Prices, Expectations and the Changing Housing Market: A Commentary and Discussion

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Abstract

The last decade of housing price fluctuation, crises of housing affordability and the turmoil of housing foreclosures brought housing, and housing markets, closer to center stage in the debates over the future of the global economy. As part of the renewed interest in housing some recent papers have questioned whether we have an adequate model for understanding housing prices and housing market behavior more broadly. Specifically, is the expected utility model of housing market behavior, and the associated hedonic housing price model, still relevant in an increasingly uncertain housing market? Certainly the recent rapid escalation in housing prices and the behavior of agents in the housing market has further stimulated rethinking of our models of housing markets. Analysts are asking what is the future behavior of and in housing markets, and how will the housing market function in the post housing market bubble decade. It is a useful time to take another look at how the housing market behaves and what underpins housing prices. Even to ask the question, do we need a new model of housing market behavior?

The Context

The last half of the 20th Century was a period of unprecedented growth in homeownership in the United States and Europe as affluence and policy created a new "ownership society." Homeownership was and is the goal of a substantial proportion of households, certainly in the US and the UK, but in New Zealand, Australia and Europe as well. Although housing appreciated only slowly during the 1950s and 1960s the forced saving of paying off a mortgage gave, at least, the illusion of financial gain. But housing provided more than modest financial gains it provided middle class access to neighborhoods with good schools, low crime and a set of community services. It also provided better quality residences than rental housing, and freedom from arbitrary landlord demands and evictions.[1]

Government policy and the housing market functioned to bring large numbers of families into ownership during the long period of rising affluence after the Second World War. The housing market also functioned as a central part of the larger economy. As incomes and real wealth increased families bought mobility and housing (Levy, 1998). Car ownership in the US increased by 21 million between 1950 and 1960 and in the same period the number of owner occupied homes almost doubled (Levy, 1998). The demand had always been there but incomes had lagged. In addition the car opened up new areas for construction and (cheap) land with mass home construction techniques revolutionized the availability of the ownership society.

The homeownership society is inextricably bound up with government policy and government actions. The loans to US Veterans after World War II, mortgage deductions for homeowners and the creation of the large lending agencies of Fannie Mae and Freddie Mac were central elements of the creation of an ownership society. The ownership stimulus fueled the building industry, and the national economy during the 1960s, 1970s and into the 1980s, and was key to the creation of a middle class society. Government inputs were fundamental in the shift from a renting to an owning society and not just in the United States but in much of Europe as well. Certainly both policy and individual behavior worked to emphasize a society in which families, especially middle class families were stakeholders in the financial well being of society.

Not only was there a shift to ownership it began to be seen as part of family asset accumulation. When US society was a society or renters housing assets were the province of developers and landlords. With the movement to ownership families began to think of housing as part of their asset portfolio. Even though house prices fluctuated, the general steady increase in house prices in the last several decades provided a significant addition to family assets. By the early 1990s housing equity represented about 45 percent of the net worth of the average homeowner (McCarthy, van Zandt and Rohe, 2001). And, for minority households the proportion of assets held in the house is much greater than for

[1] The quality of residences is in general greater for owners as owner-occupied units are usually larger and far less likely to have physical problems Overall, renters are twice as likely to suffer from physical deficiencies and three times more likely to lived in crowded conditions and homeowners live in units which are on average about a third larger (McCarthy, Van Zandt and Rohe, 2001).

white households. For Hispanics housing equity represented nearly 61 percent of household net worth (McCarthy, van Zandt and Rohe, 2001).

Now, the events of the past decade and a half have brought the issues of ownership and affordability into sharp focus. In this paper and commentary I review the context of the housing price escalation and then discuss two papers in this volume which ask whether our models of housing price formulation and housing market behavior are adequate explanations of market functioning. To do that it is helpful to revisit behavior in the housing market and the confluence of events that created the recent inflation and deflation in the housing market.

Affluence, the "ownership society" and psychological responses

For most households the tenure decision is still the major expenditure decision that a family makes over their life course, and for several decades the ownership decision was about home and shelter and access to work and amenities. There were earlier price escalations which suggested a shift from house as home to house as investment, notably in the 1970s but the real shift in attitudes and expectations really began in the late 1990s. In this most recent shift in psychology families began to view housing as both home and a major part of their investment portfolio. The rapid increases in housing prices shifted the psychology from the house simply as a place to raise a family and have a secure living environment, to how much money was being generated by the rise in property values.

During the long period of population growth and steadily increasing incomes in the 1950s and 1960s, housing was built for the surge of baby boomers who were marrying and having children. Over a two decade period in the 1960s and 1970s more than 1.5 million housing units a year were added to the US housing stock (Sternlieb and Hughes, 1980). But beginning in the 1980s house building and housing projects changed in their creation and delivery. Land costs increased, and with increasing affluence consumers demanded more space, more amenities and greater infrastructure. The cost of building housing increased and new environmental and other building regulations further increased the cost of housing construction. Permit costs now include fees for a myriad set of agencies many of which have little if any relationship to building homes.

