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Behavioural Real Estate

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Behavioural Real Estate

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Abstract

All over the world there is a strong infatuation towards real estate. Nevertheless there seems to be a (sub)conscious omission in incorporating this stylised fact into the academic literature. The decision of buying residential property may be one of the most important transaction people will ever make, and the emotional attachment when houses become homes is inevitable. Can we effectively sustain that properties, houses, and homes are equivalent terms? It is fair to say that while its importance is undeniable, the consumption function as well as the social and emotional perspective of real estate are often neglected. The behavioural approach to decision making under uncertainty combines insights from psychology and sociology into real estate finance and investment. We aim to provide an overview of the current state of affairs of the main themes in which the behavioural approach intersects with real estate to gain a deeper understanding of the build environment. It seems to be the general agreement that behavioural studies can help to gain insight into property markets, but that a large component of behavioural decision making is left undiscovered.

Keywords: real estate markets, market participants, behavioural decision making
JEL-codes: G02, R31, R33

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1 The build environment evolution: from rationality and efficiency to irrational exuberance

Traditional financial theory is based on the notion that investors act rationally, correctly considering all currently available information in the decision making process (Kishore, 2006). Such 'decision makers' are characterised as logically weighing up the respective costs and benefits before acting. This is in line with the concept of utility maximisation (UM). UM is a theory derived from a rational decision making assumption. In finance, UM at the individual level leads to the Efficient Market Hypothesis (EMH), as introduced by Fama (1970). EMH states that efficient markets reflect all available information. Applied to real estate, this line of thinking implies that future house prices are unpredictable based on currently available information; there is no such thing as a free lunch.

Although it is commonly known that real estate markets are rather illiquid, the majority of academics assume that these markets are efficient; it is assumed that participants act in accordance with rationality. Farlow (2004a), for example, argues that the fundamental determinants of house prices in this efficient market are income, interest rates, housing stock, demographic changes, credit availability, and the tax structure.

By the end of the 1980s, however, studies that concluded that housing markets are inefficient became more popular. Case and Shiller (1989) find positive serial correlation in single family homes. In addition, they conclude that information relating to real interest rates, which should be an important determinant, does not appear to be incorporated into the pricing of housing. Extended research by Case and Shiller (1990), with additional fundamental forecasting variables, leads to a comparable conclusion: price changes observed in one year succeed in the following year. Furthermore, the explanatory power of regressions to explain changes in house prices, based on fundamentals, remains low (Case and Shiller, 1990). Cutler, Poterba, and Summers (1991) find a strong positive autocorrelation structure reaching out for at least three years for both residential real estate and farms, on average for the US and for a number of metropolitan areas. Moreover, Brown and Matysiak (2000) use a regression model to test the influence of momentum in property investment indices. By reference to the IPD All Property Index, results show that returns from previous years can explain 80 percent of current returns. This implies that current returns can be predicted using historical returns data (Brown and Matysiak, 2000, p. 437). Clayton (1998) also provides strong evidence against market efficiency: results show that future returns for apartments in

Vancouver, Canada can be predicted by instruments such as historical annual returns and a measure of deviation from fundamental prices. Kouwenberg and Zwinkels (2011) find that a price forecast combining momentum and mean reversion is able to outperform a range of benchmark models. These findings imply that a sharp run in property prices is in part due to over-optimistic expectations.

Quigley (1999) argues that, although economic fundamentals are important determinants of house prices, such factors still leave a large share of changes in real estate prices unexplained. Simple models of economic fundamentals explain only between 10 and 40 percent of changes in property prices. This is confirmed by Farlow (2004a), who argues that the most plausible explanation for the dramatic increase in house prices during the last decades cannot be found in supply and demand fundamentals. In short, house prices are very volatile, and this volatility is not explained by fundamentals. Therefore, it is posited that house prices are, to a large extent, determined by the behaviour of consumers and financial institutions (FI).

The unavailability of a long high quality time series on house prices or rents makes it hard to formally test the efficiency of the real estate market[1]. However, the previous section showed that future housing price movements can be predicted from information that is available now, for example, deviations from long term trends and recent price increases. By consequence, the only conclusion can be that housing markets are inefficient (Farlow, 2005b).

An obvious reaction to market inefficiency is arbitrage. Arbitrage signifies taking advantage of pricing inefficiencies without any exposure to risk. However, in practice consumers and FI do not arbitrage in the housing market (Farlow, 2004b). In the words of Barberis and Thaler (2003): there are limits to arbitrage.

Arbitrage in this market is risky for several reasons. First, a player has to be sure that there are enough players in the market that are also arbitraging; an insufficient proportion of arbitrageurs might cause the inefficiency to persist. The second source of risk is the impossibility to obtain general agreement on the deviation from a certain fundamental value. Thirdly, houses are heterogeneous assets that rarely have close substitutes and hence are traded in segmented markets. In addition, no central exchange exists so information is far from perfect. Furthermore, the relatively high transaction costs and the absence of short-selling opportunities in housing markets makes arbitrage even riskier (Hong and Stein, 2003;

[1] An exception is Ambrose et al. (2011), who study 355 years of house prices in Amsterdam and find large and persistent deviations of price from fundamental value

Farlow, 2004b). Hence, it is better to exploit momentum in this risky market than to try to fight against it in time of excess (Farlow, 2005b).

Other studies relate market efficiency to the appearance of booms and busts in house prices. De Bondt (1995) finds that, as well as economic fundamentals, institutional factors such as taxes and regulation play a role. However, according to Bondt (1995), institutional factors alone cannot explain booms and busts. The overall judgment of efficiency in real estate markets is that, although there are problems in testing efficiency, volatility in house price values cannot be easily explained by movements in economic fundamentals. Farlow (2005a) attempts to explain the rapid increase in house prices during the early 2000s stating that a large proportion of stakeholders were disillusioned by equities and moved their assets to the housing market. Findings suggest that US housing stock increased in paper value by $5 trillion in four years, which equates to the rise in paper value of the stock market in the late 1990s. This asset movement contributes to our understanding of the increasing house prices after 2000, but cannot fully explain this change. Seslen (2004) findings state that households are more likely to trade when prices have been increasing or are expected to increase, and less likely to trade when prices have been decreasing or are expected to decrease. Moreover, it is shown that irrationality is more concentrated in the downside than the upside of the housing market.

The above studies found that the real estate market is, to a certain extent, inefficient. This inefficiency is expressed by observation that house prices are predictable, persistently deviate from fundamental values, and are too volatile relative to fundamental values. As a reaction to these demonstrations of market inefficiency and the awareness of the influence of human behaviour and social contagion, an alternative approach to the study real estate emerged. This approach is called Behavioural Real Estate (hereafter referred to as BRE). It deviates from the traditional neoclassical financial focus to study real estate by explaining changes in house prices with fundamentals. Black et al. (2003) argue that if every real estate problem is treated as a financial problem, scientists miss the opportunity to use insights from other disciplines. Real estate does not only concern finance, but also marketing, management, law, planning, etc. The similarity of all these disciplines is that they derive their existence from human behaviour. Thus, research should go beyond cash-flows and provide space for the psychological side of stakeholders in real estate (Black et al., 2003).

