

LIFE CYCLE COSTS & HOUSING AFFORDABILITY MEASUREMENT

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ABSTRACT

This paper examines current problems with home ownership affordability measurement and presents an innovative affordability measurement model that incorporates a comprehensive assessment and risk analysis of housing life cycle costs. The main method used to measure home ownership affordability is the benchmark ratio method whereby housing costs should not exceed a benchmark proportion of household income. This approach typically focuses on mortgage costs with other acquisition and operational costs largely ignored or given scant consideration. There is also a lack of data, impartial advice and financial tools available for home purchasers to effectively undertake a comprehensive analysis and risk assessment of affordability based on total potential costs. Purchasers largely rely on advice provided by entities with a vested interest in the process (such as financial institutions). Deregulation of financial sectors, high levels of competition amongst housing finance providers and a low inflationary environment over the past decade have combined to significantly increase the borrowing capacity of home purchasers in many countries around the world. This has fuelled a dramatic rise in the levels of household debt in countries like Australia who now has one of the highest personal debt-to-income ratios in the world. Questions are now being raised about the lending practices of housing finance providers particularly in light of the US sub-prime mortgage market collapse in recent years. The model helps to address these problems by providing an independent and comprehensive financial analysis of home ownership costs and the affordability of these costs for a purchaser's specific circumstances. It focuses on creating greater consumer awareness of the total costs of ownership and concomitant financial risks.

Keywords: Home Ownership, Housing Affordability Measurement, Life Cycle Costs.

1 INTRODUCTION

The life cycle costs of home ownership incorporate initial capital acquisition costs, financing costs and operational costs. This paper describes the importance of including housing life cycle costs in the measurement of housing affordability and proposes a model that can be used to achieve this. Housing affordability is typically based on financing costs with other housing life cycle or operating costs largely ignored. Confining affordability measures to financing costs does not give the purchaser a true indication of the total costs involved and does not satisfactorily account for the individual circumstances of the purchaser and the peculiarities of the subject property. In one of the largest inquiries into home ownership ever undertaken by the Australian Government, the Productivity Commission (2004) highlighted the need for greater consumer awareness of the total costs involved in home ownership, the risks involved and their impact on affordability. Considerable literature has identified a lack of independent cost information and advice on the total costs of home ownership (Productivity Commission 2004, Reserve Bank 2004, Gabriel 2005, et. al.).

Information and advice is still predominantly provided by commercial bodies with vested interests in the housing process (such as financial institutions, real estate agents and government departments). Caplin et al. (2003) also identified problems with the provision of quality independent housing advice and concluded that there is literally no one that can be relied upon for objective guidance. Erskinomics (2003) has found that the home purchase market is very primitive in terms of financial advice compared to other financial asset markets where there is considerable information and sophisticated financial advice available.

To address this problem, this paper proposes a housing cost and affordability assessment model that incorporates housing life cycle costs. The model operates through an interactive simulation program called HOMECOST and is described herein. It can be used by home purchasers, developers, financial institutions, government authorities and other bodies involved in the provision of housing services.

HOUSING LIFE CYCLE COSTS

The application of life cycle cost analysis to property incorporates an assessment of total acquisition and operating costs. This technique and research surrounding such have largely been confined to public and commercial properties. The author's research has focused on increasing the knowledge and data base of residential property life cycle costs. For the purposes of this paper, life cycle costs are defined as the total cost of a property over the period of financial interest of the owner. This period will vary in length according to the circumstances of the owner and the nature of the investment. The life-costs of a property are categorised as follows:

