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THE DETERMINANTS OF INTEREST RATES IN KUWAIT: AN EMPIRICAL INVESTIGATION

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Key Words

Monetary Policy; Money Supply; Interest Rate; Stock Market Index; Real Estate Index; Federal Funds Rate.

Abstract

The objective of this paper is to empirically investigate the determinants of interest rates which represent the main monetary policy tool of the central bank in Kuwait. The aim is to provide a clear understanding of how a reaction function can fit the need of monetary policy in an oil-producing country like Kuwait where a significant part of inflation is uncontrollable. Both the short- and long-run behavior of interest rates are investigated using the cointegration and Granger-causality methodology. The results show that, money supply, the exchange rate, oil prices, real and financial asset prices, are significant determinants of the interest rate.

Introduction

Since central banks (CBs) generally do not express their goals and priorities explicitly, economists tend to use a reaction function to measure the response of monetary policy to changes in the economy. Generally, the inter-bank rate is used to measure the tightness of the CB's policy (Bernanke and Blinder, 1992; Bernanke and Mihov, 1995; and Hakes, Gamber, and Shen, 1998), in responding to the state of the economy variables, including the real sector (e.g. output, employment, and prices) and the financial sector (e.g. money supply and exchange rate).

In particular, most studies investigate responses of the monetary authority to changes in the inflation rate because many central banks target inflation more than any other variable. However, a wide criticism has risen against the use of the consumer price index (CPI) or the GDP deflator as measures of inflation because they include only prices of goods

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Table 1

Study	Model
The Claremont	$r_t^k = a_0 + a_1 r_t^f + a_2 \Delta\, r_t^f + a_3 OP_t + e_t$
Economics Institute (1983)	$r_t^k = a_0 + a_1 r_t^f + a_2 G_{t-1} + a_3 E_{t-1} + u_t$
Moosa (1986)	$r_t^k = b_0 + b_1 r_t^f + b_2 NP_t + v_t$
Al-Refai (1999)	$r_t^k = a_0 + a_1 \sigma_t^2 + a_2 r_t^f + a_3 E^{DM} + a_4 E^{JY} + a_5 E^{KD} + a_6 m_{t-1} + a_7 r_{t-1}^k + u_t$

Where: r_t^k: nominal interest rate on the KD, r_t^f: nominal interest rate on the US Dollar, OP: price of oil, G_t: government expenditure, E_t: exchange rate of the KD against the US Dollar, NP_t: net position of local commercial banks, σ_t^2: risk premium, E^{DM}: exchange rate of the Deutsch Mark against the US Dollar, E^JY: exchange rate of the Japanese Yen against the US Dollar, and m_t: value of currency issued

and services and ignore asset prices (Alchian and Klein, 1973) that the CB may try to control in order to burse potential bubbles in asset markets..

As an alternative measure of inflation, a broader price index was proposed to include asset (i.e. stock and real estate) prices. The strongest justification for the inclusion of asset prices is that they affect future inflation. Housing and equity prices affect aggregate demand through the wealth effect, either by making individuals wealthier so they consume more (Modigliani, 1971) or by increasing their borrowing capacity via increasing collateral's and net worth's values (Goodheart and Hofmann, 2000). Empirical evidence is mixed over the significance of a broader price index. For example, Goodheart and Hofmann (2000) found that using a financial conditions index helps in predicting future inflation. While Cecchetti et al (2000) and Filardo (2000) found no significance in using a real estate index to predict future inflation.

To our Knowledge, only three studies have specified reaction functions for Kuwait. Table (1) presents these specifications.

The Claremont Economics Institute (1983) has used two versions of the reaction function. In the first version they regressed the interest rate on the Kuwaiti Dinar (KD), the foreign interest rate, a moving average of the change in the foreign interest rate, and the price of oil. In the second version they used the foreign interest rate, the lag of the government expenditure, and the lag of KD exchange rate. Moosa (1986) has specified the interest rate on the KD as a function of the foreign interest rate and the net position (liquidity) of local banks. The net position of local banks is a good measure of banks' ability to lend and

borrow and therefore as a determinant of the inter-bank interest rate. Al-Refai (1999) has regressed the interest rate on deposits in KD on a risk premium, money supply, and the exchange rate of the US Dollar (against the Deutsche Mark, Japanese Yen, and KD), and a lagged value of the dependent variable.

