



# RESERVATION PRICE DYNAMICS FOLLOWING THE 2008 FINANCIAL CRISIS

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The real estate market is of great importance to the economy. Housing wealth accounts to approximately 50% of the whole economy, which makes it a very important market to understand. What happened after the crisis to the market? How did this affect the behaviour of the actors involved in the market? Literature review, and subsequently interviews, seems to point out that reservation prices are subject to most importantly supply and demand. There possibility that more factors play a role is prevalent, however, information did not seem to lead to any changes in the reservation prices. Furthermore, there are several factors that affect the reservation price, but are not affected by the crisis making them relatively constant with the intervention of the crisis.

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## 1. INTRODUCTION

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Experts often regard the 2008 financial crisis that followed the subprime mortgage crisis as the worst crisis after the Great Depression in 1929. The effects have not only been experienced during the crisis, but also during its aftermath. In general we can state that the crisis has lowered national wealth, at least in the U.S. We can observe today that the pre-crisis unemployment rate in the U.S was 4.7% in July 2007 and peaked at 9.9% in December 2009 (U.S. Department of Labor, 2014). The unemployment rate in March 2014 was 6.7%, which indicates that the US is still above the pre-crisis rate. In addition, the inflation adjusted median income has also affected general well being. In 2007, inflation adjusted income was \$55.627 (pre-crisis), and it decreased substantially to \$51.017 by the end of 2012 (U.S. Department of Labor, 2014, p. 5). Moreover, the real estate market has experienced a serious collapse. Real estate is of large significance to the US economy, as data suggests that housing wealth is about one half of total household net worth (Lacoviello, 2011). The collapse of the real estate market is reflected by the purchase-only housing price index (HPI), which was 226.8 in the second quarter of 2007, and decreased to 178.66 in the first quarter of 2011 (FHFA, 2014). These developments and actual levels show us that the effects of the crisis are still present, which implies that the topic is highly relevant from a society point of view. Although these numbers refer to the U.S, one can argue that the high level of interconnectedness of the financial markets made it a global crisis, with the effects also being felt in the Dutch economy. It is important to note that the crisis is not solely monetary in nature, but also psychological issues like trust in the system and consumer confidence are affected which magnify the extend of the crisis. Concepts such as risk aversion and the disutility of losses play a fundamental role in determining the behaviour of actors in the real estate market.

The psychological aspects of the real estate market bring us to a very important concept called the reservation price. This concept reflects the maximum amount that a buyer is willing to pay for a certain product, or the minimum amount a seller wants to receive to sell its product. Psychological concepts like loss-aversion might cause a seller to keep his reservation price high, even though he has received an offer that is quite good considering current market conditions. Reservation prices are highly relevant in the real estate market and strongly reflected in the academic debate. In this study, I will identify the drivers of the reservation price from both the seller's perspective, as well as the buyer's perspective. What causes an

individual to ask more or less for his house? What causes a buyer to be willing to pay more? Some preconceived notions like a higher disposable income come to mind, which cause a buyer to decide on a higher reservation price. But I am more interested in the effects of the financial crisis on the reservation prices. By answering questions like the ones mentioned above, the aim of this study is to give an explanation as to why reservation prices change, and how the financial crisis helped shape the change. In that sense, it is of great relevance towards a better understanding of the functioning of the real estate market.

This research builds on earlier contributions on the fundamentals of the real estate market and reservation prices. Kummerow & Chan Lun (2005) mention that their focus is on information and ICT applications in the changing real estate market, and its implications for the market structure. They argue that changing information structure and decision systems could help improve allocative efficiency. In the context of the real estate market, this could refer to the matching of supply and demand. It can help close the gap of both reservation prices of the seller and the buyer. Once they are the same, a transaction can theoretically be made because the buyer is willing to pay an amount that the seller is satisfied with. The final argument that could be made is therefore that information supply and structure can improve the efficiency of the real estate market in terms of allocation.

Huang & Palmquist (2001) estimate the seller's reservation price. They also bring forward the role of imperfect information, which results in a trade-off between expected selling price and expected time to sell. This again reflects the importance of psychological issues and the selling prices people expects. The urge to sell as soon as possible can lead to people considering the trade-off and decide to lower the maximum amount he or she wants to receive. Their research thus establishes that the reservation prices are partly determined by the time to sale, which could be driven by internal motivations (psychological) or external pressures (paying back short-term debt). Apart from this, the reservation price may also be conditional on the distribution of potential offers, the probability of receiving an offer in a certain time period and transaction costs. Quan & Quigley (1991) emphasize the lack of information and the high search costs that characterize the real estate market. It is argued that due to the market structure, costly search has to be conducted by the buyer because all the houses are heterogeneous and due to the existence of information asymmetry/lack of information. They mention that people will stop searching when the expected marginal gain from an extra observation, is equal to the marginal cost of obtaining an extra observation.

Therefore, according to Quan & Quigley, the reservation price is dependant on the costs associated with searching in the market. Also, search costs have a direct role in the determination of the reservation price, because a buyer or seller will want to recover the search costs, and thus incorporate that in their respective prices.

White, Valley, Bazerman, Neale & Peck (1994) have studied the negotiation process and several variables that affect it including reservation prices. The study starts with describing the negotiation process between a buyer and a seller, and introduce the concept of reservation prices. They introduce the concept of bargaining zone, which is defined as the range where the reservation prices of both parties involved overlap each other. Using an ANOVA test, they came to the conclusion that reservation prices were significant in determining the outcome of a negotiation. It is also argued that when both parties have clear reservation prices, the final outcome will be pushed towards the middle of the two prices. They found it surprising that market prices had no significant effect on the outcome, but have provided a possible explanation for this that involves reservation prices. The argument made is that external information like market prices have a significant effect in the pre-negotiation stage, helping both parties to determine their reservation prices. In other words, information about the commodity over which both parties are negotiating about, is a determinant of the reservation prices that in turn significantly affects the outcome. They conclude that the results reinforce earlier findings on the importance of reservation prices in determining the outcome of a negotiation.

The trade-off argument put forward by Huang & Palmquist (2001) is further confirmed and supplemented by Knight (2002). He mentions that search theory predicts this trade-off because motivated sellers would set a lower reservation price in exchange for faster sale of property. According to Knight, search theory is highly relevant because sellers in the real estate market try to sell a heterogeneous product, and that requires time to find an appropriate buyer that not only is prepared to pay the reservation price of the seller or above, but is also satisfied by the characteristics of the house itself. This way of thinking implies that the reservation price is dependant on the preferred time to sell. Again, an emphasis is being made on the heterogeneity of the market and the trade-off between time to sell and reservation price levels. As a result of the financial crisis, people could be less patient because of the risks associated with keeping a house. Assuming most people are risk averse and adding the effects of the financial crisis, people may be impatient to sell now because of the probability that the

market could crash again. Therefore, impatience can be caused by the financial crisis, which in turn affects the reservation price of the seller. We see however, that the reverse is true, at least for the Netherlands, where time to sale increases in (NVM, 2014) as sellers attempt to wait for market recovery.

