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Understanding property cycles in a residential market

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Abstract

Purpose – This paper aims to review property cycle theory and the relevance of the larger body of knowledge about cycles with reference to the housing market. It also aims to highlight the lack of research into property cycles in the residential sector on a suburb or smaller region basis, as well as the potential for increased knowledge about cycles to assist to avoid housing stress.

Design/methodology/approach – The paper conducts a literature review of previous cycle research and encourages the use of cycle theory. It discusses the established body of knowledge about business cycles and the office market sector, as well as investigating levels of housing affordability and how detailed knowledge about property cycles can assist to decrease housing affordability in residential areas, which will eventually experience a downturn.

Findings – It is argued that an increased level of certainty about cycle behaviour in particular suburbs will give households a higher level of confidence when considering whether and when to enter the market. Property cycle research has the potential to assist low-income homeowners to better understand the characteristics of cycles and associated risks in each residential.

Research limitations/implications – This is a conceptual paper and has conducted a review of cycle research and housing affordability in certain countries. Some areas or countries may be affected to varying degrees by property cycles and levels of housing affordability.

Practical implications – In extended periods of high volatility it is argued that a better understanding of housing cycles will allow more homeowners to avoid negative equity and the stress associated with repossessions. Property cycles are unavoidable although there is typically relatively little information available in the open market about the timing and amplitude of cycles in individual areas.

Originality/value – This paper is unique as it highlights the potential for property cycles to be used to avoid housing stress in the residential market. Traditionally cycle research is used to increase returns and avoid downturns in the office and/or business sectors.

Introduction

Even though it is generally accepted that property cycles are a common occurrence in established housing markets, knowledge about their individual features for individual areas (e.g. suburbs) is not commonly available or discussed. Even though it makes a sound financial decision to buy a home when the housing cycle is in a downturn (i.e. before it
reaches the bottom and then rises) and sell when the housing market is rising (i.e. prior to reaching the top of the market and falls), the cycle characteristics of each type of suburb is not known. For example does a suburb have only one cycle or multiple cycles? Furthermore what is the length of each cycle and what type of suburb are the cycles associated with? This is a starting point for using proven cycle theory in the housing market analysis.

Although government policy has been focused largely on maintaining and protecting household income levels, surprisingly there has been relatively little attention given to the other side of the housing equation, namely the risks associated with homeownership. A closer examination of future house price levels has two main benefits for assisting housing affordability. First, households will have a higher level of confidence to enter the housing market if the value of their house is unlikely to decrease in the future, which in turn reduces exposure to downside risk. This also applies to households, which have the option of renting or buying where the latter has benefits for wider society. Second, households which have very limited income will be able to enter the market without fear of their mortgage debt exceeding the market value of their home.

The key to identifying areas with changing property value is to monitor house values and accurately identify their respective cycles. This awareness of the co-movement and variance of house values across locations or suburbs is essential for making informed micro and macro-housing policies. The paper commences with a review of the general theory of property cycle and its relevance to mature housing markets. In extended periods of high volatility it is argued that a better understanding of housing cycles will allow more homeowners to avoid negative equity and the stress associated with repossessions.

**Housing stress and affordability**

Housing stress and housing affordability are increasingly important considerations in cyclical markets. In comparison with other developed countries listed in recent international housing affordability surveys (Cox and Pavletich, 2008; Cox et al., 2009), Australia suffered the highest housing stress with an overall median multiplier of 6.3 (see Table I). This was in direct contrast to Canada (3.1), the USA (3.6), Ireland (4.7) and the UK (5.5), even though the accepted affordability standard itself is normally 3.0. Also confirming the decreased level of housing affordability in Australia was the ranking of Australian capital cities in global top-50 list of least affordable housing markets as follows: Sydney (11), Perth (19), Melbourne (22), Adelaide (35) and Brisbane (36). This decline in housing affordability, being the ratio between the cost or value of housing and income, has directly contributed to high levels of housing stress in capital cities in Australia.

