0.2438	-4.468481	-2.976263	0.0016	I(1)

Source: Results of the (Eviews 7) software

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As shown in Table 1 below, we are out to test the hypothesis that Ho: Y_t I (1) against $H_{1:}$ I (0). From the below results, we expect to reject the null hypothesis when the variables Y_t are stationary. It is therefore, established in Table 1 that all the variables that suffer from spurious regression achieved stationary in their first difference as such are integrated in order 1. Given that none of the variables is integrated of order 0, and all have the same degree of integration, we found it useful to study their Cointegration using the Engle -Granger method.

The Augmented Engle-Granger (AEG) cointegration test is carried out based on the estimated model 1, which result is shown in Table 2. The residual term (U_t) series generated from it was found to be stationary at level. The result presented in Table 3 shows that the null hypothesis of no cointegration is rejected at the 1% and 5% asymptotic critical level for the model. Therefore, there exist long-run relationship between capital flight dynamics and institutional and macroeconomic variables in Tunisia.

Table 2: The Least Square Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	-1.111	0.835	-1.330	0.1969
ICRG	0.254	0.111	2.284	0.0324
POLITY	-0.037	0.018	-2.008	0.0570
OIL	0.041	0.009	4.188	0.0004
DOM	-0.823	0.745	-1.105	0.2809
DEBT	1.640	0.386	4.242	0.0003
MARK	-0.011	0.006	-1.844	0.0793
DIFINT	-0.050	0.015	-3.488	0.0021
EXCH	0.700	0.291	2.401	0.02252
R^2	0.89			
Adjusted R^2	0.85			
Prob (Fisher)	0.0000			
D-W test	1.34			

(CF/GDP) is the dependant variable, (.) = Student t; (***, **, *) = Significance at the 1%, 5% and 10% level respectively.

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Table 3: Residue Stationary Test

Variable	ADF	ADF test critical value of 5%	Engle-Granger test value of 5%	Result
Residue	-4.049	-2.963	-3.34	I(0)

The existence of the cointegration relationship is confirmed by the Johansen test (Johansen, 1991). This test indicates, in fact, seven cointegrating relationships between the variables of the model at the 5% level.

At this stage from analysis, a study of the error behavior is necessary. In fact, the error normality Jarque-Bera test, the Heteroskedasticity and the autocorrelation Breusch- Godfrey tests have been made to our model using the "Eviews 7" software (Table 4). Results show that the errors of the models equations are both normal, homocédastic and uncorrelated because for each of the three tests, the probability values exceed the critical 5% probability. Ultimately, we can consider that these models are good.

Table 4: Tests on Models Errors

Test	Probability Fisher	
	Long run	Short run
JarqueBeranormality test	0.7356	0.7193
Breusch-GodfreyHeteroskedasticity test	0.1746	0.1776
Breusch-Godfreyautocorrelation test	0.2262	0.6700

Source: Results of the (Eviews 7) software

In Table 3, we present the results of the model 1 of the capital flight. Capital flight in the case of Tunisia was specified as a function of corruption, political instability, oil rent as a GDP ratio, interest rate differential, domestic credit as a GDP ratio, exchange rate, stock market ratio and external debt servicing as a GDP ratio.

Specifically, the results reveal that an increase in corruption, political instability, oil rent rate, exchange rate and external debt servicing on the hand, and a decrease in stock market rate and interest rate differential on the other hand, provoke capital flight. The above explanatory variables are statistically significant below 5 percent level of significance meaning that any policy measure to reduce capital flight from Tunisia must take into consideration those factors.

The explanatory power of the model (1) is substantial. The coefficient of determination R^2 shows that 89% of the variability in the level of capital flight is explained by the indicators of our

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model. The Fisher F statistic is significant at 1%. Thus, we reject the null hypothesis and consider that the regression is significant. The model is statistically significant and provides a robust explanation of the determinants of capital flight.

