



THE EFFECT OF MONETARY POLICY ON THE REAL ESTATE MARKET IN KUWAIT

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Abstract

The real estate market in Kuwait is a vital asset market which is attracting a remarkable amount of Kuwaitis' wealth. This market has passed through several cycles during the last few decades. In this study, the ARDL model is applied to investigate the short- and long-run relationship between the real estate market and two main monetary variables: namely, the money supply (M2) and a one-week interest rate in Kuwait. The findings of this study show that M2 has strong positive effects on the real estate market in Kuwait in both the short- and long-runs. No significant relationship was found between the real estate market and the short-term interest rate for either the short- or long-run.

Keywords: ARDL, Kuwait, Real-estate, Monetary Policy, Central Bank of Kuwait

INTRODUCTION

The relationship between the monetary policy and real estate market draw huge interest from economists, policymakers and practitioners, particularly after the global financial crisis in 2008, which occurred as a result of the price bubble in the housing market in the USA. This crisis compounded many problems in the credit portfolio of banks and American mortgage institutions, and affected all countries globally. Monetary policy plays a vital role in the economy, and might affect the real output in the short-term (Friedman and Schwarz, 1963). However, assets, including stocks and real estate prices, can be affected by the monetary transmission mechanism. Mishkin (2001) stated that real estate prices can affect the aggregate demand through the direct effects of housing expenditure, household wealth, and bank balance sheets. He argued that asset prices are essential elements besides the interest rates, so the central banks should pay these more attention. A tightening of the monetary policy is usually followed by declines in the real GDP and price level. This monetary policy may also reduce the net cash flows and collateral values of the real estate units. Bernanke and Gertler (1995) argued that the main channels through which the monetary policy may affect the real estate market are either household income or bank-lending. Both channels will be affected by the interest rate. Bernanke and Gertler (2001) argued that monetary policy would be affected by asset price changes only when these changes affect the central bank's predicted inflation. For example, a rise in the interest rate causes household income to decrease, which will increase the cost of buying. Therefore, the real estate demand and prices will drop. Kennedy (2008) believes that the central bank should take real estate prices into account in their monetary policy decision and Kuttner (2012) concluded that monetary policy should respond quickly to property price rises. Williams (2015) argued that monetary policy may impact on house prices through only one channel, through which it influences the financial stability. However, the central banks carefully examine the financial stability of the country and the inflation level, as most of the central banks set a target inflation rate and work to achieve this. The monetary policy system can be effective through different channels and mechanisms, such as the interest rate, money supply, etc. (Yan, 2019). Bolland (2004) argued that speculative bubbles in the real estate market could damage the economy in two ways: first, by misallocating people's savings and investments to the wrong places and, second, investors and consumers will lose confidence in the financial system once the bubble bursts.

Extensive research has examined the relationship between monetary policy and house prices. The real estate market in Kuwait is a crucial asset market, which is attracting a remarkable amount of the citizens' wealth. The value of traded real estate in the market represented about 8% of Kuwait's GDP at current prices at the end of 2019. This market has not

taken good attention from policymakers and researchers in Kuwait. However, only a few studies have tackled this market in Kuwait, and we believe that, so far, only five serious studies have been conducted, by Kaganova et al. (2005), Almutairi (2010), Almutairi and El-Sakka (2016), Abul (2019), and Abul and Al-Kanadri (2020). We believe that this constitutes the first attempt to examine the relationship between monetary policy and the real estate market in Kuwait. In the following, we discuss and review the most relevant studies that have investigated the impact of monetary policy on house prices.

LITERATURE REVIEW

An early study conducted by Naylor in 1967 investigated the impact of fiscal and monetary policy on the housing market in the USA. He argued that fiscal policy could affect the GNP through the feedback mechanisms. In contrast, the monetary policy can affect the housing market through the money supply. Increasing the money supply will lead to reduced interest rates that stimulate consumption and the demand for housing. Naylor (1967) argued that, although a large number of empirical studies on the housing market had been conducted up until 1967, "none of the these has as its principal aim the explanation of relationships between fiscal and monetary policy and the housing market" (Naylor, 1967). Tsatsaronis and Zhu (2004) examined the relationship between house prices and five factors, including the growth rate of GDP, inflation rate, real short-term interest rate, the difference in yield between a long- and short-maturity government bond, and the growth rate in inflation-adjusted bank credit for 17 developed economies for the period 1970 to 2003. He revealed that the inflation rate, among other factors, is the most important driver of housing prices across his sample, while other factors, such as bank credit, short-term interest rates and spreads, explained a third of the house prices' variance in the long-term. The short interest rate plays a significant role in driving the house prices in the 17 developed countries. His results also indicated that household income has little explanatory power regarding housing price developments. Ahearne et al. (2005) examined the behaviour of house prices in 18 industrial countries for the period 1970 to 2005. They reported that the property price booms were due to the easing of the monetary policy in these countries. Iacoviello and Minetti (2008) examined the impact of the credit channels of monetary policy on the housing market in four European countries, including Finland, Germany, Norway, and the U.K. They reported that the institutional framework and different levels of efficiency regarding funding and mortgages in the housing market can affect the effectiveness of the transmission mechanism of monetary policy in each country. They found evidence of a bank-lending channel in Finland and the U.K., most evidence of a balance-sheet channel in Germany, and a lack of evidence of a credit channel in Norway. Vargas-Silva

