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Factors Affecting the Performance of Kuwait Stock Market

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Abstract

This paper aims at finding the effective factors that influence three sectors in Kuwait stock exchange market (KSE) in addition to the whole stock market. The three sectors are banking, real estate and insurance sectors. The paper measures KSE performance through the average share prices calculated on a quarterly basis starting from 2005 until first quarter of 2015. It is found that each sector behaves differently towards macroeconomic variables. The most important determinants for the KSE overall market performance were found to be gold price and the deposits rate. Individually, the banking sector is influenced by consumer price index, interest rate on loans, oil price and gold price. The insurance sector is influenced by money supply, residential real estate price and oil price. The real estate sector is influenced by the exchange rate with respect to US dollars, interest rate on loans, oil price and gold price.

Keywords: stock market, oil prices, gold prices, Kuwait

I. Introduction

Informal stock trading was first introduced into Kuwait in 1952 with the establishment of the first shareholding company at that year in which the Kuwait National Bank was established. All along three decades afterwards, the government of Kuwait had issued a number of laws to regulate the emerging stock market industry and it wasn't until the third quarter of 1983 that Kuwait Stock Exchange market (KSE) was founded and became the regulator and the umbrella for the stock market. In the first quarter of 2010, the regulatory responsibilities of KSE were transferred to a newly established authority at that time namely Capital Market Authority (CMA) whose mission was to create an investment environment in the stock market that is transparent and competitive so as to attract local and foreign investors.

Kuwait stock market currently consists of fourteen sectors, each with a specific activity such as investment or instruments or financial Services. Not all KSE sectors were established at the beginning. Over time and according to the progress of the market conditions, new sectors were developed and added to satisfy an up to date market requirements. Its worth to mention that common stock is still the only type of stocks traded in the market and short selling is prohibited (Aldaihani, 2008).

Like other stock markets, KSE has indices that gauge its performance. The first index is the "*price index*" which calculates an arithmetic average and adjusts automatically for dividends and distributions. The second index -the oldest one- is the "*capitalization weighted index*". This index sums up the product of all stock prices by the number of the outstanding shares for companies as to be seen later in Equation 2. Thirdly, the "*Kuwait*-15 *index*" which was first used in May 2015 is designed to be an indicator of the performance of Kuwait economy. In calculation, it is similar to the capitalization weighted index with the difference that it only measures the index for the highest fifteen ranked companies in terms of market capitalization.

Given the importance of the stock market in Kuwait and its position in the Gulf region, this paper aims at determining the factors that affect the KSE performance. To do so, an intensive analysis will be conducted for the three most important sectors in KSE in addition to the whole market. These three sectors are Banking, Insurance and Real Estate sectors.

The rest of the paper continues as follows: section 2 illustrates the key findings in the literature review followed by the methodology in section 3. Afterwards, section 4 presents the theoretical framework for this study. Section 5 is dedicated to the empirical results and sectors correlation in the banking sector, the insurance sector the real estate sector, and the overall stock market. Finally, the paper concludes with remarks and recommendations.

2. Literature Review

Goswami and Jung (1997) find that Korean stock market is cointegrated with the industrial production, inflation, short-term long-term interest rates, oil prices and foreign exchange rate. They use Korea composite price index as a dependant variable. This index is a weighted average of all stocks traded in the Korean stock exchange market. The findings of their work show that industrial production, inflation and short term interest are positively related to the stock index, while negatively related to the other mentioned variables.

Yartey (2008) uses a panel data of 42 emerging economies in the world and puts the market capitalization as a dependant variable to explain the stock market development. He uses variables such as private credit, inflation, investment, political risk, corruption, and GDP per capita. Yartley finds income level, investment, banking sector development, private capital flow and stock market liquidity are the main determinants of the stock market development in emerging economies. Also, the market structure plays an important role in the development of the stock markets.

Næs *et al*. (2009) analyze the Norwegian stock returns and their pattern. They find that stock returns can be explained by three indices. These three indices are: a market index which is associated with the accumulated return on market portfolio, a size index which is associated with firms sizes and a liquidity index which is associated with value, and an index which is associated with the volume and speed of stock trade.