Still in equation 2, after the application of the Engle and Granger (1987) co-integration error correction mechanism (that is, two-step procedure on the two-stage Least Squares results) (Table 6), we observe that the coefficient of the ECM is negative 0.859 and is stable. This result is also statistically significant at more than 99 percent level of significance. The long – run stability and reliability of this result reveals that it could be used for forecasting and policy recommendation.

Table 6: Cointegrating Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	-0.038	0.122	-0.317	0.7544
D(ICRG)	0.009	0.045	0.212	0.8342
D(POLITY)	-0.003	0.004	-0.749	0.4625
D(OIL)	0.029	0.014	2.010	0.0581
D(MARK)	-0.019	0.006	-3.154	0.0050
D(DEBT)	1.940	0.488	3.973	0.0007
D(DOM)	-0.575	0.504	-1.140	0.2674
D(DIFINT)	-0.060	0.018	-3.421	0.0027
D(EXCH)	0.328	0.2770	1.186	0.2494
RESIDU(-1)	-0.859	0.267	-3.205	0.0044
R^2	0.617			
Adjusted R^2	0.435			
Prob (Fisher)	0.0118			
D-W test	1.79			

(.) = Student t; (***, **, *) = Significance at the 1%, 5% and 10% level respectively.

The coefficient of the R^2 for equation 2 is 0.617. This shows that the regression line captures more than 61 percent of the total variations in capital flight caused by the variables specified in the capital flight equation. The joint test of significance of all parameter estimates conducted using F-Statistic shows that our observed F-ratio is 23.67 and greater than its theoretical value at one percent level. This explains that our findings are 99 percent reliable.

The results of estimating the long-term equation (1) reveals that the "ICRG" and "POLITY" variables are significant and highly correlated to capital flight. The positive coefficient for the

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variable "ICRG" on one hand (+0.254) and negative for variable "POLITY" (-0.037), on the other hand, confirm that corruption has a negative impact on economic development. This positive relationship between "ICRG" and capital flight shows that the level of capital flight for Tunisia is strongly affected by the governance policies adopted in the country.

However, in the short run, these institutional variables have an insignificant influence on capital outflows (Table 6).

The total amount of private capital outflows of Tunisia was over $52 billion for the 31-year period under study. Some of political events were found to be related to capital outflows. In fact, the substantial increase of the escape took place from 1999, the year of Ben Ali's second re-election. And the largest amount of capital outflow occurred in 2004 with 3.077 billion USD. This increase may be linked to the presidential elections for Ben Ali to a 4th mandate (2004) and therefore unstable and turbulent socio-political situation of the country.

Indeed, Tunisia's economy was stifled and under the influence of a small clan of people. The corruption of Ben Ali's family was known widely within and outside the country, hence rising frustration for Tunisians because looting affected a large range of population, discouraging entrepreneurship. The first victim of these operations was the Tunisian state which has been completely gutted by Ben Ali and his entourage. The high level of corruption was the main factor prompting the fall of the Ben Ali regime, on January, 14th 2011. Since then, Tunisia has been living in political instability.

In the long run and short run, the "oil rent" variable is positively and significantly correlated with capital flight with a level of correlation are respectively (0.041) and (0.029).

These results (Table 2 and Table 6) believe that the revenue of the natural resource extraction can also be used to power the capital flight. This revenue can take a form of signing bonuses which are one-time payments made by companies in exchange for exploitation rights; a form of royalties and taxes on oil and mining exports; or, a shape of loans backed by natural resources such as loans backed by oil assets.

Despite that Tunisia has very modest oil resources compared to its neighbors (Libya and Algeria), this sector has a very important role in the economy and faced several challenges such as corruption and lack of transparency, the development of alternative distribution channels and the loss of control on the borders with neighboring countries.

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The explanations of such high corruption orchestrated by the governors and officials of Member States vary widely, but generally fall into the economic policy of these states describing a vicious cycle as oil wealth, corruption, underdevelopment and instability.