(2008) examined the influence of monetary policy on the U.S housing market for the period from 1965 to 2005. He reported that the housing and residential investment market responded negatively to monetary policy shocks in the USA.

Kasai and Gupta (2010) examined the impacts of the monetary policy on house prices in South Africa during the period from 1967 to 2006. They ran their test for two subsamples: namely, pre-financial liberalisation and liberalisation. They applied the SVAR model to investigate the impact of the monetary policy on three types of house size: large, medium, small and all of them. They revealed that monetary policy in South Africa has a low impact on house prices. Although they found that this influence became a little more effective during the liberalisation period, they concluded that house price inflation look likes an exogenous variable and was mostly explained by itself. However, Xu and Chen (2012) investigated the influence of the key monetary policy instruments, including the money supply, mortgage credit policy indicator, and long-term benchmark bank interest rate, on the real estate market in China using quarterly data for the period from 1998: Q1 to 2009: Q4 and monthly data from July 2005 to February 2010. They reported that the interest rate is a crucial factor regarding house price growth. Decreasing the interest rate, increasing the money supply and relaxing mortgage down payments tend to increase house price growth, and *vice versa*. Therefore, they concluded that the Chinese monetary policy instruments are the main driving forces behind the changes in the real estate price in China. Another study, conducted by Kondybayeva and Ishuova (2013), examined the impact of the monetary policy on house prices in the Republic of Kazakhstan for the period from 1994 to 2012. They reported that negative monetary policy actions shocked the house prices negatively, generally.

Williams (2015) reported that monetary policy has significant impacts on house prices and GDP. He examined the effects of monetary policy shocks on the interest rate, real house prices, real GDP per capita, and inflation for 17 countries over a period of 140 years. His estimations for the whole period show that a 1% increase in the short-term interest rate caused a 6% decline in house prices after two years, while the GDP decreased by around 2%. He revealed a high drop in house prices when using shorter data (a 5.7% decline in house prices), and argued that the central bank could use a tight monetary policy to stabilise the financial system during the housing boom.

Almutairi and El-Sakka (2016) examined the relationship between house prices in Kuwait, and four variables, including oil prices, government expenditure, interest rates, and inflation rates for the period from 1990 to 2014. They revealed that these variables do not play an important role in real estate price changes in Kuwait. The variance decomposition test shows that up to 10 quarters (2.3%, 1.6%, 1.5% and 0.8%) of real estate prices in Kuwait are

explained by interest rates, inflation rates, government expenditure, and oil prices, respectively. Chen et al. (2018) investigated the impact of monetary policy on house prices in China for the period from July 2005 to February 2014. They found a significant influence of short-term interest rate on the house prices while the money supply M2 does not affect the housing prices in China. In particular, a positive shock to the market based on a 7-day interbank has a significant negative impact on housing prices that appears in the market from five to 18 months later. Their findings are in line with the theory regarding the influence of monetary policy on house prices (i.e. raising the interest rate tends to decrease the house prices). Yan (2019) investigated the relationship between monetary policy and real estate prices in China for the period from February 2009 to October 2017. He revealed that there is a stable relationship between monetary policy and the real estate market over the long-term. The relationship between the real estate market and interest rate is negative, while that between the real estate and money supply is positive. He concluded that the monetary policy in China could control the real estate prices, and that the interest rate is the best tool that affects the real estate market and might last for a longer time. BİNGÜL (2019) examined the impact of the monetary policy, mainly the short-term interest rate, on the housing prices in Turkey for the period from 2007 to 2019. They revealed that the interest rates affected the house prices and that the volatility in the housing market in Turkey is due also to external shocks. Abul (2019) examined the relationship between the real estate market and the stock market in Kuwait for the period from January 2007 to December 2017. He revealed that there is both a long- and short-term association between Kuwaiti stock prices and multi-apartment building prices only. At the same time, no evidence of such a relationship was found the residential real estate (land and houses prices). In a recent study, Abul and Al-Kandari (2020) examined the influences of selected macroeconomic variables and the real estate market in Kuwait. They revealed a strong effect of M2 on the real estate market in Kuwait in both the short- and long-runs. They reported that there exists long-run causality between the real estate market in Kuwait and the oil prices. Moreover, they did not find any relationship between the real estate market and the Kuwaiti stock market index.

