HOUSE PRICE INFLATION AND AFFORDABILITY: CHALLENGES AND ISSUES

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ABSTRACT

The fundamental objectives of most macroeconomic policies is to sustain high economic growth with low inflation. However, economic theories reach a variety of conclusions pertaining to the responsiveness of output growth to inflation. Mundell (1963) cited that an increase in inflation or inflation expectation immediately reduces people's wealth. Fischer (1993) however, concluded that in line with past theories and studies, inflation impacted on growth by reducing investment and by reducing rate of productivity growth. Tsatsaronis and Zhu (2004) concluded that house prices generally depend on inflation, the yield curve, bank credit and also the difference in mortgage market. This paper intends to examine the inflation in housing prices between 1986 and 2009. It will do so by investigating whether this run-up in prices can be "explained" by increases in demand fundamentals such as population, income growth, movement in interest rates and several other economic variables pertaining to market demand and supply of housing in Malaysia. Concurrently, this paper also intends to analyse to what extent the inflation in house prices can affect the levels of housing affordability. Affordability encompasses both owning and renting and their correlation with price, where a high house price leads to higher rent, and vice versa. Households with higher levels of affordability will have the opportunity to enjoy higher levels of quality living. As housing plays a crucial part in daily life, it is pertinent to consider the social circumstances that are predominantly related to both the standard of living and the national economy.

Keywords: macroeconomic policy, inflation, sustainability, affordability

1. INTRODUCTION

Like most countries, industrialised and developing, one of the most fundamental objectives of macroeconomic policies is to sustain high economic growth together with low inflation. However, there has been considerable debate on the existence and nature of inflation and the growth relationship. Some suggest that macroeconomic stability specifically defined as low inflation is positively related to economic growth. During periods of high inflation, price variability increases and thus reduces the country's international competitiveness by making its exports relatively more expensive. This in turn impacts on the balance of payments. In this situation economic growth can be severely affected.

Economic theories reach a variety of conclusions about the responsiveness of output growth to inflation. Theories are useful as they account for some observed phenomenon. *Classical Growth Theory* illustrates the relationship between the two variables is implicitly suggested to be negative, as indicated by the reduction in a firm's profit levels through higher wage costs. Under the *Keynesian Theory*, there is a short-run trade-off between output and change in inflation, but no permanent trade-off between output and inflation. For inflation to be held steady at any level, output must equal the natural rate. Any level of inflation is sustainable, however, for inflation to fall there must be a period when output is below the natural rate. *Neo-classical Theory* as per Mundell's model (1963), states that an increase in inflation or inflation expectation immediately reduces people's wealth. This works on the premise that the rate of return on an individual's real money balance falls. To accumulate the desired wealth, people save more by switching to assets, increasing their price and thus driving down the real interest rate. Greater savings means greater capital accumulation and therefore faster output growth. A continuation of this theory by Cooley and Hansen (1989) extends the mechanism to consider capital accumulation as well. The key assumption is that the marginal product of capital is positively related to the quantity of labour. Thus, when the quantity of labour declines in response to a rise in inflation, the return to capital falls and the steady-state quantities of capital and output decline. Cooley and Hansen show that the level of output permanently falls as the inflation rate increases.

There have been several studies published that aimed to determine the relationship between economic growth and inflation. Faria and Carneiro (2001) estimated a short run time series model for changes in output against changes in inflation from January 1980 to July 1995. They found that the test statistics were significant where a negative impact of inflation on output exists. Bruno and Easterly (1995) confirmed the cost of inflation only becomes significant at relatively high rates of inflation. However, strong recovery of growth follows a successful reduction of high inflation. Inflation crises have a temporary effect on output but no permanent effect on output growth.

Barro (1995) concluded that an adverse influence of inflation on growth looks small, but long-term effects on standard of living can be substantial. For example, a shift in monetary policy that raises the long-term average inflation rate by 10% per year is estimated to lower the level of real GDP after 30 years by 4-7%. Fischer (1993) shows that in line with past theories and studies, inflation impacted on growth by reducing investment and by reducing the rate of productivity growth.