Capital Costs

Capital Costs include all costs associated with the initial acquisition of a property including Land/Property Purchase Price, Design/Construction Costs (new dwellings), Pre-Purchase Costs, Fit-Out Costs. The Land/Purchase Price of land or an existing home are usually readily identifiable. Design/Construction Costs are applicable for the construction of new dwellings and may include design fees, statutory authority fees and construction costs. However, additional allowances may be necessary for unforeseen expenses due to variations, provisional sum adjustments and other contingencies. Pre-purchase costs are the costs and statutory charges incurred by purchasers in addition to the basic purchase price of a home and, together, can represent a considerable sum over and above the deposit requirements for a home. These costs should ideally be deducted from the purchaser's level of savings which may result in a reduced deposit from the amount envisaged and, hence, an increase in the purchaser's anticipated borrowing requirements. These costs generally comprise stamp duties, legal fees for the property's conveyance, survey/inspection fees, services connection fees, insurance premiums, council/water rates adjustments and moving costs. Fitout costs generally comprise loose fittings, furniture, furnishings and household goods and equipment. Fitout requirements upon occupation of a newly purchased home are dependant on a number of variable factors. The cost significance of these items is generally determined by the adequacy and appropriateness of the purchaser's previously acquired fitout items (if any), the purchaser's fitout requirements, the immediacy of the purchaser's fitout requirements, the quality and quantity of fitout items required, the cost of fitout items required and the financial capacity of purchasers to meet these requirements. An assessment of the potential fitout requirements for the home is often not made by the purchaser.

Finance Costs

Finance costs can be categorised into establishment costs and repayments. Establishment costs include fees charged by the lending authority, legal fees for the preparation and registration of the mortgage, stamp duty and mortgage insurance premiums. Mortgage repayments normally represent the most significant home ownership outlay during the early years of purchase and, as a consequence, are generally acknowledged as the most important affordability determinant. Repayments are determined by the amount borrowed, the interest rate on the loan and the loan structure. Interest rates have a significant effect on affordability levels and play an important role in the willingness and ability of individuals to purchase property. As an example, a household's borrowing capacity decreases from triple their annual income to double their annual income if interest rates increase from 6-7% to 12-13%. It is essential that home purchasers make allowance for future interest rate movements, particularly during periods of low inflation and low interest rates, as is currently the case. The amount of borrowed funds necessary to purchase a home in Australia has increased markedly in real terms, particularly for first home purchasers. This challenge has been largely met by an increase in the willingness of purchasers to meet this increasing financial burden.

Operating Costs

Operating Costs include annual ownership costs, maintenance, repair and improvement costs, fitout costs and selling costs. Annual ownership costs are classified as those costs which occur on a regular basis and generally include mortgage repayments (previously mentioned), local council/water rates, services charges, insurance premiums and body corporate fees (for strata titled property. The cost of maintaining, repairing, adding to or altering the existing appearance, quality and/or function of a home can be divided into the following categories: Maintenance Expenses, Repair Costs and Improvement Costs.

The costs incurred in repairing, maintaining and improving the existing housing stock in Australia are significant. They represent more than 50% of the total expenditure on private residential building work (Housing Industry Association 2005). This proportion is actually understated as the value of "do-it-yourself" labour is excluded. Maintenance and repair costs are potentially the largest element of a home's operating costs particularly over long time frames. These costs are determined by the age and state of repair of the home, the quality of construction, the past tenants' or vendors' treatment of the premises" and the financial capacity and individual preferences of the owner. A variety of methods have been used to determine the cost of maintenance and repairs. The major constraints facing any such measures are the lack of appropriate data and the great variance in the main determinants of maintenance and repair costs, namely the home's age, state of repair, quality and type of construction and the owner's desire and financial capacity to carry out such work.

Archicentre (2004), the housing division of the Royal Australian Institute of Architects, have regularly completed independent studies on the nature and extent of defects in existing residential buildings based on over 100,000 property pre-purchase inspections collectively. The results of these studies show that the proportion of existing homes with major defects is high. Archicentre have found that 25% of homes inspected had potentially lethal defects. "People need to assess every property individually. The majority of people put their hands up at an auction without any understanding of the risk, related repair costs or maintenance they may need to undertake to make the home comfortable or, in some cases, safe. People who buy a lemon are often confronted with unplanned borrowings to fix problems such as plumbing, wiring, rising damp and roof problems which can run to tens of thousands of dollars. Most people will be unprepared for the potential shock" (Archicentre 2004, pp. 1-2).