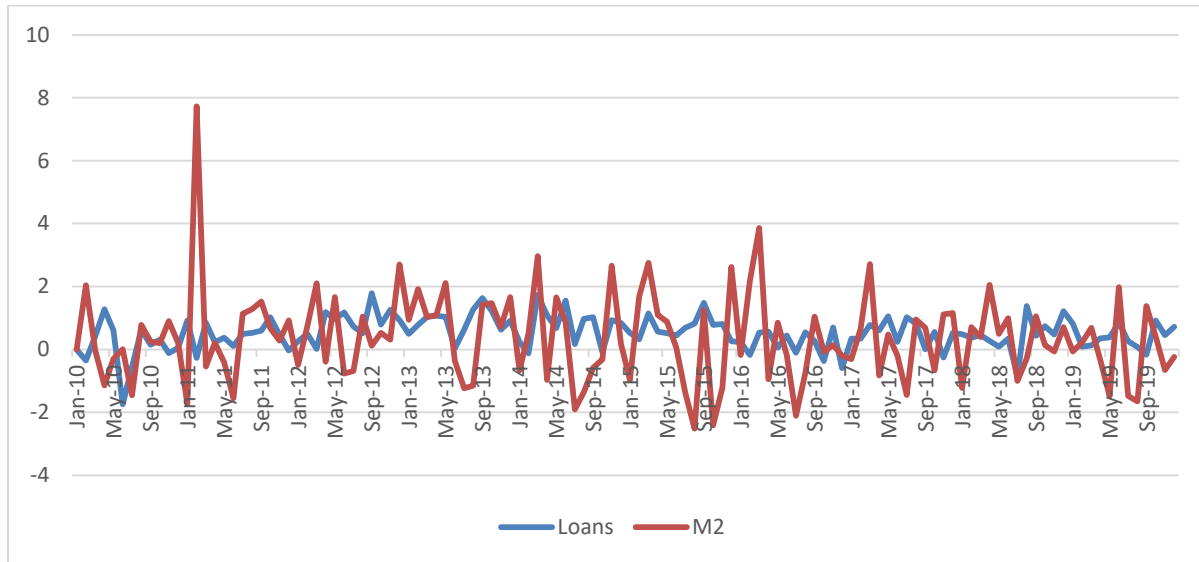
The Monetary Policy in Kuwait

The monetary policy in Kuwait is set by the Central Bank of Kuwait (hereafter, CBK) in accordance with Law No. 32 of 1968, which specifies the following objectives for CBK: issue currency, secure the stability of the Kuwaiti currency and its free convertibility into foreign currencies, direct policy in such a manner as to assist social and economic progress and the growth of national income, supervise the banking system in the state, serve as a banker for

the government, and work as a financial advisor to the government. The major policy instruments available to the CBK are: the discount rate, liquidity management; direct intervention in the money market through taking placing deposits, CBK bonds, treasury bills and treasury bonds, foreign exchange swaps, and overnight facilities. CBK can influence the money supply via the said policy instruments. Monetary policies which lean towards increasing the money supply will lead to a decrease in the interest rate. The lower interest rate will stimulate the demand for real estate in Kuwait. However, CBK maintains price stability by pegging the Kuwait Dinar exchange rate to a basket of currency to provide a nominal anchor for inflation and CBK does not have an inflation target (Al-Sabti, 2015). The cash credit facilities that the local banks in Kuwait extended to the real estate sector at the end of 2019 reached 8,918.1 million K.D., which accounts for 23.2%, while the instalment loans account for 31.1%. The Kuwaiti government's control over 95% of the land in Kuwait, and there is no mortgage system for buying residential units in Kuwait. The banks in Kuwait provide 'instalment loans' which are granted to Kuwaiti citizens against their salaries as collateral under specific terms, such as the instalments must not exceed 40% of the wages of working people or 30% of the income of retired people and should be paid off within 15 years. This amount of money does not cover the cost of a house in Kuwait. Instalment loans are used to repair homes, construction, or contribute to the purchase of homes, where the borrower is asked to add double this amount in order to be able to buy the house because this amount is insufficient to buy a house in Kuwait due to the high price of housing. However, the banks are active in financing the multi-apartment sector since they can accept these assets as good collateral against their finance.