Rjoub *et al*. (2009) test six macroeconomic variables to measure the sensitivity of a portfolio return towards them. The variables were structure of interest rate, unanticipated inflation, risk premium, exchange rate, money supply (M1) and unemployment rate. They found that portfolios react differently to the analyzed macroeconomic variables. While they found a significant relationship between the dependant and the independent variables, they found weak explanatory power and concluded that there are other factors that might affect the stocks in Istanbul stock exchange.

In their paper about the Indian economy, Naik and Padhi (2012) investigate the relation between the Indian stock exchange and five macroeconomic variables; industrial production index, wholesale price index (WPI), money supply, treasury bills rates and exchange rates. The dependent variable which is Indian stock market index is found to be positively related to money supply and the industrial production index, and negatively related to WPI. They did not find a significant relation between stock prices and Treasury bill rate or the real effective exchange rate.

Barakat *et al*. (2016) studied the relationship between stock market and macroeconomic factors in two emerging economies (Egypt and Tunisia) for the period between January 1998 and 2014. Results indicated that there is a causal relationship in Egypt between market index and consumer price index (CPI), exchange rate, money supply, and interest rate. The same goes for Tunisia except for CPI, which had no causal relationship with the market index. Results also revealed that the four macroeconomic are cointegrated with the stock market in both countries.

3. Methodology

This paper uses the Ordinary Least Square (OLS) method, after verifying it is the convenient method, to find the determinants of KSE performance. Quarterly data are collected starting the beginning of year 2005 until the first quarter of 2015. Since data are time series and each variable is of a different nature, it was important to transform the necessarily data into the logarithmic format so as to avoid spurious regressions.

KSE performance is not measured through official indices as seen in some work like Goswami and Jung (1997) or Naik and Padhi (2012), but through an average share price. In this paper, to find the average share price (P), we divide the value of traded share prices by their volume in each quarter, as follows:

$$P = \frac{Value\ of\ Traded\ Shares\ (KWD)}{Volume\ of\ Traded\ Shares} \tag{1}$$

This price (or index) gives a better understanding of the market; if the number increases, then this is an indicator of an increase in stock prices or a decrease in volume traded and vice versa. It reflects key microeconomic concepts such as supply and demand forces. Unlike KSE indices, average share price (Figure 1) reflects reality, it fluctuates according to forces of the market. To prove the limits of capitalization weighted index mathematically, we look at its equation:

$$Weighted\ Capitalization\ index = \frac{\sum_{i=1}^{n}(Price_i \times Weight_i)}{Index\ Divisor} \tag{2}$$

The price in equation (2) is the share price and the weight represents the number of outstanding stocks. By multiplying the two numbers and dividing the result by a divisor index determined by KSE, the weight index is

measured. The weakness of this measure is that in case the prices are fixed and new companies enter the stock market with their shares not traded then the index changes in value, or perhaps if a company splits its stocks and doubles them and subsequently their share prices decrease to half price then the index value remains constant without saying anything about the performance of KSE. On the other hand, if the same thing happens but with the *average price index* as a measure for stock market performance, we find a difference between pre split and post split values. Such difference signifies economical activity.