When the problems associated with housing stress are converted directly into the number of households, it is evident that many Australians are directly affected. According to Mission Australia (2008) over 400,000 lower-income households are paying more than half of their income for housing which has obvious created or continue housing stress which is currently at record level (Gordon, 2008; AHURI, 2009). Between 2001-2006 the level of housing stress in Australia has continued to increase (see Table II), where lower income group and indigenous Australian households are particularly affected by the current affordability crisis. Many Australian households have been officially in housing stress with more than a third of
family income required to service the average home loan (Klan, 2006). For example NSW homeowners spend 36.4 per cent of income on mortgage repayments with homeowners in Queensland and Tasmania at 34.9 and 33.3 per cent respectively.

Clearly housing affordability is not a new issue and there have been many previous “attempts” to address this long-term problem. Monitoring medium to long-term house price changes coupled with the ability of the society to gain access to affordable housing have been priority areas for government policy (Marks and Sedgwick, 2008). There are clear issues for existing government policy, which is now facing severe problems as it seeks to ease housing stress in Australia. The global financial crisis has unfortunately placed even further pressure on housing affordability. Lower housing affordability by Australian homeowners also has a flow-on-effect, since additional pressure is placed on the private rental market where many households can neither afford homeownership or access public housing (Darby, 2005). With reference to renting at least 600,000 families and singles in the private rental market face housing stress as they pay more than 30 per cent of their income in rent, which represents 65 per cent of low income private renters (National Shelter, 2009). There have been attempts to examine the impact of rental increase on housing stress levels in different Australian states (Vu, 2008), although clearly this is a widespread national problem.

**Cycles in market economy**

It is possible to conduct neo-classical analysis of Australian's housing markets given the comprehensive data available. The challenge is that housing markets, except residential investment property, are subject to government social policy intervention. To balance the investment end and the social end of the housing market, a “general” theory of property cycle is required – a combined framework of property cycle theory and the theory of state intervention. The theory has been slowly developed in mainstream economic theory and its modern extension (e.g. NIE and the Behavioural School) or competing theories (e.g. neo-Marxian theory). Empirical evidence has been drawn from urban land markets (Hoyt, 1933), residential markets (Case and Shiller, 1989, 1994) and commercial property markets (Ball et al., 1998). More recently, the theory has been formalised and symphonised mainly based on commercial property markets (Ball et al., 1998; RICS, 1999).

Cycle theory is one of the basic human observations of the natural world as well as in human societies. It is defined by the *Dictionary of Theories* as “events, economics and political systems move through cycles similar to the natural life-cycles of living beings” (Bothamley, 2002, p. 133). Being a subset of the market system, the level of house prices can be studied and explained in a way that is consistent with how the stability of the entire system is studied. Leading economists such as Mitchell (1927) and Sherman (1991) defined the business cycle as a phenomenon found typically in a market economy and not observed in a pure planned economy. The character and importance of the market system and the pricing system has been demonstrated extensively in the literature with competing evidence and theories being introduced (Friedman, 1981). The history of modern society is where each market system is continuously seeking to identify the “balancing point” or “equilibrium” (Samuelson and Nordhaus, 2001). As Schumpeter (1939, preface) explained:
“analysing business cycles means neither more nor less than analysing the economic process of the capitalist era”.

The two volumes of the business cycle study conducted by Mitchell and Burns represented one of the most comprehensive attempts in the twentieth century to examine cyclical fluctuations of a market economic system. The concept and the working plan were developed in the first volume (Mitchell, 1927), which was used to form the working definition for the study in the second volume (Burns and Mitchell, 1946) and to establish the methodology for investigations into business cycles. Its definition serves as an explanation of the measurement and analytical approach which is equally valuable for the property cycle study:

Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration business cycles vary from more than one year to ten or 12 years; they are not divisible into shorter cycles of similar character with amplitudes approximating their own (Burns and Mitchell, 1946, p. 3).