The suburban development in the US after the Second World War to accommodate the growth in the baby boom population emphasized basic housing developments. The infrastructure of schools, parks and the other amenities of "urbanness" were left to be provided later by local governments (Sternlieb and Hughes, 1980). Land was relatively inexpensive, the house was small, less than 1000 sq feet, and had one, or one and a half bathrooms. It was a home and a yard. The average amount of space in a new US house is now more than twice what is was in the 1950s when the baby boom was in full flower. Between 1950 and 1990 the average house size increased from 983 sq feet (28 sq.m) to 2080 square feet (60 sq.m), and by 2004 the size had increased further to 2349 sq feet (67sq. m).

Table 1: The Average US House Size (Sq feet) 1950-2004

1950	983 sq ft
1970	1500 sq ft
1990	2080 sq ft
2004	2349 sq ft

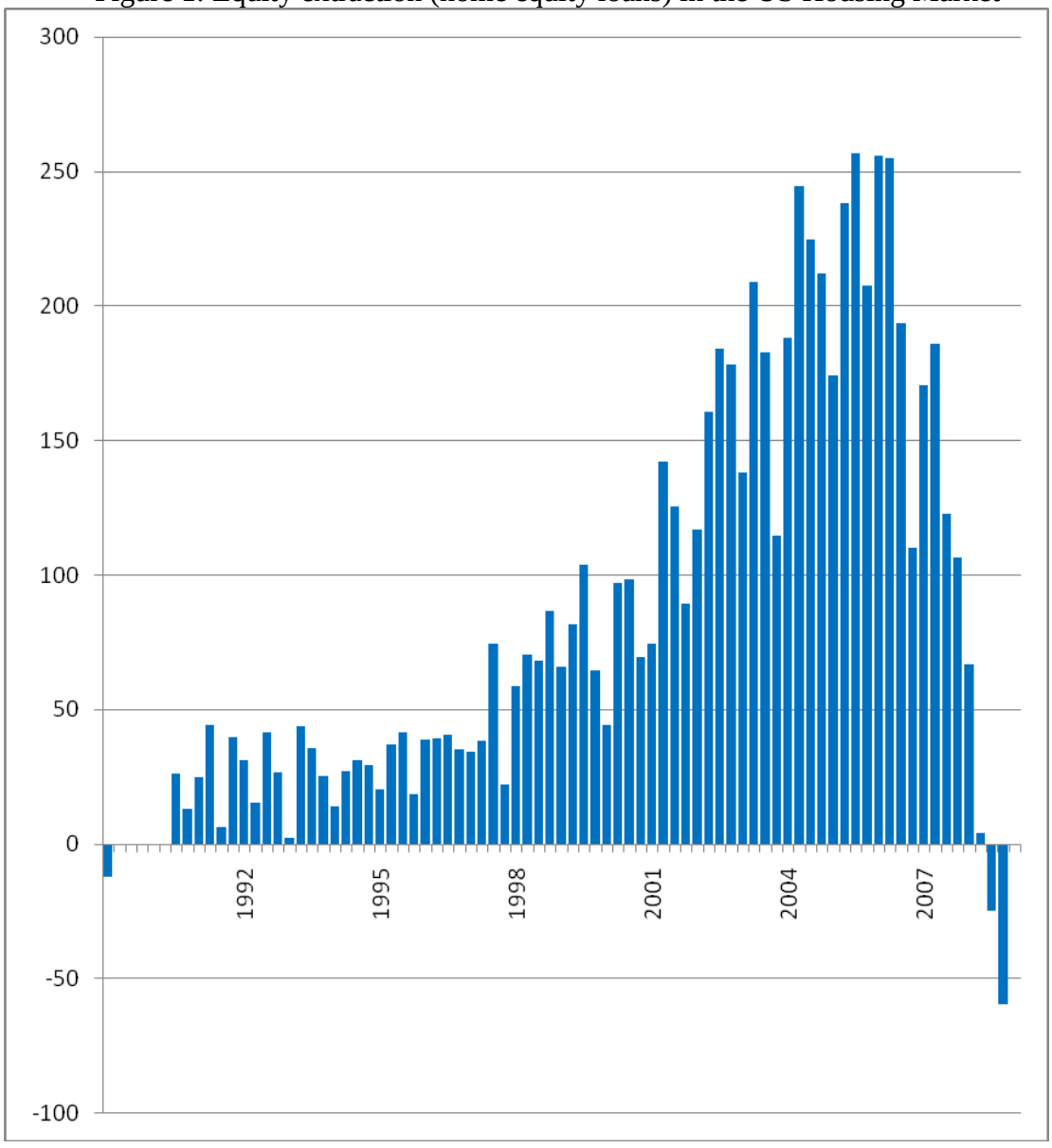
Source: National Association of Home Builders (Housing Facts, Figures and Trends for March 2006).