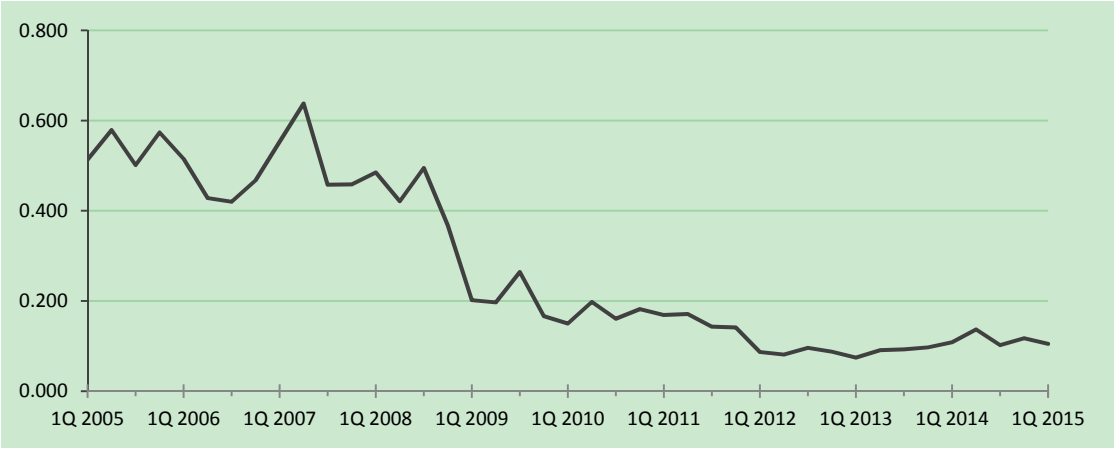

Figure 1. Kuwait stock exchange average market share price

Furthermore, the average price represents the market portfolio theory which designs a theoretical bundle of investments that includes every type of asset available in the market, with each asset weighted in proportion to its total presence in the market. So, by measuring for the average stock price, we are measuring for the whole stock market as one portfolio. For these mentioned reasons, this paper measures the performance of KSE through the average share prices (look at Figure 1) and will consider it as the dependant variable.

The initial independent variables tested for this project are oil price, gold price, discount rate, interest rate on deposits, interest rate on loans, money supply (M1), treasury bonds interest rate, exchange rate with respect to dollar, consumer price index, unemployment and residential real estate prices (Table 1). These variables are used as the independent variables in 4 models built to measure the performance of the KSE market with its main sectors. The first model considers the KSE average price as the dependant variable while the other three are the above mentioned sectors.

Table 1. The description of the independent variables

Variable	**Description**
log (*rlst_sqm*)	Average Residential Real Estate Price of Plot in Kuwait KWD/m^2
(*u*)	Unemployment Rate
(*dsknt_r*)	Discount Rate
(*depst_r*)	Weighted Interest Rate on Deposits
(*loans_r*)	Weighted Interest Rate on Loans
log (*m*1)	Money Supply (1)
(*t.bnd_r*)	Treasury Bond Interest Rate
log (*exchng*)	Exchange rate with respect to 1$ US-dollar
log (*cpi*)	Consumer Price Index
log (*oil*)	Oil Price in US-dollar
log (*gld*)	Gold Price in US-dollar

4. Theoretical Framework

The real estate market in Kuwait is a strong industry and is thought to be a good substitute for the stock market in a way that when investors are pessimistic about one market, they switch to the other. So, if this was indeed true, this research should assess this theory by showing a negative correlation and a negative coefficient for the variable log (*rlst_sqm*) in the models; meaning that if the average real estate price in Kuwait increases, then we would expect our index of KSE to decrease.

Unemployment rate is used because as this rate decreases, more individuals will motivate to use their accumulated income to enter the stock exchange. Therefore, this paper expects a negative relationship between unemployment rate and KSE price.

Discount rate; interest rate on deposits and interest rate on loans are expected to be correlated as they are integrated. In essence, deposits and loans rates are based on the discount rate that the Central Bank of Kuwait charges the commercial banks. It is expected that as discount rate decreases and hence other rates will decrease, then KSE average price increases as demand for shares increases due to the fact that investors look for higher returns that are not satisfied by the depository rates.

Money supply is an important macroeconomic variable as it indicates the base of cash available in the market. The more the supply of money the more cash available and hence more expected trades.

The bond market is another substitute for the stock market. The rule of thumb is that as treasury bonds rate decreases then KSE average price increases as demand for stocks increase since investors try to maximize their returns yielded from the stocks. Another determinant for KSE might be the exchange rate which reflects the integration of the Kuwait stock exchange with foreign countries as seen in previous literature. Many papers emphasized on the usage of the exchange rate as an independent variable.

The consumer price index (*CPI*) which is a measure of inflation is expected to be correlated with the prices and the indices of KSE. Since inflation makes money cheaper, therefore interests earned from deposits or bonds cheaper, then it is expected that as CPI increases, KSE average price increases.

