Testing the Expectations Hypothesis of Interest Rate Term Structure in Kuwait

Nayef Al-Shammari  KhalifaGhali  ReyadhFaras  Abdullah Al-Salman
College of Business Administration
Kuwait University

Abstract
This paper investigates the validity of the expectations hypothesis for the term structure of interest rates in the context of the deposit interest rates in Kuwait. The data set covers average inter local bank interest rates on deposits of Kuwaiti Dinar (KD) with maturity of one, three and six months from the period June 1994 to August 2008. We utilize Johansen procedures to examine the relationship between spot and forward rates. Our findings show that the spot and forward rates are cointegrated for all cases, the one month interest rates, the three month interest rates as well as the six month interest rates. The explanation of this relationship indicates that the expectations hypothesis of the term structure of interest rates is accepted for the case of Kuwait.

I. Introduction
The term structure of interest rate explains the market expectations about the relationship between those rates. According to the expectation theory of the term structure of interest rate between the short term and long term interest rates, the future long run rates may be determined by the future path of short term rates. There is a vast literature that started testing the validity of the expectation theory in developed countries, including Campbell and Shiller (1987), Kugler (1990), Boothe (1991), Hurn, Moody and Muscatelli (1995), and Hardouvelis (1994). Recently, researchers have started shedding the light on the validity of the expectation theory for developing countries. In this paper, we test the validity of the expectation hypothesis of the term structure of interest rate for Kuwait.

The most accepted explanation for the link between the long term interest rate and the short term interest rate is given by the expectation hypothesis at which the predicted long term interest rates are determined by the expectation about the future short term interest

1 The pioneer view that the average future short term rate is the long term rate was first discussed by Fisher (1930), Hicks (1939), and Lutz (1940).
rates. Understanding the term structure of interest rates within the framework of the expectation theory is important for several implications. First, easy evaluation for predictions of different term structure theories as the actual term structure of the interest rate is observable (Russell, 1992). These theories may also help understanding the effect of changes of the short term interest rate on the long term level of the interest rate. In addition, the observed term structure gives the opportunity for the expectations of participants in the market about the interest rate in the future.

On the other hand, the role of the term structure of the interest rate may be used as a guide for the position of the monetary policy (Estella and Miskin, 1997), exchange rates (Lopes, Artur, and Monteiro, 2007), inflation (Mishkin, 1990, and Fama, 1990), and economic activities (Hu, 1993, and Estrella and Hardouvelis, 1991). The link between the short term and long term interest rates is entirely covered by the interest of central banks at which the monetary policy targets the long term interest rates through affecting the short term interest rates. Also, the importance of the expectation theory is linked to the implications of market efficiency. Specifically, it may explain if the forward rate be an unbiased predictor of future spot rate. In addition, the term structure of the interest rate may help provide forecasts to the future path of the short term interest rate.

According to previous studies, testing for the validity of the expectation theory shows ambiguous findings. While, the expectation theory is rejected in many studies such as Campbell and Shiller (1987), Kugler (1990), Boothe (1991), Backus, Foresi, Mozumdar, and Wu (2001), and Cooray (2003), the theory has been accepted by Hurn, Moody and Muscatelli (1995), Hardouvelis (1994), Al-Loughani (2000), Cuthbertson and Bredin (2000), Carriero (2007), and Camarero, Ordonez, and Tamarit (2008). The inconsistent conclusions, which lead to rejecting the theory, may come mainly from employing inappropriate econometrics techniques (Lanne, 1991). Studies such as Shiller (1979), and Mishkin and Miron (1986) apply the framework of conventional tests. The volatility test (Startz, 1982),