We can conclude that the concept of information supply plays a crucial role in determining search costs and reservation prices. According to Evans (2004), if property owners were fully aware of changes that affect the value of their property, it would be economically described as efficient, while the opposite holds. In other words, when sellers can identify every variable that affect the attractiveness of their property, and are aware of external factors like demand (which in turn is dependant on numerous variables), then the seller will be able to determine an optimal price that maximizes the utility. By extension, new information can cause changes in the reservation price of sellers and buyers. For instance, when crime rate information is published or leaked about a neighbourhood, which could be negatively received by buyers, they will adjust their reservation price and are willing to pay less for a given house within that neighbourhood.

In this research I will conduct research on the determinants of the reservation price, and how and why it has changed after the financial crisis of 2008, if at all (initial observation seems to suggest it has). This paper therefore attempts to add to the body of literature by identifying changes in the reservation price that occur due to the financial crisis. Accordingly, the research question is formulated as follows:

**“What are the determinants of the reservation prices, and how did it evolve following the events of the financial crisis?”**

One of the possible reasons why the reservation price might have changed could be related to insecurity about the future, because the average person may believe that a crisis could happen at any instant. In order to protect himself against the negative effects of the crisis like unemployment, he can decide to save money instead of buying a house if we assume he was in need of a new house. This points out the importance of research in this area, as it is a fundamental question of investment. The causal process of the financial crisis having an impact on the real estate market, and specifically reservation prices is complicated and

requires careful consideration. This study will provide empirical evidence from the Netherlands, shedding new light on reservation prices from a Dutch perspective.

## 2. THE RESERVATION PRICES IN DETAIL

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### *2.1 The Seller's Reservation Price*

#### *2.1.1 Definition*

First, it is of importance to discuss the definition of the reservation price. The definitions provided in other research appear to be the same and only differ in the exact wording. But the implications of the definitions are the same. I will name a few and also emphasize on what the definition will be in this study. Zeng & Sycara (1997) define the reservation price as follows:

- (1) The reservation price is the price such that the supplier agent will not accept an offer below this price

This means that a seller, in this case a supplier agent, will have an ask price  $X$ . Any offer below  $X$  will be rejected by the seller, regardless of expected spread of bids and/or other variables that affect the market conditions. Kristensen & Gärling (1997) also defined the reservation price in their study. The definition is formulated as follows:

- (2) The reservation price is the seller's lowest acceptable price

The wording is different, but the implication is exactly the same as provided by Zeng & Sycara (1997). In this case,  $X$  is the lowest price at which the seller will accept the offer. We can also imagine this graphically with the addition of possible spreads in a market.

Figure 1: Bid spread



The bid spread here is simply defined as the range of bids the seller can expect. His reservation price, or his lowest acceptable price, is defined by X. The maximum offer has a level of Z, for the sake of simplicity. According to the definition, any offer below X will not be accepted and therefore, the transaction price will not fall within that interval. The transaction price will land anywhere between X and Z, depending on the bargaining power of both parties involved.

Important to note here is that this figure is static and therefore very sensitive to all kinds of determinants, which may result in dynamics. For instance, sudden job loss, which requires a person to move elsewhere for a job, will affect X in this case as the sale becomes urgent (see section 2.1.3. for more). If a buyer has access to such information, assuming rationality, he will lower his bid because he knows that the seller is likely to have a lower reservation price. These examples reflect the sensitivity of the market to all sorts of factors, which will be discussed in the following section.

### *2.1.2 Loss Aversion*

As mentioned before, loss-aversion can play a role in determining the reservation prices, or in other words, affect seller behaviour in the real estate market (Genesove & Mayer, 2001). The example given in the paper written by Genesove & Mayer (2001) is based on data retrieved in the city of Boston between 1982 and 1989. The authors show that housing prices of condominiums (condo's) rose about 170% and fell more than 40% the next four years (Genesove & Mayer, 2001, p. 1234). Let us imagine an individual going through this outlined interval, and arrive at the notion that the individual now faces lower housing prices, after a significant rise. In the paper, it is explained how loss aversion in this case can affect seller behaviour. When housing prices fall, many units will have a lower value than what the house owner initially paid for the house himself. Owners who are averse to these kinds of losses will have an incentive to keep their reservation price relatively high, compared to the level in the absence of a loss. The authors support this argument based on the data that sellers whose unit's expected selling price falls below what they initially paid for ask a 25-35% higher price for their unit compared to the other sellers (p. 1235). In other words, one can now argue that sellers who are facing a loss are more inclined to keep the minimum amount of money they want to receive at a higher level compared to other sellers that do not face a loss. This real life

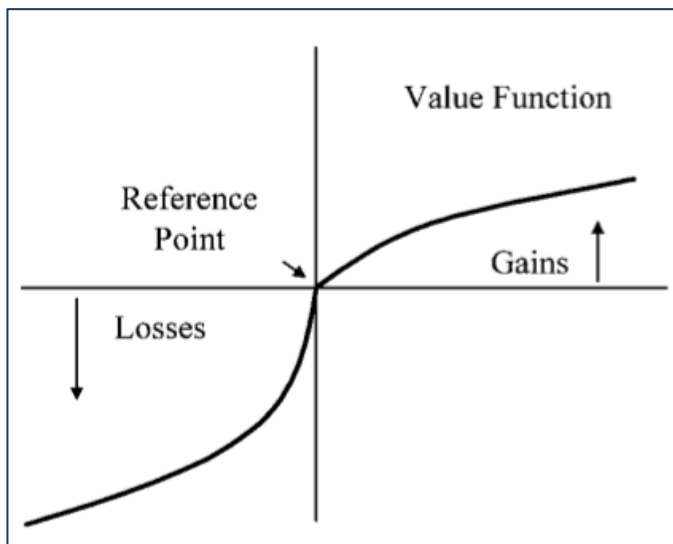


example can also be explained by prospect theory. The theory is meant to explain the behaviour of individuals. Tversky and Kahneman (1991) have pointed out that this theory consists of three components that help explain how individuals make choices in uncertain circumstances.