Oil price is the fuel for Kuwait's economy. A price increase in oil should nourish the market. So, it is expected that as price of oil increases, stock prices also increase. On the other hand, gold price is expected to be negatively correlated to KSE, since gold is a valuable asset and insurance for many investors then it is expected that as stock prices decrease, then investors become pessimistic about KSE and switch to other assets such as gold leading to an excess in demand and therefore increase in gold price.

5. Empirical Results and Sectors Correlation

Table 2 shows the correlation matrix for KSE market price and the three mentioned sectors. It is found apparently that the market price is mostly correlated with the real estate sector price, and the banking sector price is mostly correlated with insurance sector price. The correlation doesn't necessarily indicate the integration between these sectors with the market. It will be useful to help understanding the behavior of the market with the three sectors. In addition, Figure 2 shows the movement of these three main sectors along with the price index for KSE.

Table 2. Pearson correlation matrix

	Market Price	Banking Price	Real Estate Price	Insurance Price
Market Price	1.000			
Banking Price	0.816	1.000		
Real Estate Price	0.913	0.702	1.000	
Insurance Price	0.743	0.860	0.570	1.000

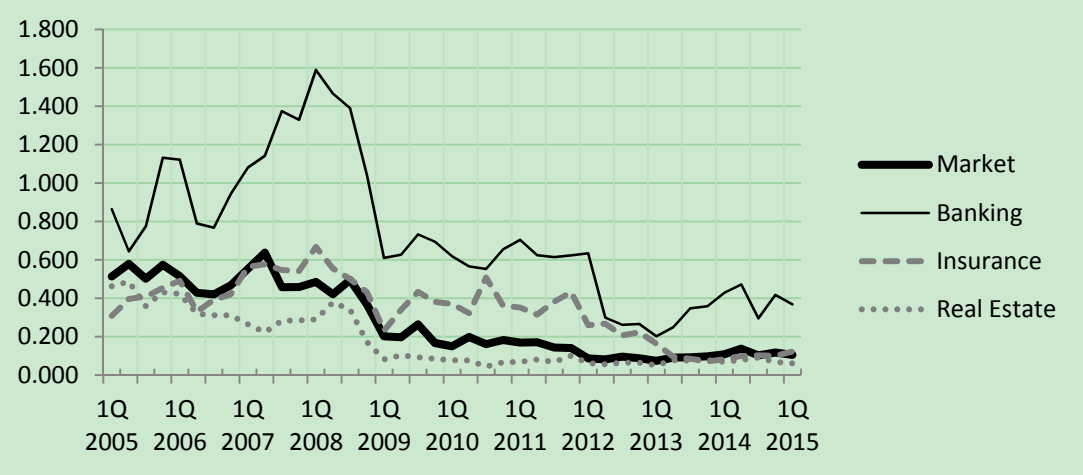

Figure 2. Average prices in the market and in each sector

5.1 KSE Market

The correlation matrix (Table 3) shows the relationship between KSE price and the independent variables. Among the interest rates, KSE is mostly correlated with Kuwait's central bank discount rate followed by deposits, loans and lastly treasury bonds rate. Expectedly, KSE is highly uncorrelated with exchange rate. This is possible because during this timeframe of the study the central bank of Kuwait (CBK) has pegged the Kuwaiti dinar to US-dollars for some years and then pegged it to a basket of currencies for some other years.

Table 3. Market correlation with the independent variables

log (*market*)	1.000	log (*m*1)	-0.891
log (*rlst_sqm*)	-0.678	(*t.bnd_r*)	0.899
(*u*)	-0.875	log (*exchng*)	-0.213
(*dsknt_r*)	0.952	log (*cpi*)	-0.604
(*depst_r*)	0.934	log (*oil*)	-0.588
(*loans_r*)	0.933	log (*gld*)	-0.895

As expected by the theoretical framework, we find a negative correlation between real estate price and the market share price though the relation is moderate. Also, we find a strong negative correlation with unemployment rate which empowers our hypothesis regarding the change in unemployment and its subsequent effect into the KSE.