Housing provides both investment and consumption. Therefore, the focus of BRE differs depending on the researchers' primary focus. A majority concentrates on the investment

function of property and the role of the valuation process (Diaz, 1999). These studies stress the financial and physical aspects of the house. A minority studies behavioural phenomena, with an eye for the consumption function that pays attention to the social and emotional side of homeownership. This is especially important given the relatively large size of real estate transactions and low frequency of transactions, especially for household buyers. Furthermore, the real estate market at large is comprised of a broad range of different participants, such as corporate buyers, household buyers, intermediaries, and institutions. Sommervoll et al. (2010) show that the interaction between different, boundedly rational, market participants can result in endogenous house price cycles. Therefore, in the remainder of this paper we will give an overview of the research on behavioural biases that are prevalent for each group of market participants. Combined, the biases at the individual level may provide part of the explanation for the inefficiencies in real estate markets.

This paper is organised as follows: the next section will describe previous research about the corporate and household investment function of houses, and focuses on biases that are found. Subsequently, studies on appraisal and the difference between the normative and descriptive valuation process are presented. Section 3 focuses on the non-financial motives of housing decisions; consumer behaviour concerning homeownership including residential mobility and emotional attachment. In Section 4, the housing market will be put in a historical perspective, paying particular attention to political policy, institutional changes, and the development of less conventional mortgage products. Finally, a conclusion will be provided in Section 5.

2 Real estate finance and investment: The price of a house or the value of a home?

Housing provides different functions. Shiller (2007) stresses that purchasing a house is both an investment decision and a consumption decision. This diversity makes housing investment hard to compare to other financial investment assets that do not provide direct consumption (Benjamin, Chinloy, and Jud, 2004). This section will consider the investment function of property. The first subsection focuses on corporate investors, while the second covers the household perspective. Finally, we focus on the appraiser's perspective. The key issue is always the value of a house and how it is determined. This determination includes rational as well as irrational behaviour, implying that it deviates from an optimal strategy in pursuit

of trying to determine a true valuation. Special attention is offered to irrational behaviour in property investment.

2.1 Corporate real estate

Real estate should play a significant role in optimal portfolio choices for institutional investors. Fugazza et al. (2007) find that optimal portfolio weightings are between 12 and 44 percent consisting of European stocks, bonds, real estate, and cash, when excess asset returns are predictable. The weight depends mainly on the time horizon and the level of risk aversion (Fugazza et al., 2007). Case et al. (1999) analyzed the real estate market and found relatively low correlation coefficients for all property types across countries. Correlation coefficients ranged from 0.33 to 0.44, indicating the presence of diversification opportunities. Sirmans and Worzala (2003) confirmed that real estate portfolios should be well-diversified. However, there are common continental and regional factors that should be considered in overall investment strategy. Strategies should not only imply geographical diversification, another major role is played by currency risk diversification (Sirmans and Worzala, 2003). Brounen and Eicholtz (2005) studied corporate implications for real estate ownership. They find that owning real estate decreases the systematic risk of a firm. In addition, they show that stock returns are lowest for firms with high real estate ownership levels. Over the years real estate ownership has become less popular due to leasing alternatives.

Investment decisions in real estate are traditionally assumed to be a rational process. The process concentrates on sets of rules that decision makers should follow (Gallimore, Hansz, and Gray, 2000). This normative process can be divided into different stages. Jaffe and Sirmans (1995) propose a model to structure property investment decisions. This model consists of five stages including an analysis of the initial environment, setting goals, an analysis on market conditions, and a combination of tactical and financial decisions. In general, it can be stated that the prescriptive literature on real estate investment about valuation, returns and diversification is widely available and well integrated (Brown and Matysiak, 2000). In contrast, Gallimore et al. (2000) state that literature on investment decision making is "sparse, loosely integrated and focused principally upon large, institutional investors" (Gallimore and Gray, 2002, p. 602). This is more notable in descriptive literature on property investment, which is evaluated in the next section.

Several studies show that behaviour deviates from the prescribed normative process, predominantly, because normative process require a lot of information and information process-

ing. Gallimore et al. (2000) study investment decisions in small property companies. They focus on how investment strategies are formulated and what determines the final decisions to buy or sell. They hypothesised that corporate decision-making exhibits, as does individual decision making, heuristics and biases. Bokhari and Geltner (2011) even document that certain biases are stronger the more sophisticated or experienced the commercial investor is.

Information that is passed through market contacts is heavily weighted, potentially leading to behaviour that is biased by availability and overreaction. After all, observed behaviour highly differs from normative models (Gallimore et al., 2000). Moreover, Gallimore and Gray (2002) show that investment decision makers in the UK are influenced by their sentiment, despite its neglect to explain property market functioning. Just like in wider financial markets, this leads to suboptimal decisions. Usage of sentiment can be partly explained by the lack of qualitative or quantitative data that is required to make judgments according to prescribed models. The result is that it is not only hard market information that is used: decision makers are to a large degree influenced by personal feelings and the views of others (Gallimore and Gray, 2002).

A number of biases have been found in corporate real estate valuation processes.

Availability

Adair et al. (1994) describe the existence of an availability bias. They show that more often than not investors invest in projects where information is readily available. Market imperfections concerning the availability of information can make investors deviate from the normative process. Availability can also result in the representativeness bias: Investors typically mistake the most recent price changes as representative for the full distribution of returns. Mei and Sanders (1997) illustrate the trend chasing behaviour of commercial banks investments in real estate. Furthermore, Ling (2005) lays bare similar patterns for professional forecasters of the commercial real estate market.

A study based on a semi-rational model shows that investors in property are often overconfident when the developer's private information is confirmed (Wang et al., 2000). One implication is the appearance of permanent overbuilding and cycles in Asian real estate markets. A possible source of biased risk and return estimates is offered by Lin and Vandell (2007), who argue that real estate is a heterogeneous commodity that is traded in decentralised markets with costly searches.

Uncertainty about the time to sale and the marketing period make real estate illiquid.

These aspects provide sources of bias. Ultimately, estimated returns must be biased upward and risks downward. This provides a solution for the risk-premium puzzle in real estate, which means that ex-post returns appear too high for the low volatility.

Smoothing and lagging

Biased behaviour is not only observed when making investment decisions, but also when evaluating investment projects. According to Fuerst and Matysiak (2009) country, sector allocation, style, gearing, and fund size combinations impact the performance of real estate investment funds. The overall performance is often analyzed based on indices. Barkham and Geltner (1994) study these property indices and find that they are prone to smoothing and lagging. This is a result of the fact that property indices are based on valuations, which are lagged thereby understating the true volatility of property returns. The authors suggest that the smoothing of property indices can be great enough to bias investment policy and decision-making. Geltner et al. (2003) also showed that market tracking, and therefore, performance measurement is smoothed. There is no optimal use of past and current information because of a lack of trades or confidentiality. Brown and Matysiak (2000) suggest that these high frequency indices reflect a general trend rather than a market trend. One implication is that the risk cannot be managed optimally.