However, most of the instalment loans are used to buy residential property or build houses. Both the real estate loans and instalment loans represented about 54.3% of the banks' total credit facilities at the end of 2019, compared with 44.66% at the end of 2010. Figure 1 indicates the monthly percentage changes in the money supply and credit facilities in the real estate sector (real estate loans plus instalment loans). It is noticeable that these time series are moving in a very similar direction. The CBK can affect the real estate market through the banks' credit channel by directing the banks to diversify their credit portfolios. It is true that the real estate sector in Kuwait is a favorable credit channel for banks, but it will pose risks in the event of a decline in the real estate prices due to a decrease in the anticipated demand for it as a result of the government policy of reducing the number of expatriates in Kuwait in the coming years.

Figure 1: Real Estate Loans and M2 January 2010-December 2019 Percentage Change (%)



Overview of Kuwait's Real Estate Market

The structure of the real estate market in Kuwait (KREM, hereinafter) is not necessarily the same as that in other countries; for example, the government owns around 95% of the land in Kuwait, and only 5% is available for private and individual investors (Almutairi, 2010). It has become a common phenomenon for the real estate market in Kuwait to be unstable from time to time and, during the last four decades, this market has passed through several cycles. The main three segments of the real estate market include the residential sector, multi-apartment buildings (considered an investment in Kuwait), and the commercial sector (businesses and shops). The most active of these are the residential and multi-apartment sectors.

Figure 2: Value of Traded Real Estate in Kuwait January 2010-December 2019 in Million KD

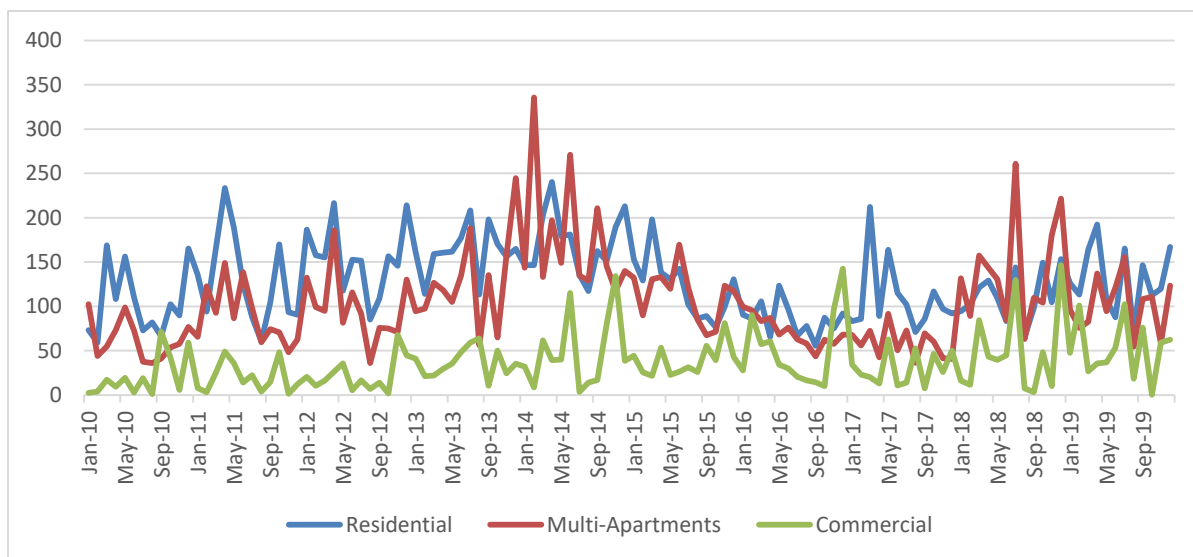
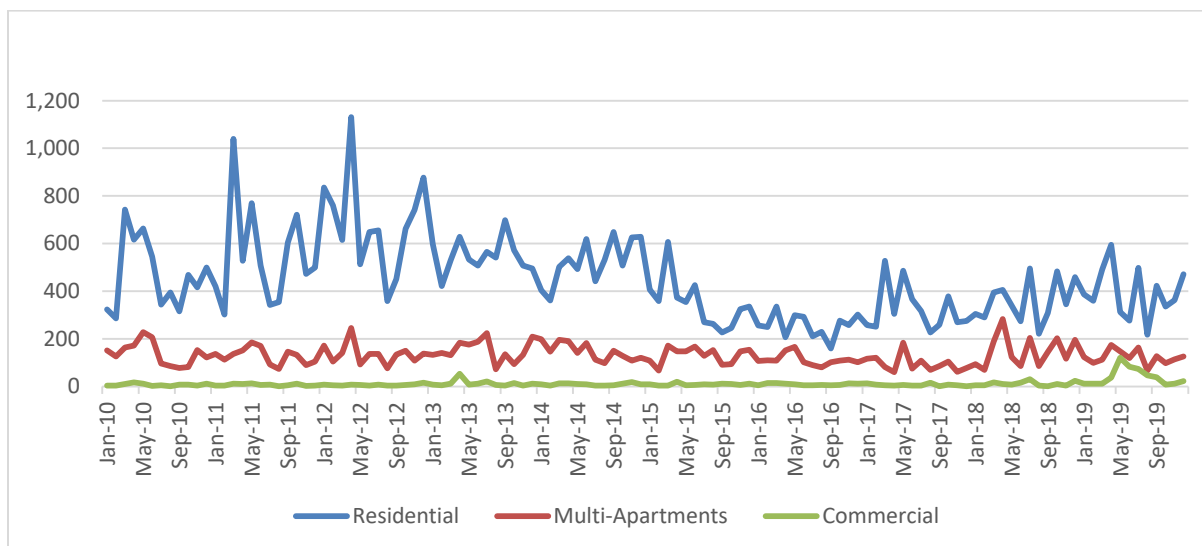