Surprisingly, we find a negative correlation between oil price and KSE. This implies that if oil prices drop chances are that KSE energizes. The economic explanation behind it might be that a drop in oil prices affects some business sectors negatively and brings pessimism to the market and doesn't help to initiate new business opportunities. But, due to that, businesses and households invest in other alternatives such as stock market. Another explanation might be that when oil prices are high, businesses become robust and unwilling to take risk leading to a slowdown in the market activities or laziness, while if prices are low then businesses are alert and willing to take some risk to save their businesses and therefore this leads to an active stock market. However, the correlation coefficient is a weak one, and as we will see later on, the estimation coefficient of oil price gave the corrected sign.

In the first round, we established a model with all variables included. We found an adequate model with an adjusted R^2 (0.95). Yet, there were evidences of multi-colinearity and zero coefficients for some variables. To avoid this problem in the second round, the exchange rate was excluded as it was the weakest variable correlated with KSE price, also interest rate on Treasury bonds was excluded as it was correlated with other interest rates and had a very high Variance Inflation Factor (VIF).

The second round result showed an improvement in the adjusted R^2 to be (0.96) yet evidences of multi-colinearity and zero coefficients existed. So, in the third round, the discount rate and loans interest rate were removed.

Furthermore, we excluded oil prices from the model and the adjusted R^2 was reduced to (0.93) but we had insignificant variables with p-values more than (0.05). So, by removing these variables one by one, we reach the best model which doesn't have statistical problems such as multi-colinearity and serial correlation. The final model has only the deposits interest rate and surprisingly the gold prices. The adjusted R^2 is (0.93) and the Durbin Watson Statistics (DW) is (1.40) which is higher than the tabulated upper DW value indicating that there is no serial correlation and so the model is appropriate for estimation which gives the following results (where numbers inside parentheses are t-statistic and " * " means significant at 1% level):

$$\log(\textit{market price}) = \underset{(2.872)^*}{1.059} + \underset{(8.914)^*}{0.882}\ \textit{depst\_r} - \underset{(-6.300)^*}{0.701}\ \log(\textit{gld})$$

The model suggests a positive relation between deposits rate and the market price. From an economical perspective, the opposite relationship seems more logical. As the deposit rate decreases for investors then instead of keeping their money in the banks and earn very low interest, investors look for other opportunities such as the stock market to invest in, this will lead to a rush to the stock market increasing the demand and therefore increasing the average price. Yet, the model suggests that as deposits rate increases then the market price increases. This remains a puzzling behavior for the authors.

The question emerged right afterwards was which causes the other? Does the deposit rate cause the market price or is it the opposite? To find the answer, Granger Causality Wald test was conducted. The result indicated that there is a bilateral effect between deposits interest rate and market price (results were not reported but are available upon request).

In the case of price of gold, it is reasonable that the gold affects the stock market price as gold is an international asset watched by investors globally. The result found was consistent with the economic theory since an increase in gold price will affect KSE negatively as investors switch to that valuable asset.

The model suggests that a 1% increase in the deposit rate will lead to a 0.88% increase in the average stock market price given gold price is fixed, while a 1% increase in gold dollar price will lead to a decrease of 0.70% in the average stock market price given the deposit rate fixed.

Figure 3 shows the market price versus the fitted model. It shows that the model is successful in explaining the trend but fails to follow the volatile fluctuations.