\footnote{Carriero (2007) suggests that the expectation theory works on average, but does not hold exactly.}
test of VAR based Wald (Campbell and Shiller, 1987, 1991), and Likelihood Ratio test (Drifill, Psaradakis, and Sola, 1997) have also been used to investigate the expectation theory in early works. However, the test of Likelihood Ratio has been used to investigate the finite sample behavior by applying Monte Carlo simulation. This methodology was adopted by Bekaert and Hodrick (2001), which has been used in many later studies such as Thornton (2004), Bekaet, Wei, and Xing (2007), and Sarno, Thornton and Valente (2007). The methodology was also extended by the work of Bataa, Kim, and Osborn (2006) who incorporated developments in bootstrap literature for the US term structure. Silva Lopes and Monteiro (2007) applied cointegration analysis for term structure of the interest rate in the Portuguese interbank money market. While Sugita (2008) used the cointegrated VAR model with multiple structural breaks in the case of Japan, the panel cointegration technique was applied using Euro countries data by Camarero, Ordonez, and Tamarit (2008). The Johansen procedure was applied in many recent studies such as Cuthbertson and Bredin (2000), and Cooray (2003) using data from Ireland, and Sri Lanka, respectively.

In this paper, we examine the validity of the expectations hypothesis for the term structure of interest rates in the context of the inter-local bank interest rates in Kuwait, which has not been largely studied in the previous literature. Up to our best knowledge, only one study was conducted on Kuwait by Al-Loughani (2000) who tested for cointegration in the Kuwaiti interbank market applying the simple Augmented Dickey-Fuller test.

Practically, we test if the forward rate and spot rate are cointegrated using the Johansen (1988) and Johansen and Juselius (1990) procedure. We use data for the average inter-local bank interest rates on Kuwaiti Dinar (KD) deposits with maturity of one, three and six months from the period June 1994 to August 2008. The empirical results indicate that forward and spot rates are cointegrated, suggesting that the expectations hypothesis of the term structure of interest rate is accepted by the data in the case of Kuwait. The findings also show that the forward rate is an unbiased predictor of future spot rate. Besides the empirical test for the expectations hypothesis, the results may be utilized by both monetary authorities and market
participants. The role of the term structure of interest rates can be used as guidance for the position of inflation. Additionally, concerns about recession leads policy makers to rationally anticipate the movements of the short term interest rates as well as long term interest rates.

This paper is organized as follows. Section II contains an overall view about the interest rate market in Kuwait. In section III, the model and testing specification used in the study are explained. Section IV explains the data. The empirical results are explained in V. The conclusion and policy implications are provided in section VI.

II. Kuwait Interest Rate Market

Developments in Interest Rate Market

The Central Bank of Kuwait (CBK) is in charge for implementing the appropriate monetary policy instruments to be in line with the objective of the Kuwaiti’s general economic policy. However, the role of these instruments may have limited effectiveness within the economic activities in the local economy of Kuwait due to the characteristics of the economy structure. Historically, the money and capital market in Kuwait has been developed by the CBK through encouraging the inter-bank operations, issuing certificates of deposit and bonds, trading in CBK bills and the Kuwaiti Dinar-denominated bills, and finally determining of the structure for interest rates.

The interest rate market in Kuwait has faced many structural changes in the last twenty years. The structure of interest rate in Kuwait is exposed to local and external factors. The overall trends of interest rate worldwide, as well as the local demand for credit play a crucial role in determining the level of the structure of the local interest rate. The CBK introduces liquidity to the money market through using the available monetary policy instruments, mainly discount rate, swaps, loans and deposits of CBK with commercial local banks. The maximum contractual interest rate in Kuwait was

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3 These characteristics include, for example, the dependency of oil sector, and government expenditures.

4 These aspects are mentioned by a speech of the CBK Governor at the Cultural Season of the Kuwaiti Economists Association, February 1987.
determined in 1976 by a legislative amendment to Article 166 of the previous commercial law. According to that amendment, the maximum contractual interest rate was set at 7% per annum on productive economic activities' loans and 8.5% for non-productive economic activities' loans. Basically, the ceiling of on banks interest rate is used in Kuwait to help credit allocation. In addition, the interest rate on saving accounts was determined by a minimum rate of 4.5% per annum. Starting from 1987, the maximum contractual KD interest rate was reduced to 6% and 7.5% per annum on productive loans and non-productive loans, respectively. This change was implemented due to the local and international developments which came mainly from rising international interest rates.

In the meanwhile, the CBK has been using the discount rate as a key policy rate to which the ceilings of KD interest rates lending are linked. Accordingly, local interest rates move together with the discount rate, as they have been raped together. Thus, commercial banks would adjust both the ceiling of KD lending interest rate and the minimum of KD depositing interest rates. Recently, the CBK has set a new structure of interest rate at which there is more flexibility for banks to adjust local interest rates on lending, and liberalized from any minimum of KD depositing interest rates. The ceiling limit of the annual KD lending interest rate shall not exceed 3% above the discount rate.