Along with the increase in the size of housing space and housing amenities ther was a subtle change in thinking about housing. Even by 1980 Sternlieb and Hughes identified what they called the post shelter society, a society in which "owning housing is to Americans as gold Napoleons in the mattress were to the French" P.97. Much of the change was generated by consumers willing to devote extraordinary shares of income to home ownership. The idea of a society less concerned with shelter and more concerned with house values (Sternlieb's post shelter society) rapidly faded from the academic literature. But, beginning in the late 1990s house prices began to rise again, and with it a return to the psychology of expectations. Those in the housing market began to think of the rapidly increasing house values as a resource to supplement stagnant incomes, or to pay for escalating costs of college and health care. Those who were not already in the housing market were concerned that they were missing the increases in equity. A mentality of "we must get into the housing market before it is too late" began to pervade house buyers, while those in the market recounted their huge "paper" gains. In this climate, housing price escalation and the rapid turnover of houses fueled a speculative fever. Families began to view housing as both home and ATM (debit card). The rapid increases in housing prices shifted the psychology from the house simply as a place to raise a family and have a secure living environment to how much money was being generated by the rise in property values.

The change in psychology is reflected in the aggregate change in home mortgage debt which nearly quadrupled in fifteen years from 2506 billion in 1990 to 8873 billion in 2005 (US Federal Reserve Board of Governors and EconStats.Z1 Flow of Fund www.econstats.com). Clearly, there was a change in psychology from house as home to house as investment/bank. The seasonally adjusted rate of next equity extraction rose from about 200 billion at the end of the 1990s to nearly a 1000 billion in 2005. Gross equity extraction fluctuated between 100 and 200 billion until 1998 and beginning in 1999 and accelerating in late 2001 gross equity extraction climbed rapidly and peaked in late 2004. Not all homeowners withdrew equity, but it is clear that a remarkable amount of money was indeed made available (Figure 1). It is difficult to determine precisely how this money was spent (e.g., cars, vacations, college tuition), but much of it certainly worked its way back into the housing market (e.g., vacation homes, investment properties and remodels). Still, money was also used to counter the relative stagnation in wages for large numbers of working families who then used the equity to subsidize inflating life

course needs, from health care to help with the growing costs of education, especially tertiary education for children and grandchildren. At the same time equity extraction provided for new consumer durables from cars to home entertainment systems.

Figure 1: Equity extraction (home equity loans) in the US Housing Market



Source: A. Greenspan, J Kennedy, Estimates of mortgage originations, repayment and debt on one-to-four family residences. Federal Reserve Board, Staff Policy Paper 2005-41.

FROM HOME TO HIGHLY LEVERAGED ASSET

How did prices become unhinged from housing assets? Beginning in the late-1990s various events and practices in both government policy and the financial industry

led to fundamental changes in credit provision and in the availability of mortgage financing. These changes ultimately led to an escalation of prices in some markets which were unrelated to the housing assets themselves.

First, there was a strong public policy push to increase home ownership. Expanding homeownership has long been a goal of US federal government policy, at least since the Herbert Hoover administration. Because minority and low income households were left out of the rapid increase in ownership in the 1950s and 1960s there was a special push to expand ownership in these communities. In 1992 the US government required positive action by Fannie Mae and Freddie Mac, specifically they were to devote a percentage of their lending towards affordable housing for lower income households. In 2000 the Department of Housing and Urban Development *required* Fannie Mae to dedicate 50 percent of its business to low and moderate income families and in 2002 President George W Bush set a goal of increasing minority homeownership by at least 6.5 million households by 2010, including a Fannie Mae commitment of $440 billion to establish Neighbor Works America with faith based organizations (Federal Register, 2000).

Second, the Federal Reserve under Alan Greenspan created easy credit. Very low interest rates and exceptional liquidity became the hall marks of federal polity. In addition, the Taxpayer Relief Act of 1997 expanded the capital gains exclusion which in turn encouraged people to us this greater liquidity to buy second homes and investment property. The Financial Services Modernization Act of 1999 deregulated banking, insurance and securities and created a financial services industry. In the same year, 1999, Fannie Mae eased credit restrictions to encourage banks to extend home mortgages to individuals whose credit was not good enough qualify for conventional loans (the so called sub-prime mortgages). Where the mortgage denial rate had been about 29 percent for conventional home loans in 1997 it was 14 percent in 2002-2003 (Weicher, 2000). The US Federal Reserve lowered the Federal Funds rate from 6.5 percent to 1.75 percent in a period of a little over a year during 2001. Growth in international demand for US investments further worked to keep liquidity high and interest rates low.