Property cycles

So far most of the research into property cycles has been limited to the office market sector. Earlier studies by Pyhrr and Born (2006), Pyhrr et al. (1989, 1999), Barras (2005), Barras (1983, 1994), Dipasquale and Wheaton (1996) and Ball et al. (1998) offered a comprehensive treatment of the concept and key defining characteristics of commercial property cycles, e.g. re-occurring fluctuations, non-periodic fluctuations (irregularity), identical “patterns” of co-movement, strong links to the general economy, such as the four to five year classic cycles, the nine to ten year long cycles, the 20-year long swings and the 50-year long wave, strong links to the capital market (primarily capital value variation driven), “building lags” against business cycles, geographical and economic condition dependent, strongly influenced by structural settings, and strongly influenced by expectation including speculation. Other studies examined the general concepts of the property cycle and its relationship to business cycles (RICS, 1999; Key et al., 1994a, b, c; Estates Gazette, 1995, 1996). Recurrent but irregular fluctuations in the level of all property total returns are also apparent in many indicators of property activity, but with varying leads and lags against the all-property cycle (Key et al., 1994c). This definition is much less rigid than those defined in the natural sciences, and yet it covers the cycle phenomenon in property markets more comprehensively which is close to observed market behaviour. More rigidly constructed definitions of property cycles are usually for the purpose of market forecasting using mathematical models, or empirical testing of historical data. The MIT urban economist William Wheaton defined a property cycle as:

... a more restrictive definition of a real estate cycle involves repeated oscillations of a market, as it continually overshoots and then undershoots its own steady state ... real estate cycles are defined as some degree of instability in the market whereby a single economic shock leads the market to oscillate around its steady state for some number of iterations (Wheaton, 1999, pp. 217-8).

Wheaton’s empirical studies (Wheaton, 1987; Wheaton et al., 1997) are an extension of his definition of property cycle. However, there is a common omission in most property cycle
definitions of what the cyclical patterns attempt to describe (Baum, 2001). Indeed, property markets are a complex system and property cycle represents a group of interacting forces (Hoyt, 1947). Previous attempts to define cyclical behaviour in property markets from different perspectives have created confusion and controversy. The complexity of property cycle theory can be found in Pyhrr et al. (1999) and Pyhrr and Born (2006), which discussed property cycles from micro, macro and managerial angles. The same approach of classifying property cycle theories has been adopted in Wernecke et al. (2004) to study property cycles in Germany.

The perspectives argued in academic papers such as Pyhrr and Born (2006) and Pyhrr et al. (1990), and practical papers such as PWC (1999) and RREEF (2006), are such where property cycle theory is largely a strategic-game-based investment theory that links the problem of asymmetric information and politico-economic decision-making that is critical to investor-government, investor-investor, occupier-government and government-government relationships. From an investor’s perspective it is also an individual entity, such as an individual, a firm or a government body, which evaluates and makes decisions against general market movement. As Pyhrr et al. (1999, p. 27) concluded, “real estate cycles are relevant and will become a more important decision variable for investors and portfolio managers in the future”. Although this view is dominant in academia and practice, the policy aspects of the theory is unclear, as market conditions and structure both changes in a way not easy to predict.

**Theory and analysis**

Most “boom-bust cycle theories” are not theories in their own right because major events that directly trigger major cycles in property markets are often explained by irrational human or crowd behaviour (Stoken, 1993; Shiller, 2005). However, the way the theories are linked to the reality is unclear, given the limited knowledge about the complex modern society and the even more complex relationship between physical and human environments. There is a distinct need to identify these links. Among popular explanations of the property cycle it is generally accepted that property markets behave cyclically in the long run, primarily due to building lags in relation to demand changes for space which are mainly driven by the fluctuations of business activity. The conceptual model as developed (Barras, 1983, 1994, 2005, 2009) explains the process in a modern market system (see Figure 1). The links between the general economy and the sub-markets of space is at the core of this theory.

Changes in general economic activities affect the households, firms and other types of entities, which in turn affect the effective demand for space. This gives a signal to property developers to supply new space. On the other hand the lengthy process for space development creates delay or mismatch in relation to changing market demand. The lag between building demand and supply has become one of the most popular reasons for property cycles in the building cycle theory; the Barrasian building cycle model is largely based on the UK market, which might limit its explanatory power in economies with different social infrastructures. Barras (2005) extended the treatment of lags in building cycle theory into each of the submarkets where the lumpy nature of property markets is related to lags in various adjustment processes; namely user response to change of rents,
builder response to demand changes, and typical building lags. The timing for delayed land development is also an important source of property cycles (Grenadier, 1995).