2. FACTORS AFFECTING HOUSE PRICE TREND

House prices are very sensitive to the economic climate. If there is a slight change in the monetary or fiscal policy of a nation, the housing price is among the first to respond either positively or negatively. This is mainly due to the huge amount of money involved in owning, investing or speculating in the housing market. During severe price movements, speculators will be affected greatest when either making profit or suffering severe losses. The owners-occupied housing, however, are least affected, except facing erosion in its intrinsic (user-cost) value.

2.1 House Prices and Economic Growth

There seems to be consensus among economists and policy makers that house prices have been playing an important role in fueling the growth of the economy. Many believe that the strong housing market, during the crash of the stock market in 2001, may have helped save the U.S economy from a more serious recession. However, the current crash in the housing market initiated from the subprime crisis has caused severe detrimental effects to the nation's economic growth. Indeed numerous economic theories have demonstrated that house price changes have real effects on the nation's economy.

Lustig and Nieuwerburg (2004) argue that house price increases, in most cases, help relax borrowing constraints and thus increase consumption. Thus changes in house prices can have powerful impacts on consumption through wealth effects. Benjamin, Chinloy & Jud (2004) show that the wealth effect of housing is not only statistically significant, but also probably larger than the wealth effect from the stock market. However, households planning to purchase their own house may tend to reduce their consumption in the wake of higher prices as they will have to save more for higher down-payments and repayments. Thus, the strength of the wealth effect is uncertain. As such, the wealth effect of house prices may partially contribute to the impact of house prices on economic growth and likely other mechanisms through which house prices directly affect economic growth. Firstly, increased house price may induce excess demand or strengthening of the housing market, which in turn can lead to more construction and more residential investment. Second, increases in house prices are often associated with increasing trading/business volume associated with more services provided in relation to the real estate sector. This includes real estate agencies, financial institutions, manufacturing of household goods and numerous other household consumption goods. Thirdly, decreases in house price can increase the default rate for mortgages, which in turn can disrupt the financial market, subsequently having a negative effect on economic growth.

2.2 House Price and Inflation

A steady rise in prices has been a major feature among developed and developing economies in the new millennium. While the economy has boomed with spectacular growth, the downside has been the accompanying inflation, which is raising concerns having reached such high levels for a sustained period of time. The subsequent rising cost of living is impacting the housing sector and making it less attractive for businesses to set up base.

In Malaysia there are three reasons for the inflation: Firstly, rapid growth of the major economic sectors, namely the manufacturing and services sectors. The rise in GDP, increasing government expenditures and the resulting increase in liquidity have contributed to inflation by fueling domestic demand; Secondly, some of the inflationary tendency is caused by rising import prices because of deteriorating value of the Malaysian Ringgit; Thirdly, the demand-supply imbalance – where demand has been rising due to a rising population – has not only increased public spending but also improved income. This in turn has propagated higher living standards. The supply side has been unable to keep pace with the rapid increases in demand, thus pushing house prices and rent upward. The supply-demand shortfall has triggered house price acceleration which leads to a higher cost of living.

Inflation is a corrosive disease that eats away the "purchasing power" of our money as time goes by. This leads to higher costs of living which has the potential to put downward pressure on living standards. Sustained inflation (shown by continuous price increases) makes every ringgit owned buys a smaller percentage of goods or services. Thus, the value of the ringgit, as observed in terms of purchasing power, declines. Under severe inflation, the more cash one carries, the more its purchasing power decreases. For example, if the inflation rate is 2% annually, theoretically a house selling RM100,000 will cost RM102,000 in a year. After inflation, our ringgit cannot purchase the same type of house it could beforehand.

In a demand-pull inflation, it is summarized as "too much money chasing too few goods". The market is said to be very liquid, spurred on by a low interest rate which makes borrowing costs very low. As interest rates drop, consumer spending and investment increases and this in turn stimulates economic growth. During a financial crisis, Bank Negara have the tendency to ease interest rates to provide liquidity to the financial market, thus preventing a severe market meltdown. By changing these interest rates, Bank Negara aims to achieve stable prices, maintaining market confidence and attaining continued growth.