Third, Wall Street firms packaged mortgages and debt for the international investment community. New credit instruments emerged faster than the ability of regulatory agencies to review these new credit arrangements. As demand for mortgage backed securities and related investment vehicles increased, Wall Street sought new and larger sources of money. The financial innovations and new credit vehicles eventually worked their way down to Main Street and beyond as a wide-array of adjustable rate mortgages (ARMs), Option-ARMSs and Alt-A, interest-only loans were made available to new home owners.

Fourth, risk taking and over-leveraging increased as real estate became the investment vehicle to replace the crash in technology stocks. Not only did more and more financial institutions offer exotic mortgages, but lending standards were relaxed, and in some cases ignored altogether. The rise of NINJA loans (No Income, No Job or Assets) and other loans with little or negligible financial owner input epitomized the rush

to generate banking fees and broker's commissions. It was during this period of time that down payment requirements decreased or disappeared, which in turn contributed to the decoupling of house prices from historic trends and the fundamentals of value. As housing prices (in the coastal markets in the US especially) doubled and tripled, high down payments were seen as contributing to unaffordable housing costs. In fact, house prices were escalating due to extreme levels of leverage (e.g., zero down, low interest loans). Moreover, with the federal government promoting and guaranteeing such loans (e.g., FHA/VA loans with a 3 percent down payment), it is little wonder that the housing prices escalated so rapidly.

This confluence of events has been described as the perfect storm - a set of events which in combination created a financial crisis well beyond the housing market itself. Still, did it change basic behavior during the price escalation?[2]

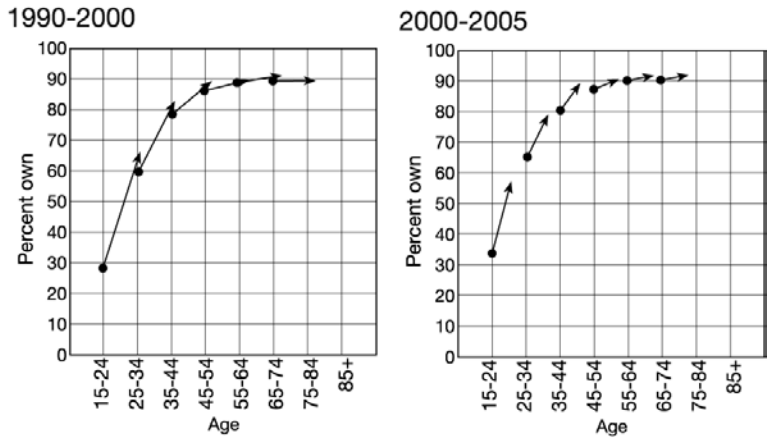
The housing market shift

The standard life course trajectory with increasing income, marriage and the addition of children is closely associated with the shift from renting to owning.[3] The ownership trajectory reflects both rising incomes and demographic changes, especially the changes related to the growing baby boom population. While relatively small proportions of households under 25 own their homes, by the late 30s and early 40s, the national homeownership rises to well above 70% for families. Standard cohort methods show the way in which this process works. For the two periods 1990 to 2000, and 2000-2005 there is a sustained shift from renting to owning, a shift that characterized earlier periods as well (Clark, 1998). The levels of ownership are somewhat higher in the 2000 to 2005 period but in general the process is similar in both the 1990-2000 and 2000-2005 periods. As predicted by theory the ownership process is closely associated with the change in family status. Once ownership is achieved there is little tendency to return to renting and ownership continues to exceed more than 90 percent on average.

[2] We will have to await a later census to determine whether the ownership trajectory changed during deflating prices

[3] The trajectory is created by taking all households in a ten year age cohort and aging that cohort ten years. In this way we can compare the rate of ownership for 15-24 year olds ten years later when they are 25-34 years old and by extension for each of the other age cohorts.

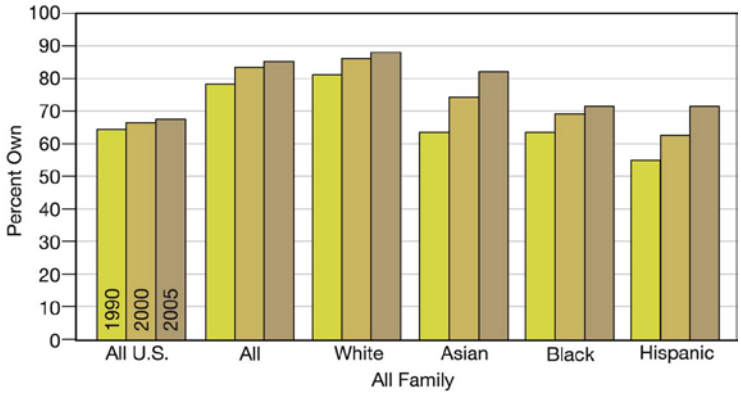
Figure 2: Trajectories of homeownership in the US Housing Market 1990-2000 and 2000-2005



Source: US Census of Population and Housing 2000 and American Community Survey, 2005.