- 1) Gains and losses are relative to a reference point.
- 2) The value function is steeper for losses that are of the same size as compared to similar gains.
- 3) The marginal value of gains and losses diminishes with the size of the gain or loss.

These three assumptions together can be summarized in figure 1.

Figure 2: Prospect Theory



Source: (Genesove & Mayer, 2001)

Genesove and Mayer use the initial purchase price of a house as the reference point in their research. The reason for this is that sellers usually use the purchase price as their reference point in making decisions about whether to sell or not. The concept of loss aversion is also based upon this assumption. The y-axis reflects the value or utility one person obtains dependant on the gains and losses, defined in monetary terms. The second component is highly relevant to the provided example of Boston. The area defined as “Losses” by the figure shows that the value function is much steeper and decreases much more compared to a same level of increase. This is exactly what happened in the case of the condominium market in

Boston. The only option the seller has until his reservation price is met is to extend the time on the market, or to withdraw from the market all together. Therefore the concept of loss aversion is strongly linked to time on the market.

### *2.1.3 Time to Sell*

Genesove and Mayer also point out that there is a cost for sellers who consistently keep their prices high. This cost is pointed out to be a longer expected time to sell. As mentioned in the introduction, there is a trade-off between selling time and price level, from a seller's perspective. Glower, Haurin and Hendershott (1995) also provide proof for the existence of this relationship between price level and the time on the market. They mention a number of factors that influence the selling price including the probability that a seller already made a bid on another house at the time of listing. They found that sellers who already made an offer or bought other property asked a 3-4% lower price. The explanation for this is that people would want to sell the house as soon as possible and move to their new house. However, they found an even more important factor that causes reservation prices to vary. Households who undergo a change in job have a sales price that is 11% lower compared to the sample mean. They do not actually define a job change, but it seems likely that it involves moving between geographic regions (housing markets). Such, labour migration between regions is more likely to lead to a difference in sales price, since there is considerable incentive to move to another house that is closer to the working place. This can be supported with the findings of Springer (1996), who mentions that relocation can motivate sellers to facilitate sale by posting a lower list price. The point being made with respect to time on the market versus sales price is the significant role of urgency. Urgent sales are expected to have a strong influence in determining the reservation price, and consequently the possible outcome in the form of a transaction price, because the minimum amount the sellers want to receive will change based on the desired time to sell. This urgency is translated in time on the market in the sense that people who need to sell quickly will ask a lower price for their house.

### *2.1.4 Holding Costs & Information*

Sirmans, Turnbull and Dombrow (1995) suggest another factor, which significantly affects seller behaviour, or seller reservation prices. Houses are assets that require upkeep in order to maintain its functionality. High upkeep combined with the desire to move elsewhere leads to "an unpleasant" experience, or disutility. To be precise, higher levels of upkeep will most likely lead to more disutility and the seller may therefore be inclined to lower its reservation price. By doing this, the seller will be able to sell the house more quickly and leave any issues

regarding upkeep behind. A major part of the upkeep is obviously the cost of the mortgage. It is likely that paying for a house you do no longer want to live in, will be experienced in a negative way. The paper also mentions that a lower reservation price is positively correlated with time to sell, namely lower prices lead to less time required to sell the house. Their results suggest that the relationship between high reservation prices and long time on the market also holds the other way, in the sense that lowering the price will reduce time on the market. Their findings suggest that quick sales could represent transactions involving sellers with high holding costs. The connection with reservation prices will be that sellers with low listing prices, or low time to sell, could be faced with high upkeep costs of their house.

The results of Sirmans et al. further reinforce the importance of information in the housing market. Information asymmetry can lead to sellers being misinformed about several characteristics of the market. Sellers may have different perceptions of the market, different views on the expected spread of the bids they will receive and also a lack of information about alternatives. This in turn can lead to sellers setting a non-optimal list price, which can be lower and higher depending on the signs of the before mentioned factors. For instance, the seller may be misinformed about the spread of expected bids and will set a lower price compared to the list price in the absence of this lack of information.

The impact of information supply is also emphasized upon by Vincent (1995). He introduces an auction setting, in which the seller tries to sell a given good. He builds upon the work of Milgrom and Weber (1982), who state that a seller who possesses private information about the good can increase her expected profits by credibly revealing the information. However, when the seller possesses information that is regarded as high value for both the seller and the buyer, the seller would optimally reveal that information (Cai, Riley, & Ye, 2007). If a seller has favourable information about his house, say additional features like floor heating, it will be positively perceived by the buyer, and he will be willing to pay more for it. The process of information revealing works in the interests of both the buyer and the seller in this case. A buyer can then ask himself whether the provided information lacks credibility, because the seller will manipulate the information to serve only his interest, assuming he is a rational individual. Vincent (1995) also mentions that there existed a phenomenon of keeping the seller's reservation price a secret. The effect of this is that sellers encourage greater participation by buyers, which drives up the price. The reservation price is therefore also a sign of perceived value for the seller. The buyer may still have another perception of the value

because it is possible that the seller simply does not know the true value, but the buyer may. The risk associated with revealing the reservation price is illustrated as follows. Suppose a reservation price for a given house is revealed in the housing market. A rational buyer will never bid more than the reservation price of the seller, because in theory, the seller should accept the reservation price. This effectively reduces the odds of the seller to receive any bids above its reservation price, except for the case of multiple bidders who will try to outbid each other. The first bid will be the reservation price of the seller, and the second bid has to be higher than this to make any sense, assuming the seller is indifferent to buyer characteristics.

## ***2.2 The Buyer's Reservation Price***

### *2.2.1 Definition*

The definition from the buyer's perspective is somewhat in the same line as the one from the seller's perspective. Breidert, Hahsler & Schmidt-Thieme (2005) use the definition provided by Varian (p.4, 2003) and is formulated as follows:

- (1) "The reservation price is the highest price that a given person will accept and still purchase the good. In other words, a person's reservation price is the price at which he or she is just indifferent between purchasing or not purchasing the good".

This definition is somewhat related to the seller's definition. For the seller it was the lowest amount that will be accepted, and for the seller it is the highest offer that will be proposed by a buyer. The study by Breidert et al also includes the fact that other authors use different definitions. The example given is quoted as follows:

- (2) "The price for a product such that an individual switches away from her most preferred product"(Kohli & Mahajan, 1991).

This gives rise to a discussion about which definition is the most appropriate in this study, because the second definition is clearly different than the first, also from the point of its implications. The second definition basically gives a price X at which the buyer does not buy the product, but switches away from it to another. That is in contrast to the first definition, which states that X is the highest price a person will accept and still purchase the good. This means that the point at which the buyer buys the product is higher than the reservation price defined in 1. If X is the price at which a buyer wants to switch products away from the most

preferred, then there has to exist a price above X at which the person is indifferent between the most preferred product and the alternative. That would in this case be the reservation price as defined in 1. It will also be used in this study as the definition of the buyer's reservation price.