Developments in the interest rate structure of the Kuwaiti market reflect the development of the monetary policy in Kuwait toward interest rates. This is in turn resulted in more flexibility adjusting the interest rate according to discount rate movements. Also it helps maintaining the competitiveness of the KD at which increasing interest rates to be in favor of KD deposits to reduce the shift toward forging currencies. Furthermore, the structure of deposit maturities can be adjusted in favor of longer periods which help obtaining assets-liabilities consistency within local banks.

Operations of interbank market in Kuwait have been supported by the liquidity system conducted by local banks. Since the liquidity system applied by the CBK takes into account the structure of banks' deposits at each local bank, this system exempts operations of interbank deposits from the required liquidity ratio if needed. During the
period from June 1994 to December 2000, the KD Inter-Bank Offered Rate (KIBOR) with maturity of sixmonth has averaged 7.07% compared to 6.93% and 6.81% for three month rate, one month rate, respectively. For the period from June 1994 to August 2008, the average KIBOR has dropped, compared to the period from June 1994 to December 2000, to 3.78% s for the six-month maturity, and about 3.53% for the three-month maturity, and then one-month maturity with about 3.36%. These reductions in averages are consistent with the direction of the discount rate in Kuwait which averaged with 6.9% during period from June 1994 to December 2000, and the average rate then dropped to about 4.8% for the period from June 1994 to August 2008. Consistent with aimed monetary policy, the CBK attempted during these mentioned periods to influence the inter-bank rates through using the discount rate to which the ceilings of KD interest rates lending are linked.

**Interest Rate Policy Linkages**

In 1975 the Central Bank of Kuwait started conducting a currency basket system to manage the KD exchange rate policy. According to the currency basket system, the KD exchange rate is determined based on a weighted basket of currencies for main trading partners to Kuwait. While, the weight of each foreign currency versus the KD within the basket is disclosed by the Central Bank of Kuwait, the US Dollar is observed to obtain the highest weight within the basket. The currency basket system in Kuwait was suspended in January 2003 to be replaced by a currency peg to the US Dollar. This policy was conducted as a step to reflect the Kuwaiti commitment toward the GCC monetary union. In May 2007, the Central Bank of Kuwait abandoned the US Dollar peg in favor of the prior currency basket system as a result of the inflationary pressures caused by the depreciation in the US Dollar against major currencies.

According to the exchange rate policy announced by the Central Bank of Kuwait, the traditional goal of the exchange rate policy is to achieve stability between the KD and main foreign currencies. In particular, the Central Bank of Kuwait acquires monetary stability in the banking and financial sector through achieving KD exchange rate policy stability associated with an effective policy of interest rates.
Such policy can be achieved through influencing and adjusting local interest rates.

As mentioned in the previous section, the discount rate is used by the Central Bank of Kuwait as a key policy to influence the monetary identities at the economy. Therefore, any developments in the interest rate structure of the Kuwaiti market reflect the development of the monetary policy in Kuwait toward interest rates. This is in turn resulted in more flexibility in adjusting the interest rate according to discount rate movements. Also it helps maintaining the competitiveness of the KD at which increasing interest rates to be in favor of KD deposits to reduce the shift toward other forging currencies. In particular, the Central Bank of Kuwait attempts all the time to have higher interest rate on KD deposits compared to the interest rates on the US Dollar to which the KD currency basket is pegged with a high weight.

The interest rate policy in Kuwait represented by the discount rate follows movements in US Dollar interest rates, specifically federal fund rate. Historically, the period from 1995 to the end of 2002 showed a decreasing trend for the US federal fund rate from 6% to 1.25% with a total of 26 times of rate changes. These changes in the federal fund rate were followed by 14 changes in the discount rate in Kuwait from 7.5% to 3.75%. The period from January 2003 to May 2007 showed 18 changes in the federal fund rate. This period illustrated an opposite direction for the US federal fund rate with an increasing trend from 1% in June 2003 to 5.25% in June 2006. Changes in the federal fund rate made by the US Federal Reserve were followed by the Central Bank of Kuwait to adjust the discount rate 12 times from 3.25% in June 2003 to 6.25% in December 2006.