The trajectory remained the same during the house price escalation but homeownership did increase beyond previous levels especially for minority households. Clearly the lowered credit requirements allowed significant gains fro Black and Hispanic families. That Asian families increased their rate of ownership from 63 to 82 percent in a decade and a half and Hispanic households from 54 to 71 percent is a striking illustration of the power of the ownership lure and the willingness of families to take on the high cost of becoming owners. The issue now is whether that ownership can be sustained in a volatile market.

Figure 1: Homeownership in the United States 1990-2005



Source: US Census of Population and Housing 1990 and 2000 and American Community Survey, 2005

Absent the recent price fluctuations and the turmoil in the foreclosure market in the US behavior seems to be remarkably similar to periods before the recent turmoil but

the operation of the housing market bound up in the expected utility framework is now seen as an incomplete model of the housing market and the mechanisms for price setting. Can household behavior (still) be explained by the life course and expected utility models or is there is a new psychology to housing markets and housing market behavior? Do we need a new model and of what form?

Rethinking Expected Utility Concepts and House Price Models

For the past three decades housing research has privileged expected utility models of housing choice and hedonic models of housing prices. These two approaches have been central in creating our understanding of how prices are set and how housing markets work. This is not to say that the standard models have been without critiques. Certainly, beginning with Maclennan (1982) and followed by a range of housing specialists including Genesove and Mayer (2001) and Simonsohn and Loewenstein (2006) for example, there have been both critiques and reformulations. Now, two new papers suggest that there are gains to be achieved by cross disciplinary perspectives and a greater flexibility in conceptualizations of housing market behavior. Both Marsh and Gibb (2011) and Smith (2011) cite the recent inflation and subsequent deflation in housing prices as a stimulus to rethink the adequacy of the housing disequilibrium model in general and the hedonic pricing model specifically. They suggest that the debate both about the nature of price change and about the psychological underpinning of the housing market, raises questions about the adequacy of models founded on standard assumptions, and that therefore it is time to explore potential alternatives.

There has been a long standing recognition that applying standard consumer models to housing decisions may not have contributed to real advances in understanding housing markets and housing prices. Maclennan (1982) raised a series of questions about the operation of the housing market and the appropriateness of the expected utility maximization approach. Amongst his concerns were the issues that are specific to these papers – the infrequency with which transactions occur for an individual buyer, the complexity of the commodity, the spatially dispersed nature of housing vacancies and the difficulty of acquiring and using information in making choices in the housing market. Despite these concerns, in general the neoclassical approach has dominated research in the housing market research for the past three to four decades.

The two new papers (Marsh and Gibb, and Smith) further challenge the expected utility conceptualization and suggest that concepts from behavioral economics and in Smith's case, from the social sciences more broadly, will yield greater insights into the operation of housing markets. The papers evaluate current thinking about the operation of the housing market and suggest new ways in which research into housing markets and housing market behavior can benefit from the ideas and concepts outside of traditional economic approaches.

Models of residential mobility and the behavior of the housing market

What are the central issues in this new thinking, what are the new paradigms and are they real alternatives to the classical models of housing markets and housing market

behavior? Marsh and Gibb and Smith build their review around four issues in the operation of the housing market- complexity, uncertainty, information use and underlying psychological responses in behavior. Although they take up these topics in different ways, and provide quite differing perspectives at the end the topics are those which raise most questions about how the expected utility model functions. At the heart of both papers is the argument that while expected utility theory assumes stable well-defined preferences, in fact neither preferences, nor beliefs nor decision making are standard, nor well-defined.

The key to new thinking in both the Marsh and Gibb and Smith papers is the focus on information processing, and the limitations that households face in developing strategies in the absence of full information. But even on this common topic there is a real distinction in the approach of each paper. The Marsh and Gibb paper addresses residential mobility as a behavioral approach to actions in the housing market, while Smith focuses more directly on the formation of housing prices. Naturally, in the end the issue of price and negotiating price is central to the working of the housing market. We will have to ask, do the suggestions in these papers advance our thinking of the operation of the housing market and do they provide a coherent replacement for expected utility models? To be fair, none of the authors claim to provide a new model but rather they point to the way to enlarge approaches to understanding market operations and the functioning of pricing mechanisms.

