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DEMAND FOR HOUSING IN KUWAIT: A COINTEGRATION ANALYSIS

Key Words

Housing demand; Conintegration analysis; Kuwait economy; State welfare; Subsidies.

Abstract

Government-spending program on housing in Kuwait is the largest part of the subsidies program provided by the government. This paper uses cointegration analysis to study the demand for housing behavior in the Kuwaiti market. The aim of the paper is to estimate the demand for housing function and to determine the variables that are most useful in explaining the short- and the long-run behavior of the demand. The results of the study indicate that there exists a long-run relationship between demand for housing and the main variables that determine this demand in Kuwait. These include income (GDP), population growth and stock of houses. It was also seen that there are significant differences between the elasticities of demand with respect to different variables especially for income and price variables.

Introduction

Kuwait is a small oil producer, which depends heavily on the outside world for the supply of most of its needs of goods and services. The Kuwaiti government has been the single supplier of most of the public utilities and services to the country's population. Following is the list of broad groups of services provided by the public sector in Kuwait such as, education, health services, housing to eligible citizens, electricity, fresh water, telecommunication, fuel, public transport, infrastructure (road network), and sanitation services among other miscellaneous social services.

Apart from free education, health and sanitation services to both Kuwaitis and expatriates, under the existing policy, most other services are provided at highly subsidized prices to both Kuwaitis and expatriates. Furthermore, some of the above mentioned groups include sets of services. For

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instance, the health program includes hospital care, medical treatment, preventive services, etc. Similarly, telecommunication services include local telephone calls, international telephone calls, telegrams, telexes, facsimiles, etc.

It is the proclaimed aim of most countries to raise their peoples' standards of living. After food, the chief factor determining living standards is housing. In this connection, housing is the synthesis of social, economic, environmental, technological and political considerations applied to the human control of the environment. Housing constitutes the physical environment in which the family, the basic unit of society, develops. The improvement of housing therefore represents a visible expression of the rise in a society's general standard of living. The public housing system in Kuwait falls broadly into two main categories: First, Large projects: the government allocates the land and designs and constructs the dwellings, provides electricity and water, and distributes the dwellings to the families that apply. Second, individual dwellings: the government allocates plots of land and finances the construction of dwellings by a soft loan.

This is the largest and most expensive government-spending program. The government's involvement in the housing market goes back to 1954 when some 2000 units were built and distributed among the citizens. Since then, the government has distributed more than 35,000 units to eligible citizens. Originally, the government provided housing to limited-income families only, defined as those where the head of the household's income did not exceed KD 150 monthly. The income ceiling was changed in 1967, and left to the discretion of the policy-maker. In addition to building houses, in October 1960, the government established the Credit Bank with a capital of KD 7 million, to facilitate real estate, industrial and agricultural credit for the public. The bank was changed to a savings and credit bank in 1965. The Bank's capital was increased to KD 1 billion in 1982. Its major activities are defined by Law No. 40, amended in 1965 to provide construction loans to Kuwaiti citizens provided with plots of land, or those who want to expand or maintain existing houses.

The housing policy in Kuwait has been modified many times since the late 1950s. In 1974, the government established the National Housing Authority (NHA), followed by the Ministry of Housing in 1975. Those organizations, in addition to the Supreme Council for Housing, are entrusted with policy-making, planning and execution of the government-housing program. In 1978, middle-

income housing was introduced and the government dropped its policy of providing plots and loans, which was reinstated in 1981. In 1984, the distinction between limited and middle-income housing was dropped, on the recommendation of a ministerial committee that was formed. Current policy on housing options are as follows:

1. Plot and loan: For a nominal fee ranging from KD 1000 to KD 5000, the government provides a 400 m^2 plot plus a KD 54,000 interest-free loan to build the house, the amount of the loan was later increased to KD 70,000 interest free.
2. Government-Built Villas: These are built by the NHA, and have an area of 400 m^2.
3. Apartments: Units in multi-level buildings.
4. Plot Only.
5. Loan Only.

During the 1970's and 1980's the average annual cost of the government's housing program was estimated to be approximately KD 434 million, which is 8.5 percent of the GDP or one-third to one-fifth of the total development expenditure.