There is certainly a cause and effect relationship between inflation and housing price. Under conditions of high liquidity from low interest rates, buying a house becomes more affordable. This ultimately increases housing demand, and supply then needs time to respond to the accelerating demand. Constraints on supply include land availability, zoning restrictions, bureaucracy, speculation and culture tend to portray a more pronounced effect of inflation. High house prices reduce affordability of home ownership, stimulating rent to increase. Under this phenomenon, large cities may be confronted with labor shortages due to high a cost of living, prompted by expensive housing.

2.3 House Price and Affordability

Homeownership remains an essential part for the majority of society and plays a critical role in strengthening families, communities and the entire nation. Among the developed nations, initiatives have focused on increasing homeownership rates to higher levels, which is popular among citizens and policy makers. According to the OECD Report (2005), Spain topped all Industrial Countries in terms of homeownership rate, where 82.9% of their population were homeowners. Spain were followed by Ireland 76.9%, Australia 70.0% and United States 68.3%. Germany were at the bottom of the list with 43.6% of their population as homeowners. Housing observers and economists have a ready explanation for the trends in the homeownership rate among nations, namely growth in jobs, expansion of the economy, low mortgage interest rates, aging of the baby boomer generation, demographic trends and renewed public policy initiatives to provide homeownership opportunities to households. Besides the age and demographic factors, affordability seems to be the main element for homeownership. Monetary and fiscal policies have prominent effects on homeownership, where strategies consists of four elements; to make homeownership more affordable; eliminate barriers to homeownership; and to enable families to manage the responsibilities and rewards of homeownership and make it easier to buy a home.

Unfortunately, the steep increase in the average house price prior to the global financial crisis (beginning 3Q: 2007) has made homeownership very challenging. Many aspiring homeowners realise that their target home has become unaffordable and some have had to postpone their endeavors of obtaining a suitable house. As such, would-be homeowners can be prevented from buying a home for a variety of reasons, such as excessive debts, insufficient cash for a down payment, poor credit history, a high monthly mortgage and low income.

The affordability of housing has gained prominent footing among developed and developing nations. Access to shelter for families is considered among the basic necessities for living whether as an owner-occupied or as a renter. Affordability encompasses to own or to rent, where owning and renting are highly correlated with price. High house prices lead to higher rent and vice versa. The most common housing affordability index is that used by the National Association of Realtors® (NAR) where a housing affordability index for an area brings together the price and the income elements that contribute to housing affordability. In addition to median income and median house price, the index requires the current mortgage rate, amount of down payment for the purchase and maximum percentage of the income to spend on housing.

A study conducted in the United States looking at home affordability data from 1984 until 2004 shows that the percentage of families who could afford to buy a home during that time period decreased from 60.4% to 58.4%. This indicates that affordability was reduced for families to qualify for a mortgage for a modestly priced home in the area where they lived using 30-year conventional fixed-rate financing with a 5% down payment. However, for those who have qualified for the mortgage, proportion of household income required to pay the interest on that mortgage has been trending upward. This reflects the increased size of mortgages for which significant increases in house prices and interest rates have increased in tandem with the price hike.

There are several alternatives where affordability could be improved. Moderation in the interest rate, an increase in household income, a decline in unemployment, reduced excessive debt of households, improved credit history, increased financial assets or savings of households, and assistance on down payment or reduced amount of down payment required. A study done in the United States on owners and renters after several of the above measures were taken shows that 71% of the owners could afford to purchase a different modestly priced house in the same area. It also found the number of renters decreased by almost 2% between 2002 and 2004.

3. REVIEW OF LITERATURE

There were several studies done on the relationships between house price, inflation, affordability and consequently to homeownership. These four elements are said to be correlated directly or indirectly as to price movement and price volatility. Affordability and homeownership are positively related where increase in affordability will lead to increases in homeownership. However, affordability is very much affected by the price levels which correspond to the rate of inflation.

Homeownership is often thought to be one of the essential ingredients of the conception of a secure and successful life. A study by The National Homeownership Strategy (1995) conclude that homeownership is a commitment to strengthening of families, promoting good citizenship and helps to stabilise neighborhoods and thus strengthen communities. Its attributes are significant in a variety of social and economic benefits both to individuals and the society as a whole. In a national survey among residents in a major city in Unites States, 86% felt owning is better off than renting and 74% believe that people should purchase a home as soon as they can afford it. Of the renters surveyed, 67% said they rent because they are unable to afford to own, whilst only 26% said it was a matter of choice.