The central approach of the Marsh and Gibb paper is to argue that residential mobility is an inappropriate candidate for the application of expected utility theory, and that insights from the institutional and behavioral economics tradition can provide a more realistic and more useful explanation of mobility decisions and therefore behavior in the market. They direct our attention to the concepts of bounded rationality and in particular the notions of costly optimization. In situations when optimization is costly, decision makers rely on simple rules, which do not necessarily lead them to the optimal choice. Here they are drawing on the long tradition initiated by Newell and Simon (1972) on the underpinnings of economic behavior. They suggest that insights from behavioral economics will sharpen the understanding of the operation of the housing market and move away from unrealistic assumptions. Of course the question which Marsh and Gibb face is how to take this general notion and how to move beyond general propositions.

Their alternative is to set mobility and search at the heart of a reformulated approach to housing market behavior. They pose the question - should a household stay where they are, or relocate to obtain a desired level of housing related consumption? In many ways this is not a very different question from the classic question of the expected utility model. The difference of course, is that Marsh and Gibb suggest both a set of heuristics as the decision making context and a new conceptualization of aspirations. The aspirations are determined in part by the consumption behavior of a reference group. Here we see something quite different from the expected utility theory approach (Hanuschek and Quigley, (1978) by suggesting the role of social status and not just the consumption of housing per se. Unlike the expected utility model, which emphasizes the amount of space and the comparison of the current level of satisfaction with the level of

satisfaction to be gained by moving, the emphasis shifts to search and mobility, which is triggered when consuming the current dwelling drops below some reference level defined either as a social reference group or because the current location is predicted to decline. The heart of the new approach to behavior is to take the choice out of the context of objective comparisons of dwellings and to make it a comparative concern.

Marsh and Gibb outline a conceptual approach to housing market behavior which stresses a context in which a household envisages alternative scenarios. At the heart of this conceptualization is an emphasis on the "cognitive limitations of housing market decision makers and that households adapt strategies to cope with these limitations (page). Thus, theoretical formulations need to broaden the range of factors which go into the decision making pool, and moreover those formulations need to recognize that there is an inherent conservatism in housing market choices. And, equally important, that inertia increases with uncertainty. All of this is grist for the mill of rethinking how to build a model of decision making under uncertainty, and they outline a way forward. For Marsh and Gibb we must recognize that genuine uncertainty means that individuals are more likely to adopt behavior that is rational in a procedural, not substantive sense, and that *they employ more or less sophisticated rules which allow them to cope with uncertainty and reach a decision* (my emphasis). Still, in the end we are not provided with a workable alternative to the hypotheses that can be drawn from the expected utility framework. I will however, draw attention to a strategy for accomplishing the Marsh and Gibb suggestions.

The psychological underpinning of house prices

In a comprehensive review of house price dynamics Smith begins by noting that home prices are linked to consumption, underpin lending, tie financial assets to home values and affect the soundness of the financial sector (p.2). These generalizations are easy to accept but it is more difficult to accept the suggestion that existing research has not provided adequate explanations for the price dynamics of the housing market, and that few other critical concepts in housing studies are so little understood. It is this contention, which is that the heart of Smith's discussion of housing price dynamics and must naturally be at the heart of a discussion of whether we need a reformulated model of housing market behavior and of the formation of housing prices. Like Marsh and Gibb she positions her paper on the limitations of the neoclassical approaches to housing economics.

The paper covers similar ground to that in Marsh and Gibb with a review of the complexity of the housing markets, the cyclicity and volatility of prices and the implications of the mainstream dependency on the rational behavior of homebuyers. While conceding that there is still much that can be done with formal quantitative analyses of residential property prices, she argues that it is time to complement, at the very least, the formal neoclassical models with alternative paradigms of housing market behavior. The paradigm shift that Smith espouses focuses on peoples' and households' psychological motivations and their thought processes. It is a paradigm, which argues for the intersection between economics and psychology and that the presumptions built into

neoclassical economic models can be enriched and elaborated without abandoning econometrics, or more properly as Smith points out, precluding the application of the tools of theoretical analysis. In essence, the paradigm shift is to focus on the psychology of price, the psychology of behavior in the market, and the psychology of consumer behavior more broadly. Such an approach is better able to look at what appears to be irrational and contextual responses and is a richer and more nuanced approach to prices.

Given that Smith paper and the Marsh and Gibb paper were in part simulated by the recent volatility in house prices we must pause and ask whether the recent behavior was in fact irrational or outside of what can be explained by housing market models. Clearly prices rose dramatically, and people responded by attempting to make gains from that price rise. Some were successful, others through poor decision making or greed found themselves with paper if not real losses. Still, some were able to purchase properties, sell them again and make substantial gains. This is in fact the role of the marketplace. That some households, perhaps with less information or shall we say more greed, made poor decisions in a rapidly inflating housing market is not surprising. This is very little different from other periods in housing market turmoil and may not be a case for a paradigm shift. Certainly Tulip mania, the Teapot Dome and other market disruptions do not establish that the market is not working. There is no clear cut argument that the market was not working, it just did not work the way in which some would like to see it work – more balanced and perhaps more socially responsible.