Improvement Costs

Renovations, alterations and additions are an operating cost and, in Australia, there has been a marked increase in both the quantity and the value of such work since the 1970s. The Housing Industry Association (2003) found that in 1969-70 alterations and additions accounted for just 20% of total private dwelling building commencements but by 2003 this proportion had risen to over 60%. The cost of such work can only be accurately assessed on an individual basis. This would ideally entail the purchaser making a list of all improvement work planned, particularly in the early years of purchase. This facilitates an estimate of the likely cost of these improvements by the owner or other suitably qualified person. Consideration of statutory building fees, design fees and contingency allowances may be required in addition to the estimated construction cost. Another important factor that needs consideration is that the majority of home improvements are not urgent and can be delayed if the owner does not have the financial capacity to carry out such work in the first year of purchase.

MAIN MEASURE OF HOME OWNERSHIP AFFORDABILITY

In Australia and many countries around the world, home ownership affordability has traditionally been based on the mortgage repayment capacity of a purchaser whereby repayments cannot exceed a specified "benchmark" proportion of a purchaser's gross income. This proportion has traditionally been 25-30% but over the past decade home mortgage providers have significantly increased this benchmark to the point where they will commonly lend amounts that have minimum repayment requirements accounting for 35-50% and even higher of purchaser gross income (Reserve Bank 2005).

This measure remains the most common form of affordability assessment both in Australia and around the world. However, the measure does not necessarily reflect individual circumstances nor does it give the purchaser a true indication of the total costs involved. Fundamental flaws in this method include: i) it constitutes a "broad-brush" measure which does not take proper account of an individual purchaser's circumstances, ii) it relates to a purchaser's gross income and not actual net (after-tax) income, iii) it does not properly assess a purchaser's non-housing expenses and cost commitments, iv) it does not include an assessment of the total costs involved in home purchase and ownership (i.e. pre-purchase costs, finance costs, annual ownership costs and operating costs), v) if based on current mortgage interest rates (which is usually the case) borrowers with variable or short-term fixed interest rate mortgages are at risk of potential increases to these rates (particularly important given the current low interest rate levels), and vi) if based on the combined gross income of couples the risk of potential declines in this income, particularly in the case of starting a family, is not accounted for.

HOME OWNERSHIP COST AND AFFORDABILITY MODEL (HOMECOST)

In order to address these problems with housing affordability assessment and measurement, the author has developed a unique model that measures affordability on the basis of housing life cycle costs. Incorporated in a conceptual software program called HOMECOST, the main objectives of the model have been to:

- i) measure the capital, pre-purchase, finance and operating costs of home ownership in relation to the net disposable income (gross income less income tax less non-housing expenses/cost commitments) of individual purchasers and the level of savings that they can invest in the home

- ii) measure the risk of increases in mortgage interest rates and/or declines in purchasers' net income levels and, hence, the potential effect of these risks on affordability levels
- iii) be sufficiently simple for use by home purchasers on an individual basis in assessing the affordability of a purchase

The following sections will describe the basic structure of the model and provide examples of the results that can be achieved.

Methodology And Assumptions

The model was initially developed within a conceptual framework and then further developed into an interactive software program called HOMECOST. The model comprises two basic components:

- i) A cost model that expresses weekly housing costs as a function of the purchase price of a home and the purchaser's level of savings allocated for the purchase
- ii) An affordability model that:
 - identifies an individual purchaser's average net weekly income (i.e. "cash in the pocket") left after meeting tax and housing cost commitments by relating the weekly housing costs identified in i) to the purchaser's income
 - enables the purchaser to undertake risk simulation to establish the potential effect of income/interest rate changes on their average net weekly "after tax/housing costs" income
 - enables the purchaser to determine their maximum affordable purchase price by establishing their desired level of "after tax/housing costs" income and relating this to the weekly housing costs identified in i).