This paper will attempt to answer the question of what determines the interest rate in Kuwait. The answer is important for two reasons. First, it shows the need for modifying reaction functions to fit the specific characteristics of developing countries in general and oil-producing countries in particular. Second, it helps understand how the central bank sets interest rates.

In specifying the reaction function for Kuwait, three modifications have to be made to the conventional function. First, the free convertibility of the KD to other currencies puts an additional pressure on the CB in setting the interest rate because setting it below rates on other currencies reduces the demand for the KD as a store of value (i.e. currency substitution). Thus, including a foreign rate in the reaction function will increase the explanatory power and determines the degree of openness of the financial market.

Second, because of the absence of a monthly measure of income, we will include the price of oil as an indicator of the change in income, given the high dependency of the economy on the oil sector. Finally, the CB of Kuwait uses the discount rate as a policy tool in two ways; it changes the discount rate when tightening or loosening monetary policy; and uses the discount rate as a benchmark for determining interest rates on deposits and loans. In particular, it should be clarified that in the case of Kuwait the discount rate is a much more important policy tool than the inter-bank interest rate. This is because the Central Bank of Kuwait uses the discount rate as a benchmark when setting the other interest rates. For example, the CB's resolutions of (1993) set the maximum interest rate charged by commercial banks on loans as a function of the discount rate. The same resolutions set also the minimum interest rate on deposits paid by commercial banks as a function of the discount rate. Both, interest ceilings and floors are tied to the discount rate. Therefore, the discount rate is manipulated by the Central Bank and represents the critical rate on which all rates are set in the financial market in Kuwait. However, the inter-bank rate is determined freely in the reserve market depending on supply and demand forces. Therefore, this paper uses the discount rate

as a measure of monetary policy, instead of the inter-bank rate.(1)

In addition to the state of the economy variables discussed above, we are interested in investigating the response of monetary policy to changes in asset prices, namely, stocks and real estates. The importance of asset prices arises for two reasons. First, as mentioned earlier, asset prices are good indicators of future prices, which would certainly improve our ability to predict inflation. Second, asset prices can be used in determining whether assets and money (e.g. deposits) are substitutes or complements. For example, the real estate sector heavily depends on loans, meaning that money and real estates are complements. If so, the central bank would be able to control real estate prices through controlling interest rates (e.g. increase the discount rate when real estate prices are high). Also, investors look at deposits and stocks as substitutes (portfolio theory), meaning that an increase in interest rates reduces the demand for stocks, leading to a decline in their prices.

The Econometric Methodology

Testing for Cointegration

To model the relationship between the variables, we consider that their short-run dynamics can be represented by a vector autoregression VAR specification as follows:

$$X_t = c + \pi_1 X_{t-1} + ... + \pi_k X_{t-k} + \Psi D_t + \varepsilon_t \quad (1)$$

where X = (lnCPI, lnEXCH, lnFEDRATE, lnM2, lnOILP, lnREI, lnSMI, lnDISCRATE)', t is time, c is a 8x1 vector of constants or drift terms, π_i, i = 1...k, are 8x8 matrices of time-invariant coefficients, and e is an 8x1 vector of i.i.d errors with a positive covariance matrix. D is a matrix of deterministic components such as trend and dummies. The VAR(k) model defined in equation (1) is covariance stationary if all values of Y satisfying:

$$| I - \pi_1 Y - \pi_2 Y^2 - ... - \pi_k Y^k | = 0 \quad (2)$$

lie outside the unit circle.