Our analysis confirms the relationship closely linking exchange rate overvaluation with capital flight. Indeed, central banks seek to exercise their influence on the inflation rate as well as the exchange rate, controlling monetary policy. All things being equal, a local depreciated currency involving a high exchange rate, will lead residents to emigrate their private savings abroad to protect the real value of their assets.

Concerning the real exchange rate, in the long run, it plays an important role in the management and the magnitude of capital flight in Tunisia (0.700). However, this indicator of competitiveness is not statistically significant in the short run (Table 6). When the real exchange rate increases, it causes small-scale capital outflows and thus this variable should be excluded when looking to examine the factors explaining the leak in the short run.

According to our assumptions, the interest rate differential between Tunisia and the United States has a negative and significant impact on capital flight in Tunisia, in the short and long term with a level of correlation are respectively (-0.060) and (-0.050). If the interest rate applied on the Tunisian money market, is set at a level below that of the United States, capital will leave Tunisia to head overseas and amplifying flight capital.

Table 2 and 6 show that domestic credit provided by the banking sector in Tunisia does not reflect the true country's liquidity position and does not therefore possible to limit the phenomenon of capital flight.

In fact, Tunisian banks have suffered from weak corporate governance. Under the Ben Ali’s regime, their lending decisions and their ownership structures were subject to political interference. The members of the boards sometimes lacked independence and their appointment could be influenced more by their political position as their competence. Tunisia is considered to have limited financial freedom with a small and fragmented banking system, which penalizes access to credit from domestic private sector, raising the cost of credit.

The econometric results of our two models in the long and short run show a significant and positive correlation between the ratio of external debt to GDP and the capital flight in Tunisia ((1.640) and (1.940)). In fact, when Tunisia borrows more and more, much of this debt is diverted and placed in foreign banks; fueling capital flight from the country.

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Whether, at the level of short and long run, the estimation results show that the variation of the stock quote in Tunisia helps to explain significantly the phenomenon of capital flight. The negative and significant coefficient for this variable in both models are (-0.011) in the long run and (-0.019) in the short run. These results confirm the theoretical assumptions previously determined by Ndikumana and Boyce (2003, 2011) who found that financial development can reduce capital flight if it is accompanied by an expansion of opportunities for diversification of the domestic portfolio.

5. CONCLUSION

The paper results lead to very interesting conclusions. First, our results show that the major incentives for capital movement in Tunisia during 1984-2014 periods were corruption and political events followed by significant exchange rates overvaluation, and external debts use. Domestic credit provided by the banking sector in Tunisia was not significant when it comes to explaining the movement of capital from Tunisia. In fact, Domestic credit provided by the banking sector in Tunisia does not reflect the true country's liquidity position and does not therefore possible to limit the phenomenon of capital flight. This result is not surprising, considering the extent of corruption within this sector. In fact, the report established by the National Commission of investigation on corruption and malfeasance, in November 2011, states that “the banking sector is the most affected by Corruption.

Second, the results reveal that an increase in corruption, political instability, oil rent rate, exchange rate and external debt servicing on the hand, and a decrease in stock market rate and interest rate differential on the other hand, provoke capital flight.

Indeed, it is generally accepted that one of the main determinants of capital flight is the variation in the exchange rate. It has been amply demonstrated in the empirical analysis of several studies (Dornbusch, 1985) (Cuddington, 1986, 1987) (Lessard and Williamson, 1988) (Pastor, 1990) that the real exchange rate plays an important role in the management and the magnitude of capital flight for heavily indebted countries.

However, this indicator of competitiveness is not statistically significant in the short term, while it is the long term. Thus, the exchange rate does not affect significantly on capital coming out in the short term of Tunisia.