Since the US federal fund rate and the discount rate in Kuwait follow the same path almost all the time, it is obvious that the interest rate policy in Kuwait is to follow the movements in US interest rate policy to have the margin in favor of the interest rates on the KD. The data shows a strong correlation between US Dollar interest rates and KD interest rates. The Central Bank of Kuwait implements a policy to maintain a positive spread for KD deposits over Dollar rates. According to Figures one to three, the trends for interest rate on KD
deposits and on Dollar deposits are represented for one month, three months, and six months during the period from 1994 to 2008.

Figure One: One Month Interest Rate on KD Deposits and US Dollar Deposits

Figure Two: Three Month Interest Rate on KD Deposits and US Dollar Deposits

Based on these figures, it is noteworthy to notice the historical trend for the US Dollar interest rates and KD interest rates which are following the same path in the three figures. In addition, the three figures illustrate the assertion by the Monetary Authority in Kuwait for maintaining KD positive spread over the Dollar rates. Figure one shows that the differential of the one-month Kuwaiti Dinar deposit rate over the U.S. Dollar deposit rate was allowed to rise from 1.43% to 1.46%. Based on Figure two, the differential of the three-month Kuwaiti Dinar deposit rate over the U.S. Dollar deposit rate also showed an increasing trend from 1.41% to 1.67%. The wider spread between Kuwaiti Dinar deposit rate and US Dollar deposit rate is
shown in the six-month deposits rates in Figure three. According to Figure three, the six-month Kuwaiti Dinar deposit rate over the U.S. Dollar deposit rate showed an increasing differential from 1.05% to 1.47%.

III. Model Specification and the Econometric Methodology

The model
The model for the expectations hypothesis adopted in this paper is proposed by Tease (1988) with the notations shown in Cooray (2003). Assuming a two-period framework, the yield on a two period security is defined by the following expression:

\[ I_t = \mu + \lambda i_t + (1 - \lambda) E_t i_{t+1} \tag{1} \]

Where:
- \( I_t \) = yield per period on a two-period security in period \( t \)
- \( i_t \) = yield on a period security in period \( t \)
- \( \lambda = 0.5 \)
- \( \mu \) = constant risk premium which is zero under the pure expectations hypothesis
- \( E_t \) = expectations operator conditional upon information at time \( t \)

According to Equation (1), the return on a two-period security is equal to half the sum of the current one period security return and the expected one period security return in period \( t+1 \) plus a constant risk
premium. Presuming rational expectations, the expected one period yield can be written as:
\[ i_{t+1} = E_t i_{t+1} + v_{t+1} \], where \( v_{t+1} \) is white noise.  

Substituting Equation (2) into Equation (1) yields the following equation:
\[ I_t = \mu + \lambda i_t + (1-\lambda) i_{t+1} + \varepsilon_{t+1} \], where \( \varepsilon_{t+1} = -(1-\lambda) v_{t+1} \).  

Applying rational expectations into Equation (1) yields several testable implications of the expectations hypothesis. So, dividing Equation (1) by the expression of \((1-\lambda)\) gives:
\[ (1-\lambda)^{-1} I_t - E_t i_{t+1} = a + bi_t, \tag{4} \]
where \( a = \mu / (1-\lambda) \) and \( b = \lambda / (1-\lambda) \).

Rearranging Equation (2) and applying it into Equation (4) yields the following equation:
\[ (1-\lambda)^{-1} I_t - i_{t+1} = a + bi_t - v_{t+1}, \tag{5} \]

According to Equation (5), the current one period security rate in addition to a risk premium is equal to the expected one period return on a two-period security. Based on the null hypothesis of the expectation theory, the coefficient \( b \) is expected to equal one and \( v_{t+1} \) to be uncorrected with information available in period \( t \).