This paper uses cointegration analysis to study the demand for housing behavior in the Kuwaiti market. Housing demand is defined here as all types of buildings provided by NHA, in the sense that they are mainly villas either government built or built by individual Kuwaitis. The aim of the paper is to estimate the demand for housing function and to determine the variables that are most useful in explaining the short- and the long-run behavior of the demand. Empirical studies of housing conventionally view that equilibrium house price can be thought of as the natural outcome of equating demand for housing with its supply. Under this view, the long-run demand and supply for housing interact to determine the price of housing relative to the price of other goods and services. However, there are many reasons to expect that the housing market will deviate significantly from this long-run market-clearing price. For the last three decades, the government of Kuwait was the dominant supplier of land and housing and the market was almost totally controlled by government policy. In 1998, however, the private sector started to provide land for housing development projects and the government role began to diminish. Therefore, the supply side of the market is mainly constrained by government policies and the demand side is largely determined by population growth.

A number of studies have attempted to estimate the demand for housing, Wheeler and Chowdbury

(1993) and Knodsen (1994) among others. However very few studies attempted to estimate the demand for housing using cointegration analysis such as Kenny (1999), Salo (1994) and Miles (1994).

However, Kenny (1999) noticed that "the earlier studies were all conducted ahead of recent developments in applied econometrics which now permit researchers to investigate the long-run equilibrium relationship postulated by economic theory using cointegration analysis". The cointegration technique can serve as a form of misspecification test to guide variable selection in empirical macroeconomics (Perman, 1991). Moreover, if a unique cointegrating vector is found, an error correction representation provides information concerning the short-run adjustment process and an equation for short-run forecasting (Johansen and Juselius, 1990).

This paper is divided into five sections. Section two discusses the theoretical background that has been used in the study. Section three briefly reviews the literature and outlines the model and the data. The empirical results of the cointegration analysis are also given in section three; an error correction model is estimated and discussed in section four. Finally section five gives the conclusions of the study.

The Theoretical Background

Many economic variables exhibit a strong upward trend and therefore, display the characteristics of a random-walk time series process (Enders, 1995). The random-walk process is, however, a non-stationary process.

The usual statistical properties of the least squares methods hold only when the time-series variables involved are stationary, Griffiths, Hill and Judge (1993). Non-stationary time series must be detrended before the analysis is carried out. There are two common approaches: (a) estimation of time-trend regression and (b) differencing the series once or more (Gujarati, 1995).

A test developed by Dickey and Fuller (1979), called the unit root test, has been used to determine if a time series is difference stationary or trend stationary. The test is based on the following model:

$$Z_t = \alpha + \beta t + \rho Z_{t-1} + \mu_t$$

If $\rho = 1$ and $\beta = 0$ in this model, then $Z_t = \alpha + Z_{t-1} + \mu_t$ is difference stationary. However, if the autoregressive parameter $|\rho| \prec 1$, then Z_t is trend stationary.

If an economic time series y_t follows a random walk, its first difference forms a stationary series. In this case y_t is said to be an integrated process of order 1

and denoted by I (1). On the other hand if y_t is stationary, then it is integrated of order zero and denoted I (0). Granger and Newbold (1974), warned of regressing one I (1) variable on another I (1) variable and called these regressions "spurious", since the least squares estimator, if it turns out, breaks down in this case. If, on the other hand, two series y_t and x_t are I (1) then, in general, the linear combination

$$y_t - \alpha - \beta x_t = \mu_t$$

This equation is also I (1). However, it is possible that μ_t is stationary or I (0). In order for this to happen, the trends in y_t and x_t must cancel out when $\mu_t = y_t - \alpha - \beta x_t$ is formed. In this case, y_t and x_t are said to be cointegrated, and β is called the cointegrating parameter. Thus, a pair of series y_t and x_t are defined as cointegrated if they are each I (0) but there exists a linear combination of them, $\mu_t = y_t - \alpha - \beta x_t$, that is I (0) if y_t and x_t are cointegrated and the error μ_t is stationary with a mean $= 0$, then:

$$y_t = \alpha + \beta x_t + \mu_t$$

Since $\mu_t \sim (0, \sigma^2)$ is stationary, the variables y_t and x_t obey a stable, long-run relationship. We can estimate the last relationship, which is called the cointegrating regression, by the least squares method and test whether or not the residuals μ_t are stationary using the Augmented Dickey-Fuller Test.

An alternative, but superior method for testing cointegration between two or more variables is Johansen and Juselius (1990) cointegration technique. They suggest a maximum likelihood estimation procedure that provides two test statistics for determining the number of cointegrating vectors as well as estimates of all cointegrating vectors that could exist among a set of variables.