An important, and perhaps one of the important arguments in the Smith paper comes from the observation that economists rarely ask people what they are thinking and that there is much to be gained by bringing the social science perspective to bear on how housing prices are formed. There is no question that asking questions and analyzing those responses can challenge us to reconsider our approach to housing markets and to housing market behavior. In a recent paper (Morrison and Clark, 2008) we point out that while the neo classical migration models which rely on wages as an explanatory mechanism for movement between labor markets, that questionnaires routinely fail to support that finding. Is the economic approach wrong? Probably not but we are able to show that the motivation for migration is more complex than a simple response to wage differences across labor markets. To extend this thinking to housing markets is well worthwhile and will likely yield new findings on housing market behavior. Clearly as Smith notes, the personality of price and the psychology of decision-making are an important function of how the market operates and they have not received the attention that might well bring them into the center of understanding the housing market and its operation.

Like Marsh and Gibb the discussion in the Smith paper is clearly focused on the gains from bringing into play the psychology of expectations. The observation that buyers are uncertain about their preferences and (easily?) influenced by arbitrary clues leads to the suggestion that economic fundamentals are unlikely to explain behaviors and that psychological drivers “might usefully be added to the mix”. But what is the mix? It is here that this paper like the Marsh and Gibb paper is rich in new thinking but shorter in how we can bring these new insights into models which provide testable hypotheses and new findings. Still, the suggestion that behaviors and prices are different in different

contexts leads to some interesting observations. Prices and behavior may well be different in "glamour cities" those which support high-tech industries and world-class universities. They may be places where home price appreciation surges ahead of income, fueled by global shifts and the movement of capital across regions rather than within nations. But are the traditional growth models suspended in these "glamour cities"? Why should home prices be driven by fundamentals in some cities while in glamour cities price dynamics are more sensitive to irrational behaviors? Are high prices less a function of attractive amenities and a simple willingness to pay? These are research questions which may well be amenable to hypothesis testing and analysis. Whether there are some cities, where price rises are driven by fundamentals and others by speculative and psychological imperatives is not yet clear, nor is it clear how it would change the modeling strategy.

Correctly, Smith notes that the tendency even when there are bubbles, is to leave influences other than market fundamentals to the realm of residuals. Although she acknowledges the appeal of a modeling strategy in which psychological drivers account for the variation in prices after the fundamentals have played their role, her thinking is that this downplays the role of the emotional economy. The paper argues that there is much to be gained by looking at material sociology and social psychology for ideas to enrich the analysis of housing prices. However, when she turns to "animal spirits" as an alternative to Adam Smith's "invisible hand" my anxiety increases. And when she cites McCloskey (albeit cautiously) that "most of what appears in the best journals of economics is unscientific rubbish" I find I cannot agree. Yes, there is poor research and presentation in all fields but I do not find such suggestions useful. She suggests that the literature which describes animal spirits in economics is still small, and it may well be that it should remain so.

There is much in these current papers to challenge current thinking. There is no doubt that we can gain from broadening our perspective and thinking outside the box. Drawing from psychology is clearly a part of the way forward in understanding how the decision maker operates. That is, understanding housing markets might be enriched by bringing into play thinking from social psychology, nor should thinking from material sociology be dismissed lightly. At the same time, it is not clear that either of these papers has provided a structure to replace the neoclassical understanding of prices and housing market's. No one would disagree that there is more to the operation of the housing market than the operation of supply and demand and the setting of prices. There is genuine uncertainty in making choices in the housing market, and that uncertainty means that individuals are unlikely to behave in a completely rational manner. Agents in the housing market employ more or less sophisticated behavior rules, which allow them to cope with uncertainty and reach a decision. As Marsh and Gibb conclude "Recognizing uncertainty, complexity and the important role played by expectations require economic models built on micro-foundations of boundedly rational agents following relatively simply rules. It is this finding which suggests that future research might gain by pursuing alternative strategies to decision-making under certainty – namely the approaches which use production system models for behavior in the housing market.

Alternative Modeling Strategies

In the search for a new paradigm, both to understand behavior in the housing market, and for setting prices it is worthwhile returning to research of a decade or two ago, which took up just these questions. In a strategy which is an alternative to the expected utility theory model, Clark and Smith (1985), Smith (1983) and Smith Clark and Cotton (1984) developed a series of computational models which were specifically concerned with information use and the strategies involved in understanding how decisions get made in the housing market. These more flexible production system models can be seen as a direct alternative to the more restrictive expected utility and Bayesian theoretical models. In its most basic form a PS (production system) model is simply a set of IF-THEN rules (or production rules), a short term memory (STM) and a mechanism for controlling which rule to apply in a given context. In effect they are a collection of heuristic rules of behavior and a scheme for the appropriate application of such rules. They come close to what Marsh and Gibb propose as a mechanism for examining decision making in the housing market. Production system models of human decision making behavior (Anderson, 1981), which derive from the Newell and Simon (1972) notions of satisfying, also meet the criterion suggested by Marsh and Gibb of a procedural approach to human decision making.