Figure 3: Number of Deals of Traded Real Estates January 2010-December 2019



Figures 2 and 3 show the activity of the Kuwaiti Real Estate Market (KREM) during the period from 2010 to 2019. Figure 2 indicates that the residential traded value (liquidity) in the market is higher than the multi-apartment value for the majority of the investigated period (January 2010-December 2019). The same figure shows that the traded value of each sector has passed through several primary cycles. However, each sector has its peaks, and they move together. For example, the residential sector witnessed the highest value of traded units during April 2011, April 2014, December 2012, July 2013, April 2014, March 2017 and April 2019, respectively, while the multi-apartment sector reached the highest traded value in April 2012, February 2014, July 2018 and December 2018, respectively. This might be due to several factors, such as the regulatory changes that occurred when the Kuwaiti government issued two laws (Nos. 8 and 9 of 2008) prohibiting companies from owning or trading in residential land and houses and imposed on residential land over 5,000 meters square an annual 10 K.D. fee per square meter. In fact, these two laws, in addition to the global financial crisis of 2008, affected the market activity negatively. The commercial sector is less active than other sectors due to the fact that the majority of the commercial units belong to companies (figure 3). The aim of this study is to investigate the impacts of the monetary policy in Kuwait on the real estate market.

METHODOLOGY

From the previous literature review, we can conclude that the two main monetary policy variables that influence the real estate market are the money supply and the interest rate (Bernanke and Gertler, 2001, Yan, 2019, Zhou et al., 2014, Williams, 2015). For example, if the money supply exceeds the demand for money, a positive surplus will probably be invested in

real estate, which leads to an increase in the real estate prices. Matalik et al. (2012) argued that growth in asset prices also increases the inclusive wealth of a society, which can affect the demand for money positively. The interest rate is a very important variable. A low interest rate will encourage Kuwaiti investors to obtain loans and buy real estate. This study examines the relationship between the KREM and two monetary policy selected variables: namely, the money supply (M2) and a one-week interest rate (INTR). The sample period consists of monthly data for the period from January 2010 to December 2019. These variables are as follows:

1. Money supply (M2) is the broad money (currency in circulation + sight deposits + Quasi money). Source: Central Bank of Kuwait Website, April 2020 (www.cbk.gov.kw/en/index.jsp).
2. One-week interest rate (INTR) on K.D. Source: Central Bank of Kuwait website, April 2020, (www.cbk.gov.kw/en/index.jsp).
3. The total value of real estate transactions (KREM) which can be used here as a proxy for the KREM activity. Source: Ministry of Justice website, April 2020, (<https://www.moj.gov.kw/AR/pages/Statistics04.aspx>).

The EViews (10) program was used for the empirical work in this study.

ANALYSIS AND FINDINGS

Table 1: Descriptive Statistics

	KREM	M2	INTR
Mean	268.7984	32902.85	0.665142
Median	264.0441	33878.80	0.522000
Maximum	567.0000	38999.60	1.498000
Minimum	106.8000	24901.00	0.337000
Std. Dev.	96.44442	4430.292	0.372793
Skewness	0.720577	-0.423597	1.154215
Kurtosis	3.326482	1.847221	2.929586
Jarque-Bera	10.91757	10.23319	26.66903
Observations	120	120	120

Table 1 shows the descriptive statistics for all of the variables at level I(0). The skewness test shows that M2 has a negative tail, while the other variables have positive tails concerning their departure from symmetry. However, the Kurtosis test shows that the KREM and INTR are almost 3 (3.3 and 2.9), which indicates a normal distribution, while the M2 is less than 3, denoting that the M2 is thinner than normal.