The Model and the Data

This paper follows closely the work done by Kenny (1999) where the long-run relationship between Kuwait demand for housing and the other variables were examined using the Johansen multivariate cointegration analysis. His study suggested that there exist a long-run relationship between demand for housing and the main variables such as population growth, stock of housing, house price variable, per capita income and interest rate. Moreover, there are significant differences between the long-run elasticities of demand with respect to different variables. Income behavior, in particular, appears to be the major determinant of Kuwait housing demand. The long-run price elasticity of demand for housing is, by contrast, a relatively minor determinant.

However, with respect to the case of Kuwait there are some minor differences from that of Kenny (1999). These differences are mainly caused by data deficiency. For the most part, Kuwaiti demand for housing (H) is assumed to depend on the four major variables of final demand, namely population growth of Kuwaitis (POP), government average cost of providing a house (P) provided by NHA, level of income measured by Gross Domestic Product (Y) and stock of housing (S) provided by the NHA based on a national survey conducted by the ministry of planning. Given these assumptions, the long-run Housing demand function is specified as follows:

$$H = f(POP, P, Y, S)$$

It should be mentioned here that:

- The present model does not include a variable that represents the price of a house as new houses are mainly provided by the government. The average cost of a house built by the government is used as a proxy for the price and calculated by NHA.
- The present model does not use interest rate as one of the explanatory variables. This is mainly because the government provides most of the loans on interest free basis and we are focused on housing provided by the government to the Kuwaiti nationals.
- Data on real estate in Kuwait are scarce and fragmented. The only sources for information regarding the housing market are the NHA annual report and the household survey conducted by the Ministry of Planning. Because Kuwait does not publish quarterly data on government provided houses, the present model uses annual data over the period 1970-2000. The data were extracted from several issues of the Annual Report of National Housing Authority (NHA) and the International Financial Statistics 2000 Yearbook and several issues of the Quarterly Statistical Bulletin of the Central Bank of Kuwait.

If a long-run relationship exists between demand and the specified variables, the variables included in the model must form a unique integrating vector. To identify this vector, the first step is to test for the order of integration of each variable included in the model. Following the approach adopted by Abbot et al, the augmented Dickey-Fuller (ADF) equations were estimated as follows:

$$\Delta x_t = \alpha_t + \beta_t x_{t-1} + \sum\nolimits_{i-1}^{n} \rho \Delta x_{t-1} + \delta \text{ time}_t + e_t$$

This model will be tested to establish the order of cointegration. The

unit root tests are given in Table 1. It is clear that all variables (H, POP, P, Y and S) are integrated of order one, i.e. $\sim$ I (1). The ADF statistics are greater

Table 1
Unit Root Tests on Various Variables

Variable H				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-1.8861 (-2.9665)	-1.9983 (-3.5731)
ADF(1)	1970-2000	30	-2.1463 (-2.9706)	-2.2229 (-3.5796)
Variable POP				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-1.3997 (-2.9665)	-1.4658 (-3.5731)
ADF(1)	1970-2000	30	-1.5074 (-2.9706)	-1.7038 (-3.5796)
Variable P				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-2.4404 (-2.9665)	-5.0870 (-3.5731)
ADF(1)	1970-2000	30	-1.3336 (-2.9706)	-3.4877 (-3.5796)
Variable Y				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-1.4800 (-2.9665)	-2.3001 (-3.5731)
ADF(1)	1970-2000	30	-1.2660 (-2.9706)	-1.0112 (-3.5796)
Variable S				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-1.2423 (-2.9665)	-2.0948 (-3.5731)
ADF(1)	1970-2000	30	-1.1328 (-2.9706)	-1.3500 (-3.5796)
Variable DH				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-4.9417 (-2.9706)	-4.8588 (-3.5796)
ADF(1)	1970-2000	30	-4.8343 (-2.9750)	-4.7720 (-3.5867)

Variable DPOP				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-4.4999 (-2.9706)	-4.4918 (-3.5796)
ADF(1)	1970-2000	30	-4.3532 (-2.9750)	-4.3740 (-3.5867)
Variable DP				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-8.9347 (-2.9706)	-8.7733 (-3.5796)
ADF(1)	1970-2000	30	-5.7340 (-2.9750)	-5.6287 (-3.5867)
Variable DY				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-8.3399 (-2.9706)	-8.3292 (-3.5796)
ADF(1)	1970-2000	30	-3.5230 (-2.9750)	-3.6167 (-3.5867)
Variable DS				
Statistic	**Sample**	**Observations**	**Without Trend**	**With Trend**
DF	1970-2000	30	-6.9559 (-2.9706)	-6.9217 (-3.5796)
ADF(1)	1970-2000	308	-5.7691 (-2.9750)	-5.8511 (-3.5867)

Note: 95% critical values in brackets.

than their critical values at the 5 percent level of significance. However, the results suggest that the first differences (variables DH, DPOP, DP, DY and DS) are stationary processes. The calculated ADF statistics are less than the critical values at the 5 percent level of significance.