### *2.2.2 Utility*

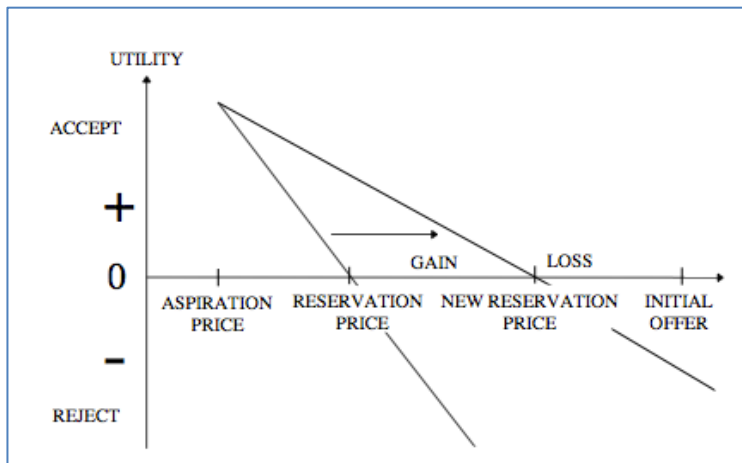
Kohli & Mahajan (1991) discuss one of the determinants of the buyer's reservation price, which they assume to be true in their research. The determinant brought forward is related to utility. "The consumer's reservation price for a product is determined by the consumer's expected utility for the product, in relation to the price and utility for his or her most preferred product among all product offerings in his or her evoked set" (Kohli & Mahajan, 1991). In other words, the reservation price is (partly) determined by the consumer's expected utility of the product relative to the price and utility the consumer could achieve by choosing his or her most preferred product amongst all possible products. This effectively expresses the value of a certain product in terms of the value of the most preferred product, and the consumer then decides the amount he or she is willing to pay at most for it. An example is given in the paper, related to students searching for apartments. Assume that each student's current apartment is his or her most preferred amongst all available. It follows that a student considering a new apartment will relate the expected utility of that apartment to the most preferred apartment, which they are currently living in according to the assumption made. They also account for heterogeneity by assuming that each consumer's reservation price estimate is an observation from a distribution that has the same functional form, but has different parameter values. In the example of apartments, this can mean that student A values larger rooms more than student B, who values the quantity of rooms more. But the functional form remains the same across all consumers, which is a fairly strong assumption to be made.

### *2.2.3 Affordability*

Kristensen & Gärling (1997) discuss the initial determinant of the reservation price from a buyer's perspective. In their study, they speculate on the notion that the primary factor that affects the reservation price in the pre-negotiation phase is affordability. This is related to net income, or disposable income. It is also said that this will affect how an offer will be perceived, as a gain or as a loss. A more clear explanation on this will be provided with the use of figure 3.

Figure 3: Hypothesized effect of a seller's initial offer on a buyer's reservation price in a price

negotiation.



Source: (Kristensen & Gärling, 1997)

This figure shows the hypothesized effect of an initial offer on the buyer's reservation price. It is important, however, to distinguish the different phases of the negotiation process. Before anything happens, the buyer determines a reservation price for himself based on his disposable income (affordability). The next stage involves the initial offer made by a seller, who proposes a higher number than what the buyer is willing to pay at most. Two different pathways can follow. The first involves simply the definition, which states that the buyer will not buy the product at a price higher than his reservation price. The second option is depicted in the figure. It shows that an initial offer can change the reservation price towards the direction of the seller. The consequence of this is that the buyer may consider an offer that he or she perceived first as a loss and now as a gain, which makes the offer more attractive.

This shows that the reservation price under these assumptions is sensitive to initial offers made by the seller. A possible explanation for this could be seen from a psychological point of view. A high offer by the seller is able to affect the perceived value of the buyer. He or she can be inclined to believe that the value of the product in question is much higher than what he thought to be the case initially. The opposite can happen as well when a seller offers a price that is lower than the reservation price of the buyer. This will lead to the buyer willing to pay less than before.

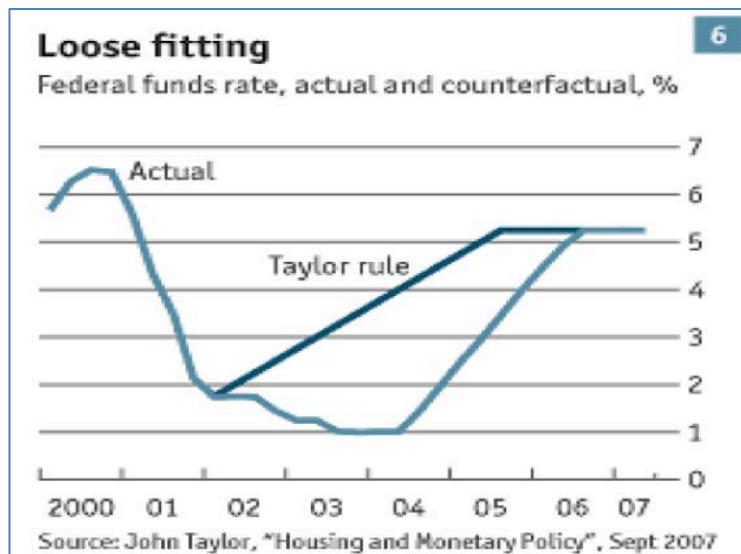
## 3. The Financial Crisis

### 3.1 What Were The causes Of The Crisis Of 2008?

#### 3.1.1 Taylor Rule & Interest Rates

After laying out the object that is the main point of discussion of this study, it is time to introduce the variable that is hypothesized to have an effect on the object. In order to understand the first and most important cause of the crisis, the Taylor rule has to be presented first. The rule is defined loosely as “an instrument rule linking the central bank’s instrument (short term interest rate) to the current inflation rate and the output gap, as a benchmark for analysing monetary policy” (Peersman & Smets, 1999). Taylor proposed that this rule could allow central banks to stabilize the economy and still achieve long-term growth. The importance of this concept is reflected in figure 4.