In this study, the impact of the monetary policy on Kuwait's real estate market (KREM) is investigated using the Autoregressive Distributed Lag (ARDL) bounds test, introduced by Pesaran *et al.* (2001). This study employed the ARDL model to investigate the short- and long-run impacts of the monetary policy variables, including the money supply (M2) and the short-term interest rate on KREM as a target variable. Pesaran *et al.* (2001) stated that the ARDL model could be applied only to data that are either stationary at I(0) or first deference I(1) only, or mixed, but not for data that are stationary at the second level I(2). Therefore, we started our empirical work by testing all of the variables for the stationary using the Augmented Dickey-Fuller (ADF) test, and found that the KREM is stationary at level I(0) and the other variables are stationary at their first deference I(1). In this case, the application of the ARDL bound test is appropriate for assessing whether the short- and long-run relationships exist between the KREM and the two selected variables. However, the unrestricted VAR model was estimated, after which the optimal lag structure was tested by the Akaike Information Criterion (AIC) and Hannan Quinn information criterion (H.Q.), which show that the appropriate lag is 4.

ARDL Model

The selected lag (4) is used to estimate the following ARDL model:

$$\Delta KREM_t = \beta_0 + \sum_{i=1}^n \beta_i \Delta KREM_{t-i} + \sum_{i=0}^n \delta_i \Delta M2_{t-i} + \sum_{i=0}^n \vartheta_i \Delta INTR_{t-i} + \varphi_1 KREM_{t-1} + \varphi_2 M2_{t-1} + \varphi_3 INTR_{t-1} + u_t \quad \dots\dots(\text{Eg.1})$$

Where;

Short-run coefficients; $\beta_i, \delta_i, \vartheta_i$.

Long-run coefficients; $\varphi_1, \varphi_2, \varphi_3$.

u_t is the disturbance (white noise) term.

Table 2: Estimation of the ARDL Model

Variable	Coefficient	Std. Error	T. Statistic	Prob.
C	39.96610	64.17940	0.622725	0.5347
$\Delta KREM_{t-i}$	-0.314022	0.087949	-3.570495*	0.0005
$\Delta M2_{t-i}$	0.039010	0.017735	2.199628*	0.0299
$\Delta INTR_{t-i}$	-345.5145	242.1640	-1.426779	0.1564
$KREM_{t-1}$	-0.491627	0.103613	-4.744849*	0.0000
$M2_{t-1}$	0.003067	0.002209	1.388733	0.1676
$INTR_{t-1}$	-15.25371	26.01600	-0.586320	0.5588
R-squared	0.434657			
Durbin-Watson	2.15244			

*significant at 5%.

Table 2 shows the results of the ARDL model, where the money supply (M2) has strong positive effects on the real estate market in the short-run, which is in line with the theory of monetary policy.

This result is in line with previous studies, such as: Adams and Füss (2010), who revealed a positive short-run relationship between money supply and real-estate in 15 selected countries; Xu and Chen (2012), who reported a positive impact of money supply on the real estate market in China; Zhou et al. (2014), who revealed that M0 had a stronger impact on the real estate prices in China in the long-run compared to M1 and M2; Pillaiyan (2015), who reported a strong impact of money supply on Malaysia's real estate market; Chen et al. (2018), who reported the opposite findings (namely, that M2 does not affect the housing prices in China); and Yan (2019), who revealed that M2 has a positive impact on the real estate market in China. A recent study by Abul and Al-Kandari (2020) reported strong positive effects of M2 on the real estate market in Kuwait in both the short- and long-runs. The same table reported that the short interest rate (INTR) has no effect on the Kuwait real estate market (KREM). This result is in line with Ong (2013), who reported an insignificant relationship between the interest rate and housing price in Malaysia's real estate market. He argued that this result could be explained by buyers' behaviour in failing to pay attention to the interest rate due to the unbalanced supply and demand in Malaysia's real estate market (Ong, 2013, Abul and Al-Kandari, 2020). However, this finding is not in line with the theory and most of the previous studies which found a significant role for the short interest rate in driving the real estate markets, such as: Bernanke and Gertler (2001); Zhou et al. (2014), who reported that the short interest rate plays a significant role in driving house prices in 17 developed countries; Vergas-Silva (2008); Xu and Chen (2012); Williams (2015); Chen et al. (2018); and Yan (2019). All of these studies found a significant influence of the short interest rate on the real estate in different country case studies. In the following, the diagnostics test for our model has been applied to check the model's fitness.