This methodology required a number of assumptions to be made due to the large number of potential variables involved. For the purposes of brevity, details of assumptions made and the reasoning behind them are not included in this paper. The scope of the model is restricted to existing detached dwellings and the aforementioned assumptions. However, the model can be readily modified to include strata titled property, new construction and other housing types as well as the particular requirements of financial institutions or government authorities. The costs contained herein are based on a comprehensive collection and analysis of housing cost data that included detailed case studies of over 500 residential properties drawn from locations throughout the Sydney region.

Maintenance and repair costs were based on a detailed analysis of the case study results. The strategy used to obtain this information/data was to collect and analyse pre-purchase property inspections carried out by a professional inspection firm for prospective home purchasers. These inspections are commonly commissioned by home purchasers prior to the purchase of a property to assess the condition of the dwelling and identify any maintenance and defect problems. The property inspection report helps to protect the purchaser's interest in the property. If problems are identified, the purchaser may be able to negotiate a lower selling price, decide not to proceed with the sale or, at the very least, purchase the property but be more informed about potential problems. These reports provide a wealth of information and data on housing maintenance and rectification requirements. Property inspection data was provided by one of the largest property inspection firms in NSW, Tyrrells Property Inspections. A pilot study was initially carried out based on an analysis of 106 property inspection reports and this was expanded to 505 inspection reports for the main study. This included detailed cost estimates for all maintenance and rectification work.

Purchaser Expenditure Analysis

The deficiencies with the benchmark method of measuring housing affordability whereby housing costs, namely mortgage repayments, should not exceed a certain proportion of the purchaser's gross income have been noted. A major requirement of the model was to overcome these deficiencies by relating affordability to a purchaser's net disposable income available for housing costs. Consequently, a Purchaser Expenditure Table was developed to enable purchasers to make an individual assessment of their income in those terms. This information is critical to the proper interpretation and use of the model. Although financial institutions and government housing authorities do include general expenditure tables in their home loan application forms, emphasis is placed on the applicant's other loan/debt commitments whilst other household expenditure is not normally incorporated in the maximum borrowing assessment. The expenditure table developed herein is unique in the sense that it provides for a detailed assessment of the purchaser's total non-housing expenditure and cost commitments with such information forming the basis for the calculation of the purchaser's maximum affordable purchase price.

The purchaser's non-housing expenses and cost commitments are separated into two categories; fixed commitments and variable expenses. These costs are deducted from the purchaser's net (after-tax) income to establish their weekly disposable income available for housing costs. Fixed commitments consist of other loan or debt repayments, insurance, superannuation, motor vehicle registration and insurance and other miscellaneous costs that occur on a regular annual basis and are generally fixed, barring the effects of inflation. Variable expenses consist of items of expenditure that are subject to variance depending on the purchaser's needs, wants, lifestyle and income.

The inclusion of a category for savings recognises that some households may wish to save a certain portion of their income for holidays, future capital expenditure, other or future investments and future potential contingencies. A potential constraint facing the use of the table is that purchasers may not have the knowledge and/or expertise to accurately assess their future expenses. Nevertheless, the table would still provide a budget for the purchaser within which to operate to ensure that their level of disposable income for housing costs is maintained. Furthermore, if the purchaser wishes to increase their purchase price capacity, the table facilitates the identification of areas in which the purchaser may be able to reduce their non-housing expenses and, thus, increase their purchasing capacity.

Home Purchase and Ownership Costs

The model measures average weekly life cycle home purchase and ownership costs in relation to the purchase price of a property, the condition of the property, the purchaser's level of savings and the purchaser's requirements in terms of fitout and home maintenance, repair and improvement. Savings are used in preference to deposits as the deposit can only be determined after pre-purchase and finance establishment costs have been deducted from the purchaser's level of savings. A potential home purchaser can utilise this model by assessing their total level of savings and relating that sum to the weekly costs likely to be incurred. A major feature of the model is that pre-purchase and finance establishment costs are automatically incorporated as are annual ownership costs. By using the Purchaser Expenditure Table, the purchaser can actually use this cost model to determine their maximum affordable purchase price. This is determined by matching their net disposable income available for housing costs and their level of savings with the nearest weekly housing costs below this level of available income.