One of the key characteristics is their long lifecycles in relation to depreciation in both physical and economic terms. Thus the “imbalances” between physical and economic depreciation almost certainly has an impact on property development and occupancy behaviours and market stability. The filtering process examined in Robinson (2002, 2005) for tenants to move from lower grade to higher-grade office buildings during an economic downturn as market rent drops, and vice versa, is reflected in the volatility of vacancy rates in the lower grade office sector. In other words, the physical and economic depreciation of buildings in relation to user behaviours may either enhance or reduce the amplitude of property cycles. Baum (1991) examined this issue and showed the importance of integrating building depreciation and the supply lag in property cycle theory.

It seems that Say’s Law, notably where goods and/or services and associated costs of production equal total demand, may only be suitable for an ideal socio-economic situation where the growth of different sectors that form the society is in a balanced form (Liu, 2003). The typical treatment in dealing with property cycles is focused on over-supply of or over-investment into space market as measured by consequential changes in rent and values, returns and vacancy rates. It was also argued that neither over-supply nor over-investment really mean that supply has surpassed effective demand. It only means that investments in specific sectors are unbalanced where investors expect higher profit and leave supporting sectors under-resourced (Rothbard, 1963). Rental and aggregate space supply, do not have direct connections (Key et al., 1994a) because oversupply is an imbalance of space types which will not directly affect the real demand of certain building types or their rental levels.

The nature of profit is the return or the opportunity cost that property investors require, to justify the risk they take, in organising development or investment activities. When market conditions are stabilised with the increased uncertainty in the space demand-supply interplay, it lowers the real “risk” by reducing associated transaction costs. In theory, the average profit or return margin for property development and investment should be reduced because the operational models and conditions for successfully running the system can reduce the risk margin. However, this cannot make players voluntarily lower their profit margin, given that the existing economic structure also tends to maintain this order. The leads and lags of technology upgrade or knowledge advancement are often affected by the social return of the economic system. If the margin is not achieved then the incentives will be reduced and subsequent production is likely to be delayed.

The imbalance of information required in the efficient operation of modern economic systems represents one of the main market defects that can cause instability of the demand and supply conditions. In the case of property development, although building construction is not as abstract and sophisticated a task as a nuclear physics experiment it requires high-level division of labour and various types of knowledge in coordinating factors in production such as land, building material, building design, capital and information over time and space. Making all of these factors work in building development projects in an efficient way is beyond individual’s capacity in a world of uncertainty. For those who take these tasks
seriously, the risks are normally high and therefore more likely to exacerbate the problem of asymmetric information to affecting property cycles.

Theory-based modelling, time-series analysis and market forecasting are the most dominant forms of property cycle analysis over the past two decades. These approaches are made possible by the availability of good quality time-series data with the support of computer-based modelling tools. Modelling property cycles has been reviewed in detail in Ball et al. (1998) based mainly on US and UK literature. The US property market has been extensively modelled at the national level (see Wheaton, 1987) and at city or local levels (see Pyhrr et al., 1996). The UK property has been studied extensively (Wheaton et al., 1997; RICS, 1999; Farrelly and Sanderson, 2005; Scott and Judge, 2000). More recent progress in modelling property market cycles include (Wheaton and Nechayev, 2008; Barras, 2005; Wheaton and Simonton, 2007), although modelling emerging markets still remains a major challenge (Wu, 2009).

**Property cycle in a general equilibrium framework**

One of the prime motivations for business cycle studies is to understand the unstable nature of the market mechanism. This is also the case in property cycle analysis. At the core of the enquiry into market mechanism is the notion that a self-interest driven economy based on perfect competition is able to achieve an efficient allocation of resources and a fair distribution of welfare. One of the most influential theories designed to deal with this concern is general equilibrium theory. General equilibrium theory validates the power of the market mechanism hence the legitimacy of modern market system as a preferred resource allocation system. The business cycle theory and the general equilibrium approach should both be derived from a common foundation, namely free market system. Similarly, there should not be a major conflict between property cycle theory and general equilibrium principles in commercial property market systems. Perhaps the only problem is that the classic general equilibrium theory is naturally an ideal market system with zero transaction costs, hence makes limited concern of the non-market force in affecting market demand and supply. In the condition of imperfect property markets, perhaps it is unwise for property cycle analysis to ignore the state's role in affecting supply and prices.