The Johansen's maximum likelihood method was applied to test for co-integration between the demand for housing and the other variables in the model (Johansen and Juselius, 1990). The test specifies three cases: (i) Non-trended variables which assume that there are no deterministic trends in the variables and the underlying data generating process (DGP) does not contain a trend term either, (ii) Trended variables, no trend in DGP which assumes that all variables have deterministic trends, but there is no trend term in the DGP and (iii) Trended variables, trend in DGP which assumes that variables as well as DGP have a deterministic trend. The Johansen's procedure was ap-

plied to variables in logarithm forms. The results are given in Tables 2 and 3.

Table 2, gives the Long Run (LR) test based on trace of the stochastic matrix while Table 3 gives the cointegration LR test based on maximal Eigenvalue of the stochastic matrix. The results suggest that the null hypotheses of zero cointegrating vectors are strongly rejected at both the 5% and the 10% level of significance. The hypothesis of one or more cointegrating vectors can not, however, be rejected. According to the trace test there appears to exist, at most, one cointegrating vector in respect of vari-

Table 2
Johansen Maximum Likelihood Procedure (Trace Stochastic Matrix)

30 Observations from 1970 to 2000. Maximum lag in VAR = 2.
List of variables included in the cointegrating vector: LPOP, LH, LY, LS, LP.
List of eigenvalues in descending order: .75470, .57627, .35228, .18384, .073188

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	R > = 1	83.3662	68.5240	64.8430
r < = 1	R > = 2	44.0190	47.2100	43.9490
r < = 2	r < = 3	19.9765	29.6800	26.7850
r < = 3	r < = 4	7.8161	15.4100	13.3250
r < = 4	r = 5	2.1281	3.7620	2.6870

Table 3
Johansen Maximum Likelihood Procedure
(Maximal Eigen Value of the Stochastic Matrix)

30 Observations from 1970 to 2000. Maximum lag in VAR = 2.
List of variables included in the cointegrating vector: LPOP, LH, LY, LS, LP.
List of eigenvalues in descending order: .75470, .57627, .35228, .18384, .073188

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	39.3472	33.4610	30.9000
r < = 1	r = 2	24.0425	27.0670	24.7340
r < = 2	r = 3	12.1603	20.9670	18.5980
r < = 3	r = 4	5.6880	14.0690	13.3250
r < = 4	r = 5	2.1281	3.7620	2.6870

ables specified in the model. The maximal Eigenvalue test also confirms the existence of a unique cointegrating vector at both the 5% and 10% levels of significance.

Thus, according to the results of both tests, it appears that there is at most one statistically significant cointegrating vector in respect of variables specified in the model. This unique cointegrating vector is reported in Table 4, which also presents coefficient estimates normalized on demand for housing. Based on these results, the following equation represents the long-run relationship between variables identified in the model:

$$H = 0.44065POP + 0.51498S + 1.8793Y - 0.21564P$$

Table 4
Estimated Cointegrated Vectors in Johansen Estimation

30 Observations from 1970 to 2000. Maximum lag in VAR = 2, chose r = 1.	
LPOP	.55678 (-1.0000)
LH	.24535 (-.44065)
LY	.28673 (-.51498)
LS	-1.0464 (1.8793)
LP	-.12006 (.21564)

What is meant by the LR equilibrium is reading the steady state. Actually the size of the coefficients in the LR is the most important because it shows the response to changes in the variables by the demand. The only analogy here is to provide policy makers with ideas on how the demand for the type of housing they provide will be influenced by these independent variables and which they can use as a policy instrument.