Misaligned incentives

Shiller and Weiss (2000) find that misaligned incentives bias investment returns. They focus on how home equity conversion leads to moral hazard and lower investment returns. They found that homeowners have incentives to stop caring about the maintenance of the house as soon as they know that investors are aware of the risk of poor market performance.

To conclude, it can be stated that both decision making as well as performance measurement in corporate real estate investment are shown to be biased; or, as Glaeser (2013) puts it: "Buyers don't appear to be irrational but rather cognitively limited investors who work with simple heuristic models, instead of a comprehensive general equilibrium framework". Moreover, Dieci and Westerhoff (2012) stress that the use of heuristics can be associated with bubbles. They find that the presence of speculation among real estate agents has the potential to generate bubbles and crashes. The key feature of the model is that heuristic

based speculative forces determine housing demand. Some agents believe that prices converge to their fundamental value, while others are convinced that the bull or bear market persists. Market circumstances determine the relative importance of the two competing heuristics. This nonlinear model based on speculation helps to explain observed inefficiencies in the housing market. Kouwenberg and Zwinkels (2011) provide empirical support for the model of Dieci and Westerhoff (2012) by estimating it on the US residential real estate market. Brown and Matysiak (2000) state that testable models are needed to isolate behavioural issues. Furthermore, property derivatives are needed to make the market more liquid. These derivatives should not be based on the smoothed indices. The next section describes the cognitive limitation that households experience when investing in housing.

2.2 The household perspective

According to Goetzmann (1993), homeownership is one of the most common investments. This is confirmed by Kullmann and Siegel (2003) who state that property is the most widely held asset in a typical highly undiversified US investment portfolio. The Federal Reserve's 2001 Survey of Consumer Finances exhibits that nearly 66 percent of the net wealth of median households is invested in housing. This is in contrast to only just over 20 percent invested in cash, bonds and mutual funds. Shiller (2007) stresses the significance of homeownership by noticing that residential investment rose to 6.3 percent of GDP in Q4 2005, which is the highest level since 1950. Furthermore, residential investment is a volatile part of GDP and is significantly correlated to the business cycle. Housing as an investment highly differs from other investments by being highly illiquid because of infrequent trading and the heterogeneity of the asset. It reduces overall portfolio risk for a household when no short term liquidity is required. Kullmann and Siegel (2003) find that real estate exposure reduces relative holdings of risky assets like stocks.

Despite this, homeowners more often own stocks than renters. Moreover, if households have a higher mortgage balance, they more often participate in risky financial assets. In general, capital appreciation of real estate is higher than bond returns, but lower than stock returns. Goetzmann (1993) finds that an efficient household portfolio devotes a significant proportion to property investment. This proportion rises with the level of risk aversion. Real estate investment should be included because of the negative or low correlation between real estate returns and stock or bond returns. Despite the importance of residential investment for individuals, as well as the aggregate economy, the risk and return characteristics are far from

fully understood (Goetzmann, 1993). Already more than two decades ago, Case and Shiller (1988) used a questionnaire to clarify views on residential property as an investment. They found that the real estate market differs greatly from the markets modelled and discussed in the traditional finance literature, showing that prices are inflexible downwards and driven by past price movements. A repetition of the inquiry with identical questions took place in 2002. Most respondents strongly indicate that real estate is the best long term investment. Hjalmarsson and Hjalmarsson (2009) show that buyers of apartment units in a cooperative housing association in Sweden do not properly discount future maintenance fees and capital costs. Moreover, evidence is found for the presence of several biases (Case, Quigley, and Shiller, 2003). In general, it can be stated that homeownership is a common and often judged riskless long term investment. However, many academics find that cognitive limitations bias the households' view on property. Most of these findings are presented in the following section and sorted by type of bias under study.

Over-optimism

Farlow (2004b) argues that over-optimism is the most important psychological bias in real estate markets. Findings show that households believe that buying a house does not involve a great deal of risk and house prices will on average increase more than 11 percent per year. This indicates over-optimism. In general, households have over-optimistic assessments of future levels of interest rates, and under react to the risk of changes in interest rates (Case et al., 2003). An often neglected perspective in the determination of housing market sentiment and the construction of bubbles is the role of the media. Farlow (2004b) argues that media prefer optimists over pessimists neglecting the possibly harmful consequences that over-optimistic information publishing has for ordinary investors.

Over-confidence, hindsight bias and irrational probability evaluation

Over-confidence is, just like over-optimism, a bias that originates from a mental illusion of control. Whereas over-optimism concerns an overly optimistic view on future returns, over-confidence refers to an underestimation of risk. Experiments show that 98 percent confidence intervals contain the true quantity in only 60 percent of the time (Farlow, 2004b). Shiller (2005) acknowledges that overconfidence significantly determines behaviour in real estate markets. The reasons he proposes for the presence of overconfidence are related to cognitive

processes. Probability evaluation takes place as the last step of the cognitive reasoning process, whereby elements of false reasoning are already forgotten. Overconfidence can also originate from the hindsight bias, meaning that people think they knew certain events in advance. It gives people the impression of making unpredictable events predictable.

Confirmation bias

Farlow (2004b) recognises the presence of a confirmation bias in the property investment market. He observes that the success people have during a housing boom is mostly attributed to wise investment. In contrast, failing investments during times of busts are blamed on bad luck, other people, or circumstances like the market, and the presence of bearish investors that deteriorated investment sentiment. The same bias influences future expectations. In general, people tend to not adjust their expectations easily because they look around for a logic which explains and reinforces their beliefs.

Momentum effect

Another bias is expressed when observed property price movements are used as a basis of future property price expectations. This feedback on price change is often referred to as the momentum effect. Case et al. (2003) investigated whether price increases encouraged people to buy a house. On average, more than 80 percent of the respondents confirmed that price increases stimulated them to buy a house. These findings confirm the ignorance of fundamentals and the presence of momentum. Agents ignore laws of probability and instead overreact to news that follows the trend. An implication is the presence of herd behaviour. Lux (1995) provides a formal model to explain bubbles by linking momentum and herd behaviour. He interprets a bubble as a self organised process of infection among investors. This makes equilibrium prices deviate from their fundamentals. He also stresses investors' readiness to follow the crowd and the importance of actual returns on prospects, indicating momentum.

Herd behaviour

The importance of not analysing behaviour as a sum of individual decisions was already mentioned by Shiller (1995) who proposed a framework for information cascades and the transmission of information across groups. Shiller (2005) proposes that herd behaviour plays

a crucial role in the human decision making process. People do not always exercise independent judgment due to social pressure. The thought that not everybody can be wrong is used to rationalise herd behaviour. Herd behaviour is shown to be a source of mispricing and speculative bubbles (Shiller, 2005). Shiller (2007) finds that the problem of psychological coordination causes failure for people to change their future expectations. Because expectations in a boom period are not only based on recent price changes at home but also in other regions. Prices are generally perceived to go up around the world so people will not see a change. This coordination problem has contributed significantly to the appearance of momentum and herd behaviour during recent years.