An implication of Equation (3) can be explained by the expected spread. If the current short rate is below the current long rate, there is an expectation that short rates are to go up higher than the current long rate. When Equation (3) is divided in both sides by \((1-\lambda)\), a testable implication of such hypothesis can be written as:
\[ i_{t+1} - i_t = a + b(i_t - i_{t+1}) + v_{t+1}, \tag{6} \]

According to Equation (6), the null hypothesis tests for \( b=1 \). The following equation explains the empirical validity of the expectations hypothesis that forward rates should be optimal forecasts of future spot rate:
\[ i_{t+1} = a_0 + b f_{t+1} + \varepsilon_{t+1}. \tag{7} \]

Accordingly, under the pure expectations hypothesis the coefficients in Equation (7) should be zero for \( a_0 \) and unity for \( b \), where \( f_{t+1} \) represents the expected or forward rate at time \( t+1 \) and \( i_{t+1} \).
Econometric Methodology

To model the long run relationship between variables in the estimated expectation theory’s model, we incorporate the Johansen procedure proposed by Johanson (1988) and Johansen and Juselius (1990). We first begin with short-run dynamics represented by a vector autoregression (VAR) specification as follows:

\[ X_t = c + \pi_1 X_{t-1} + \ldots + \pi_k X_{t-k} + \epsilon_t. \]  

(8)

where \( X \) is defined as a vector containing all variables included in VAR, \( t \) is time, \( c \) is a 4x1 vector of constants, \( \pi_i, i = 1\ldots k, \) are 4x4 matrices of time-invariant coefficients, and \( \epsilon \) is an 4x1 vector of i.i.d errors with a positive covariance matrix. The VAR(k) model defined in Equation (1) is covariance stationary if all values of \( Y \) satisfy:

\[ |I - \pi_1 Y - \pi_2 Y^2 - \ldots - \pi_k Y^k| = 0. \]  

(9)

According to the cointegration specification, variables in \( X \) were said to be cointegrated with the order of one, \( I(1) \). Then, it is possible to tell that there is co-movements among these variables and they will move together towards a long-run steady-state equilibrium. The long run behavior of these variables can be explained using a vector error-correction (VEC) model that integrates the short-run and the long-run dynamics:

\[ \Delta X_t = c + \sum_{i=1}^{p-1} \Gamma_i \Delta X_{t-p} + \Pi X_{t-p} + \epsilon_t. \]  

(10)

where \( \Pi = -(I - \Sigma i \pi_i), i = 1\ldots p, \) is the long-run parameter matrix, \( \Gamma_i = -(\pi_{i+1} + \ldots + \pi_{i}), i = 1, \ldots, p-1 \) are estimable parameters, \( \Delta \) is a difference operator and \( \epsilon_t \) is a vector of impulses representing the unanticipated movements in \( X_t \) with \( \epsilon_t \sim i.i.d \ N(0, \Sigma) \). In the case of \( r \) cointegrating vectors \( (1 \leq r \leq 2) \), \( \Pi \) has rank \( r \) and can be decomposed as \( \Pi = \alpha \beta \gamma \), with \( \alpha \) and \( \beta \) both 4 x \( r \) matrices. \( \beta \) is the matrix of cointegrating vectors and \( \alpha \) are the adjustment coefficients which measure the strength of the cointegrating vectors in the VEC model.

The Johansen procedure proposed by Johanson (1988) and Johansen and Juselius (1990) uses a maximum likelihood methodology to test for the cointegrating rank \( r \) and to estimate the parameters \( \beta \) and \( \alpha \). Therefore the test of cointegration demonstrates the long-run relationships among the variables in \( X \). Such procedures
propose two likelihood ratio tests in order to determine numbers of cointegrated vectors. The first test is based on the maximal eigenvalue test, and the other relays on the trace statistic. According to the model represented in Equation (7), the VEC model for \( i_t \) and \( f_t \) can be written as follows:

\[
\Delta i_t = \alpha_1 + \sum_{j=1}^{k} \beta_j \Delta i_{t-j} + \sum_{j=1}^{k} \gamma_j \Delta f_{t-j} + \phi_1 (i_{t-1} - f_{t-1}) + w_{1t}, \\
\Delta f_t = \alpha_2 + \sum_{j=1}^{k} \beta_j \Delta i_{t-j} + \sum_{j=1}^{k} \gamma_j \Delta f_{t-j} + \phi_2 (i_{t-1} - f_{t-1}) + w_{2t},
\]

While the expression \( \phi(i_{t-1} - f_{t-1}) \) denotes the error correction, the term \( w_t \) is white noise in both equations. We test the two equations for one, three, and six month interest rates.