If some or all the variables in X are I(1), then we can exploit the idea that there may exist co-movements of these variables and possibilities that they will trend together towards a long-

(1) It should be noted that in addition to traditional banks in Kuwait, there is also one Islamic bank which does not use interest rates because they are prohibited by Islam. However, we think that competition in the banking sector forces Islamic banks to react, at least indirectly, to changes in the interest rates. For example, when interest rates fall, loans offered by traditional banks become more attractive. In this case, Islamic banks would try to offer better deals in order to safeguard their share in the market.

run steady-state equilibrium (i.e cointegrated). Hence, their behavior can now be represented using a vector error-correction (VEC) model that incorporates the short-run as well as the long-run dynamics,

$$\Delta X_t = c + \sum_{i-1}^{p-1} \Gamma_i \Delta X_{t-p} + \prod X_{t-p} \quad \Psi D_t + \varepsilon_t \qquad (3)$$

where $\prod = -(I - \sum_i \pi_i)$, i = 1,...p, is the long-run parameter matrix, $\Gamma_i = -(\pi_{i+1} + ... + \pi_i)$, i = 1,..., p -1 are estimable parameters, Δ is a difference operator and e_t is a vector of impulses which represent the unanticipated movements in X_t with $\varepsilon_t \sim$ niid(0, $\sum$).

With r cointegrating vectors ($1 \leq r \leq 7$), $\prod$ has rank r and can be decomposed as $\prod = \alpha\beta'$, with α and β both 8 x r matrices. β is the matrix of cointegrating vectors and α are the adjustment coefficients which measure the strength of the cointegrating vectors in the VEC model.

The Johansen (1988) approach uses a maximum likelihood procedure to test the cointegrating rank r and estimate the parameters β and α. If the cointegration test reveals the existence of long-run relationships between the variables in X, then several implications including "spurious" regression, Granger non-causality, and dynamic simulations can be established.

One advantage of the cointegration methodology is that it illustrates the conflict that exists between the equilibrium framework and the disequilibrium environment from which the data are collected. As illustrated by the VEC model in (3), this conflict can be easily resolved by extending the equilibrium framework into one that accounts for disequilibrium by including the equilibrium error measured by ($\beta' X_{t-1}$). Once the equilibrium conditions are imposed, the model is now describing how the system is adjusting towards its long-run equilibrium state. Since the variables are supposed to be cointegrated then, in the short-run, deviations from the long-run equilibrium will feed back on the changes in the dependent variables in order to force their movements towards the long-run equilibrium state. Thus, the adjustment coefficients α measure the proportion by which the long-run disequilibrium (or imbalance) in the dependent variables are corrected in each short-term period.

Testing for Granger Non-Causality

There are several procedures for testing Granger noncausality (GNC) using vector autoregressive models. These were developed and studied by Toda and Phillips (1993, 1994), Toda (1995), Dolado and Lutkepohl (1996), Zapata and Rambaldi (1997), and Yamada and Toda (1998). Recent surveys of these procedures are in Caporale and Pittis (1999). A compar-

ison of the properties of these procedures based on simulation experiments can be found in Giles and Mirza (1999).

However, the choice between the alternative procedures depends on the pretesting for integration and cointegration among the variables. That is, depending on the degree of integration of the variables included in the system and depending on whether they are "sufficiently" cointegrated, there is a particular specification of VAR that adequately ensures appropriate behavior of the test statistic for testing the null of GNC. In particular, there are four different specifications. These are the VAR in levels (VARL) model, the augmented VARL model, the vector error-correction model (VECM), and the VAR in difference (VARD) model. In each one of these models, the statistic used to test for GNC is a Wald statistic(1).

In general, if θ is an mx1 vector of parameters and R is a nonstochastic qxm matrix of known parameters with rank q, then the Wald statistic to test H_0: $R\theta = 0$ is

$$W = T\hat{\theta}' R' \{R\hat{V}(\hat{\theta})\ R'\}^{-1} R\hat{\theta} \qquad (4)$$

Where $\hat{\theta}$is a consistent estimator of θ, θ, $\hat{V}(\hat{\theta})$ is a consistent estimator of the asympototic variance - covariance matrix of $\sqrt{T}(\hat{\theta} - \theta)$, and T is the number of observations. Under appropriate conditions, W is asymptotically distributed as a $\lambda^2(q)$ distribution under the null.