Homes are considered to be the largest private investment for a person, and among the developed economies well over half of all households are homeowners. In Europe, housing accounts for 40% - 60% of total household wealth and an average household holds six times as much wealth in residential property than in shares.

Lacoviello's (2000) study regarding the responsiveness of house price to macro-economic forces found that adverse monetary shocks generally have a significant negative impact on real house prices and that the magnitude of the response in house price can be partly justified by the different housing and financial housing institutions in those countries. Tsatsaronis and Zhu (2004) concluded that house prices generally depend on inflation, the yield curve and bank credit, where national differences in the mortgage market matters.

A study by the Royal Bank of Canada (RBC) in July 2009 revealed that aggressive policy action to shore up confidence in financial markets, jump starting the economy are behind much of the improvement in affordability for some major cities in Canada. The housing affordability measure is based on gross household income where an affordability measure of 50% means that home ownership cost, including mortgage payments, utilities, and property

taxes, takes up 50% of a typical household's pre-tax income. Normally, 25% to 30% of a borrower's gross annual income should go to "mortgage payment" – principal, interest, property taxes and maintenance fees. Bank's rate cutting campaign and the Fed's active support of the mortgage securities market brought a meaningful reduction to the cost of homeownerships and the decline was accelerated by the softening of house prices. Declining mortgage rates, sinking home prices and gains in family income in late 2008 and early 2009 had helped towards restoring homeownership affordability in Alberta. Significant improvement in affordability in Vancouver since mid-2008 seemed to revive their housing market and put the construction industry is back in business with indications of an upswing in the sales of existing homes and demand for new homes. Looking ahead, if this trend persists, it could help restore a healthy balance between supply and demand which should provide support for prices going forward and attain stability.

Another most commonly quoted housing affordability index is that used by the National Association of Realtors (NAR), Florida, United States. It measures the ability of the median income household in an area to purchase a median priced house in that area. Other than the median income and median house price, the index takes into account current mortgage rates, percentage of down payment and maximum percentage of household income that can be spent on housing. An index of 100 indicates the median-income household in the area has sufficient income to purchase a single-family home selling at the median price. The study, conducted in Florida from 2003 until 2006, found that the number of counties with an index value of below 100 totaled 49 in 2006, an increase from 15 in 2003. The numbers show a decline in housing affordability in Florida between 2003 and 2006. The remaining 18 counties had indexes above 100. The more affordable counties are generally rural counties located in the remote area of the state. It should be noted that counties with the highest affordability indexes had fewer than 300 transactions in 2006. The small number of transactions is not surprising in small counties and may be indicative of the level of competition in the market and therefore the lack of pressure on housing prices.

4. METHODOLGY AND RESULTS

We applied the autoregressive distributed lag (ARDL) bounds testing suggested by Pesaran, Shin and Smith (2001) to analyse the effect of macroeconomic fundamental factors on housing prices. ARDL method of cointegration analysis has some advantages against the single equation cointegration analysis. First, ARDL method does not generally require knowledge of the order of integration of variables. Second, ARDL method can distinguish dependent and explanatory variables. Third, ARDL method also estimates the long- and short-run components of the model simultaneously.

ARDL procedures involves two-step estimations. First, we investigate the existence of a long-run relationship predicted by the theory among the variables under study. Secondly, we estimate the long- and short-run parameters of Equation 1 to determine whether a long-run relationship was established in the first step.

$$\text{Log } P_t = \sum \alpha_j \text{ Log } P_{t-j} + \beta' \text{ Log } X_i \qquad (1)$$

The dependent variable is the house prices, and X are the macroeconomic fundamental factors; population, income, interest rate, inflation rate, rent and unemployment rate.