Figure 4: Loose Fitting



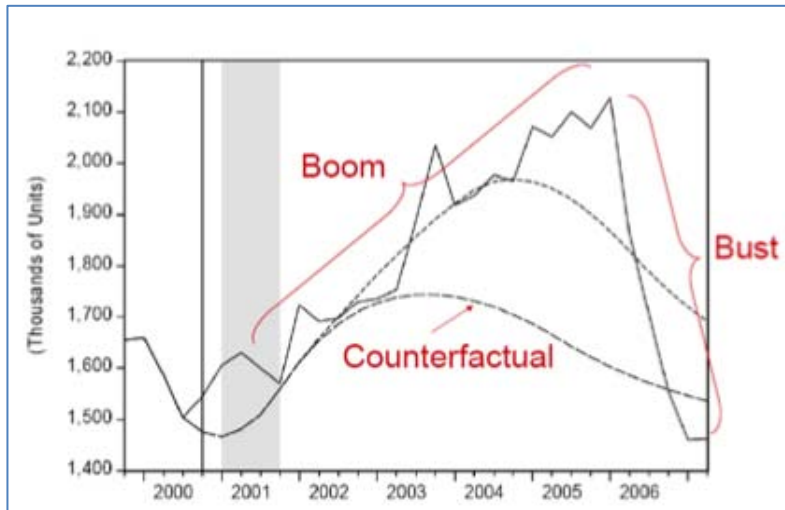
Source: (Taylor, 2009)

The Economist labelled the Taylor rule as the line that reflects what should have happened based on the good economic performance of the last 20 years (Taylor, 2009), or in other words, the interest rates that would have to be set in order to achieve short-term stability and still achieve long-term economic growth. The line also reflects the interest rate levels that had to be set if the Federal Reserve (FED) had followed the kind of policy that had worked well during the historical experience of the Great Moderation that began in the early 1980s (Taylor, 2009). What we can clearly see is that the actual interest rates were much lower than the levels that are in accordance with the Taylor rule. This figure thus presents an empirical

measure of monetary looseness, or easy credit. The policymakers made these decisions with full awareness, as mentioned in the paper by Taylor. It is explained by Taylor that these deviations from the “regular” setting, based on the actual macroeconomic, levels were purposefully done and that the interest rate would be raised slowly. Interest rates are basically the “price of money”, the rate at which you can lend money now to consume all kinds of commodities. This means that there is a negative relationship between the interest rate and the money demand; when interest rates go down, money demand will go up because it simply gets cheaper to borrow. Due to this relationship, Taylor concludes that there were monetary excesses in the build up to the housing boom.

Taylor argued that the loose money was responsible for accelerating the housing boom, and ultimately to its leading to its burst. In order to provide empirical evidence of the existence of this relationship, he set up a regression model with which he estimated the relationship between interest rates and housing starts. The following step was to test the counterfactual, which he defines in this context as the situation in which the interest rates of the Taylor rule were used. Combining these two estimates, he provided the following figure.

Figure 5: The Boom-Bust in Housing Starts Compared With the Counterfactual



Source: (Taylor, 2009)

This figure shows the amount of housing starts in two situations. One is the observed level labelled as “Boom” and the other is the counterfactual that we cannot observe, the estimated level of housing starts in the absence of the “boom” levels of the interest rates. In other words, when the interest rates were used that are proposed by the Taylor rule. By using this graph



that is the result of a regression model, Taylor provided evidence that the loose credit was a factor that caused the boom of the housing market, which was bound to burst.

### *3.1.2 Sub-Prime Mortgages*

It is important to note that money looseness is not enough to cause the crisis. If every person that borrowed money was able to pay off its debts, there would simply be no collapse and the financial system would remain intact. The problem was that there were a lot of loans that should not have been made if reasonable standards were used. These loans are called “sub-prime” loans, or loans of lower quality. They have a higher probability of default because the borrower is more likely to fail on payments. According to the Department of Statistics and Operations Research of the University of North Carolina, the percentage of new low quality sub-prime mortgages rose from 8 to 20% in the period from 2004-2006. This effectively means that banks face the risk of borrowers defaulting, or simply put, banks not being able to recover their money. This puts the financial system under severe pressure. The same institution also mentions that households became increasingly more in-debt. The ratio of debt to personal income rose from 77% in the beginning of 1990 to 127% at the end of 2007, and much of this increase is mortgage related.

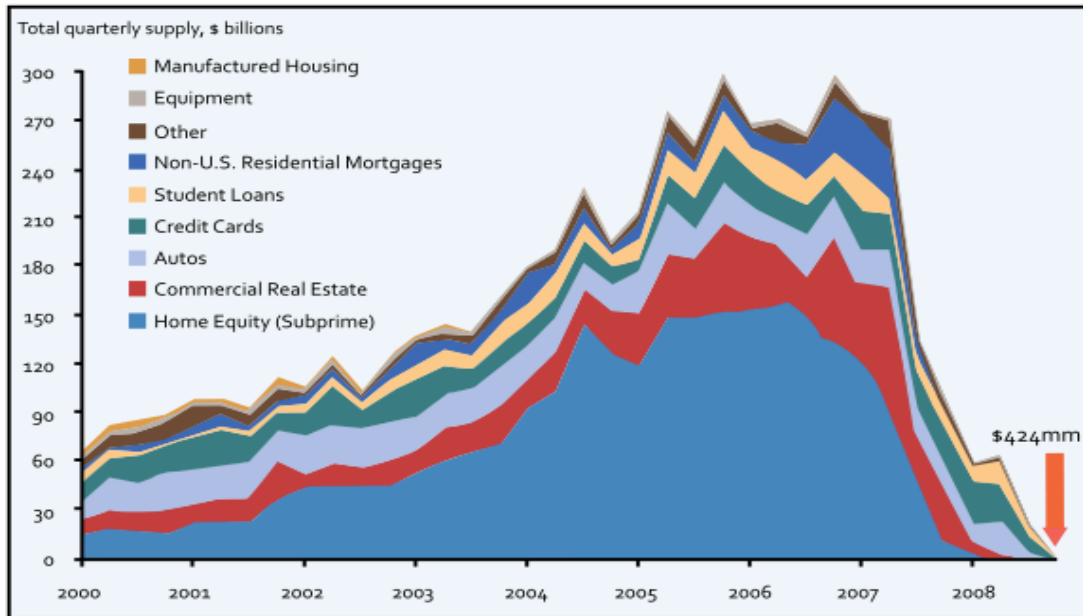
The implications of these developments are explained as follows. The mortgage borrowers of lower quality had difficulties of paying off debt to the financial intermediaries. Of course, the borrower has an underlying asset at its disposal, namely the real estate itself. Theoretically, using the option to sell the asset in order to pay off debt would provide a solution on the condition that asset prices have remained the same. If we imagine that borrowers on a large scale are unable to pay off debt plus interest, and thus collectively list their real estate for sale, the consequence is connected to supply and demand. Housing prices came under pressure, and borrowers received much less for their house than what they initially paid for, or in other words, the amount of their loan. Proof of this is also provided in the same document by the University of Carolina, where it is mentioned that 23% of the U.S. homes were worth less than the mortgage loan by September 10.