Irrational exuberance

Herd behaviour has important consequences. Shiller (2005) appoints exuberance as the major cause of the price-value discrepancy. He describes irrational exuberance as a social phenomenon where markets reach "high and unsustainable levels under the influence of market psychology" (Shiller, 2005, p. 1). Shiller poses several explanations for the appearance of irrational exuberance. These include structural factors like the internet and Ponzi schemes, and cultural factors like the popularity of a phenomenon in the media. Shiller (2006) argues that the most recent boom in house prices should be thought of as a social epidemic. Lux (1995) argues that overvaluation of assets can occur because of self amplifying reactions of investors to deviations from the equilibrium. The degree to which speculators follow the crowd highly depends on actual returns (Lux, 1995). This insight supports the view that serial correlation is important in the housing market.

Regret theory

Another psychological bias which makes households deviate from rational behaviour is regret theory. It implies that people anticipate on the regret of making a bad investment decision. In practice, people are motivated to enter an asset market because they see other people receiving high returns on their investments. Regret plays a significant role in markets that recently showed excessive price rises. Instead of acknowledging the increased risk of capital losses, they participate in the market because they want to avoid having regret about not participating in the market (Farlow, 2004b).

Money illusion

Money illusion is one of the most commonly studied anomalies in economics. Money illusion in real estate implies the failure of consumers to evaluate alternatives during a period of inflation due to a difference between nominal and real values. It plays an important role in real estate because it generally deals with long term projects and frictions, like short-sale constraints, which makes it difficult to arbitrage mispricing away. Raftery and Runeson (1998) perform experimental studies on money illusion where subjects have to analyse choices on buying property in inflationary periods. They find that if their findings correlate with real world settings, money illusion occurs. It is suggested that the way information should be structured and presented in the market needs to be evaluated (Raftery and Runeson, 1998). Farlow (2004b) adds that few people connect inflation to the payback of their housing debt. If inflation is low, people forget that they are not paying back their debt as quick as they are supposed to. Brunnermeier and Julliard (2008) investigate whether money illusion can explain real estate market inefficiency. Their findings suggest that a significant part of mispricing is due to inflation. Shiller (2008) confirms and explains these findings. Since houses are important purchases, we remember house prices from a long time ago. So the contrast between those prices and prices today gets a lot more attention than the price increase of a loaf of bread over the same period. This results in the erroneous view that houses have been a spectacular investment, while real returns over the very long run are limited (Eichholtz, 1997). Ackert et al. (2011) study the relation between money illusion and price expectations using survey data. They document that home owners suffer from money illusion, yet their price expectations are reasonable. Hayunga and Lung (2011) empirically show that although money illusion is a persistent characteristic of home owners, overconfidence has a larger effect on mispricing.

Money illusion could be prevented by implementing inflation-indexed mortgages (Shiller, 2008). Farlow (2004b) argues that the appearance of inflation illusion is caused by the obsession of banks and media to publish nominal rates rather than real rates. Professional marketers also prefer the use of nominal rates because it offers the opportunity to publish misleading information. An example is that nominal house prices have not fallen in the past, even though real prices fell dramatically in the late 1980s.

Mental accounting

Another bias that homeowners are exposed to is mental accounting, which implies that consumers use heuristics to compartmentalise elements of their expenditures in different mental accounts (Thaler, 1985). Almenberg and Karapetyan (2009) study mental accounting in the housing market and find that it makes capital structures inefficient. In general, households use sub-optimal debt structures to finance their houses. Campbell (2006) suggests that a substantial share of households makes serious investment mistakes. The most important mistakes include non participation in risky asset markets, under-diversification of risky portfolios, and failure to exercise options to refinance mortgages. In general, poorer and less educated people are more often subject to these mistakes than wealthy and well-educated people (Campbell, 2006).

Loss aversion

Loss aversion is another phenomenon that makes household investment in real estate biased. Engelhardt (2003) remarks that nominal loss aversion in the housing market significantly influences household mobility. Homeowners have the tendency to strongly prefer avoiding losses to acquiring gains, combined with a reluctance to realise a nominal loss when selling their house. Genesove and Mayer (1997) find that the equity position determines the sellers price, time on the market, and the ultimate price received. Property sale processes in the Boston condominium market are highly influenced by the loan to value (LTV) ratio. In general, sellers having a high LTV set a higher asking price, have a longer expected time to sale, and receive a higher price than owners with less debt. The magnitude of the effect is large: an owner of a 100 percent LTV receives, if sold, four percent more money than the owner of a comparable house with an 80 percent LTV. Findings are presumably caused by significant down-payments for purchasers and support equity based theories of price volume movements in the property market. This study is extended in Genesove and Mayer (2001) who find that loss aversion determines seller behaviour. Sellers who are subject to nominal losses set higher asking prices, attain higher selling prices, and show a lower sale hazard than other sellers. The appearance of sellers that are averse to realise losses can explain the positive price-volume correlation that occurs in the housing market.

Home bias

The traditional home bias implies that individual investors over-invest in the geographical home market, as explained in Karlsson and Norden (2007). Goetzmann (1993) empirically studies real estate diversification and finds that regional diversification dominates local diversification. The risk reduction of possessing four houses in different regions compares to the risk reduction of owning thousands of houses in only one region. Farlow (2004b) confirms that most investors are heavily exposed to one asset: their house. Most decisions that are made do not relate to marginal purchases. An explanation is that the risk of owning a house is believed to be low. Benjamin et al. (2004) find a possible explanation for the appearance of the home bias: households show a higher propensity to consume from housing wealth compared to other assets. The most plausible explanation is that housing provides an investment as well as a consumption function.

All in all, it can be stated that the neoclassical way of viewing consumers in the housing market as rationally calculating individuals does not seem to hold. The biases, as summed up above, exhibit that consumer behaviour often deviates from rational behaviour. This is also explicitly shown by De Bruin and Flint-Hartle (2003) who used a postal survey to find that investors in residential property do not show optimisation and perfect knowledge but rather imperfect knowledge and satisfying behaviour. This is a strategy that attempts to meet criteria for adequacy, instead of optimisation. Decisions were influenced by social and contextual factors in operation like preference and feelings of comfort. These findings should not be shocking; already in 1950 a realtor who was interviewed by the Washington Post acknowledged that the appearance of a mass desire to buy houses was stimulated by a psychological factor (Shiller, 2007). Although many theoretical and empirical studies stress the presence and importance of behavioural biases, the awareness of cognitive limitations in the housing market is not wide spread. Case et al. (2003) asked private investors whether market events in the early 2000s should be attributed to fundamentals or psychology of homebuyers. Only 15 percent acknowledged the importance of investor psychology, despite the fact that this previous period was characterised as frenzy. The remaining 85 percent of the respondents attributed the booming market to fundamentals.