Finally, these results appear to be robust to model specifications and are consistent with prior studies such as Murphy and al. (1991, 1993), Shleifer and Vishny (1993), Mauro (1998), Mesbahi (2002) and Blanchard and al. (2010). These studies demonstrate that corruption and political events have a negative impact on economic development.

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It appears from the analysis of significant determinants of capital flight, that the solution to this problem requires economic structures and institutional reforms allowing to eliminate or reduce monopolies and Public opacity and to increase transparency in the resources' management in Tunisia. There are prerequisites, in fact, for consolidating and sustaining the recent strides made. Building a relation of trust between decision-makers and citizens is a real challenge. The elections 2014 should help assess the success of the democratic transition and institute a more reliable and transparent system of governance that would meet the expectations of the people, who has risen up in 14 January 2011.The political future and economic recovery are closely linked. There can be no economic recovery without stability, and no successful transition to democracy without recovery, providing a tangible response to young people's aspirations.

The government should create stable environment for investments in Tunisia so as to dissuade capital flight. Also, he should intensify effort in the recovery of looted funds in foreign accounts and its anti-corruption campaign as this will improve the country's image and limited capital flight in Tunisia.

REFERENCES

Afef Mnif Trabelsi (2017): Political Uncertainty and behavior of Tunisian Stock Market cycles: structural unobserved components time series models, Research in International Business and Finance (2017), pp. 206-214

Ajayi, I.S., (1997), "An analysis of external debt and capital flight in the severely indebted low income countries in sub-Saharan Africa". Working Paper No. 97/68. International Monetary Fund, Washington D.C

Alam M, Quazi R., (2003), "Determinants of capital flight: an econometric case study of Bangladesh", International Review of Applied Economics 17: 85-103.

Arezki, Rabah&Brückner, Markus, 2011. "Oil rents, corruption, and state stability: Evidence from panel data regressions," European Economic Review, Elsevier, vol. 55(7), pages 955-963.

Bai, Chong-En, and Shang-Jin Wei. 2000. "Quality of bureaucracy and open economy macro policies." NBER Working Paper 7766. NBER, Cambridge, MA.

Blanchard, O., Dell'Ariccia, G. and Mauro, P. (2010), "rethinking macroeconomic policy", IMF Working paper.

ISSN: 2455-8834

Volume:03, Issue:09 "September 2018"

Bouchet, M. H., 1986,"Capital flight in Latin America". Washington D.C.: Institute of International Finance, Mar. 21

Boyce, J.K and Ndikumana, L., (1992), "The revolving door? External debt and capital flight: Philippine case study". World Development 20 (3): 335-49.

Boyce, J.K. and Ndikumana, L. (2001), "Is Africa a Net Creditor? New Estimates of Capital Flight from Severely Indebted Sub-Saharan African Countries, 1970-1996", Journal of Development Studies, 38(2), 27-56.

Boyce, J.K et Ndikumana,L. (2002). "Public Debts and Private Assets: Explaining Capital Flight from Sub-Saharan African Countries." PERI Working Paper

Boyce, J.K and Ndikumana, L. (2008)."New Estimates of Capital Flight from Sub-Saharan African Countries: Linkages with External Borrowing and Policy Options," Working Papers wp166, Political Economy Research Institute, University of Massachusetts at Amherst.

Cheung,Y., Qian, X., (2010), "Capital flight: Chinas experience". Review of Development Economics 14: 227–247

Chunhachinda, Pornchai, and KulpatraSirodom (2007), "Determinants of Asian Capital Flight and the Impact of 1997", Economic dynamism of Asia in the new millennium, Singapore: World Scientific, ISBN 9812568980, p. 1-29.

Collier P., Hoeffler A. and Pattillo C., (1999, 2001) "Flight Capital as a Portfolio Choice", World Bank Policy ResearchWorking Paper, n°2066, February 1999, and World Bank Economic Review, Vol. 15, N°. 1, pp. 55-80, Washington, D.C., 2001

Cuddington, J.T. (1986), "Capital flight: Estimates, issues, and explanations", Princeton Studies in International Finance,n°58, Department of Economics, International Finance section, Princeton University, N.J., 44p.