Black (1995) attempted to identify and draw together various competing theories under the single umbrella of general equilibrium. Rather than introducing various factors he suggested that business cycles could be analysed under the equilibrium framework. This approach makes sense because the subject matter, namely market fundamentals and non-market elements under state-market interplays, remain unchanged. Although some analysts emphasise the impact of state control in business cycles or property cycles, it does not change the fact that the general equilibrium framework can be used as a tool to explore such circumstances. Put simply business cycle theory and mainstream economic theory should not be deconstructed when dealing with market demand and supply. The basic drivers of the market system determine economic choice making, preference and so forth, which set the mechanism of property cycles. In many cases, it is an effective way to use a “simple” approach or model to deal with a complex issue. General equilibrium principles look simple and elegant in its unrestricted form (Black, 1995) yet it is very effective in explaining the basic market forces and associate phenomena such as market cycles. North
(2005) also recognised the challenge for developing a dynamic theory of changes that is comparable in elegance to the general equilibrium theory.

Arguably there is no role, however, for government in general equilibrium theory because it is essentially a theory to justify the power of the “invisible hand” or the mechanism of freedom in allocating resources and welfare distribution (Hicks, 1946; Samuelson, 1983). As Samuelson and Nordhaus (2004) suggested, all partial-equilibrium processes occur simultaneously and all the processes of supply and demand, of cost and preference, of factor productivity and demand are really different aspects of one vast, simultaneous and, interdependent process (Lindblom, 2001). Although mainstream theory recognises the imperfection of the real world and the essential role played by the state, it is not at the core of mainstream economic analysis. It is clear that the modern competitive market alone can give rise to major social problems; state and other organisations have been engaged to play influential roles in the property sector both in the past and the present. The “weakness” of the general equilibrium model in matching actual market evidence requires it to be expanded further with the support of new economic theories about institutional changes and the state’s role as an integrated part of the system. The new institutional economics, as well as Keynesian macroeconomic theory both contribute in this regard. Standard property cycle theory suggests a number of causes for property cycles with various lengths. Property cycle theory also supports specific techniques such as time-series decomposition to analysing property cycles. Thus it is important to examine the link between property cycle theory and the general equilibrium approach, because ideally, all standard theories used to explain market stability needs to be consistent with the refined equilibrium framework.

**Housing cycle and housing bubble**

The classic treatment of housing market dynamics is on its level of “efficiency” (Gatzlaff and Tirtiroglu, 1995; Case and Shiller, 1989; Keogh and D'ArCY, 1999) and the stock/rental adjustment processes (Dipasquale and Wheaton, 1994; Gabriel and Nothaft, 1988; Read, 1988; Wheaton, 1990). Current theory of fluctuations in residential markets typically concerns “housing bubbles” which are unsustainable price surge that do not fit with societal fundamentals (Black et al., 2006; Case and Shiller, 1994; Glaeser et al., 2008). Some paid tribute to speculative behaviour (Shiller, 2005; Malepezi and Wachter, 2005). Recent concerns about the severe housing price problem includes the housing crisis that is commonly known “the subprime crisis” (Wiedmann, 2006; Shiller, 2008). The study of business cycle, property cycle and more specific issues such as price “bubble” is closely linked to the advancement of economic theory and theories in other related fields. Identifying bubble and measure or testing the existence of bubble can be a major challenge. Within the general property cycle theory the behavioural foundation of bubble phenomenon can contribute a great deal to the understanding and the modelling of property markets. The study of the irregularity and risks about property markets over time is associated to the study of the psychological foundation of price bubbles and it is even more critical a factor in studying cycles in emerging or immature markets.

The same argument is equally valuable in a housing cycle study when considering affordability issues. Overall the nature of property markets suggests its lack of efficiency so that individual behaviour (e.g. decision-making) and interactions (e.g. games) play an
important role. In reality this is reflected in the general public's view on the field of real estate and its associated professions i.e. speculative people and organisations. Similar to commercial property research, housing prices are subject to cyclical fluctuations, e.g. three-year cycles in an urban property market. Furthermore housing investment also contributes to property cycles (Jud and Winkler, 2003; Jud, 2003). Recently the social behaviour is found to be an important basis for understanding housing markets (Meen and Meen, 2003; Meese and Wallace, 2003). However housing cycle theory is linked to demographical conditions and changes in conditions of a society at aggregate levels hence often contain higher complexity than the theory of commercial property cycles.