Estimates of Equation 1 show that the *F-statistic* denoted by $F_{PRI}(PRI|X)$ where X represent (POP, INC, INT, CPI and REN) were used to examine the existence of a 'stable and long run relationship'. The null hypothesis of the 'non existence of the long-run relationship', i.e. the coefficient of all level variable are jointly zero and can be written as: $H_0 : \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = \phi_6 = 0$ against the alternative hypothesis that the existence of long run stable relationship $H_1 : \phi_1 \neq \phi_2 \neq \phi_3 \neq \phi_4 \neq \phi_5 \neq \phi_6 \neq 0$.

The calculated F-statistic, $F_{PRI}(PRI|POP, INC, INT, CPI, REN) = 11.505$, is higher than the upper bound critical value at a 5% significant level[1]. Therefore, we *reject the null* of no long-run relationship. Similarly, we have constructed another two housing price models where (INC, CPI and REN) and (POP, INT and UMP) are used as independent variables. The corresponding estimated *F*-statistic are as follows: $F_{PRI}(PRI|INC, CPI, REN) = 3.541$ and $F_{PRI}(PRI|POP, INT, UMP) = 3.952$. These *F-statistics* are higher than the lower critical value 2.86 but lower than upper critical value 4.01 at the 5% significance level. *No solid conclusion* can be made and we need to further examine in the error correction model.

Having found a long run relationship, we move to the second-step by estimating Equation 1 using the following ARDL(*a,b,c,d,e,f*) model. Using the Schwartz Bayesian Criterion (SBC) the following static long-run model of the corresponding *ARDL(2, 1, 0, 0, 2, 2)* were estimated and the results are shown in the Table 1. The result shows that *inflation (CPI) has a positive significant effect* on the long run housing price. Other variables are statistically not as important. The models are statistically satisfactory since the diagnostic test statistics are insignificant except for *serial autocorrelation problem* (Table 1: ρ-value =0.034).

Table 1: Long Run Estimates of House Price Full Model

Lag	Coefficient					Diagnostic Test			
	POP	*INC*	*INT*	*CPI*	*REN*	A: LM	B: RESET	C:JB	D: ARCH
(2,1,0,0,2,2)	-0.04	0.88	-18413.1	2258.1*	104.9	6.88*	0.99	0.07	4.27
	(1.49)	(0.25)	(-1.62)	(1.80)	(0.58)	[0.03]	[0.35]	[0.96]	[0.53]

Note: Figures reported in bracket ( ) and [ ] are t-ratio and p-value, respectively. The test statistics are: LM=Lagrange multiplier test for the autocorrelation; RESET=Ramsey's test for functional form misspecification, JB=Jarque-Bera test for normality of residuals; and ARCH=Engle's autoregressive conditional heteroscedasticity test. * and ** indicate 5% and 1% level of significant respectively.

[1] The critical value for lower bounds for 5% and 1% are 2.45 and 3.15 respectively, while the critical value for upper bounds for 5% and 1% are 3.61 and 4.43 respectively. The critical values are calculated by Pesaran, Shin and Smith (2001) pp300.

The analysis of short-run dynamic using error correction (EC) model can be further explored by the following equation.

$$\Delta PRI_t = \Delta\hat{\alpha}_0 - \sum_{j=2}^{p}\hat{\alpha}_j \Delta PRI_{t-j} + \sum_{i=1}^{k}\hat{\beta}_{i0}\Delta X_{it} - \sum_{i=1}^{k}\sum_{j=2}^{q}\hat{\beta}_{i,t-j}\Delta X_{i,t-j} - \alpha(1,p)ECM_{t-1} + u$$

where $ECM_t = PRI_t - \hat{\alpha} - \sum_{i=1}^{k}\hat{\beta}_i x_{it}$

The results of the EC representation of *ARDL* model are shown in the following Table 2.