**IV. Data Description**

The data used in this paper consists of average of declared inter local bank interest rates on Kuwaiti Dinar (KD) deposits with maturity of one, three, and six months. The period used in the data is monthly from June 1994 to August 2008. The data is constructed from the quarterly statistical bulletin issued by the Central Bank of Kuwait. Graphs in Figure four, five, and six illustrate the path for the forward and spot rates over the period covered in the data. According to the graphs, both the forward and spot rates with maturity of the one month interest rate, three month interest rate and six month interest rate move together over time.
Figure Four: One Month Interest Rate

Figure Five: Three Month Interest Rate
V. Empirical Results
The results of testing for the number of cointegrating vectors for the 1-month, 3-month and 6-month interest rates are reported in Table 1.

Table 1: Test Results for Cointegration

<table>
<thead>
<tr>
<th></th>
<th>Trace</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>H₀</td>
<td>H₁</td>
<td>Stat.</td>
<td>95%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-month rates</td>
<td></td>
<td>r = 0</td>
<td>r ≥ 1</td>
<td>16.937</td>
<td>15.495</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>r ≤ 1</td>
<td>r ≥ 2</td>
<td>2.004</td>
<td>3.841</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three-month rates</td>
<td></td>
<td>r = 0</td>
<td>r ≥ 1</td>
<td>17.43549</td>
<td>15.495</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>r ≤ 1</td>
<td>r ≥ 2</td>
<td>2.051818</td>
<td>3.841</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six-month rates</td>
<td></td>
<td>r = 0</td>
<td>r ≥ 1</td>
<td>19.03265</td>
<td>15.495</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>r ≤ 1</td>
<td>r ≥ 2</td>
<td>3.171884</td>
<td>3.841</td>
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<td></td>
<td></td>
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</tbody>
</table>

The table presents the trace statistics and maximum eigenvalue ($\lambda_{max}$) and the 5 percent critical values. The results show that using the
1, 3 and 6 month interest rates, the spot and forward rates are cointegrated with one cointegrating vector and one common stochastic trend.

After determining the number of cointegrating vectors, we estimate the cointegrating vectors for the 1, 3 and 6 month interbank rates. The aim is to find the relationship that links both types of interest rates. Table 2 reports the estimated results and show that the model performs well in predicting future rates. The 1-month rate performs the best with an estimated coefficient of (-0.9961), the 3-month rate (-1.1199), and the 6-month is (-1.1564). In addition, the results suggest that the predictability of the forward rate is negatively correlated with the maturity of the interest rate, suggesting that the one month rate provides the best predictability power. This is consistent with the fact that market participants have more information in the short-run than the long-run, hence they make decisions with less uncertainty.

### Table 2: Estimated Cointegrated Vectors

<table>
<thead>
<tr>
<th>Maturity</th>
<th>$i_t$</th>
<th>$f_t$</th>
<th>Intercept</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Month Vector</td>
<td>1.00</td>
<td>-0.9961</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-61.69)</td>
<td></td>
</tr>
<tr>
<td>3- Month Vector</td>
<td>1.00</td>
<td>-1.1199</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-18.83)</td>
<td></td>
</tr>
<tr>
<td>6- Month Vector</td>
<td>1.00</td>
<td>-1.1564</td>
<td>0.012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-20.07)</td>
<td></td>
</tr>
</tbody>
</table>

Finally, we conduct a test of the expectation hypothesis for the three interest rate maturities using the Chi-Square ($\chi^2$) test. The null hypothesis is that the coefficient of the future rate in the cointegrating equation equals 1 (i.e. $b=1$). The results reported in Table 3 show that we fail to reject the null hypothesis, concluding that $b=1$. This suggests that the expectations hypothesis of the term structure of interest rate is accepted by the data for the 1, 3 and 6 month rates. The findings also show that the forward rate is an unbiased predictor of the future spot rate. These findings are consistent with the results obtained by Al-Loughani (2000) who tested the expectations hypothesis using interbank rates in Kuwait for the period 1979-1990. His results
suggest that the forward interest rates (3 and 6 month) are unbiased predictors of future rates