### *3.1.3 Mortgage Backed Securities & CDOs*

The consequences are further magnified by the fact that financial innovations were taking place in that time. Mortgage backed securities (MBS) were introduced which enabled global investors and institutions to participate in the real estate market (Dungey, Dawyer, & Flavin, 2011). A mortgage backed security is defined as a security which derive their value from

mortgage payments and housing prices (The University of North Carolina, 2012). Figure 6 provides a graphic representation of the development of these securities throughout the years prior to the financial crisis.

Figure 6: Asset-Backed Security Issuance (2000-2008)



Source: (Acharya & Richardson, 2009)

The figure points out how large the increase in asset-backed securities actually was. The largest part of the securities were backed by home equity, or real estate which points out the importance of the real estate market in the crisis. The risk of creating more of these securities is discussed by Acharya & Richardson (2009). They mention that securitization allowed banks to avoid holding costly capital by simply selling them to anyone else. The result is that banks did not need to meet the capital reserve requirements because the loans are simply not owned by the bank any longer, and it recovered funds by selling them off.

The mortgages were sorted based on the level of risk, and were then sliced up in “trenches” (Acharya & Richardson, 2009). Imagine the mortgages being put in a box that the investors own, because they bought them from the bank. This box then represents income streams in the form of mortgage payments that consists of interest and principal, and is called a collateralized debt obligation (CDO). It is defined as follows:

“A CDO comprises a pool of underlying instruments against which notes of debt are issues with varying cash-flow priority” (Meneguzzo & Vecchiato, 2004).

The implications are that the income streams first go to the investors that bought the least risky trench of mortgages. Once they receive their return in full, the next trench's returns will be realized and this will go on through all the classifications of risk. In return for waiting all other trenches to receive their returns, the risk taking investors receive a higher return on their investment. As housing prices and mortgage payments dropped, institutions like hedge funds that invested heavily in these MBS's reported severe losses of wealth, and this had a negative effect on the economy in general. The mortgage backed securities had also played a role prior to the crisis itself. The housing boom which is reflected by the number of housing starts that increased significantly throughout the years before the crisis is not only explained by Taylor's argument about loose credit. Increased demand for mortgage backed securities affected the real estate market by resulting in less strict lending criteria, and thus, increased demand for housing in general (Dungey, Dawyer, & Flavin, 2011). More people were qualified for house ownership due to the fact that lending money simply became easier. The end result is simply that there will be invested more in the production of houses. The anticipated increase in housing prices was not realized, simply because it made no sense for house owners to pay off the mortgage. When the sub-prime mortgages defaulted, and the bank obtained the underlying asset, namely the house itself, the bank usually lists the house for sale in order to recover the remaining credit. However, because defaults occurred on a large scale and housing prices plummeted, house owners that were able to pay the loan back were paying for something that was worth less. Imagine a mortgage of \$300,000, and thus a house of the same value. The household needs to payoff the mortgage and its interest, while the house's value is just \$100,000 because prices plummeted. A rational person would not pay the amount of the loan, and instead leave the house and the keys to the bank who is inclined yet again to sell the house, further channeling downward pressure on the housing market.

In August 2007, the financial crisis was brought to an international level and it was triggered by the downgrading of a large set of mortgage backed securities by the rating agencies (Hellwig, 2008). This event had an immediate effect on the market prices of these securities, as they were now seen as much more risky in terms of collecting the economic benefits that the security is supposed to deliver. This is called the underlying credit risk. But also market

risk, purely based on the actions by the rating agencies, resulted in the plunging prices of these securities.

Acharya & Richardson (2009) provide an explanation on why the crisis was so much more worse than just a collapse of the specific sector. Instead, it brought the whole financial system down. It is mentioned that the financial intermediaries did not focus on their own business model of securitization and chose not to the credit risk to other investors. The legitimate reason to start securitization is mentioned to be spreading small concentrations of risk to a large number of investors. But between 2003 and 2007, the main purpose was to avoid the capital requirement regulation. The net result kept risks at the banks, and also amplified it because of the over-leveraging securitization allowed.

#### *3.1.4 Political support & psychology*

On December 16, 2003, the American Dream Downpayment Initiative (ADDI) was signed. The act was an initiative by the Bush office to make house ownership accessible to to everyone, regardless of income (Donovan, 2014). It was especially designed for low-income households that aspire to own a house, but not yet qualify to obtain a mortgage. The purpose of the act was to assist buyers with the biggest hurdles to home ownership, namely down-payent and closing costs. The U.S. was yet again highlighted as the nation that offered limitless opportunities and this was also to be spread to the low income households, with the intention to have them live the American Dream too. This political support and the act that helped shape the sub-prime mortgage market played an important role in the events that led to the crisis. It was this policial support that perhaps even assured the people and parties involved in the market that everything was going to be fine, as it is not anticipated that the president would do anything to endanger his country. This could be labeled as the psychological aspect that affected the households in question. They went on pursuing the American Dream, which contributed to the failure of the financial system. Howeve, the contribution of this factor to the crisis is of a much lower level compared to the financial system.

#### *3.1.5 Information Asymmetry*

The crucial role of information is again emphasized upon by Beltran & Thomas (2010). In their study, they mention that information about the securities' intrinsic values could be different, in the sense that sellers could have more (accurate) information at their disposal than potential buyers. Placing this remark in the context of this section of the study sheds light

to a possible problem. As mentioned before, the mortgages were sorted and “sliced” in parts, which enabled them to be used as an instrument in the creation of mortgage backed securities. Investors bought these securities, and ultimately, the money for the mortgage originates from the investors. However, the parties that bought the securities are very likely to have little to no information about the individual that actually borrows the money. The bank is tasked with this process of selection and screening, so the question would be why the bank was not more careful with this. The answer is that the banks actually made profits on the transactions. Lending out the money to borrowers, and subsequently selling the mortgages to the buyers, which could be investment banks, was actually profitable. The banks charge transaction costs for doing this, and the service it provided for the investors could ultimately be identified as screening of mortgage candidates, and monitoring them because they are well suited for this type of activity (Mishkin, 1992, p. 121). Therefore, the bank simply had the incentive to lend as much money as possible. However, banks need to have funds themselves in order to lend it out. The loans made by the bank were simply sold to someone else, which resulted in recovered funds that could be used to make more loans. Another reason provided in the paper by Acharya & Richardson (2009) of how the banks accomplished to build this type of system is connected to “structured investment vehicles” (SIV’s). These were entities, or organizations, that held on to the loans made by the bank. The advantage of this technicality was that banks were not obliged to hold against these loans any longer, and thus, had more funds to make even more loans. This is also mentioned by Crotty (2009), who states that CDOs were attractive assets to keep since they could be held off-balance, and thus required no reserve capital.