Table 2: Short Run Estimates Full Model

	PRI	POP	INC	INT	CPI	REN
LAG(BIC)	(2,1,2,0,0,2)	(1,2,2,1,2,2)	(2,0,2,2,1,0)	(2,1,1,2,2,2)	(1,0,1,0,0,2)	(1,0,0,0,0,0)
PRI	-	-5.65	0.53*	0.55	0.87	-0.38
		(-1.21)	(3.07)	(0.17)	(1.61)	(-0.43)
PRI-1	-	9.95	-		-	-
		(1.81)				
POP	-0.01*	-	0.001	-0.59	0.16	0.29
	(-2.29)		(1.74)	(0.43)	(0.87)	(0.92)
INC	7.87*	27.81	-0.60*	0.37	-0.35	0.557
	(2.87)	(0.80)	(-2.63)	(1.06)	(-1.06)	(0.09)
INC-1	7.49*	-	-	-	-	-
	(2.68)					
INT	-1325.9	-2025.7	183.9	-	1.03*	11.32
	(-0.80)	(-0.07)	(1.20)		(2.27)	(1.78)
INT-1	-	-	-147.8	-	-	-
			(-1.27)			
CPI	964.0**	12542.7*	-45.4	0.13	-	-0.18
	(4.17)	(2.62)	(-1.75)	(1.22)		(-0.15)
CPI-1	-	-	-	0.17	-	-
				(1.93)		
REN	84.83	868.1	-7.38	0.01	0.001	-
	(1.72)	(0.85)	(-1.96)	(1.86)	(0.103)	
REN-1	175.38*	-	-11.34*	-	0.03*	-
	(3.11)		(-2.58)		(2.46)	
ECM_{t-1}	-0.42*	-0.31	0.10	-1.01**	0.003	-0.29
	(-2.28)	(-1.50)	(0.91)	(-3.799)	(0.051)	(-1.20)

Note: Figures reported in bracket ( ) are t-ratio. Δ means the first difference and ECM_{t-1} is the error correction term. * and ** indicate 5% and 1% level of significant respectively.

The first column of Table 2 shows that current income, income lag 1 year, inflation and rent lag 1 year are significant in affecting house prices. The error correction (EC) model shows that the EC term (ECM_{t-1}) is negative and statistically significant on the housing price model (PRI). The result indicates that there is an adjustment mechanism which forces the housing

prices towards its equilibrium, defined by the long run relationship at a relatively slower pace. However, the EC model does not support the inference of a unique cointegrated and stable long run housing price and macroeconomics fundamentals relationship. The EC for *interest rate (INT) is statistically significant* which show that there is an adjustment from macroeconomics fundamentals including house price to the interest rate.

Other models which include parts of the full models are reported as follows in Tables 3, 4, 5 and 6, in order to act as a comparison to the full model. The results show *that income (INC), inflation (CPI), population (POP), unemployment (UMP) and interest rate (INT) all significant*ly affect housing price.

Table 3: Long Run Estimates of House Price (INC CPI REN)

Lag	Coefficient			Diagnostic Test			
	INC	*CPI*	*REN*	A: LM	B: RESET	C: JB	D: ARCH
BIC(1,0,0,0)	2.51**	891.78**	-79.30	0.134	1.60	0.847	0.009
	(3.21)	(4.67)	(-0.94)	[0.719]	[0.224]	[0.654]	[0.924]

Note: Figures reported in bracket ( ) and [ ] are t-ratio and p-value, respectively. The test statistics are: LM=Lagrange multiplier test for the autocorrelation; RESET=Ramsey's test for functional form misspecification, JB=Jarque-Bera test for normality of residuals; and ARCH=Engle's autoregressive conditional heteroscedasticity test. * and ** indicate 5% and 1% level of significant respectively.

Table 4: Short Run Estimates (INC CPI REN)

	PRI	INC	CPI	REN
	(2,0,0,1)	(2,0,0,1)	(1,1,0,1)	(0,0,1,0)
PRI	-	0.033*	0.28	-0.20
		(2.43)	(0.05)	(-0.22)
INC	1.59	-	0.99	-0.02*
	(2.68)*		(1.07)	(-2.21)
CPI	565.8**	16.68	-	2.29**
	(0.003)	(1.22)		(3.46)
REN	-50.31	-4.29	0.02	-
	(-1.00)	(-1.15)	(1.37)	
ECM_{t-1}	-0.63**	0.13*	0.083	-0.49**
	(0.003)	(2.7)	(1.36)	(-2.64)

Note: Figures reported in bracket ( ) are t-ratio. Δ means the first difference and ECM_{t-1} is the error correction term. * and ** indicate 5% and 1% level of significant respectively.