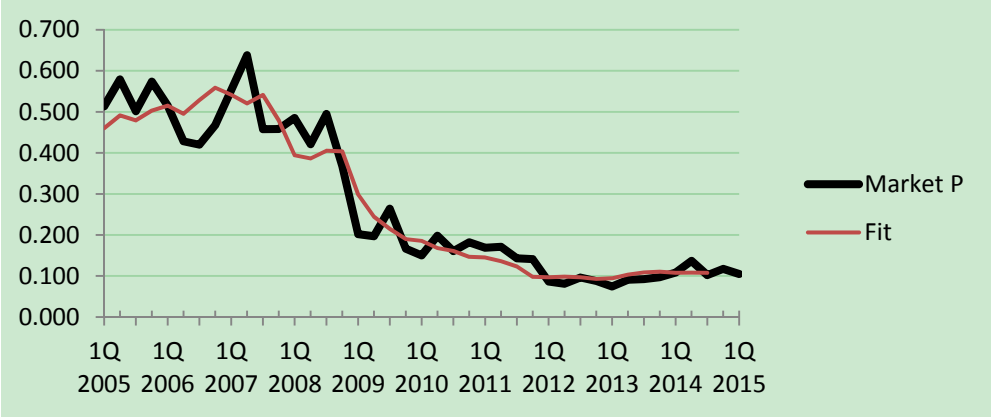

Figure 3. Market price time series and the fitted model

5.2 Banking Sector

The banking sector relative to the market is less correlated with the independent variables. As appear in Table 4, the strongest correlation occurs with the deposit rate which in fact is one of the independent variables in the market price equation. Other rates are also correlated with this sector. The weakest variables are the exchange rate and the consumer price index which are both negatively correlated to the sector. Yet, these variables were tested in the model. And the best estimated model is the following (where numbers inside parentheses are t-statistic and " * " means significant at 1% level):

$$\log(bank) = -9.378 + 1.788\ \log(loans\_r) + 4.888\ \log(cpi) + 0.613\ \log(oil) - 1.232\ \log(gld)$$
$$(-9.850)^{*} \quad (8.385)^{*} \quad (9.427)^{*} \quad (3.706)^{*} \quad (-5.814)^{*}$$

The significance for coefficient of the inflation rate means that with high levels of this rate in the economy, people want to invest in the market to protect themselves from the "inflation tax".

Table 4. Average banking sector price correlation with the independent variables

log (*banking*)	1.000	log (*m*1)	-0.765
log (*rlst_sqm*)	-0.623	(*t.bnd_r*)	0.722
(*u*)	-0.652	log (*exchng*)	-0.207
(*dsknt_r*)	0.827	log (*cpi*)	-0.285
(*depst_r*)	0.877	log (*oil*)	-0.366
(*loans_r*)	0.820	log (*gld*)	-0.655

Figure 4 shows the consistency between the fit and the actual time series. The adjusted R^2 is (0.90) and DW is (1.72).

Figure 4. Banking sector price time series plot and the fitted model

All independent variables are positively related to the sector price except for gold price. Gold becomes important during recessions since it is an asset of high value regardless of the state of the economy, so as individuals fear the future of their economies, they hold on to their valuable assets such as gold leading to decrease in demand on other assets such as stock shares. Therefore, it is plausible to conclude that as gold price decreases then economies are likely prospering leading to an increase in the economical activities such as stock exchange hence to an increase in the average stock prices.

It is important to note that there is also a negative relation between oil prices and the sector average price. Although oil should fuel the economy as it rises in price – especially that Kuwait economy relies heavily on oil exports – yet the time series plot and the correlation shows the opposite. If oil price decreases, then stock price increases. This is the opposite of our expectation regarding the effect of oil.

As appears in Figure 4, the actual time series of the average stock price along with the values of the fitted model. We see that before the financial crisis in 2008, although the model is trending like the actual data, yet it fails to mimic the fluctuations and after the recession. we see a clear improvement in the model following the pattern with a cut in the fourth quarter of 2011 and that is due to unavailable data for CPI at that period.

Using Granger causality Wald tests, we found that with 1 lag the interest rate on loans causes the changes in the average stock price in the banking sector. The effect of gold price, oil price and inflation appear on the banking

sector after 2 quarters.

5.3 Insurance Sector

There are 8 companies listed in the insurance sector in which 4 of them were listed before 1985 and the remaining 4 were listed after 2002. The total number of shares issued in the sector is around 1.18 billion shares.

Table 5. Average insurance sector price correlation with the independent variables

log(*Insurance*)	1.000	log (*m*1)	-0.797
log (*rlst_sqm*)	-0.784	(*t.bnd_r*)	0.627
(*u*)	-0.527	log (*exchng*)	-0.345
(*dsknt_r*)	0.716	log (*cpi*)	-0.204
(*depst_r*)	0.760	log (*oil*)	-0.318
(*loans_r*)	0.733	log (*gld*)	-0.480

The insurance sector strongest correlation partner is the money supply and they correlate negatively (Table 5). Furthermore, and like other sectors, insurance sector correlates positively with all interest rates. The weakest variables are the exchange rate and the consumer price index and none were used in the final model.