The LR equilibrium relationship indicates that the major determinants of Kuwaiti demand for housing are the level of income, stock of housing, and population growth. These three variables seem to dominate the influence in the long-run. Moreover, there appears to exist significant differences between the partial elasticities of demand to housing with respect to population growth, stock of housing, income and government cost (price) with the estimated elasticities of 0.44065, 0.51498, 1.8793 and 0.21564, respectively. The latter observation was tested statistically by imposing three linear restrictions on the parameters of the cointegrating vector. The results are shown in Table 5. The equation below gives the restricted estimates:

$$H = 0.25631POP + 0.25631S + 0.25631Y - 0.25631P$$

Table 5
Restricted Cointegrated Vectors in Johansen Estimation

30 Observations from 1968 to 2000. Maximum lag in VAR = 2, chose r = 1.	
LPOP	1.7008 (-1.0000)
LH	-.43594 (.25631)
LY	-.43594 (.25631)
LS	-.43594 (.25631)
LP	-.43594 (.25631)

The likelihood ratio test statistic of the restricted equation has a Chi-Square (3) value of 24.9949, which is significant at the 1 percent level of significance. The restriction can thus be rejected.

An Error Correction Model

In order to examine the short-run behavior of the demand for housing in Kuwait, a dynamic error correction model was estimated. Since Kuwait does not publish quarterly data related to various determinants of housing demand, the model was tested using annual observations for 30 years (1970-2000). However, three observations were held for forecasting purposes. The lagged residual error derived from the cointegrating vector was incorporated into a highly general error correction model. The general dynamic model takes the form:

$$\Delta H_t = \alpha_0 \sum_{i=0}^{n} \alpha_{1i} \Delta POP + \sum_{i=0}^{n} \alpha_{2i} \Delta P_{t-i} + \sum_{i=0}^{n} \alpha_{3i} \Delta Y_{t-i} + \sum_{i=0}^{n} \alpha_{4i} \Delta S_{t-i}$$
$$+ \sum_{i=0}^{n} \alpha_{5i} \Delta POP_{t-i} + \sum_{i=0}^{n} \alpha_{6i} \Delta H_{t-i} + \alpha_6 ECM + \ error\ term$$

Where: H = Demand for Housing, POP = Population Growth, P = Government Cost (Price), Y = Gross Domestic Product and S = Stock of Houses.

The Cochrane-Orcutt AR method AR (3) gives the results shown in Table 6. The specific model is given by the following equation:

$$\Delta H_t = \underset{(-3.1895)}{-116.8} + \underset{(3.9165)}{.25691}\,\Delta POP_t - \underset{(3.1558)}{.34368}\,\Delta P_t + \underset{(4.2269)}{1.5296}\,\Delta Y_t$$
$$+ \underset{(.73943)}{.13763}\,\Delta S_t - \underset{(-2.3995)}{.16264}\,\Delta POP_{t-1} + \underset{(2.6362)}{1.1940}\,\Delta H_{t-1}$$
$$- \underset{(-3.0168)}{1.5148}\,\Delta H_{t-2} - \underset{(-.17995)}{.087214}\,\Delta H_{t-3} + \underset{(2.6572)}{.95315}\,\Delta H_{t-4}$$
$$- \underset{(-6.1683)}{1.8430}\,\Delta U_{-1} - \underset{(-3.2254)}{1.5716}\,\Delta U_{-2} - \underset{(-2.3960)}{.70533}\,\Delta U_{-3} + E$$

* The values of t-statistics in parentheses.

The regression results and the test statistics given in Table 6 suggest that the model is well-behaved (Engle and Granger, 1987). The plot of actual and fitted values suggests that the model tracks the actual data rather well. The variations in housing demand appear to be mainly determined by the variations in the specified variables, in particular, changes in income level. In order to investigate the forecasting performance of the model, three additional observations covering the period 1993-2000 were added to the

Table 6
Cochrane-Orcutt Method AR (3) Converged After 12 Iterations

Dependent variable is DH. 30 observations used for estimation from 1970 to 2000

Regressor	Coefficient	Standard Error	T-Ratio
CONT	-116.7687	36.6102	-3.1895
DPOP	.25691	.065597	3.9165
DP	-.34368	-.10890	3.1558
DY	1.5296	.36188	4.2269
DS	.13763	.18613	.73943
$DPOP_{t-1}$	-.16264	.067781	-2.3995
DH_{t-1}	1.1940	.45290	2.6362
DH_{t-2}	-.5148	.15213	-3.0168
DH_{t-3}	-.087214	.48466	-.17995
DS_{t-4}	.95315	.35871	2.6572
R-Squared .84420		F-Statistics F (12, 6) 2.7092	
R-Bar-Squared .53260		S.E. of Regression 220.9470	
Residual Sum of Squares 292905.4		Mean of Dependent Variable 86.6318	
S.D. of Dependent Variable 300.1800		Maximum of Log-Likelihood -118.5699	
DW-Statistic 2.3760			