To facilitate the risk assessment of the effect of interest rate increases and potential income changes, the model provides for simulation analyses whereby purchasers can examine the effect of changes to income levels and mortgage interest rates. It is important for purchasers to be able to accurately identify the effect of declines in income levels due to loss or change of employment or the loss of all or part of a second income (in the case of couples). Likewise, in the current low inflationary environment, it is imperative that purchasers are aware of the impact of potential interest rate rises.

HEMECOST – HYPOTHETICAL EXAMPLE

The following example outlined in Table 1 provides details of how the model can be used by prospective purchasers of residential property. As identified previously, the affordability model has been developed for purchasers of detached dwellings in the Sydney region and who intend to live in the premises as owner-occupiers. The model is restricted to this scope but the principles and concepts can be adapted for other housing and purchaser types not only in Australia but around the world. Table 1 shows the Summary Section of the Model with the results of a hypothetical analysis. This example uses the details of a hypothetical purchaser to test and evaluate the results produced by the affordability model. The main purchaser details used for the analysis were:

Purchaser Details:

Status: Couple (dual income)
 Combined Gross Income: \$130,000 per annum (Partner 1 - \$90,000, Partner 2 - \$40,000)
 Savings for Purchase: \$50,000

Property Details:

Purchase Price: \$400,000
 Location: Central Coast
 Characteristics: 10-20 years old, single storey, 4 bedrooms, brick veneer, concrete slab, aluminium framed windows, concrete roof tiles

Mortgage Details:

Mortgage Type: Standard Credit Foncier Variable Interest Rate Mortgage
 Interest Rate & Loan Term: 7.00 % per annum @ 25 years

The summary page of the model (Table 1) provides a snap shot for the purchaser to immediately see the bottom line of their intended purchase – the shortfall or surplus in their average disposal income per week after due allowance for all housing costs and non-housing costs and expenses. This shortfall or surplus represents, in effect, the amount of “cash” that the purchaser will have (or won’t have) in their hip pocket each week.

In the example, the purchaser has a combined annual gross income of \$130,000 with a savings level of \$50,000 and intends to purchase a property for \$400,000 in the Central Coast region of Sydney. This income and savings level is high compared to average earnings and savings levels whilst the purchase price is slightly above average for the region. Nevertheless, the analysis shows that the purchaser would have a shortfall of \$122 per week (\$6,344 per annum) after allowance for all costs. The savings level of \$50,000 does not represent the deposit level for the purchase. Pre-purchase costs (stamp duty, conveyancing costs, property reports and the like) and finance establishment costs (stamp duty, establishment fees, legal fees, insurance) are up-front expenses required prior to purchase. The full extent of these costs is often not realized by purchasers and need to be deducted from any savings accumulated.

HOMECOST SUMMARY PAGE

| Summary | Purchaser Details | Pre-Purchase Costs | Finance Costs | Ownership Costs | Maint/Repair Costs | Fitout Costs | Renovation Costs | Non-Housing Expenditure | Detailed Reports |
|---------|-------------------|--------------------|---------------|-----------------|--------------------|--------------|------------------|-------------------------|------------------|
|---------|-------------------|--------------------|---------------|-----------------|--------------------|--------------|------------------|-------------------------|------------------|

PURCHASER DETAILS

| | |
|--------------------------------|--------------------|
| Purchaser/s Name | Bill & Mary Bloggs |
| Period of Analysis (years) | 5 |
| Savings | \$50,000 |
| Total Gross Income (per annum) | \$130,000 |
| Total Gross Income (per week) | \$2,493 |
| Total Net Income (per annum) | \$91,866 |
| Total Net Income (per week) | \$1,762 |
| Loan Period (years) | 25 |
| Interest Rate (%) | 7.00 |