**Significance of housing cycles at local level**

Housing price movement or cyclical fluctuations at the city level is much studied (Tse et al., 1998; Wheaton, 1985; Hui and Lui, 2002; Macfarlane, 1998). On the other hand, the movements of prices at local level is not much studies perhaps due to a lack of data that are consistent, of good quality and covering time period of sufficient length. The dynamics of city housing market is much related to the conditions at this sub-market level. Without an understanding at this detail level, cyclical behaviours that are observed at city, provincial or national levels seem sometimes to lack of theoretical foundation or practical significance.

Investigation of property cycles at this level, however, faces several challenges:

- there is an underlying assumption that each suburb or local area can be “grouped” to reflect a relatively separated residential property market (there is a lack of theoretical support for this assumption);
- relatively low level of number of transactions to validate aggregate claim;
- second homes or investment homes sometime are difficult to be separated to others which reflects a different level of behaviour at both micro and aggregate levels; and
- unlike commercial property markets where a less regulated but highly unified market structure exists, local housing markets are subject to various policy controls and typically affected by local councils and planning authorities, which easily distort results from comparison.

Nonetheless these previously mentioned challenges should not undermine the importance of understanding cyclical behaviours of local residential markets, especially at the time when the housing markets are subject to greater uncertainty due to economic climate changes, asset market conditions (e.g. the credit market and lending behaviour) and demographical changes such as migration as well as government's response in forms of policies and regulations.

**Conclusion**

This paper reviewed property cycle theory and the relevance of the larger body of knowledge about cycles in other applications with reference to the housing market. Although business cycles are linked to commercial property cycles in established market systems, there is less research undertaken into property cycles in housing markets on an individual area basis. Property cycle research has the potential to assist low income
homeowners to better understand the characteristics of cycles and associated risks in each residential, although traditionally most of the focus has been placed on the high profile commercial markets.

This research has argued that an increased understanding of property cycles in an established housing market can help to address housing affordability by understanding inevitable market downturns. This is based on the belief that an increased level of certainty about cycle behaviour in particular suburbs will give households a higher level of confidence when considering whether and when to enter the market. Further research is required based on other related characteristics including suburb ranking, level of gentrification and distance to the city centre. This research also encourages different types of research into property markets and seeks to provide a different understanding to benefit all housing market stakeholders, especially households in the lower bracket who can least afford an unavoidable cyclical downturn and the associated negative equity scenario.

<table>
<thead>
<tr>
<th>Real economy</th>
<th>Property market</th>
<th>money economy</th>
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<tbody>
<tr>
<td>Economic up-turn</td>
<td>Increased property demand</td>
<td>Credit expansion</td>
</tr>
<tr>
<td></td>
<td>Supply shortage</td>
<td></td>
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<tr>
<td>Economic boom</td>
<td>Building boom</td>
<td>Credit boom</td>
</tr>
<tr>
<td>Economic down-turn</td>
<td>Slackening demand</td>
<td>Rising interest rates</td>
</tr>
<tr>
<td></td>
<td>Falling rents/rising yields</td>
<td></td>
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<tr>
<td>Recession</td>
<td>Property slump</td>
<td>Credit squeeze</td>
</tr>
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</table>

Source: Barras (1994)

Figure 1 How the building cycle works

<table>
<thead>
<tr>
<th></th>
<th>Affordable (3.0 and under)</th>
<th>Moderately unaffordable (3.1-4.0)</th>
<th>Seriously unaffordable (4.1-5.0)</th>
<th>Severely unaffordable (5.1 and over)</th>
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<th>Median</th>
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<tr>
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<td>5</td>
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<td>23</td>
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<td>74</td>
<td>40</td>
<td>64</td>
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Table 1 Housing stress for households and individuals

Source: Cox et al. (2009)
Table II

<table>
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<td>9.4</td>
<td>9.3</td>
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<td>21.0</td>
<td>21.4</td>
<td>19.9</td>
<td>18.4</td>
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Source: Marks and Sedgwick (2008)

Table II. Housing stress for households and individuals

References

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