In the context of a VEC model, the null of GNC can be tested in three different ways using the Wald statistic in (4). First, zero restrictions can be imposed on the α vector to test for weak exogeneity of the variables. Toda and Phillips (1993, 1994) refer to these tests as long-run noncasality tests. Second, zero restrictions can be imposed on the coefficients of the Γ matrix to test whether the lagged coefficients of a variable are zero. This test is referred to as a short-run noncausality test. Finally, zero restrictions can be imposed jointly on the coefficients in α and Γ to test for both short-and long-run noncausality.

Empirical Results

Data and Variables Definitions

Data used in this study are monthly and cover the period 1993:1-2002:7. The variables and their definitions where ln denotes the natural logarithm are as follows:

- lnCPI: the consumer price index
- lnEXCH: the exchange rate (dollars per Kuwaiti Dinar)

(1) See Giles and Mirza (1999) for an extensive discussion of these models and a discussion of the comparative testing procedures.

Table 2. Test Results for Unit Roots

	Level Variables		First Difference	
	ADF	PP	ADF	PP
lnCPI	-2.013	-1.870	-5.091	-11.605
lnEXCH	-1.342	-1.564	-7.883	-10.454
lnFEDRATE	-1.594	-0.705	-3.412	-4.597
lnM2	-0.210	-0.366	-4.931	-9.810
lnOILP	-1.988	-2.048	-4.916	-8.595
lnREI	-1.960	-2.040	-5.840	-5.753
lnSMI	-1.492	-1.251	-3.327	-6.597
lnDISCRATE	-1.321	-1.420	-3.644	-6.891
5% values	-2.887	-2.887	-2.887	-2.887

- lnFEDRATE: the U.S federal funds rate
- lnM2: money supply
- lnOILP: oil prices
- lnREI: the real-estate price index in Kuwait
- lnSMI: the stock market index in Kuwait
- lnDISCRATE: the discount rate in Kuwait

All data, except (lnREI) and (lnSMI) were collected from the IFS "*International Financial Statistics*". Data on the real estate price index (lnREI) and the stock market index (lnSMI) were provided by the Al-Shell company in Kuwait.

Test Results for Unit Roots

We herein use the augmented Dickey-Fuller (ADF) and the Phillips-Perron (P-P) tests to investigate the existence of unit roots in the level variables as well as in their first differences. These tests can be performed using the following regression

$$\Delta y_t = \rho_0 + \rho_1 y_{t-1} + \rho_2 T + \sum_{s=1}^{p} d_s \Delta y_{t-s} + \varepsilon_t, \quad (5)$$

where y_t is the relevant time-series, T is a time trend, and e_t is a residual term. The null hypothesis tested is that the variable under consideration has a unit root against the alternative that it does not. The lag-length P is chosen by the Akaike Information Criterion (AIC). We also tested for the existence of first and higher order serial correlation of the residuals in 5 using the Ljung-Box Q statistic. The results of this test, not reported here, indicate the absence of serial correlation.

Test Results for Cointegration

Before applying the Johansen's procedure to estimate α and β, it is necessary to determine the lag length,

Table 3. Test Results for Cointegration

Trace				λ_{max}				
H_0	H_1	Stat.	90%	H_0	H_1	Stat.	90%	λ
r = 0	r≥1	102.14	97.17	r = 0	r = 1	31.77	25.51	0.454
r≤1	r≥2	70.26	71.66	r≤1	r = 2	19.35	21.74	0.305
r≤2	r≥3	42.85	49.91	r≤2	r = 3	15.84	18.03	0.246
r≤3	r≥4	30.01	31.88	r≤3	r = 4	10.02	14.09	0.175
r≤4	r≥5	15.62	17.79	r≤4	r = 5	7.97	10.29	0.099
r≤5	r = 6	6.78	7.50	r≤5	r = 6	6.78	7.50	0.065