2.3 The appraiser's perspective

The valuation process, as performed by an authorised appraiser, is a crucial part of the housing market. Firstly, this section sketches the normative valuation process. Subsequently, a description of how a value is shaped in real world settings will be presented and psychological phenomena that are considered as the source of biased valuations will be outlined. The formal prescriptive valuation process is described in a detailed framework. Most countries have an authority that provides this framework. In the US Uniform Standards of Professional Appraisal Practice (USPAP) are set by the Appraisal Standards Board. In the UK the Appraisal and Valuation Standards are formulated by the Royal Institution of Chartered Surveyors (RICS). In the Netherlands, the certification of appraisers is controlled by the SCVM and VastgoedCert. Only registered appraisers are able to provide a certified valuation report that can be used to obtain a mortgage. The report is based on macroeconomic, market specific, and property specific data. This is a time consuming job. Brown and Matysiak (2000) show that when supply and demand are in equilibrium, a valuation is a good proxy for a price. Otherwise, professional advice is worthless and performance measurement invalid. The difficulty lies in testing whether the market is in equilibrium. Moreover, the price at which a property sells depends on the strength of buyers and sellers and how they interpret information. The market environment determines the strength of agents, which makes prices prone to sentiment (Brown and Matysiak, 2000). Furthermore, there is an incentive for the seller in combination with the appraiser to take the buyers' biases into account. Specifically, an asking price could serve as an anchor or heuristic used by a buyer to judge the value of a property, and they may not be able to adjust sufficiently away from the anchor to arrive at what would otherwise be a fair market price. As a result, real estate could be mispriced if sellers play to this behaviour by buyers (Bokhari and Geltner, 2011).

Munro and Smith (2008) examine how property is valued in the Scottish real estate market. Qualitative interviews indicate that real estate agents base a valuation on three types of information. The first is 'market intelligence', which implies that one can analyze market dynamics. Second is the use of a portfolio of recent sales prices of dwellings that are close in space and quality in order to the value a property comparatively. The third informative element is the role of the encounter. Property valuation is shown to require this more intensive physical evaluation (Munro and Smith, 2008). Findings demonstrate that the actual valuation process highly deviates from the normative process due to heuristics and

biases. This deviation between the normative and the actual process is partly due to the replacement of the comprehensive information search by efficient heuristics, as introduced by Tversky and Kahneman (1974). They describe heuristics as principles which reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations (Tversky and Kahneman, 1974, p. 1124). Rabin (1998) argues that the use of these shortcuts often leads to severe and systematic errors. More specifically, it is shown that the use of heuristics in property valuation is prone to be biased due to psychological effects and agency problems that will be described hereafter (Diaz, 1990).

Availability heuristic

The first psychological phenomenon which is studied in the context of real estate is known as the availability heuristic. It is coined by Tversky and Kahneman (1973) and indicates that "a person evaluates the frequency of classes or the probability of events by availability; i.e., by the ease with which relevant instances come to mind" (Tversky and Kahneman, 1973, p. 207). Quan and Quigley (1991) show that appraisers make use of their experience and human capital when valuing property. This information is easily available compared with macroeconomic, market and property specific data. They find that the availability heuristic leads to a convergence of transaction prices. Gallimore and Wolverton (1997) find that the pending subject property sales price causes the valuation to be biased when it is included in the process. Black (1997) shows that property negotiators devalue cognitively difficult information and will instead rely on easily obtainable information such as the asking price. The availability heuristic is closely related to the confirmation bias and anchoring, as presented in the following sections.

Confirmation bias

The second source of biased decisions is the confirmation bias. Gallimore (1994) finds evidence for a confirmation bias, which implies that appraisers tend to adjust less to negative evidence than to evidence that supports their existing view. The confirmation bias was introduced by Evans (1989) and is apparent when appraisers show a tendency to seek out positive evidence. Gallimore (1996) uses seven experiments to test the existence within the valuation process. It is concluded that the existence of the bias is intuitively appealing, but cannot be proved due to methodological difficulties.

Anchoring

Anchoring is the third and most described source of biased valuations. Anchoring causes valuations to be biased towards an initial starting estimate. It was first shown in a real estate context by Northcraft and Neale (1987), who describe that listing prices anchored pricing decisions of students as well as real estate agents. After more than a decade of research, demonstrations of anchoring by appraisers cover a broad spectrum of experimental settings. Even negotiators who are trained as deal makers and provided with rich and accessible information are anchored in the negotiation process (Black, 1997). Diaz and Hansz (2001) complement research by showing that the bias is even stronger for commercial expert appraisers working in unfamiliar markets. The anchors they use, in order of significance, are: the uncompleted contract price of a comparable property; the uncompleted contract price of the subject property; and the value opinions of other experts. This order of significance could be seen as counterintuitive, but is consistent with normative training and general availability of information in real world settings (Diaz and Hansz, 2001). Havard (2000) also studies commercial appraisers who work with familiar property in an unfamiliar market. Findings suggest that agents are heavily influenced by anchoring and adjusting. Participants formed a preliminary view, which operated as a strong anchor. This anchor was only customized with the appearance of strong signals from the market place to challenge the anchor. The fact that appraisers expect weak market information makes it very likely that their initial anchor will not be rejected (Havard, 2000). Although the experiment is performed by students (which makes results hard to generalize), Havard (1999) finds that there is a greater tendency to adjust previous valuations upwards than downwards. When analyzing the underlying reasons of anchoring, Diaz and Wolverton (1998) explain that biased results are independent from business pressure, such as directed valuations. The bias is a direct consequence of the problem solving process (Diaz and Wolverton, 1998). Hansz and Diaz (2001) show that transaction price feedback on previous valuation anchors unrelated subsequent valuations. Experimental results exhibit that appraisers who are told that their previous judgment was below the actual transaction price, subsequently reported significantly higher valuations than appraisers that did not receive feedback. Results are asymmetrical because responses from appraisers that valued too high was in the right direction, though not significant.

Diaz et al. (2002) find that deviations from the normative appraisal process are not restricted to familiar markets. A series of valuation experiments performed by United States,

United Kingdom, and New Zealand residential valuation experts shows that changing between familiar and unfamiliar markets did not alter valuation behaviour, which was consistently non-normative (Diaz et al., 2002). There are, however, cultural differences in valuation behaviour due to differences in disclosure. The US model is cognitively demanding and there is much more examination of sales in countries where disclosure is normal. Overall, appraisers tend to prefer efficiency over valuation quality (Diaz, Gallimore, and Levy, 2004). Clayton et al. (2001) study presents evidence that appraisers valuing the same property in consecutive periods anchor onto their previously appraised values.

Misalignment of interest and asymmetric information

Bias in valuations cannot be explained by heuristics alone. Different studies show the relevance of agency problems and misaligned incentives. Levitt and Syverson (2008) find that houses owned by real estate agents sell for about 3.7 percent more than other houses and stay on the market for 9.5 days more (Levitt and Syverson, 2008, p.599). They state that this is the case because real estate agents receive only a small share of the incremental profit when a house sells for a higher value. Residential real estate contracts cause real estate agents to receive only a small proportion of the purchase price, while bearing a large share of the costs like hosting open houses, advertising and marketing. The result is a misalignment of incentives. A potential solution would be to introduce non-linear commission structures in contracts to improve incentives (Levitt and Syverson, 2008).

Levitt and Dubner (2005) explain the roots of misalignment. They state that it is normal in our capitalist world to assume that one (often an expert) is better informed than the other (the consumer). This phenomenon is called information asymmetry, which is highly applicable to real estate. Home-sellers are reluctant to sell their house at a low price, or not at all. Appraisers are aware of this fear and often profit from it. They tend to convince sellers to accept a low bid price, because they benefit more from a quick deal than they benefit from long lasting negotiations (Levitt and Dubner, 2004). Furthermore, the consumer has a tendency to be overconfident in the skills and knowledge of the expert.