### ***3.2 Possible Effects On The Reservation Prices***

#### *3.2.1 Excess Supply Effects*

In this section, I will be formulating hypotheses based on the findings of earlier literature, and try to deduce the affect of the crisis on the reservation prices. Recalling the factors that have been identified as having an affect on the seller’s reservation price, I can now set up hypotheses about the possible changes of the reservation price. The factors identified were loss aversion, time to sell, and information & holding costs. One of the main problems that caused the financial crisis was the fact that mortgages were handed out too easily to people who could not afford one. The banks did not even ask for a stable income flow, and performed very little to no screening on the potential house buyers. After the crisis, however, learning from the mistakes that were made, the banks are expected to sharpen the criteria for

mortgage eligibility. This means that banks will require far more information about the mortgage taker including income, expenses, children, other liabilities like cars etc. By doing this, the bank is able to evaluate the financial situation of the mortgage taker more accurately. Besides demanding more information, the bank is expected to sharpen the criteria for eligibility. They could require more income, less expenses/liabilities for the mortgage to be granted. Given these expected developments, it is safe to hypothesize that there will be less people demanding houses. Less people qualify for a loan simply means that less people are able to buy a house. A house seller will adjust his reservation price accordingly. It does not matter whether the house owner knows the scale of demand, because he will adjust it when time passes, in the scenario when he does not know. If he does know, then it makes sense that the seller lowers his reservation price due to the fact there are less house buyers.

Another factor here that plays a role after the crisis could be the level of savings that households aspire to have. After the crisis, it would make sense for people to save money and to build a buffer, in order to be prepared for another crisis of any type. This also implies that people do not spend more but less, which means that instead of buying a new house, people are inclined to choose to stay in their old house. This again is an indication of lowered demand, as was pointed out in the previous section. Therefore, the first hypothesis is formulated as follows:

- 1) **H0: “The crisis has led to excess supply, resulting in a strengthened position of buyers in the market, and a lower reservation price of buyers”**

### *3.2.2 Loss Aversion Effects*

Loss aversion is the foundation for the second hypothesis, as I expect it to be a significant determinant of seller behaviour. The reason for this is deduced from the notion that home owners, when it comes down to possible losses, refrain from selling their house if there is loss or if the loss is significant. The trade-off between selling time and selling price will, from my point of view, be dominated by the selling price. Sellers are expected to be willing to live in the house until the point that is seen by the seller as “acceptable”. This acceptable point could be with a loss of any size, but also a gain. The point being made is that the seller will not want to lose “too much” on his house, and will thus keep selling his property. The expression “too much” is open for interpretation as it varies significantly from person to person. A random individual A would accept a 5% loss, whereas the other individual B may not accept any loss

at all. Unfortunately, it is hard to measure reservation prices directly. However, a good indicator of reservation prices of the seller is the selling time. As mentioned in the text, selling time and transaction price are positively correlated. In other words, a longer selling time increases the odds for a higher transaction price and vice versa. An observation of increased selling times may therefore imply that seller's reservation prices have increased, because sellers are more patient and accept only at high bids. The expectation is that sellers are not in a hurry to sell the house, and are willing to live longer in the house in exchange for a higher price. Of course, the house is listed for sale in the meantime. It is thus expected that sellers are more patient, and wait for a higher bid to be brought out, and this would be a sign of increased reservation prices from the seller's point of view. The following hypothesis is thus formulated:

**2) H0: “Loss aversion leads to the preference of longer selling times over lower transaction price”**

*3.2.3 Information Effects*

As a consequence of the crisis, many house owners realized severe losses. It is thus expected that they require much more information and data about the market in order to make a decision that maximizes their utility. This was the case before the crisis too, however, I expect it to be amplified. The crisis has shown regular house owners that a market crash can yield very unpleasant results for the owner. The seller now wants to be well informed about the developments and requires much more detail. He will gather this information from the broker who matches supply & demand, as they are experts in the field of real estate. Required information could include price trends, mortgage criteria (as a part of demand determination) and the availability of other houses (as an alternative accommodation possibility for the current house owner). After establishing the increased need for information, and the expected lower trust in the system, it is safe to hypothesize that buyers will now be much more careful when buying a house. The carefulness is also expected to have an effect on the market liquidity. Buyers simply will take much longer to decide, and this is expected to lead to a decrease in prices in the market. Sellers might not know the full details of buyer intentions, and therefore, may conclude that a person steps out of the market when he or she delays an acquisition. This is a very simple, yet plausible scenario that can take place in the post-crisis situation.

3) **H0: “ As an effect of the crisis, increased risk-aversion among buyers has lowered reservation prices of buyers.”**

With the help of these hypotheses, the aim is to discover the effects of the financial crisis on the reservation price. The next section describes the process of data collection.

## 4. Empirical Methods

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This section involves the discussion of the empirical methods that are used to collect and analyse data about the behaviour of sellers and buyers in the real estate market. In order to answer the research question in a proper way, it is of great importance to find data on the reservation prices of sellers and buyers, before and after the crisis. Surveying them would be an option, but it would require a great amount of time and effort. On top of this issue, it is most likely the case that sellers/buyers will give inaccurate information about their behaviour before and after the crisis. When asking for the minimum price at which a person would accept to sell his house, several issues arise. The person cannot place himself accurately in the pre-crisis situation again, because there are many variables that all play a role in determining the reservation price, be it small or large. These can range from the person's household composition to lack of information and motivation. During the process of selling the house, the person is much more informed about the market, and is able to determine an optimal reservation price. Several years later, however, it is not likely that the person remembers that level of reservation price, let alone positioning himself in that situation again. It thus makes more sense to gather data from a more professional environment, in which the actors base their information on actual data and professional experience. These “expert interviews” are used to either found support or grounds for rejection of the formulated hypotheses.

The data will be gathered using interviews with professionals that operate within the housing market. As mentioned in the introduction, this research is focused geographically on the Netherlands. Consequently, Dutch mortgage brokers have been approached based on their expertise in the housing market and my belief that their data is a trustworthy representation of the real world. The interview took place on the 11<sup>th</sup> of June 2014. A second mortgage broker did not have the necessary time to participate in an interview, but kindly provided answers to the interview questions in writing. Most of the approached real estate agencies however did not have time to participate in an interview, which also proved to be a limitation. Nonetheless,



the interviewed professionals' employers can be found in appendix section 8.1. The questions that have been asked to the mortgage brokers can also be found in the appendix, in section 8.2.