Table 5: Long Run Estimates of house price (POP INT UMP)

Lag	Coefficient			Diagnostic Test			
	POP	*UMP*	*INT*	A: LM	B: RESET	C: JB	D: ARCH
BIC(0,0,0,0)	0.02**	3635.1*	4123.9**	0.019	1.80	5.77	1.29
	(24.13)	(2.83)	(5.04)	[0.89]	[0.19]	[0.056]	[0.26]

Note: Figures reported in bracket ( ) and [ ] are t-ratio and p-value, respectively. The test statistics are: LM=Lagrange multiplier test for the autocorrelation; RESET=Ramsey's test for functional form misspecification, JB=Jarque-Bera test for normality of residuals; and ARCH=Engle's autoregressive conditional heteroscedasticity test. * and ** indicate 5% and 1% level of significant respectively.

Table 6: Short Run Estimates (POP INT UMP)

	PRI	POP	INT	UMP
	(1, 0, 0, 0)	(1,1,0,0)	(2,1,0,0)	(1,1,0,0)
PRI	-	3.16	0.61*	0.10
		(0.76)	(2.40)	(0.09)
POP	0.016	-	0.144	0.68
	(2.02)		(0.90)	(0.23)
INT	2945.7	-40291.4	-	-0.13
	(1.90)	(-1.48)		(-1.47)
UMP	2158.4	-78184.8*	0.11	-
	(1.03)	(-2.58)	(0.55)	
ECM_{t-1}	-0.68	-0.344*	-0.49**	-0.18*
	(-1.92)	(-2.73)	(-3.16)	(-2.82)

Note: Figures reported in bracket ( ) are t-ratio. Δ means the first difference and ECM_{t-1} is the error correction term. * and ** indicate 5% and 1% level of significant respectively.

5. HOUSING AFFORDABILITY

The affordability of housing is an important issue among the majority of the population. Households are concerned because affordability affects their ability to become or remain a homeowner, as well as the size and amenities they are able to purchase and maintain for the home. Real estate professionals and other industry participants also are concerned because the number of households able to afford the purchase of a home is an important determinant of residential sales activity in their local markets. Housing affordability also has become an important public policy issue, as home ownership is viewed as being an important goal for both individual and societal reasons. Household income, housing prices and mortgage rates are the primary determinants of housing affordability. For a household considering homeownership, an additional factor is the rate of appreciation in house prices.

Thus to increase homeownership among households is to improve affordability. The term "affordability" refers to various measures of homeownership costs relative to income. Other than house price, mortgage interest rate and other components of the cash costs of owning a house are considered in the calculation of housing affordability.

Whether house prices are high or low and rising rapidly or slowly can only be properly assessed by comparing price developments to other relevant variables, particularly household income, the common measure of purchasing power. High growth in house prices relative to income for an extended period would cause affordability problems.

Based on criteria set by mortgage lenders and agreed by most policy makers, the U.S Department of Housing and Urban Development (HUD) concludes that no more than 30% of household income should be allocated to housing principal, interest, taxes and insurance (PITI). These are considered as housing cost and out-of-pocket costs both to owners and renters. Conventional mortgage lenders typically allow 28% of household income for PITI in calculating loan amounts. Typically, pricing calculations that define "*workforce housing*" use 30% of household income as the maximum threshold of affordability.

The essence of an affordability index is a comparison between the cost of housing and the income of a household. A simple way to represent affordability is to divide house prices by annual income. Naturally this format does not adjust for taxes, capital gains or inflation. This index implicitly assume that owners do not make decisions based on all available information. The main reason for keeping it simple is because transparency promotes credibility.

For the purpose of this paper, we will utilise the most common housing affordability index used by the USA's National Association of Realtors (NAR). As mentioned earlier, the NAR index measures the ability of the median income household in an area to purchase a median income house in that area. The index requires the current mortgage rate and assumption about the down payment required for the purchase and the maximum percentage of household income that can be spent on housing. Qualifying income is defined as the income needed to qualify for a mortgage to finance an existing median-price home. An index value of 100 indicates that the family making that income can afford to buy a home, a value less than 100 indicates less affordability, and a value greater than 100 indicates better and higher affordability.