Table 4. Estimates of the β and α Vectors

Variable	β'	a
lnDISCRATE	1	-0.285
		(-4.127)
lnCPI	0.363	-0.077
	(1.320)	(-2.572)
lnEXCH	5.492	-0.024
	(10.323)	(-1.957)
lnFEDRATE	-0.299	--------
	(-10.678)	
lnM2	0.456	-0.074
	(4.606)	(-2.005)
lnOILP	-0.101	--------
	(-2.658)	
lnREI	-0.432	0.678
	(-9.600)	(6.202)
lnSMI	0.860	-0.171
	(8.514)	(-2.392)
Intercept	-15.392	--------
	(-10.578)	

k, of the VAR, equation (1), which should be high enough to ensure that the errors are approximately white noise, but small enough to allow estimation. Since the Johansen procedure is sensitive to the choice of the lag length, we based our decision on the Akaike's Final Prediction Error (FPE) criterion and selected k = 4. The results of testing for the number of cointegrating vectors are reported in table (3), which presents the maximum eigenvalue (λ_{max}) and the trace statistics, the 10 percent critical values as well as the corresponding λ values.

The estimates of β and α are reported in table (4). From this table, the long-run equilibrium equation between the variables can be written as follows:

$$(\ln DISCRATE)_t = \underset{(-1.320)}{-0.363(\ln CPI)_t} \underset{(-10.323)}{-5.492(\ln EXCH)_t} + \underset{(10.678)}{0.299(\ln FEDRATE)_t} \underset{(-4.606)}{-0.456(\ln M2)_t}$$

$$+ \underset{(2.658)}{0.101(\ln OILP)_t} + \underset{(9.600)}{0.432(\ln REI)_t} \underset{(-8.514)}{-0.860(\ln SMI)_t} + \underset{(10.578)}{15.392} \quad (6)$$

Equation (6) shows that in the long-run, the exchange rate (Dollars per Kuwaiti Dinar), money supply, and the stock market index are negatively related to the discount rate. While the U.S federal funds rate, oil prices, and the real estate index are positively related to the discount rate. Moreover, the discount rate in Kuwait is negatively related to the consumer price index, yet it is insignificant.

The negative elasticity of the *exchange rate* is consistent with the argument that an expected depreciation in the value of the Kuwaiti Dinar makes economic agents demanding higher interest rates in order to hold it, while an appreciation in the value of the Kuwaiti Dinar induces lower interest rates (Al-Refai, 1999). The negative elasticity of the *money supply* is consistent with liquidity preferences theory, which states that an increase in money supply will shift the money supply curve to the right, hence lowering the discount rate.

A possible explanation for the negative relation between the discount rate and the *stock market index* may be related to the portfolio theory, which states that investors consider stocks as substitutes to deposits. For example, a decline in stock prices (i.e. stock market index) increases the demand for stocks (according to the law of demand). This will have two effects. On one hand, demand for loans will increase as speculators borrow more. On the other hand, deposits fall as investors shift their funds from bank deposits towards stocks. As a result, the CB's reaction would be to increase the discount rate in order to reduce demand for loans, and to restore equilibrium in the banking system by making deposits more attractive.

The positive and highly significant relation between the discount rate and the *federal funds rate* indicates that monetary authorities in Kuwait are competing to make the Kuwaiti Dinar more attractive compared to the U.S dollar. This is true in Kuwait since a higher rate of return on the dollar induce more Kuwaiti investors to shift from deposits in Dinar to deposits in dollar.

The Kuwaiti economy is an oil-dependent economy where oil revenues play a crucial role in stimulating the performance of the domestic economy. As oil prices rise (higher in-

come), both public (spending on constructions and employment), and private expenditures level rise (consumption and investment). This increase in expenditures necessitates an increase in the discount rate to prevent any inflationary pressures on the price level. This may explain the positive relationship between discount rate and *oil prices* obtained in this study.

Finally, the positive relationship between the discount rate and the *real estate index* can be explained by the fact that real estate financing, whether residential or commercial, depends to a large extent on funds obtained from the banking system. The parallel increase in real estate prices and real estate demand will drive the discount rate to increase in order to curb excessive borrowing in the real estate sector.