Client pressure

Another source of agency problems is client feedback. Kinnard et al. (1997) find that a significant part of bias in property valuation can be explained by client feedback. Client

pressure makes 41 percent of commercial appraisers revise their valuation when clients ask to, even without having supportive documentation. Client size significantly affects the willingness to revise, but the magnitude of the client-requested valuation adjustment does not. The proposed solution for appraisers is to diversify their portfolio so that individual clients do not provide a considerable part of revenues (Kinnard et al., 1997). Wolverton and Gallimore (1999) divide between three types of client feedback and show that the kind of feedback determines how the valuators view themselves. Environmental perception feedback and coercive feedback makes appraisers view themselves as price valuators. Positive reinforcement stimulates them to look at themselves as providers of objective opinions (Wolverton and Gallimore, 1999). Client pressure emerges because borrowers are often seeking for maximum available loans, which are a direct result of loan to value ratios. A higher valuation increases available loans. A potential long-term consequence of client pressure is an undermining of the soundness of the mortgage lending system (Gallimore and Wolverton, 2000). Levy and Schuck (2005) build on a theory about client pressure with a focus on the process, motivation and opportunities. The authors divide between sophisticated versus unsophisticated clients and ethical valuators versus unethical valuators. Their study highlights the extreme complexity of the client-appraiser relationship and concludes that even the valuation process itself is to a large extent governed by the client (Levy and Schuck, 2005).

To conclude, it can be stated that there is a large discrepancy between the prescriptive, normative valuation process and the descriptive, positive process, which is cognitively biased and subject to agency problems. Several academics express their concern about these findings. Daly et al. (2003) conclude that the valuation task is reduced to a confirmation of bid price because of client pressure. According to them, valuators overlook the economic sustainability of the property asset, which has severe implications for housing markets and national economies that interact with these markets (Daly et al., 2003, p. 295). Farlow (2004a) points out that pricing based on recent local sales is done in bubble as well as non-bubble periods. This is because factors that influence the housing price are partly explained by human psychology. During a bubble period, high house prices can persist due to an enthusiastic market which is not updated by appraisers. Violand and Simon (2007) study real estate agencies in France and find that 830 out of 1070 agencies are breaching the law. Some of the examples are infractions concerning misleading advertising, the absence of displayed commission prices, and real estate agents operating without mandate from owners. Amidu and Aluko (2007)

suggest that if the problems with the subjectivity of the valuation process cannot be addressed urgently, the already harmed credibility of appraisers will be further harmed. Other studies concern the search for improving valuation processes and the accuracy of the result. Hardin (1999) poses that real estate valuation theory and the task environment should be integrated so that it can be investigated whether incorrect valuation exists at the novice level because of insufficient knowledge, or other reasons. Crosby (2000) stresses the importance of institutions in order to increase valuation accuracy on a national as well as an international level. He discusses the margin of error concept that is used by valuations. This margin seems to be institutionally accepted, but the consequences of exceeding the margin are unclear and differ per country. In the end, Violand and Simon (2007) find that French real estate agents do add value by increasing the selling price on average with 1.3 percent. The added value is not robust and depends on factors including property size and the experience of buyers and sellers which is measured by age. Brown and Matysiak (2000) question whether appraisers act in an optimal way. They state that the answer to this question has probably more to do with behaviour than with economics. This, once again, stresses the relevance of and need for BRE research (Brown and Matysiak, 2000, p. 383).

3 Homeownership as a signalling of social status

The previous sections focused on the investment function of real estate. The investment perspective is mainly interested in outcomes like a value, price, and performance. Different studies have argued that this focus is too narrow and leaves a lot of observed behaviour unexplained. Koklic and Vida (2009) use qualitative interviews to illustrate how cognitive and rational factors cannot sufficiently explain consumer behaviour when deciding to buy a house. Idiosyncratic characteristics like the personal situation, environmental factors, the role of feelings, experience, subconscious factors, needs, and goals significantly influence the decision making process. Gibler and Nelson (2003) emphasize the importance of studying consumer behaviour concepts because it helps to explain and predict the behaviour of property decision makers. Micro-level market choices cannot be studied by using simplifying assumptions to ignore complexities like in neoclassical research. Khoo et al. (2007) emphasise that human emotion can significantly disrupt the many long-established models of property value assessments. According to them it is "over-simplistic to suggest that house purchasers are information-processing machines bounded by systematic problem solving and calculative

thinking" (Khoo et al., 2007, p. 84). This section describes developments in the social area within BRE and points out the 'soft' processes that determine consumer behaviour. First, residential mobility will be studied. Thereafter, social and emotional determinants will be described.

3.1 Residential mobility

According to Dieleman (2001), the living conditions of individuals and households are significantly influenced by the process of residential relocation. Residential mobility thus determines part of the consumption function of a house by bringing it into alignment with changes in family composition, income, and job location. Brown and Moore (1970) distinguish two stages of the mobility process. First, circumstances like income or family composition changes causing certain extent of dissatisfaction. The second stage includes finding another dwelling and deciding to relocate or to stay. If a better alternative than the present house is not available, the present dwelling needs to be adjusted to make resident more satisfied. Clark et al. (2006) summarise literature on mobility in a comparable framework, but call the stages 'equilibrium approach' and 'dissatisfaction approach'. They focus on a comparison of the current house with potential alternatives. The moving decision arises from disequilibrium between the current dwelling and an alternative, where utility maximisation is used. Literature on housing mobility suggests that it concerns improving dwelling quality and housing consumption. When focusing on the process of moving up, Clark et al. (2006) distinguish between moving up in house quality, neighbourhood quality, or both. Neighbourhood quality includes socio-economics as well as environmental indicators. These include safety, access to jobs, green space, friendly neighbours, and the absence of crime. Clark et al. (2006) find that people often move up in house quality as well as neighborhood quality. The greatest gains of moving up in house and neighbourhood quality are made by households with higher incomes. Hooimeier and Oskamp (1996) introduce a model on mobility that includes the search intensity, the arrival rate of opportunities, and the acceptance rate. In addition, important determinants of mobility are the reason to move, and the supply which is identified by accessibility and availability. Mulder and Hooimeier (1999) find that age and the life course are important determinants of residential mobility. Young adults, between 20 and 35 years old, are by far the most mobile in developed countries. Furthermore, people living in relatively large dwellings are less mobile. There is a clear relationship between the housing career and other circumstances like family formation, education and the professional career.

Dieleman (2001) mentions that numerous fundamental determinants of property prices also determine housing mobility. These fundamentals include mortgage interest rates, the level of new construction, taxes and tax relief on housing investments and costs, and changes in demographic structure. Muhammed et al. (2007) acknowledge the importance of the life cycle, financial situation and the household composition. Moreover, they stress the significant role of commuting distance. They identify commuting distance as one of the main explanatory factors for location preferences and migration flows. Garling and Friman (2002) find that households are prone to heuristics when choosing between housing alternatives. When weighting houses, this task is simplified by disregarding attributes which are considered to be of less importance. The equity position of homeowners also determines their residential mobility. Henley (1998) finds that the level of housing wealth better explains mobility than labour market conditions. Nominal housing price decreases make households unable to sell at a sufficiently high price to pay the deposit for their next house (in the UK and US). In the end, this makes owner-occupation levels sub optimal, but helps to explain the positive price-volume correlation and the downward stickiness of property prices.