As evidence of Table 7, at the national level, income per capita has improved tremendously. This has increased the purchasing power of Malaysian people over the past 23 years. Concurrently, since 1999, monetary policy has been very accommodating as interest rates have been on a downward trend, where Base Lending Rate (BLR) has been reduced from 6.8 (1999) to 5.5 (2009), which increased liquidity in the local market. Subsequently, demand in the housing market was stimulated. House prices continued its upward trend, after a severe setback following the Asian Financial Crisis in 1997/98, establishing a new high approaching the end of 2009. With inflation lessening and interest rate stabilising, home ownership begin to accelerate due to low and encouraging monthly mortgages imposed by local financial institutions.

Table 7: Housing Affordability For Malaysia 1986 - 2009

Year	Income (RM) (per capita)	Monthly Mortgage (RM)	Mortgage % of Income	Qualifying Income (RM)	Affordability Index
1986	4341	985	22.7	47,280	110.2
1988	5364	666	12.4	31,968	201.1
1990	6578	750	11.5	36,000	219.3
1992	7913	912	11.5	43,776	217.0
1994	9719	940	9.7	45,120	258.5
1996	11986	1190	10.0	57,120	251.8
1998	12770	1400	11.0	67,200	228.0
2000	14608	1100	7.5	52,800	332.0
2002	14760	1015	6.9	48,720	363.5
2004	17576	895	5.1	42,960	491.0
2006	20841	1120	5.4	53,760	465.2
2008	22560	1110	5.0	53,280	508.1
2009	23000	1120	4.9	53,760	513.4

Source: Economic Reports and calculations based on secondary data.

Table 7 also depicts the percentage of income spent on housing shows marked improvement from 22.7% (1986) to as low as 4.9% (2009). This is mainly due to low interest rates and increases in household income between the years 1986 through to 2009. Qualifying income to purchase homes has been fairly stable, with a slight increment beginning from 2000 onward. Nevertheless, it is still considered low and very affordable.

Under such a favourable and growing economic climate, housing affordability has shown outstanding improvement from the index level of 110.2 (1986) to 513.4 (2009). However, this data represent the national level, and may vary to some extent at the state level. We expect it to show some deviations compared to the national level, but would most likely trend upwards on a slower and smaller scale.

6. CONCLUSION

Despite the generally favourable picture of homeownership affordability at the national level, it is important to recognise that some areas and some income groups are struggling with high house prices and low income. These are evidenced from the increasing number of squatters in major cities of Malaysia which constitute the low to moderate income working families (owners and renters) who spent more than half of their income on housing or lived in physically deficient units (critical housing needs). However, the government are making every effort to supply affordable housing to these critical masses.

Econometrics results obtained from the ARDL estimation were consistent with the results obtained from the non-econometrics procedure, as reported in Table 7. Both clearly demonstrate that interest rate, income level and inflation simultaneously affect house price and the affordability of households to own a house. Lower interest rates and an increase in income create house demand, and moderate inflation cause housing prices to increase to some extent.

Increased house prices makes housing more expensive for potential owners and less expensive for existing owners. The appreciation in house value increases the equity and wealth of the homeowner, so that a forward-looking, rational owner would recognise the capital gain as a reduction in the cost of housing. Our tax law permits tax-free capital gains for any residential property that has been owned more than 5 years. Additionally, property taxes and mortgage interest rates deductible from current income further encourage homeownership.

In conclusion, house price trends have continued strong since 1986, only suffering a setback during the 1997/98 Asian Financial crisis. All major cities recovered, with the highest increments among the west coast states of Kuala Lumpur, Selangor, Penang and Johor. In these states, house prices have been gradually increasing relative to income. Interest rates have been very accommodating since 1999 and lead to improvement in homeownerships among the urban Malaysian working class. The low rate keeps monthly payments affordable for most whilst also helping to lift house prices. This trend in ownership is also affected by an increase in population of those aged between 35 to 54 years, the demographic considered to be the most active housing market participants. Efforts of lenders to serve low-income, minority households by reducing the amount of down payment and other related costs upon signing a purchase agreement have also helped to enhance homeownership. The tendency of strong house price growth poses the largest challenge to prospective homebuyers in the future.

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