When comparing the effect of stock prices to the effect of real estate prices on the discount rate, we can see that they have opposite signs. In particular, money and real estate seem to be complements, while money and stocks seem to be substitutes. Given the particular nature of the financial and real estate markets in Kuwait, this result should not be viewed as contradicting the fact that real estates and stock market both rely on funds for their financing. This is because, in the case of Kuwait, the type of relationship that exists between money and real estates is significantly different than the type of relationship that exists between money and stocks. This difference is dues to the fact that in Kuwait real estate prices are always ascending and never go down, while stock prices fluctuate up and down. For this reason the tie between money and real estate is justified by the borrowing of money from the banking sector to finance real estates (even though prices are increasing continually), not the other way around. From this perspective, money and real estates are viewed as complements and the effect of real estate prices on the discount rate is positive. In contrast however, the relationship between money and the stock market in Kuwait is justified by the borrowing of money from the banking sector to buy stocks only when prices decrease. In addition, when prices decrease investors shift money from the banking sector to the stock market. Therefore, the relationship between stock prices and the discount rate is negative.

Several conclusions mark the behavior of discount rate in the long run; the monetary policy in Kuwait responds to internal and external variables, implying that the financial market is semi-open. Second, the elasticity of the discount rate with respect to the exchange rate is the highest

Table 5. Test Results for Granger non-causality

Null Hypothesis	Chi-Squares(4)	Significance Level
Inflation does not Granger-cause the discount rate	15.476	0.0038
The discount rate does not Granger-cause inflation	15.213	0.0043
The exchange rate does not Granger-cause the discount rate	3.374	0.497
The discount rate does not Granger-cause the exchange rate	2.692	0.610
Money supply does not Granger-cause the discount rate	5.554	0.235
The discount rate does not Granger-cause money supply	4.783	0.310
Real estate prices do not Granger-cause the discount rate	2.854	0.582
The discount rate does not Granger-cause real estate prices	5.647	0.227
The stock market index does not Granger-cause the discount rate	7.888	0.0957
The discount rate does not Granger-cause the stock market index	8.290	0.0815

among all variables. This may be justified as a strong commitment to defend a pegged exchange rate against the US Dollar. Furthermore, the central bank of Kuwait reacts in an asymmetric way to asset prices. Fourth, the discount rate responds positively to external (or exogenous) variables (e.g. federal funds rate and oil prices). Finally, the central bank does not target inflation.

Test Results for Granger Causality

Using the Granger non-causality test procedure described above, we now turn to testing for the short-run dynamics between the discount rate, inflation, the exchange rate, money supply, real estate prices, and stock prices. Since the number of lags in VAR is 4 and the maximum degree of integration in the data is one, we do the Granger non-causality tests by estimating a VAR with 5 lags and testing whether the first 4 lags are equal to zero. The following table provides information on the significance of each one of the hypotheses tested.

From table (5), we can see that there is a flow of short-run causality running in both directions between the discount rate and CPI, and between the discount rate and the stock market index. The former can be explained by the fact that the Central Bank uses information about prices in setting the discount rate to stabilize prices in the short run. We may argue that the CPI is a short-run economic goal (or even an intermediate target) for the Central Bank that is used to achieve other longer term goals. This is supported by our earlier results that showed the CPI to be insignificant in the long run, suggesting that the Central Bank adopts inflation targeting only in the short run. At the same time, changes in the discount rate influence prices

through their effects on the financial and real sectors of the economy. For example, an increase in the discount (lending) rate raises costs to firms who may respond by cutting output, shifting the aggregate supply curve to the left. If aggregate demand is fixed in the short-run, this shift leads to a higher price level.

The other short-run causality is between the discount rate and the stock market index; they explain changes in each other. On one hand, the Central Bank pays attention to stock prices when setting the discount rate to minimize the occurrence of price bubbles, to reduce future inflation, or to reallocate financial resources toward other productive activities. On the other hand, movements in the discount rate do affect stock prices and this may be attributed to the fact that a significant part of speculations in the stock market is financed by loans. Therefore, changes in the discount rate affect the stock market index in the short run, as this affect speculators and investors. For example, an increase in the discount rate raises the cost of obtaining bank loans, which raises the cost to speculators (borrowers) who may exit the market. Investors (savers) may also exit the market because of the increase in the opportunity cost of bank deposits that become more attractive (i.e. having high return low risk). As for the remaining variables, the short-run analysis does not indicate any causal link between the discount rate and the exchange rate, money supply, and real estate prices.