Diagnostics Tests

Serial Correlation

The model was checked for serial correlation using the Breusch-Godfrey serial correlation L.M. test. The hypotheses are as follows:

- 1) Null hypothesis: there is no serial correlation between the variables.
- 2) Alternative hypothesis: there is a serial correlation between the variables.

Table 3: Breusch-Godfrey serial correlation L.M. test

F-statistic	0.317430	Prob. F(4,95)	0.8657*
Obs*R-squared	1.424434	Prob. Chi-Square(4)	0.8399

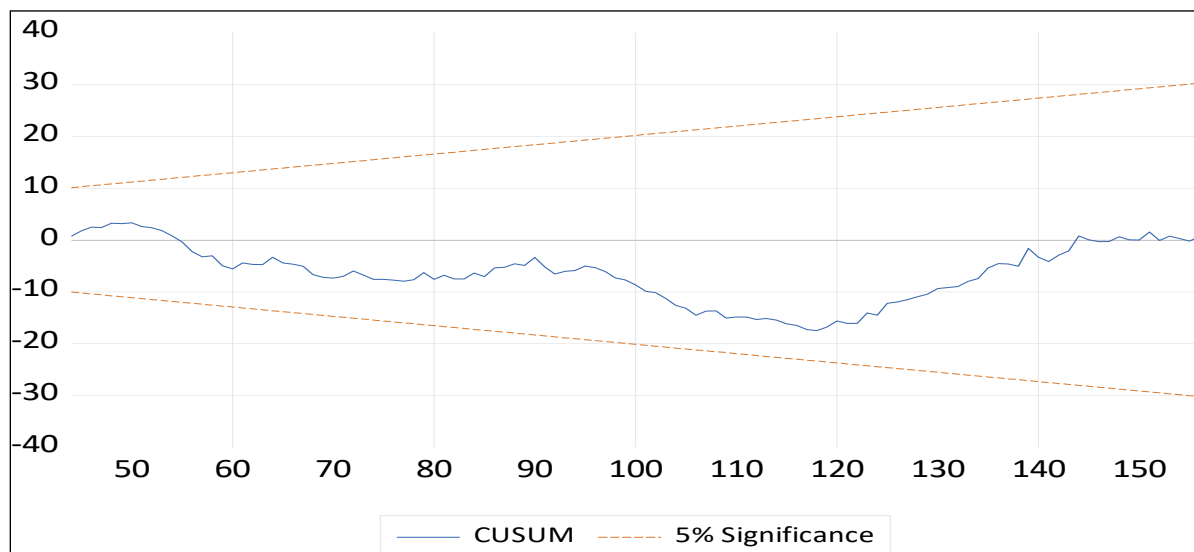
*Significant >0.05.

Table 3 shows that there is no serial correlation in the model. The P-value is $0.8657 > 0.05$, so we cannot reject the null hypothesis. This is no evidence of serial correlation in this model. In the next step, we test the dynamic stability of the model.

Dynamic Stability of the Model

The cumulative sum (CUSUM) was conducted to test the dynamic stability of this model. Figures 4 shows that the CUSUM line (shown in blue) lies within the significance level, which provides evidence that the model is dynamically stable.

Figure 4: CUSUM Chart



ARDL Cointegration Bounds Test

As mentioned in Eg.1, the ARDL long-run coefficients, reported in table 1, are as follows:

$\varphi_1, \varphi_2, \varphi_3$. The following hypotheses are tested:

$$H_0: \varphi_1 = \varphi_2 = \varphi_3 = 0$$

$$H_1: \varphi_1 \neq \varphi_2 \neq \varphi_3 \neq 0$$

The long-run coefficients of the model, $\varphi_1, \varphi_2, \varphi_3$ were tested jointly using the Wald test.

Table 4: Wald Test for the Long-run Coefficients of the Model

Test Statistic	Value	Df	Probability
F-statistic	7.624657*	(3, 113)	0.0001
Chi-square	22.87397	3	0.0000

*denotes a significant long-run relationship.

Table 4 shows that the F-statistic value is 7.624, which is higher than the upper bound critical value, at 5% (4.01). The critical values were obtained from Pasaran et al.'s critical values (unrestricted intercept and no trend) table (Pesaran *et al.*, 2001, page 300). This result provides evidence that there exists a long-run relationship between KREM and the selected variables.

Error Correction Model (ECM)

We examine the short-run effects and long-run equilibrium relationship between KREM, M2 and INTR by measuring the speed of adjustment. The following equation was applied:

$$\Delta KREM_t = \alpha_0 + \sum_{i=1}^n \alpha_i \Delta KREM_{t-i} + \sum_{i=0}^n \beta_i \Delta LM2_{t-i} + \sum_{i=0}^n \vartheta_i \Delta INTR_{t-i} + \lambda ECT_{t-1} + \varepsilon_{it}$$

(Eq.2)

Where:

The short-run coefficients are α_i , β_i and ϑ_i and ε_{it} is a stochastic error term.

