THE COMPUTATION OF A HOUSING AFFORDABILITY INDEX FOR MALTA

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Abstract. This paper applies the Housing Affordability Index (HAI) to the Maltese real estate market. The HAI is an indicator which assesses affordability for various income groups and household categories. The computation takes into consideration factors such as house prices, income levels, mortgage rates and other lending standards by banks including the coverage ratio and down-payment requirement. Escalation in house prices coupled with sluggish income growth suggests that affordability is becoming a problem in Malta.

Introduction

In recent years, the housing affordability problem in the Maltese Islands has become more pronounced. Property prices escalated, potentially reaching an unsustainable level from a socio–economic perspective. This inevitably results in first-time buyers gradually feeling pushed out of the housing market, with social housing assistance sometimes being the only safety valve available for low-income households. The rental market in Malta is still undeveloped and restricted to particular segments of society.

The measure of housing affordability to be used in this paper is the “Housing Affordability Index” (HAI) defined as the ratio of median household income to the required income to qualify for a loan on a median priced existing single-family home. Qualifying income is assumed to be dependent on housing prices, prevailing mortgage interest rates, mortgage terms and lending requirements. The aim of the index is to measure the degree to which a typical middle-income family can afford the mortgage payments on the median-priced home. However, in an attempt to realise conclusive results without excluding any segments of society, the HAI will be adjusted to

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§ The views contained in this article are Mr Darmanin’s personal views, and are not expressed on behalf of the Central Bank of Malta.
include all the income brackets together with adjustments to house prices. Moreover, the HAI will also be computed to reflect bank lending practices such as coverage ratio and down payment requirement.

This paper is organised as follows. Following the introduction, some key statistics on developments in house prices and incomes in Malta in recent years. It explains divergent views of affordability by analysing the various measures of calculation and interpretation of the concept.

After considering the pros and cons of the various approaches, the method applied in this study will be described and evaluated giving practical reasons why it was chosen while comparing it to the other methods. The section that follows gives a description of the HAI and the manner in which it is constructed. It also includes a detailed description of the assumptions underlying various scenarios and the rationale behind them.

The actual results obtained for the HAI for the various scenarios are discussed, together with an analysis of results and a critical interpretation of the outcomes.

**Recent Developments in House Prices and Incomes**

Housing affordability in the Maltese market can be gauged by correlating the Housing Price Index and disposable income. Using available data available from the Central Bank of Malta, one can conclude that median house prices were in 2007 were eight times greater than the average per capita income compared to about six times in the year 2000.

Figure 1 exhibits a time trend development of the divergence between household disposable income and the house price index since 2000. The deterioration in housing affordability is in part due to the sharp increase in house prices and relatively constant level of disposable income throughout the period.

There are a number of factors that in all likelihood have influenced house price developments in the Maltese islands. High housing costs are viewed to originate, first and foremost from the fundamental characteristics of the housing market. These include demand side considerations, demographic
developments and consumer tastes and habits. However, this trend is not expected to be maintained in the coming years since it is estimated that in between ten and fifteen years time the Maltese population will start to fall. Also, changes in social conditions such as the increase in the number of single parents may lead to a greater demand for property. From the supply side, the availability of land and production practices in the construction industry are the major considerations.

Another factor is the speculative bubble which occurs when expectations of higher future prices boost demand, thereby actually continuing to rise prices and fuelling a circle of self-fulfilling expectations. In this sense, the investment perception of housing predominates over the consumption aspect. Property is often considered as an investment opportunity and this adds an element of speculation to the price structure (Cordina 2000). During the last decade, property prices in Malta increased dramatically and this instigated households and developers to regard real estate as an investment opportunity for future capital gains as well as a source of income from rent.

Government measures aimed at subsidising the cost of housing often help to increase prices in the private housing market. Government policy may impinge on house prices through other channels such as the rent law.
According to the Malta National Statistics Office, the trend from 1967 onwards has been towards home ownership and by 2004, 77% of households owned their dwellings.

**Affordability Measures: Approaches, Methods and Interpretations**

In its most generic form, housing affordability is interpreted as the relationship between household income and housing expenditure. Affordability is commonly measured in terms of the ratio of housing costs to income (also known as rent burden or owner cost burden). Over time, thresholds of the housing cost-to-income ratio have been set at 25 percent, 30 percent, 40 percent, and 50 percent. Generally, a housing cost burden of up to 30 percent of income is defined as affordable and this idea also underlies the common practice by mortgage lenders across many countries of advising borrowers not to let mortgage payments exceed 30 percent of their gross monthly income. Housing cost burden measures of affordability, however, do not take into account whether the remaining income is adequate to meet non-housing needs. A high cost-to-income ratio might simply indicate a household’s preference for a large quantity or high quality of housing. Therefore, a high cost burden alone should not necessarily be of concern to policy makers.