Cuddington, J.T. (1987), "Macroeconomic Determinants of Capital flight: An econometric investigation", In Lessard, D.R. and Williamson, J. (eds), Capital Flight and Third World Debt, pp. 85-96. Washington, D.C.: Institute for International Economics.

Dooley, M., Helkie, W., Tyron, R. and Underwood, J. (1986), "An Analysis of External Debt Positions of Eight Developing Countries Through 1990", Journal of Development Economics, 21 (2), 283-318.

ISSN: 2455-8834

Volume:03, Issue:09 "September 2018"

Dooley, M (1988) "Capital flight: A response to differences in financial risks", IMF Working paper, Washington, D.C. July 18, 1988

Dornbusch, R. (1985), "Policy and Performance Links between LDC Debtors and industrial nations", Brookings Papers on Economic Activity, (2), 303-367.

Erbe, S. (1985), "The Flight of Capital from Developing Countries", Intereconomics, 20 (6), 268–275.

Forgha, G.N., (2008), "Capital Flight, Measurability and Economic Growth in Cameroon: An Econometric Investigation", International Review of Business Research Papers Vol. 4 No.2 March 2008 Pp.74-9.

Harrigan, J., G. Mavrotas. And Z. Yusop. (2007). On The Determinants Of Capital Flight: A New Approach. Journal of the Asian Pacific Economy, 7(2): 203 – 241.

Hermes, N., and R. Lensink (1992). 'The Magnitude and Determinants of Capital Flight: The Case for Six Sub-Saharan African Countries'. De Economist, 140 (4): 515-30.

Johansen, S. (1991), "Estimating and Hypothesis testing of Cointegrating Vectors Autoregressive Models", Econometrica, 59, 1551-1589.

Kant, C. (1996). 'Foreign Direct Investment and Capital Flight'.Princeton Studies in International Finance, 80. Princeton, NJ: Princeton University.

Le, Quan V., and MeenakshiR., 2006, Corruption and Capital Flight: An Empirical Assessment, International Economic Journal, Vol. 20, No. 4, pp. 523-540, December.

Lensink, R. Hermes,N. et Murinde,V. (July 1998) "The effect of financial liberalization on capital flight in African economies."World Development, Volume 26, Issue 7, Pages 1349-1368.

Lessard, D. R. and Williamson, J. (1987), "Capital Flight and Third World Debt", Journal of International BusinessStudies,19 (3),506-508.

Ljungwall C and Wang Z (2008)."Why is capital flowing out of China?", China Economic Review, 19, pp.359-372.

Mauro, P. (1998), "Corruption and the composition of government expenditure", Journal of Public Economics, 69, 263– 279.

ISSN: 2455-8834

Volume:03, Issue:09 "September 2018"

Mesbahy. K (2002), "La corruption : un fait social total", Bulletin Economique et Social du Maroc. Rapport du Social 2002.

Morgan Guaranty Trust Company (1986), "LDC Capital flight", World Financial Markets, 13-15.

Murinde, V., N. Hermes, and R. Lensink (1996),'Comparative Aspects of the Magnitude and Determinants of Capital Flight in Six Sub-Saharan African Countries', Savings and Development Quarterly Review, 20 (1): 61-78.

Murphy, K. M., Shleifer A. and Vishny, R. M. (1991), "The Allocation of Talent: Implication for Growth", QuarterlyJournal of Economics, 106(2), 503–530.

Murphy, K. M., Shleifer, A. and Vishny R. M. (1993), "Why is Rent Seeking So Costly to Growth?",AmericanEconomic Review, 83(2), 409–414.

Muscatelli, A., and A. H. Hallett (1992). 'How Successfully Do We Measure Capital Flight? Evidence from Five Developing Countries'.Journal of Development Studies, 28 (3): 538-56.