LOAN AMOUNT

| | |
|--------------------------------|------------------|
| A. Purchase Price | \$400,000 |
| B. Savings | \$50,000 |
| C. Pre-Purchase Costs | \$25,210 |
| D. Finance Establishment Costs | \$9,861 |
| E. Deposit on Purchase (B-C-D) | \$14,929 |
| F. Required Loan Amount (A-E) | \$385,071 |

TOTAL HOUSING OPERATING COSTS

| | |
|-------------------------------|-----------------|
| Average Annual Costs | |
| A. Finance Costs | \$33,139 |
| B. Annual Ownership Costs | \$6,250 |
| C. Maintenance & Repair Costs | \$4,897 |
| D. Fitout Costs | \$1,170 |
| E. Renovation Costs | \$700 |
| F. Total | \$46,156 |

PROPERTY DETAILS

| | |
|----------|-------------------------------------|
| Location | 23 Castle Street Utopia NSW 2000 |
|----------|-------------------------------------|

| | |
|-----------------|----------------|
| Purchase Price | \$400,000 |
| Age (years) | 10-20 yrs |
| No. of Storeys | 1 |
| No. of Bedrooms | 4 |
| Structure | Brick Veneer |
| Floor | Concrete |
| Ceiling/Walls | Plasterboard |
| Windows | Aluminium |
| Cladding | Brick |
| Roof | Concrete Tiles |
| Deck | Concrete |

| | |
|---|-------|
| G. Average Cost Per Week (F div by 52 weeks) | \$888 |
| H. Housing Costs - % Net Income | 50.4% |
| I. Housing Costs - % of Gross Income | 35.6% |
| J. Min. Mortgage Repayments - % of Gross Income | 25.1% |

AFFORDABILITY ASSESSMENT

| | |
|---|---------------|
| Total Net Income (per week) | \$1,762 |
| less | |
| Average Housing Costs (per week) | \$888 |
| Non-Housing Costs & Expenses (per week) | \$996 |
| SHORTFALL/SURPLUS IN DISPOSABLE INCOME | -\$122 |

Table 1 – Homecost Example

In the example, pre-purchase costs are \$25,210 and finance establishment costs are \$9,861. This erodes the savings level from \$50,000 to \$14,929 which represents the actual deposit on the purchase price. With a purchase price of \$400,000, the model calculates the required mortgage sum at \$385,071. This is a large mortgage representing approximately 96% of the purchase price. The model needs to determine whether the borrower could reasonably borrow this amount and therefore calculates the minimum mortgage repayments as a percentage of gross income (Item J). In this example, the minimum repayments represent 25.1% of the purchasers' gross income. As described in the literature review and in the data analysis, a common benchmark used by home lending institutions is that minimum mortgage repayments should not exceed 30% of gross income. Many institutions will, however, now increase this benchmark to 35% and even 50% or more. The purchaser is well within these borrowing limits. On this 30% benchmark basis, the purchaser could actually borrow as much as \$460,000. Finance costs (mortgage repayments and fees) are based on a market interest rate of 7% for a variable interest rate loan. This leaves the purchaser exposed to potential increases to this rate. The model enables the purchaser to simulate the effect of higher interest rates.

The model summarises the total average annual housing operating costs for the property. Finance costs are calculated at \$33,139 and annual ownership costs (rates, telephone/electricity/gas, insurance) at \$6,250. The total costs for maintenance/repair/fitout/renovation over the five year period of analysis are divided by five to approximate annual costs. Maintenance & Repairs cost an average of \$4,897 per annum, Fitout costs \$1,170 and Renovation Costs \$700. Finance costs are clearly the most significant cost. These costs are very high due to the high sum borrowed and the relatively little amount of equity that the purchaser has in the home (4%). Nevertheless, the other costs are significant and have a major impact on affordability (and particularly if purchasers have borrowed close to or at their maximum borrowing capacity).