The best estimated model is the following (where numbers inside parentheses are t-statistic, "* and **" mean significant at 1% and 5% levels):

$$\log(insurance) = 7.58 + 1.19\log(oil) - 2.11\log(m1) - 0.92\log(rlst\_sqm)$$
$$(11.214)^{*} \quad (4.684)^{*} \quad (-5.422)^{*} \quad (-2.306)^{**}$$

The adjusted R^2 is (0.84) and DW is (1.7). Using Granger causality test, we find that oil prices and money supply cause changes in insurance stock prices after one period while residential real estate prices affect the stock price after two periods.

Figure 5 shows a comparison between actual time series and the fitted model. The cuts in the fit are due to missing data in the real estate prices. Again, we find that the model fails to mimic the fluctuations but it follows the exact trend.

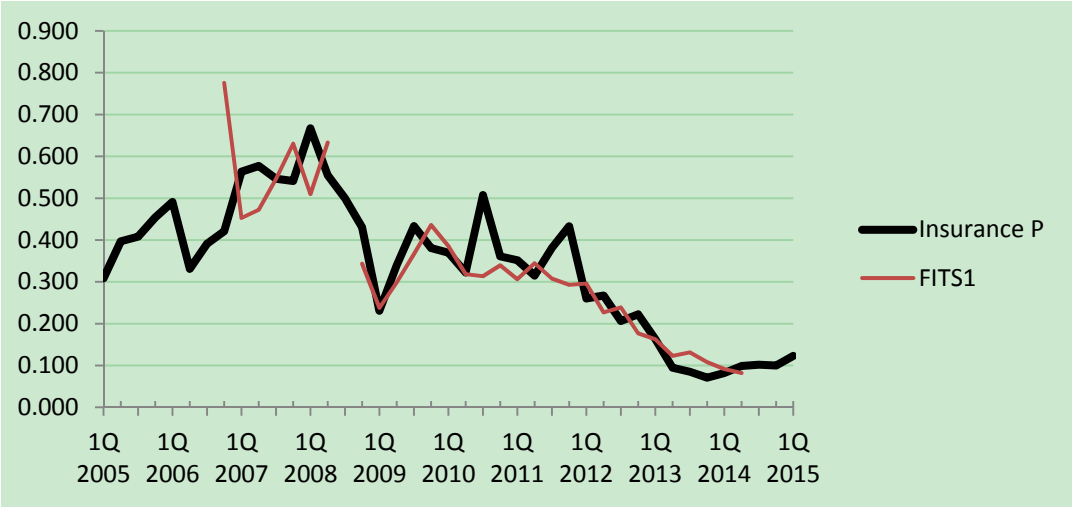

Figure 5. Insurance sector price time series plot and the fitted model

5.4 Real Estate Sector

There are currently 36 companies listed in the real estate sector in KSE. This sector is mostly correlated with the discount rate followed surprisingly by unemployment rate (Table 6).

Table 6. Average real estate sector price correlation with the independent variables

log(*Real Estate*)	1.000	log (*m*1)	-0.793
log (*rlst_sqm*)	-0.504	(*t.bnd_r*)	0.870
(*u*)	-0.922	log (*exchng*)	-0.205
(*dsknt_r*)	0.931	log (*cpi*)	-0.767
(*depst_r*)	0.835	log (*oil*)	-0.482
(*loans_r*)	0.901	log (*gld*)	-0.897

It is plausible to say that since real estate industry has great investment potential then individuals find it more rational to quit their jobs and invest in real estate to make high earnings in return. This leads to an improvement in the real estate industry which in return leads to an improvement in real estate listed companies. However, we will exclude unemployment rate from real estate model. After studying its behavior watchfully, we can attribute this idea on the following reasons: First, in Kuwait, individuals can apply to work in any company "without actually working" in order to get the benefits of the government as a compensation for working in the private sector. This step leads to a great drop in unemployment rate regardless of the situation of real estate situation. Second, there are many workers in the public and private sectors who have the luxury of time to work in real estate as a second source of income. So, we conclude that while the correlation between the real estate sector and the unemployment rate is high, and according to these reasons, yet they can't explain each other and therefore unemployment was removed from all models tested.