National Commission of investigation on corruption and malfeasance (2011), "CNICM report", Tunisia, november 2011, 335p.

Ndikumana, L. and Boyce, J.K. (2003), "Public Debts and Private Assets: Explaining Capital Flight from Sub-Saharan African Countries", World Development, 31 (1), 107-130.

Ndikumana, L. and Boyce, J.K. (2011), "Capital flight from sub-saharan African countries : linkages with external borrowing and policy options", international Review of Applied Economics, 25 (2), 149-170.

Ndikumana, L. and Boyce, J.K. (2012), "Capital Flight from North African Countries", PERI Working Papers, October 2012, 17p.

Ndikumana, L. and Boyce, J.K. (2013), "La dette odieuse de l'Afrique : Comment l'endettement et la fuite des capitaux ont saigné un continent", Amalion Editions 2013, 208 p.

Nyong M.O. (2003), "Capital Flight and Economic growth in Four African Countries". Nigeria, Cote D'ivoire, Morroco and Ghana, DMO Monthly Seminar Series N°2, February.

Pastor, M. JR., (1990), "Capital flight from latin America", World Development, 18 (1), 1-18.

ISSN: 2455-8834

Volume:03, Issue:09 "September 2018"

Schneider. B (2003), "Measuring Capital Flight: Estimates and Interpretations", working paper 194, Overseas Development Institute, London, UK, 92 p.

Sheets, N., (1995), "Capital flight from the countries in transition: some theory and Empirical evidence", International Finance Discussion papers, number 514, 48 p.

Shleifer, A. and Vishny, R.W. (1993), "Corruption", Quarterly Journal of Economics, 108, 599-617. World Bank (1985), "World Development Report", Washington D.C, 259 p

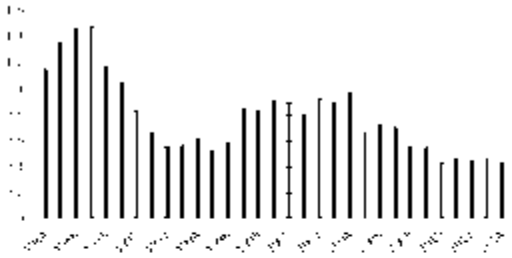
Talahite, F., (2000), "Économie administrée, corruption et engrenage de la violence en Algérie In: Tiers-Monde". 2000, tome 41 n°161. pp. 49-74.

Williams, I. (2005) "Corrupt practices: Implications for Economic Growth and Development of Nigeria", The Nigeria accountants, 38 (4), pp 44-50.

ANNEXS

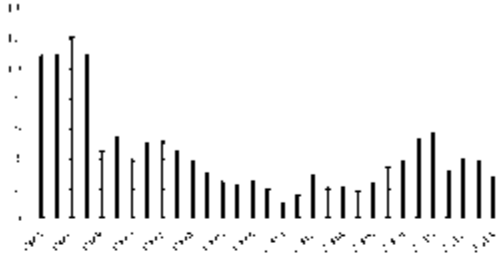
Fig. 1: Estimates of private capital outflows

Non-bank Private Capital outflows, % GDP



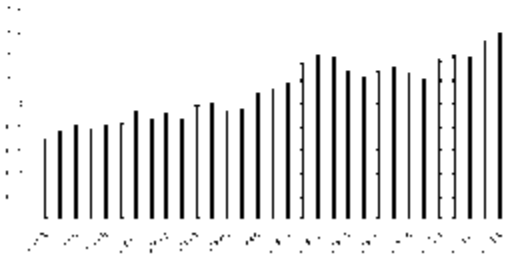
Source: BIS, 2015

Fig. 2.Oil Rent Evolution,%GDP



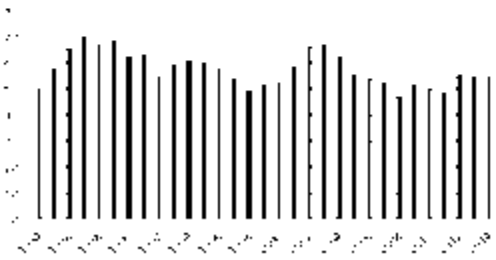
Source: World Bank

Fig. 3.Exchange Rate Evolution



Source: World Bank

Fig. 4. External Debt Evolution,%GDP



Source: World Bank.