Parameters of the Autoregressive Error Specification

$$U = \underset{(-6.1683)\ [.000]}{-1.8430 * U(-1) +} \quad \underset{(-3.2254)\ [.010]}{-1.5716 * U(-2) +} \quad \underset{(-2.3960)\ [.040]}{-.70533 * U(-3) + E}$$

T-ratio(s) based on asymptotic standard errors in brackets

Table 7
Static Forecasts

Based on fixed initial value(s) CO-AR(3) regression of DH on:
CONT, DPOP, DP, DY, DS, $DPOP_{t-1}$, DH_{t-1}, DH_{t-2}, DH_{t-3}.
30 observations used for estimation from 1970 to 2000.

Observation	Actual	Prediction	Error
1996	-5.4000	402.3736	-407.7736
1997	-135.6000	-2034.4	1898.8
2000	-228.2000	-14.5484	-213.6516
Summary Statistic for Static Forecaste			
Based on 3 observations from 1996 to 2000		Mean Pred. Errors 425.7940	
Mean Sum Abs. Pred. Errors 840.0775		Sum Squares Pred. Errors 1272465	
Root Mean Sumsq. Pred. Errors 1128.0			

original sample period. The forecast results are presented in Table 7. The forecast is poor because of the nature of data (annual rather than quarterly observations). Also, the years 1993-2000 represent the recovery period after Kuwait's liberation. The demand for imports during this period was extraordinarily high.

Conclusions

The results of the study indicate that there exists a long-run relationship between demand for housing in Kuwait and the main variables that determine this demand. So from a policy design point of view, the LR steady state suggests three variables that can be used as policy instruments.

Furthermore, the cointegration analysis suggests that the major long-run determinants of demand for housing in Kuwait are income (GDP), population growth and stock of houses. It also points out that there are significant differences between the elasticities of demand with respect to different variables especially for income and price variables.

For the most part, changes in cost of building a house incurred by the government appear to have small impact on the demand with an estimated long-run elasticity of 0.21564. Thus, policies designed to influence the cost of providing a public house in Kuwait are likely to have very little impact on the demand. This is mainly due to Kuwait's limited supply of land for

housing development projects and also due to heavy dependence on government subsidy in the housing sector as part of the welfare state.

These results have profound implications for the conduct of economic policy designed to improve housing policy performance in the long-run. In particular, new housing policies that directly influence relative prices would appear to have small impact on Kuwait's demand for housing as indicated by the small size of coefficent of the price variable on economic and statistical basis. In contrast, policies designed to influence the supply side of the market in Kuwait would seem most effective in the long-run.

On the other hand, in the long-run, policies that affect income and Kuwaiti population growth would seem to be most effective in controlling the demand for housing in Kuwait. Moreover, the Kuwaiti economy depends greatly on oil, and thus, changes in oil prices are reflected in public expenditure (the main economic drive) and consequently affecting public expenditure priorities. Finally, due to lack of quarterly data, it was not possible to test the Error Correction Model in the short-run. Nevertheless, the plot of actual and fitted data resulting from the application of this model to annual data, shows that the model tracks the data rather well.

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الملخص

الطلب على المنازل في دولة الكويت: تحليل تكاملي

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يمثل الإنفاق الحكومي على القطاع المنزلي أكبر نسبة من برنامج الإعانات الحكومية. وتعمل الدراسة على استخدام منهج التحليل التكاملي لدراسة سلوك الطلب على المنازل في السوق الكويتي. كما تهدف إلى تقدير دالة الطلب على المنازل، لتحديد أهم المتغيرات التي تبين تغيرات الطلب على المديين القصير والطويل، وقد بينت الدراسة وجود علاقة طويلة الأمد بين الطلب على المنازل وبين المتغيرات الرئيسة للطلب عليها في دولة الكويت، وكانت أهم هذه المتغيرات الدخل القومي (GDP)، وحجم نمو السكان وعدد المنازل القائمة. وتظهر كذلك وجود فروق كبيرة في مرونة الطلب بالعلاقة مع المتغيرات المختلفة، وبخاصة فيما يخص الدخل وتغيرات الأسعار.

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