Thalmann (1999) proposes a measure that combines a rent-to-income ratio, a quality-based measure, and a measure of housing consumption as developed by Lerman and Reeder (1987). The ratio of the average rent to income for a representative bundle of housing and households are used together with hedonic price estimates for various housing attributes. This measure is then used to develop a housing consumption metric that can distinguish between apparent affordability problems (where the household consumes more than the standard housing bundle) and actual affordability problems (where the household either pays above-average rents for the housing it consumes or has too little income to afford the standard bundle).

Although the measure proposed by Lerman and Reeder (1987) and Thalmann (1999) improve on the standard percentage-of-income affordability measure, they do not consider the actual financial constraints faced by low-income households, many of whom cannot afford to spend 25 or 30 percent of their income on housing. The notion that a household can adequately meet its
non-shelter needs if it has at least a certain percentage of income left after paying for housing implies either that the lower the income of a household, the lower the amount it requires for non-shelter needs, with no minimum whatsoever, or that the normative ratio must diminish with income, all the way to zero below certain incomes.

In an attempt to solve these logical flaws, Stone (1990, 1993) developed the notion of shelter poverty as a measure of the housing affordability problem. He pointed out that the conventional affordability measure understates the problem for some families. To address this issue, he defined shelter poverty as occurring when housing costs are so high that households cannot afford non-housing necessities. Stone describes his model as follows: “This residual income approach does not yield a simple rule of thumb ratio. Instead, it leads to a sliding scale, which recognises that true affordability is sensitive to differences in household composition and income.”

In the model described by Stone (1990, 1993), the maximum amount available to spend on housing is the disposable income of the household minus the cost of a minimum adequate level of non-housing consumption. If a household pays more than the maximum, it is shelter poor. Noticeably, the definition of the minimum adequate basket of non-housing goods is subjective, and Stone admits this drawback in his conclusion. He also admits that this approach is more complex than simply adopting a fixed percentage of income and, as a consequence, it is neither well known nor widely understood, let alone accepted.

Clearly, there is extensive literature regarding affordability measurement and interpretation. In the Maltese context, any measurement based on rent could not even be considered because the rental market is very underdeveloped and data in this regard is not adequate. The conventional ratio concept, although simple to understand and apply, may give a misleading picture due to its logical flaws as noted earlier. The residual income approach as proposed by Stone seems to overcome the weaknesses of the ratio concept but is much more complex and above all it requires a subjective decision including the use of a conservative, socially defined minimum standard of adequacy for non-housing items. The HAI is deemed to be the most applicable method for the Maltese context. It is the least subjective, simple to calculate, and the required data is obtainable.
The HAI Methodology

The “Housing Affordability Index” (HAI) is defined as the ratio of median household income to the required income to qualify for a loan on a median priced existing single-family home. Qualifying income is assumed to be dependent on house prices, prevailing mortgage interest rates, mortgage terms and lending requirements. The aim of the index designation is to measure the degree to which a typical middle-income family can afford the mortgage payments on the median-priced home.

The HAI calculates a monthly mortgage payment on a typical home, by using the average mortgage interest rate in the country and the median sale price of an existing home. This monthly mortgage payment is then divided by the median family’s monthly income. The family income ratio to mortgage payment is inversely related to the affordability index, such that when the ratio is high, housing is relatively affordable. The equation for the HAI is the following:

\[
\text{HAI} = \frac{\text{Median Household Income (MHI)}}{\text{Required income to qualify for a mortgage (RI)}}
\]

where \( RI = \frac{\text{The Required monthly mortgage payment} \times 12}{\text{Qualifying Ratio}} \)

The Qualifying Ratio (QR) is the lender stipulated maximum ratio of monthly mortgage payment to gross monthly income allowed for a borrower to qualify for a mortgage loan.

The underlying definitions of the variables as well as the data sources used in the model are the following.

*Median Household Income*: Household income is defined as gross income from all sources, including wages, salaries, incomes from businesses, investment income, and, where information is available, income in kind. However, due to lack of precise data, the gross income, which is based on annualised data, will be divided first by the labour force and then by the number of families/households. This was deemed as the closest proxy to median household income because it captures both family income and individual income.
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Median House Prices. The median-priced house is that house which has 50% of the houses priced below it, and 50% of the houses priced above it. Housing value is defined as the price at which a house would be sold if placed on the market for a reasonable length of time by a seller who is not under pressure to sell.

Monthly Mortgage Rate. The HAI uses the “Effective mortgage rate”. Effective rates are higher than contract rates because they include fees and charges (points) amortised over the typical life of a mortgage. The following are the mortgage rates applied: 2000 – 6%; 2001 – 5.5%; 2002 – 5%; 2003 – 4.25%; 2004 – 4.25%; 2005 – 4.5%.¹

Down Payment. In the most representative scenario, the down payment rate was assumed to be 30% because it represents the situation in the Maltese banking industry. This gives a loan amount of 70% of the house price.