In general, research on residential mobility points out that it is not only the investment opportunities that make people buy or sell their house. Important determinants of consumer behaviour in the housing market are family composition, age, job location, education and the professional career, illustrating the multidimensional purposes of real estate purchases. Macroeconomic determinants and the financial position also affect mobility. The next section points out which social and emotional household characteristics determine their housing consumption pattern.

3.2 Emotions and real estate

Several emotions influences the homeownership decision and notably consumers often get attached to places. Hidalgo and Hernandez (2001) measure the relative attachment on three levels of spatial ranges: the house, the neighbourhood and the city. They also distinguish between physical attachment and social attachment. They find that people are more attached to the house and city than to the neighbourhood. In general, social attachment is stronger than physical attachment, which indicates that people are more important than the mortar and bricks. Gender plays a major role: women are often more attached than men. Age also determines attachment: younger people find the city most important and at intermediate ages the house is the weightiest spatial level. Manzo (2003) confirms that relationships with

places include a large spectrum of physical settings and emotions. In addition, attachment to places is an ever changing, dynamic phenomenon. These emotional relationships exist within a larger socio-political milieu. Housing choice is also correlated with image-building and the social position. Sirgy et al. (2005) relate housing choice to self-congruence. The preference for functional aspects of a certain house may be enhanced by social and psychological determinants. A symbolic aspect which influences choice is perceived consistency with the buyer's self-image. A match between the residential occupant image and the self image alters motivation to buy the house because of the need for self-consistency. This effect could be interpreted as a confirmation bias in housing choice.

Levitt and Dubner (2005) stress the importance of the choice of words in housing advertisement. They find that some words are strongly correlated with the ultimate selling price. When a house is defined as 'well maintained', this should encourage the potential buyer to offer a relatively low bid price. Words that are correlated with high selling prices are: 'granite', 'state of the art', 'Corian', 'maple', and 'tasteful'. These words mainly define physical characteristics. Descriptions that are associated with lower selling prices include: 'fantastic', 'spacious', '!', 'charming' and 'great neighborhood'. The problem with these descriptions is that they are hollow, ambiguous adjectives. They seem to hide shortcomings by giving unspecific descriptions. Buyer behaviour is dependent on feelings that people attach to words in advertisements (Levitt and Dubner, 2005).

Another aspect of the decision making process is that it is not an individual but a social activity. It encompasses setting goals, discussing alternatives and negotiation of family needs. Besides, information should be exchanged with stakeholders and developments in the market have to be processed. Determinants of these activities are gender, family structure, ethnicity and social economic status. Levy et al. (2008) stress that the decision making process is a social activity, not only the household but also the extended family and friends are involved. Parts of the process are influenced by gender; men are more concerned with the financial aspect of homeownership and women with the familial issues. Interviewees repeatedly indicate that the ultimate decision concerning the purchase of a house is significantly influenced by emotions and feelings that are often difficult to explain (Levy et al., 2008). This is confirmed by Milligan (2005) who examines 'feeling at home' within the care giving experience.

Attachment to home is associated with feelings of safety, identity, and meaning. The origin to feeling at home is not laid in the building or the colour of the wallpaper, but about feeling comfortable and welcomed. The importance of emotion also determines, perhaps

unconsciously, real estate agents' behaviour. Smith et al. (2006) put the housing market in a sociological perspective and find that market participants do not act the way they pretend to. Real estate agents in the Scottish housing market characterize the market in conventional economic terms like supply, demand and value. The market is depicted as "an intrinsically rational, readily comprehendible and ultimately self-regulating mechanism" (Smith et al., 2006, p. 85). In practice, however, the market is overwhelmed with adjectives like 'hot', and 'active' and emotive terms like 'frightening' and 'amazing' to stress the mood of the market. Concluded is that the emotional rather than the rational side of the economy prevails in the market. Munro and Smith (2008) perform comparable sociological research. They argue that the price of a house is an affective as well as an economic affair. The volatility of prices is judged as an expression of sociality and emotional intelligence.

Forces that determine prices during bubble periods are desperation and fear, rather than speculation as is often posed in literature based on psychological finance (see Shiller, 2005). In their research, a substantial share of the interviewees paid average transaction prices of just over 15 percent more than the formal valuation of their house. Findings suggest that valuations did not have a useful function for them. They just made an offer that could not be refused by sellers. The reasons for paying these high prices are diverse. 'Hope' plays a role because people have confidence in the financial, political and cultural health of the place where they are going to live. They perceive the selected living area as a 'place to be', which results in an overconfident view that the risk of negative equity is non-existent. Moreover, the property has to feel right. These feelings are immediate and based on instinct. Feelings are often associated with love. On the other side, there is the fear of experiencing regret. Other interviewees acknowledged that the process of buying a house was nerve wracking. The only answer is to pay a silly price to reduce the risk of regret. It is clear that the price effects of desperation and fear can be very large. Analyses performed by Munro and Smith (2008) show that prices are often determined by feelings. One interviewee paid $406,030 for a certain house, the motivation she gave was that "my husband was 40 this year, my father was 60 this year and my sister was 30 and together this made 406030" (Munro and Smith, 2008, p. 359). They conclude that not only the psychology but also the sociality of the market drives prices.

Guy and Henneberry (2000) stress the importance of institutions in the analysis of the property development process. The pricing mechanism illustrates that economic structuring of the development is a social process. This social component is as important as the economic

one when explaining property development. They therefore, propose a research framework which blends economic and social analyses. Such a framework is offered by Meen (2003) who attempts to formally model social behaviour in local housing markets. They experience modelling difficulties due to social interaction, non-linearity and segregation, but note the importance of neighbourhood effects. They emphasize the potential of these models due to developments in social dynamics and complexity theory, but mention that still much has to be done.

Smith (2008) reviews trends about the materialization of home. Although she considers the housing function as only one materialization of homes, this function seems to become more important. Three trends are identified. First, households' disposition shifts from opting to ownership by chance to banking on housing by design. Second, homeowners are not property holding citizens anymore but become asset-accumulating investors. Third, the substitutability of governance of housing and micro politics of home increased because of new products that ease the mobilization of money. The analysis leads to conclude that social and emotional factors significantly influence homeownership and the aggregate market.

4 Homeownership encouragement: Political discourses and structured products

Property is unique in a way that it is our favourite investment and almost every Anglo-Saxon citizen has a view on the prospects of house prices. The present view on property is quite similar to the view which is propagated in the popular game of Monopoly: it is smart to own property. Indeed, Glaeser (2013) stresses that the 2000-2010 US housing boom, though different, was not entirely without precedents. Niall Ferguson (2008) illustrates the human obsession with property by putting homeownership in an institutional and political perspective.