In contrary to other models, exchange rate has improved the final model for the sector stock price and thus was included. And the best estimated model is the following (where numbers inside parentheses are t-statistic, "* and **" mean significant at 1% and 5% levels):

$$\log(real\ estate) = 12.758 - 1.860\ \log(gld) + 0.914\ \log(oil)$$
$$(2.783)^{*} \quad (-10.729)^{*} \quad (4.951)^{*}$$
$$- 4.276\ \log(exchng) + 0.868\ \log(loans\_r)$$
$$(-2.532)^{**} \quad (3.5982)^{*}$$

The adjusted R^2 is (0.95) and DW is (1.9). The coefficient of the exchange rate coefficient was significant and high in its value. According to the definition of exchange rate, an increase in the value of exchange rate means depreciation in the Kuwaiti dinar. Though exchange rate in Kuwait is stable for most of the period of the study, but this result proves that one shock to exchange rate might harm the financial market badly. Using granger causality test we find that the change will affect the price after 2 quarters. The estimated model and the fitted curve appear in Figure 6:

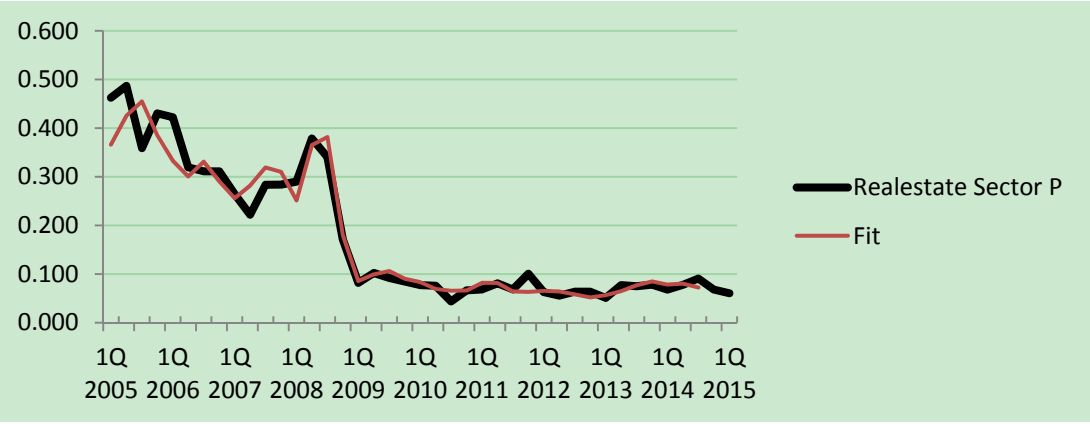

Figure 6. Real estate sector price time series plot and the fitted model

6. Conclusion and Recommendations

This paper aims at finding the factors that affect the KSE performance; which is measured through the average stock price. To do so, an intensive analysis of various factors was conducted among three sectors in KSE plus the whole market. These three sectors were the Banking, Insurance and Real Estate sectors.

It is found that each sector behaves differently towards macroeconomic variables and that is because of the distinct nature of each sector. The most frequent variables were the oil price and the gold price. We found that the overall market is influenced mainly by gold price and the deposits rate. The banking sector is influenced by consumer price index, interest rate on loans, oil price and gold price. The insurance sector is influenced by the central bank money supply, residential real estate price and oil price. The real estate sector is influenced by the exchange rate, interest rate on loans, oil price and gold price. The best fitted model relative to others was the real estate sector model.

Pearson correlation matrix suggests that there is a positive relation between KSE and all interest rates. One way to think of this result is that interest rate indeed doesn't affect investors' decisions in the stock market. So, investors will undertake their decisions to invest in the stock market regardless the level of interest rate.

Investors now can get a better sense of the overall performance of the stock market using the macroeconomic variables. Yet these findings can't be applied on single companies or portfolios. The results of this paper are regarding the whole market or the whole segment in the market reflecting the market portfolio concept.

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