Maintenance and repair costs were much lower than the average calculated in the database study. This was due to two reasons. Firstly, the property chosen had property characteristics that reduced potential rectification costs. Secondly, and more importantly, the purchaser could analyse the maintenance/repair requirements and then decide if they would undertake the work and whether they could do the work for a lower cost. They could also evaluate the actual property's condition in relation to average database costs for each defect category and determine whether work was required or not. This is greatly assisted if the purchaser has had a building inspection carried out which identifies specific problems and particularly if the inspector is able to give an indication of potential rectification costs. In the example, this is shown as the purchaser makes decisions on each cost category. A conservative approach is taken. The same principle applies with Fitout and Renovation costs. These potential costs can be simulated many times looking at a variety of options.

Total average annual housing costs are then calculated at \$46,156. Whilst minimum mortgage repayments account for 25.1% of gross income it is a different story with Total Housing Costs. They account for 35.6% of gross income and 50.4% of net income. A key argument in this paper is that affordability measures need to relate to actual income (not gross income). This analysis shows that the purchaser is borrowing well within their maximum borrowing limit yet their total housing costs account for over half of their actual income. These costs are then averaged to an amount per week for comparison with income. Total housing costs equate to \$888 per week and the purchaser's total net income per week is \$1,762. This means that the purchaser has \$874 left on average per week to spend on all non-housing costs and expenses.

The purchaser needs to determine whether this amount is affordable for their individual circumstances. The purchaser can use the Non-Housing Expenditure Table in the model to assist in this calculation. Hypothetical costs were put into this table to represent spending patterns that might be expected of purchasers in this income category. Nevertheless, a conservative approach was taken. This analysis found that the purchaser's non-housing costs and expenses averaged out at \$996 per week. Therefore there is a shortfall of \$122 per week if the purchaser intends to go ahead with the purchase and carry out the works planned and live the lifestyle budgeted for. This assumes that interest rates will not rise and income will not fall – obviously if this occurs the situation worsens.

The purchaser has many options that they can simulate to make the purchase more affordable. They may reduce their non-housing expenditure, forgo fitout items and renovation work, reduce planned maintenance/repair work and reduce their services costs. The main result is that the owner is much more informed about what the potential costs might be and how affordable that might be for their individual circumstances. It also provides a budgetary framework where the purchaser can establish a sinking fund for future costs and also to keep tabs on current expenditure, both housing and non-housing. It can also assist purchasers identify potential additional borrowing requirements. In the above example, \$874 per week for non-housing expenses might be considered very affordable for many purchasers. Some purchasers may find \$500 per week or even less affordable. For others, \$874 may be not enough for their particular lifestyle and household size.

The model will also help purchasers identify the substantial proportion of income that a house can consume and make decisions on what concessions they are willing and able to make to their lifestyle to meet their housing needs. In other words, some may choose a lower priced property and maintain their lifestyle levels whilst others may purchase a higher priced home and modify their non-housing expenditure and lifestyle. The model enables purchasers to be much more informed when making these kinds of decisions.

CONCLUSION

The Homecost Model is innovative in the sense that it provides a means of assessing the affordability of a purchase on an individual basis by relating the capital, pre-purchase, finance and ownership costs of home ownership to an individual purchaser's actual income available to meet these costs. Other unique attributes of the model are that it: i) provides an independent and objective estimate of home purchase and ownership costs and affordability, ii) measures the pre-purchase, finance and ownership cost of home ownership as well as the purchase price, iii) facilitates the assessment of a purchaser's non-housing expenses and cost commitments to determine the purchaser's actual income available to cover their housing costs, iv) provides a budgetary framework for both housing and non-housing expenses and cost commitments within which the purchaser can operate, v) establishes a benchmark minimum acceptable level of actual income remaining after housing costs, and vi) facilitates the risk assessment of future mortgage interest rate increases and/or future declines in a purchaser's net income.

Whilst the model is based on the Australian property and financial scene, the principles and structure of the model are valid for use globally. The variables need to be adjusted to suit local requirements and situations. Ultimately, the emphasis of the model is placed on identifying the actual amount of money that the individual purchaser will have "left in the hand" each week after meeting their housing cost commitments. It is around this figure that the true assessment of home ownership affordability lies.

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