The speed of the adjustment parameter represented by (λ) must be a negative sign and significant. The Error Correction Term (ECT) was derived from the long-run model.

Table 5: Results of the ECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.016448	8.170397	-0.124406	0.9012
D(KREM(-1))	-0.319427	0.087866	-3.635374	0.0004
D(M2(-1))	0.037961	0.017583	2.158947	0.0330
D(INTR(-1))	-319.4895	229.0364	-1.394929	0.1657
ECT(-1)	-0.490094*	0.103088	-4.754137*	0.0000*
R-squared	0.435805			
Durbin-Watson	2.146208			

*Denotes significant in sign and Prob. Statistics.

Table 5 denotes that the speed of adjustment (ECT(-1)) is negative (-0.490), and significant at 5%, which satisfied both conditions of the model and supported the long-run association

between the real estate market in Kuwait and the selected variables. Therefore, if the system moves away from equilibrium, it will be corrected by 49% from departure each period. There is evidence of long-run causality between KREM and M2.

Breusch-Godfrey Serial Correlation L.M. Test

Table 6 shows that there is no evidence of serial correlation in the previous model. Since the obtained p-value is 0.1173, which is higher than 0.05, we cannot reject the null hypothesis. There is no evidence of a serial correlation in this model.

Table 6: Breusch-Godfrey Serial Correlation L.M. Test

F-statistic	1.889840	Prob. F(4,110)	0.1173
Obs*R-squared	7.651998	Prob. Chi-Square(4)	0.1052

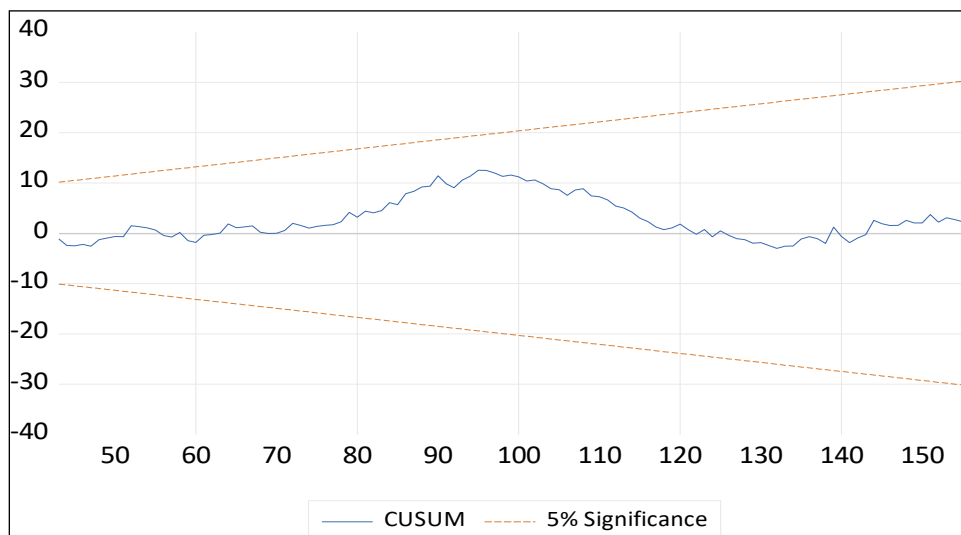
*Prob. Statistics. > 0.05.

In the next and final step, we test the long-run stability of the model.

Model Stability

The stability diagnostics of the model were tested by the Cumulative sum (CUSUM). Figure 5 shows that the CUSUM line (shown in blue) lies within the 5% significance boundary level, which provides evidence that the model is dynamically stable.

Figure 5: CUSUM Chart



CONCLUSION

This study shows that the ARDL model provides an appropriate approach for examining the effects of the monetary policy on the real estate market in Kuwait. The findings of the study showed that the money supply (M2) has a strong positive relationship with the real estate market in Kuwait in both the short- and long-runs. Also, the study did not find a significant relationship between the short-term interest rate and the real estate market in Kuwait.

The Central Bank of Kuwait should pay more attention to the real estate market in Kuwait by directing the local banks and urging them to reduce the percentage of credit granted to the real estate sector in Kuwait. The recommended percentage of credit facilities of each bank should not exceed 20% of the total credit facilities. Diversifying the credit portfolios of the local banks will avoid any risks that might arise due to a decline in the real estate prices.

The real estate market in Kuwait needs more research concerning the constructing index to measure the activity of this market and its volatility.

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