If we are to provide an alternative to the expected utility model and in a formalized context then it will probably need to come from some form of production system or agent based modeling. There is a growing and rich literature of agent based models which have been used in a variety of contexts. They have not yet been developed in any extended way in housing market models. The value of these approaches is that they resonate with the call for more empirically based modeling of housing market behavior by both Smith and Marsh and Gibb. Production system and agent based modeling can be used to take the empirical data from a survey or experimental games and use that data to induce a production system representation of such behavior. The procedures are specifically designed to obtain a minimal set of rules that can predict conditions under which an individual chooses various decision making rules during a specific decision making task.

While production system models are certainly an analytic way forward for understanding individual behavior, there are also aggregate models which employ related strategies. In order to understand “what drives housing prices” Kahn (2008) develops a growth model which focuses on the major inputs which might explain the movements of housing prices over relatively long periods of time. It is beyond the scope of this paper to examine that approach but suffice it to say that Kahn (2008) is able to produce reasonable simulations of price movements and includes within the model a “realistic model of learning about the productivity process”. That work and other similar macro approaches to prices, suggests that adaptations of the neo- classical model still have some life in them.

Concluding Observations

There is much to be gained by a careful reading of the Marsh and Gibb and Smith papers and new ideas abound. Even testing or examining the hypotheses that Marsh and Gibb list at the end of their paper would be a great start to providing new thinking on the housing market. There have been calls for new models in the past but now with greater computational power and the richness embedded in agent based models we may be poised to re-conceptualize models of the housing market. Moreover, agent based models can bring an interdisciplinary perspective, another of the calls that are central to the papers I have been discussing in this text.

References

Anderson, J. (1981) *Language , Memory and Thought*. Hillsdale, N.J. Lawrence Erlbaum Associates

Clark W.A.V. Smith T.R. (1985) Production system models of residential search behavior: a comparison of simulated and real world behavior. Environment and Planning A, 17, 555-568.

Clark W A V, Dieleman F (1996) *Households and Housing: Choice and Outcomes in the Housing Market*. Rutgers, State University, Center for Urban Policy Research.

Clark, W. A. V. (1998) *The California Cauldron: Immigration and the Fortunes of Local Communitie*s. New York Guilford.

Federal Register (2000) Vol. 65, No. 24, Tuesday October 31, 2000, Rules and Regulations.

Genesove, D. Mayer C (2001) Nominal loss aversion and seller behavior: Evidence from the housing market *Quarterly Journal of Economics* 116 1233-1260

Hanushek,E. and Quigley, J. (1978) An explicit model of intra-metropolitan mobility. *Land Economics* 54, 411-429.

Kahn, J.A. (2008) What drives housing prices? *Federal Reserve Bank of New York*, Report 345

Levy, F. (1998) *The new dollars and dreams*. New York, Russell Sage Foundation

McCarthy G, Van Zandt S, Rohe W (2001) The economic benefits and costs of homeownership: A critical assessment of the research (Research Institute for Housing America, Washington, DC)

Maclennan , D. (1982) *Housing Economics: An applied approach*. Harlow, Longman

Morrison, P. Clark, W.A.V. Nissen, K. and Didham, R. (2008).Moving for employment reasons. Proceedings of the 13th Conference Labor, Employment and Work, Wellington New Zealand, Victoria University.

Newell, A and Simon, H. A. (1972) Human Problem Solving. Englewood Cliffs, N.J. Prentice Hall

Shiller R (2000) *Irrational Exuberance,* (Princeton University Press).

Simonsohn, U. and Loewenstein, G. (2006) Mistake #37: The effect of previously encountered prices on current housing demand. *Economic Journal* 116 175-199.

Smith, T.R. (1983) Computation process models of individual decision making. In *Cities and Regions as non-linear Decision Systems* pp. 175-210. American Association for the Advancement of Science. Ed. R.W.Crosby

Smith, T.R. Clark,W.A.V. and Cotton, J, (1984) Deriving and testing production system models of sequential decision making behavior, *Geographical Analysis* 16: 191-222.

Smith, T.R., Pelligrino, J. and Golledge R.G. (1982) Computational process modeling of spatial cognition and behavior. *Geographical Analysis* 14, 305-325

Sternlieb G, Hughes J (1980) *Americas Housing: problems and prospects*. (Rutgers University, Center for Urban Policy Research, New Brunswick).

White House Office of the Press Secretary (2002) President hosts conference on minority ownership Oct. 1, 2002 – www.policyalmanac.org)

Weicher J (2000) Governor Bush's program for homeownership and community building. *Housing America Update*: 1,1-5 (Research Institute for Housing America).