Maturity and Coverage Ratio. A maturity of forty years will be assumed even though loan repayments vary markedly. The HAI will also assume a 25 percent coverage ratio, which is the proportion of minimum qualifying family income allocated to the monthly payment. This is a standard practice which domestic banks adopt. However, banks may, under certain conditions, accept a higher coverage ratio without exceeding a maximum of 30%. The HAI under such ratio increased. This explains how banks’ easing lending standards may improve the index or worsen it when standards are more stringent.

The following formula will be utilised to calculate the monthly repayments, which include both interest and principal.

\[
\text{Monthly Repayments} = \frac{AR(1 + \frac{R}{12})T}{12[(1+\frac{R}{12})T-1]}
\]

where
- A = Amount of loan
- R = Interest rate
- T = Term of loan

The HAI has a value of a hundred when the median-income household has a sufficient income to purchase a median-priced home. When the ratio is above one hundred the typical household has more income than necessary.

¹ Source Banking Sector data. Mortgage rates are based on a margin in addition to the Central Intervention Rate.
to purchase a typical house. When the ratio falls below one hundred the typical household has less income than necessary to finance a typical house.

In an attempt to highlight the affordability dissimilarity between first-time buyers and repeat home buyers, a modification on the median house price will be computed. The first-time home-buyers HAI adjusts the results based on two additional factors. First, household incomes for first time home-buyers are assumed to be 57% of the median, and second, the median home price for first time buyers is 85% of the median house price. The first adjustment relating to income will be accounted for in the most representative scenario as explained in the Median income definition.

In the income tax bands scenario, all existent income tax bands will be taken to calculate the respective HAI. Then, each income tax band will be computed with respect to the 85% of the median and the actual median priced home, that is, 100%. This will indicate the affordability at purchase of first time home buyers and repeat home buyers for both individuals and family households. In addition, it is assumed that first time home-buyers place a 5% down payment versus the traditional 20% of repeat home buyers.

However, in the Maltese context, as already stated, a 10% down payment will be assumed for first time home buyers since it is the minimum percentage acceptable by domestic banks. For repeat home buyers, a 30% down payment was deemed to be the most appropriate as it represents the most common trend in the domestic banking industry, as evidenced by data on loan-to-value ratios.

Analysis of Results

The Development of the HAI

Figure 2 presents a time series development of the HAI for the period between 1999 and 2005.

2 These assumptions are derived from survey data by the Howard County Maryland Research Department of Planning and Zoning, report issued on 14, August 2005.
3 The Income bands were chosen by taking in consideration, the income tax bands published by the Ministry of Finance used in the income Tax calculation.
4 85% represents first time buyers, while 100% refers to repeat home buyers.
Affordability for all income brackets tended to deteriorate over the 2000–2006 period. In 2003, however, there was a slight improvement in the HAI. Two main factors contributed to this result. First, interest rates in 2003 fell sharply from 5% to 4.25%; the sharpest fall in the period under observation. In fact, even though the house price index registered an approximate 10% increase, the interest rate effect dominated, and the final result was a reduced cost of financing a 40 year loan. Another contributing factor in this regard was the slight increase in gross household income. In fact, 2003 registered the largest increase in gross household income in the period under observation (2.43%). Even if the effect of changing gross income is removed, affordability in 2003 still improved as a result of low interest rates.

From the chart it is evident that affordability deteriorated significantly from 2003 to 2006. This affordability deterioration corresponds to the sharpest increase in house prices as exhibited in Figure 1. In fact, the gap between house prices and disposable income becomes very evident during this period. Among the underlying reasons for increasing house prices, one must not ignore the change in the regulatory framework regarding income tax on funds invested outside the country. This could have instigated Maltese investors to liquidate their foreign investments and return their funds in the local economy. One way of storing such wealth was to buy
property. In this sense, houses were deemed to be an investment opportunity, hence raising demand and exerting pressure on house prices. Evidently, this rate of deterioration in the HAI, if it continues, is unsustainable

**Conclusion**

This paper, has attempted to estimate housing affordability in Malta for the period 2000–2006 given that Maltese research in this field lacks a unified and accepted measure of affordable housing, this paper adopts an internationally accepted methodology. However, affordability depends on many factors and no individual index can be generalised on the whole population because it depends on a number of underlying conditions.

In essence, the most important result is that affordability has deteriorated significantly between 2004 and 2006 posing a serious concern on the possible future movements in the housing market. Furthermore, the fact that interest rates in these two years were relatively low thus serving as a cushion to affordability may heighten further the potential risk of interest rate increases. Consequently, future interest rate movements are crucial to affordability, while property prices growth, as expected, remains of central importance for housing affordability and financial stability.

**References**


HOWARD COUNTY MARYLAND RESEARCH (2005) Department of Planning and Zoning (August)