The human infatuation with owning a house was stimulated by several institutional innovations. First, mortgage interest payments have always been tax deductible in the U.S. The federal deposit insurance was introduced in the 1930s. This was a reaction against communist developments, with the aim to create a property owning democracy. Moreover, risk seeking behaviour on the consumer side, like 100 percent mortgages, is encouraged by the 'no recourse' system that is used in many American states for example. The system implies that the lender can only collect the value of the property and not on future wages or

other property. This system provides borrowers with incentives to default on the mortgage. In the 1980s, mortgage backed securities were invented to converge mortgages into bonds. These developments encouraged consumers to buy a house. Furthermore, consumers became infected with the view that investing in property is a 'one way bet'. Owning a house became known as investing without risk for the lender as well as the borrower. The rationale was that property prices increase and the lender cannot run away with the house. Often ignored aspects are the risk that the borrower loses income, which implies that the mortgage cannot be paid anymore, or the risk that the property loses value. The fact that this scenario was experienced by thousands of homeowners during the Great Depression is often forgotten or neglected (Ferguson 2008).

Alongside the new institutional innovations, political pressure has stimulated homeownership. Policy goals were to engender significant changes for families, neighbourhoods and local housing markets, because homeownership is often associated with better psychological well-being, communities and neighbourhoods. The Clinton administration focused on increasing homeownership rates to 67.5 percent. George W. Bush stated that he wanted everybody in the U.S. to own their own home, which was confirmed by signing the American Dream Downpayment Act. In the end, the introduction of new products and political encouragement paid off: the homeownership ratio increased five percent during the 1995-2005 period (Ferguson, 2008). Shlay (2006) provides a critical analysis of the governmental policy to stimulate low income homeownership. The problem is that these policy goals are based on ideological statements. She concludes that what homeownership does and why it is not well understood is because it is difficult to disentangle what homeownership means (Shlay, 2006, p. 526). An important question to answer before implementing policy is whether homeownership is a cause or consequence of a household's life cycle or economic circumstances. This is illustrated by Goetzman and Spiegel (2000) who state that the policy goal to encourage homeownership among low income households increases the wealth gap in the US. The reason is that these households will under-invest in financial assets that will grow during the years and ultimately provide their income for when they are retired. Jaffee and Quigley (2009) point out that path dependency plays a major role in the mortgage market. Two key institutions, Fannie Mae and Freddie Mac, were established to accomplish political goals. This artificial stimulation was not an appropriate method of providing services in the secondary mortgage market. With hindsight, it can be stated that political intervention in the mortgage market is shown to have ambiguous consequences.

More recently, the invention of non-conventional structured products encouraged homeownership. Subprime mortgages provide access to the property owning democracy for families with poor or patchy credit histories. Shiller (2007) argues that subprime mortgages were virtually non-existent before the mid 1990s. To contrast, in 2005 they accounted for one fifth of all new mortgages (Shiller, 2007). A high proportion of the subprime mortgages concern adjustable rate mortgages (ARMs). The interest rate that has to be paid is flexible and depends on the London Interbank Offered Rate (LIBOR). Most ARMs include a teaser period with artificially low interest rates for a certain period. Cagan (2007) presents the consequences of teaser periods related to exotic mortgages. He calculates that around 60 percent of all ARMs originated between 2004 and 2006 experienced payment increases of more than 25 percent in 2007. Moreover, nearly 20 percent of the loans experienced payment increases of more than 50 percent. Fishbein and Woodall (2006) examine non-traditional mortgage products and their potential impact on borrowers and lenders. They find that consequences depend on the time scheme and economic developments. In the short term, non-conventional mortgages allow more households to qualify for houses. On the other hand, products are difficult to understand and will heavily impact their finances over the lifetime of the mortgage. The risks and uncertainty associated with these new mortgage products are often underestimated. Mills and Kiff (2007) confirm by stating that the success of the new risky products became reliant on the continuation of housing price appreciation. Another dubious development is the upswing of refinancing deals that allows borrowers to use their property as cash machines by converting equity for cash. Ferguson (2008) finds that by the first quarter of 2006, this equity extraction provided approximately ten percent of disposable personal income. This cash was subsequently used to pay off credit card debts instead of enlarging the value of their property. Moreover, Wachter et al. (2008) suggest that a critical factor in the housing boom and its ultimate burst, was financial engineering combined with deteriorating lending standards. By lending to individuals with poor credit scores, the so called sub-prime market, financial institutions and investors in mortgage-backed securities were effectively speculating on ever increasing house prices (Gorton, 2009). In addition, the presence of fee remunerated intermediaries led to deteriorating lending standards because they did not have incentives to maintain long-term loan quality (Mills and Kiff, 2007).

This survey suggests that the increasing popularity of homeownership and subsequent increases in demand for houses can be explained by institutional and political developments as well as the invention of new financing products. Altogether people became "irrationally

exuberant" about bricks and mortar resulting in a new kind of home bias. The bias does not only imply investing in the home region, but more specifically to invest nearly all wealth in one house. Smith (2008) defines the investment function of housing as irrational. UK homeowners often invest everything they have, or even more, in their house. This illustrates the narrowness of their portfolios. In addition, housing wealth is not proportionally distributed over the life course, which leaves lots of wealth flow to the next generation. A rational perspective would propose to better diversify the portfolio and spend more personal assets before life ends. A social explanation for this behaviour is that wealth accumulation stimulates a sense of independence, autonomy, and self-improvement (Smith, 2008).

5 Conclusion

This paper aims to explain inefficiencies in the property market from a behavioural perspective. These attempts are split into the different functions of housing and the different stakeholders in the property market. This review suggests that corporate investors as well as households have a biased view towards their investments. Cognitive biases, such as over-optimism and over-confidence can explain deviations from rationality. Moreover, the appraiser plays an important role in the determination of property prices: actual observed appraisal processes largely deviate from the prescribed normative process.

Cognitive limitations such as availability heuristic, confirmation bias and anchoring help to explain this discrepancy to a large degree. In addition, client pressure is shown to make appraisers revise their valuation due to agency problems. The non-financial consumer perspective in the housing market highlights residential mobility and emotional attachment towards houses.

As Robert Shiller observes homebuyers are not aware of the importance of psychological processes in the real estate market. Homebuyer surveys asked whether recent trends in house prices could be better described by psychology or economic and demographic conditions. Only 13 percent of respondents acknowledged the importance of psychology. This was despite the fact that real house prices for the US as a whole increased by 52 percent between 1997 and 2004 (Shiller, 2005). As Shiller (2007) clearly points out, people base life decisions on vague expectations. Combining these expectations with their perception of having a unique property makes them think their property will become extremely valuable. This foresight makes them consume more today and implicitly drive up prices tomorrow.

We believe that the importance of behaviour and emotions embedded in the decision of intervening in the real estate market either as a consumer or investor is undeniable. Therefore, we hope that this work not only helps to bring light in the current state of affairs, but also motivate researchers to pursue more studies on this fascinating arena. This survey could help consumers and investors to recognize and act on their predictable irrationality and induce policymakers to 'nudge' the real estate market towards more efficiency.

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