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Table 1: Tunisian Corruption Perception Index

	Rang	Score
1998	33	50
1999	34	50
2000	32	52
2001	31	53
2002	36	48
2003	39	49
2004	39	50
2005	43	49
2006	51	46
2007	61	42
2008	62	44
2009	65	42
2010	59	43
2011	73	38
2012	75	41
2013	77	41
2014	79	40

Source: Transparency International; corruption Perception Index; 2015

Table 2: Johansen cointegration test

Date: 11/24/16 Time: 09:00
Sample (adjusted): 1986 2014
Included observations: 29 after adjustments
Trend assumption: Linear deterministic trend
Series: FC ICRG POLITY RENT TCER DOM DIFINT DETP COTB
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**

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None *	0.998992	547.7781	197.3709	0.0001
At most 1 *	0.968856	347.6712	159.5297	0.0000
At most 2 *	0.956303	247.0666	125.6154	0.0000
At most 3 *	0.901142	156.2829	95.75366	0.0000
At most 4 *	0.669608	89.17478	69.81889	0.0007
At most 5 *	0.555270	57.05801	47.85613	0.0054
At most 6 *	0.523196	33.55970	29.79707	0.0176
At most 7	0.321969	12.08085	15.49471	0.1531
At most 8	0.027629	0.812521	3.841466	0.3674

Trace test indicates 7 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Table 3: Residue Stationary Test

Null Hypothesis: U has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.049964	0.0039
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Table 4: The Least Square Estimation Results

Dependent Variable: FC
Method: Least Squares
Date: 11/24/16 Time: 08:40
Sample: 1984 2014
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COTB	-0.011071	0.006025	-1.837446	0.0797
DETP	1.640443	0.386635	4.242868	0.0003

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DIFINT	-0.051662	0.014809	-3.488636	0.0021
DOM	-0.823621	0.745107	-1.105373	0.2809
TCER	0.700482	0.291698	2.401400	0.0252
ICRG	0.254760	0.111523	2.284372	0.0324
RENT	0.041815	0.009983	4.188554	0.0004
POLITY	-0.037272	0.018558	-2.008402	0.0570
C	-1.111170	0.835090	-1.330599	0.1969

R-squared	0.895913	Mean dependent var	0.802682
Adjusted R-squared	0.858063	S.D. dependent var	0.298629
S.E. of regression	0.112507	Akaike info criterion	-1.293907
Sum squared resid	0.278471	Schwarz criterion	-0.877588
Log likelihood	29.05555	Hannan-Quinn criter.	-1.158197
F-statistic	23.67025	Durbin-Watson stat	1.343959
Prob(F-statistic)	0.000000		

Table 5: Cointegrating Error Correction Model

Dependent Variable: D(FC)
Method: Least Squares
Date: 11/24/16 Time: 08:53
Sample (adjusted): 1985 2014
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(COTB)	-0.019326	0.006127	-3.154069	0.0050
D(DETP)	1.940447	0.488305	3.973842	0.0007
D(DIFINT)	-0.060261	0.017612	-3.421563	0.0027
D(DOM)	-0.575232	0.504241	-1.140788	0.2674
D(TCER)	0.328735	0.277080	1.186429	0.2494
D(ICRG)	0.009529	0.044930	0.212079	0.8342
D(RENT)	0.028959	0.014403	2.010548	0.0581
D(POLITY)	-0.003665	0.004892	-0.749190	0.4625
U(-1)	-0.859036	0.267981	-3.205587	0.0044
C	-0.038946	0.122777	-0.317212	0.7544