In sum, among the five causality relations tested, only two were significant; between the discount rate and the CPI and between the discount rate and the stock market index. Moreover, causality runs in both directions.

Conclusion and Policy Recommendations

The objective of this paper was to empirically investigate the determinants of interest rates which represent the main monetary policy tool of the central bank in Kuwait. The aim is to provide a clear understanding of how a reaction function can fit the need of monetary policy in an oil-producing country like Kuwait where a significant part of inflation is uncontrollable. The behavior of interest rates both in the short- and long-run is investigated using the methodologies of co-integration and Granger-causality.

In the short-run, the results of Granger-causality tests table (5) indicate that management of the discount rate by the Central Bank of Kuwait takes into consideration the short-run movements in inflation and stock prices. In particular, the CB is targeting inflation in the short-run in order to stabilize prices. Moreover, the CB pays attention to stock prices when setting the discount rate in order

to minimize price bubbles, reduce future inflation or reallocate financial resources towards other productive activities.

In the long-run, the results of co-integration indicate that the Central Bank of Kuwait is managing the discount rate based on movements in the US federal funds rate, the exchange rate, money supply, oil prices, and the prices of real and financial assets.

The estimated sensitivity (0.3) of the discount rate to the federal funds rate is expected because the Dollar had been an important component of Kuwait's exchange rate basket of currencies until the end of 2002, and has been the sole currency to which the KD is pegged since January 2003. The Central Bank of Kuwait follows changes in the US interest rates most of the times, in order to keep an adequate spread (in favor of the KD) between the rates of interest on the two currencies to prevent deposit outflows. However, in the last few months (of 2005) the spread between the two rates has been 2.5%, which is relatively large.

The high sensitivity (0.43) of the discount rate to the real estate index, which is positive, implies that the monetary authority has been increasing interest rates (tightening monetary policy) in recent years where the prices of real estates have been witnessing unprecedented hikes. This would cool down prices by increasing the cost of borrowing and hence reduces demand.

The ignorance of the CPI in the long run is inconsistent with international central bank practices, which use inflation targeting as the main objective of monetary policy. It seems that the Central Bank of Kuwait has intentionally ignored the CPI for two reasons. First, in a small open economy that heavily relies on imports, the main source of inflation, would be external (i.e. imported inflation), that is exogenous to the central bank. Second, the exchange rate also plays a role in affecting prices of imported goods, so the central bank may react to "imported inflation" through adjusting the exchange rate.

The very high elasticity (- 0.86) of the discount rate with respect to the stock market index implies that the central bank looks at the relationship between these two variables differently than the traditional positive relationship. Here, however, a reduction in the discount rate will increase demand for stocks through two channels. First, by reducing the cost of borrowing to speculators in the stock market; second, by increasing investors' incentives by raising the expected return on stocks relative to deposits. As a result, stock prices rise.

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الملخص

محددات معدلات الفائدة في دولة الكويت: دراسة تطبيقية

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يهدف هذا البحث إلى القيام بدراسة تطبيقية للعوامل المحددة لمعدلات الفائدة، والتي تعد الأداة الأهم من بين أدوات السياسة النقدية للبنك المركزي في دولة الكويت. ويقوم هذا البحث بمحاولة توضيح كيفية استخدام دالة الاستجابة، لتتلاءم مع احتياجات السياسة النقدية في دولة منتجة للنفط كدولة الكويت، حيث إن جزءاً كبيراً من التضخم لا يمكن التحكم فيه. وقد تم في هذا البحث استكشاف سلوك معدلات الفائدة في كل من المدى القصير والمدى الطويل، وذلك باستخدام أسلوب التكامل المشترك، واختبار جرانجر للسببية، وأظهرت النتائج أن كلًّا من عرض النقود، وسعر الصرف، وأسعار النفط، وأسعار الأصول العقارية، وأسعار الأصول المالية وتعد من المحددات الجوهرية لمعدل الفائدة.

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