### Table 3: Test of Parameter Restrictions (b= 1)

<table>
<thead>
<tr>
<th></th>
<th>LR</th>
<th>95% critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Month</td>
<td>0.037</td>
<td>3.84</td>
</tr>
<tr>
<td>3- Month</td>
<td>2.700</td>
<td>3.84</td>
</tr>
<tr>
<td>6- Month</td>
<td>3.695</td>
<td>3.84</td>
</tr>
</tbody>
</table>

**VI. Concluding Remarks and Policy Implications**

This paper has investigated the validity of the expectations hypothesis for the term structure of interest rates in the context of the deposit interest rates in Kuwait. The paper used data on inter local bank interest rates on deposits of Kuwaiti Dinar (KD) with maturities of one, three and six months. The empirical results reached by the current paper indicate that forward and spot rates are cointegrated, suggesting that the expectations hypothesis of the term structure of interest rate is accepted by the data in the case of Kuwait. The findings also show that the forward rate is an unbiased predictor of the future spot rate.

In addition to the empirical test for the expectations hypothesis, the results may be utilized by both monetary authorities and market participants. A number of policy implications may be derived from the estimates obtained in the current paper. First of all, the results help in predicting the effects of changes in short term interest rate on the long term level of interest rate, as the long term interest rates react to predict changes in the short term interest rates. Second, the theory works well for inter-bank interest rates market in Kuwait in which activities represented by maturity in interest rates are driven by liquidity aspects. In turn, banks seek reserves managing and hedge interest rate risks on short term basis rather than attempting to speculate toward excess returns. Thus, the theory of expectations hypothesis may provide an appropriate theory to the inter-bank market.

Furthermore, monetary authorities may alter market expectations of future short rates. For instance, when the Central Bank of Kuwait is targeting long run interest rates, then the market should be able to
form expectations of monetary policy. The targeted level of long term interest rate is determined by policy implications. Therefore, when the market forms rational predictions of monetary policy, then the market should also form rational predictions of the targeted long term interest rate.

Finally, understanding the role of the term structure of interest rates may be used as guidance for the position of inflation. That is, if policy makers in Kuwait are concerned about inflation, then it is sensible for the Central Bank of Kuwait to target a higher long term interest rates by raising the short term rates anticipating reasonable results for the long term interest rates based on the findings of this paper. Similarly, concerns about recession leads policy makers to rationally anticipate the movements of the short term interest rates as well as long term interest rates.
References


Central Bank of Kuwait (various issues) Governor's Speeches, Kuwait.

Central Bank of Kuwait, Monthly Monetary Statistics (various issues).


اختبار فرضية التوقعات على هيكل أسعار الفائدة في دولة الكويت

نافي نزال
خليفة بن الحبيب
عبد الله يوسف
ضسمان
فرس القبلي
الشمرلي
كلية العلوم الإدارية
جامعة الكويت

ملخص البحث

تختبر الورقة صحة فرضية التوقعات لمعدل أسعار الفوائد للفترات المصرفية في
دولة الكويت. واستخدمت الورقة بيانات لمتوسط أسعار الفوائد المصرفية فيما بين البنوك
الكويتية على الدينار الكويتي لأجل شهر وثلاث أشهر وستة أشهر، حيث تغطي البيانات
الفترة الزمنية ما بين شهر يونيو 1994 إلى شهر أغسطس 2008. وقد تم في هذه الورقة
استكشاف العلاقة بين سعر الفائدة القومي وسعر الفائدة الأجل، وذلك باستخدام طريقة
جوهانس للتكامل المشترك. هذا وأظهرت النتائج بأن سعر الفائدة القومي وسعر الفائدة
الأجل بينهما تكاملًا مشتركًا لجميع أجال أسعار الفوائد سواء كان ذلك لأجل شهر أو ثلاث
أشهر أو حتى ستة أشهر. وذلك من شأنه استخلاص صحة فرضية التوقعات لمعدل أسعار
الفوائد عند تطبيقها لحالة دولة الكويت.