R-squared	0.617065	Mean dependent var	0.802682

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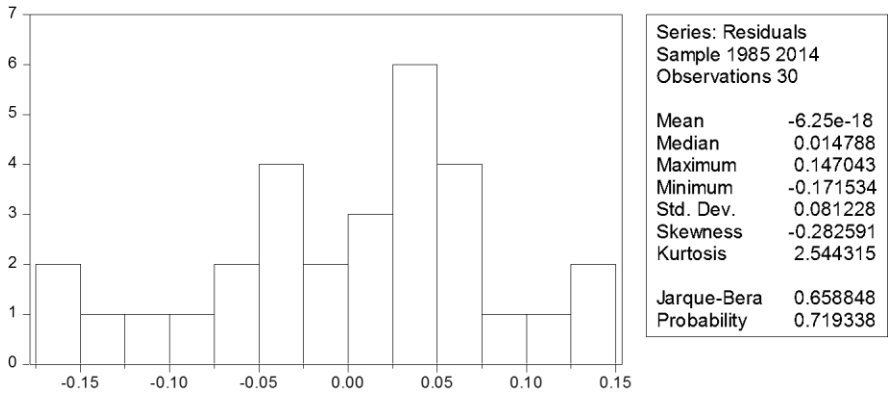
Adjusted R-squared	0.435063	S.D. dependent var	0.298629
S.E. of regression	0.097811	Akaike info criterion	-1.550356
Sum squared resid	0.191340	Schwarz criterion	-1.083291
Log likelihood	33.25535	Hannan-Quinn criter.	-1.400938
F-statistic	23.67025	Durbin-Watson stat	1.794224
Prob(F-statistic)	0.011800		

Table 6: Tests on short run model errors



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.072646	Prob. F(2,18)	0.1549
Obs*R-squared	5.615585	Prob. Chi-Square(2)	0.0603

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.739016	Prob. F(9,20)	0.6700
Obs*R-squared	7.486897	Prob. Chi-Square(9)	0.5866
Scaled explained SS	2.569362	Prob. Chi-Square(9)	0.9790

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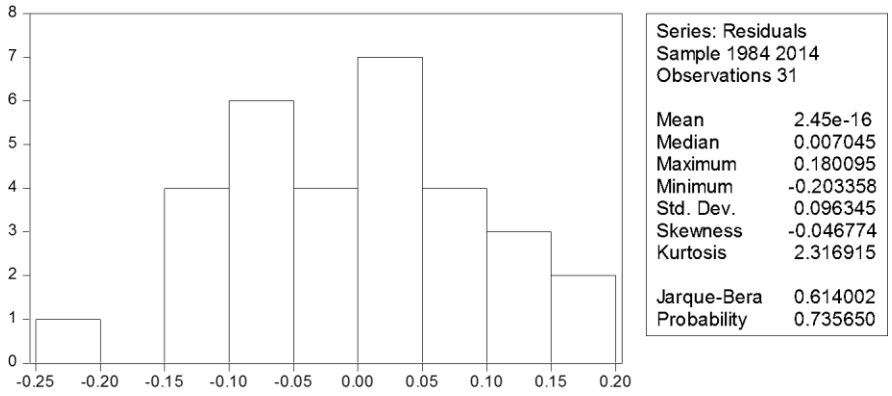
Table 7: Tests on long run model errors



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.602713	Prob. F(2,20)	0.2262
Obs*R-squared	4.282111	Prob. Chi-Square(2)	0.1175

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.624773	Prob. F(8,22)	0.1746
Obs*R-squared	11.51328	Prob. Chi-Square(8)	0.1743
Scaled explained SS	3.818112	Prob. Chi-Square(8)	0.8731