## 5. Results

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### *5.1 Hypothesis 1*

The three hypotheses will be evaluated using three different views on the topic. The first hypothesis as described above involves the relative levels of supply and demand in the real estate market. One of the interviewees mentioned during his interview that, comparing pre-crisis levels and post-crisis levels, the quantity of sellers has decreased approximately 50%, whereas the buyers' quantity decreased approximately 60%. He also mentioned that the market experiences a transition from "a sellers market to a buyers market", which is the literal translation of "verkoopersmarkt naar een kopersmarkt". This is something this interviewee mentioned, and it basically means that there is a shift of power in the market from sellers to buyers. The statistics mentioned above also imply this notion, as the relative quantity of buyers has decreased which means there are relatively less buyers. The buyers who are able to enter the market hold a stronger position. This interviewee also discussed why this happened, and emphasized on two developments that deter more buyers from entering the market. First of all, he mentioned that, as I already speculated, that the criteria for mortgage lending have been sharpened. The required "loan to income" ratio has decreased, which implies that in order to borrow an amount  $X$ , the income has to be larger. This effectively deters people who do not meet the new criteria from borrowing the money needed to fund their purchase of the house. Assuming the person is not extremely wealthy, he or she is not part of the market. The second reason he provided was specific to the Netherlands. The "hypotheekrenteaftrek", translated to English as "tax deduction on mortgage interest", simply means that the interest paid to the banks that handed a mortgage to a buyer, is deductible from the persons gross income. This reduces taxable income, and makes it very likely for the person to receive money from the taxing institution (Rijksoverheid, 2014). One simple way of interpreting this mechanism is that it makes buying simply cheaper because the buyer gets money back, due to the interest paid.

Another indication of a strengthened buyers position is claimed by interviewees to be connected to reservation prices. Sellers usually have to accept a lower price than what they would want to get at least. In other words, buyers offer less money for the house knowing that they can rely on their strong position in the market in the post-crisis situation. One can argue, though, why a seller would go below their reservation price. An explanation of this is given by Rogier to be connected to holding costs, which consist of maintenance and most importantly, mortgage payments. A person that does not want to live in the given house any longer has the feeling that he or she does not obtain enough utility for the price of the house, namely the monthly mortgage payments. This is, theoretically and usually also practically, sufficient reason to lower the ask price even further in order to stop paying the mortgage and move to a house that offers a higher utility given costs.

Another real estate broker mentioned the following about the relative levels of supply and demand. According to him/her, sellers go below their reservation price too, which backs up the answers provided by other interviewees. He/she did claim, though, that the number of clients dealt with has remained relatively stable. Unfortunately, this interviewee did not provide me answers on how exactly her clients developed, making a distinction between buyers and sellers, therefore, I cannot make assumptions on this issue.

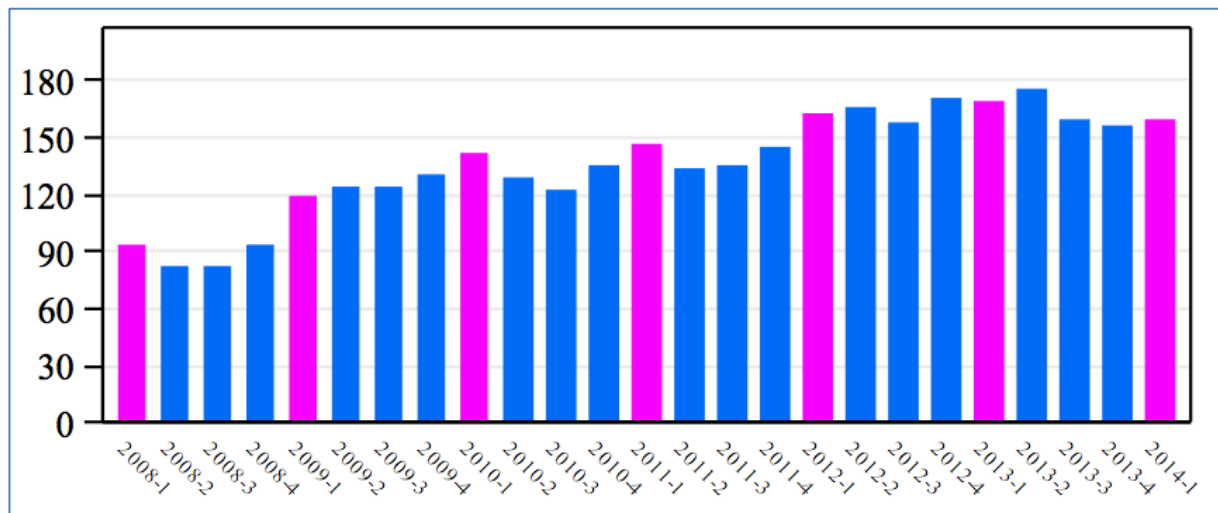
On the basis of the inputs provided by the two mortgage brokers, I **find some support for** the first hypothesis. There seems to be an indication that the crisis has indeed led to an excess supply, and consequently, weakened the position of sellers in the real estate market. As a result of this weak position, sellers are more likely to lower their reservation prices even further, simply because it is costly to hold the house you do not want to live in any longer, and you can not sell the house quickly if you do not use a “sharp price” relative to the market, according to Rogier.

## **5.2 Hypothesis 2**

The second hypothesis involves the theoretical approach described by Tversky & Kahneman (1991). The idea behind the reasoning is outlined in section 2.1.2. According to one of the interviewees, the initial acquisition price plays a role in the decision to lower the reservation price. This means that the acquisition price serves as a reference point, as laid out in the theory about loss aversion. Another interviewee also backs this statement up by mentioning that the initial acquisition price plays a role as sellers usually have a mortgage of this amount.

In other words, selling below the value of their mortgage would not be very efficient and will be experienced as a loss. Adding to this, the fact that people usually have to lower their price in order to sell leads to the notion that loss aversion seems to play a role in the decision to change the reservation price. An interviewee discussed the levels of selling times in the pre-crisis situation and the post-crisis situation. He/she was very precise and detailed about this development, and mentioned that houses now are listed for 151 days on average, whereas in the pre-crisis situation, this was about three times less. In other words, the average selling times were about 50 days before the crisis took place. Data retrieved from the NVM also points out an increasing trend in selling times.

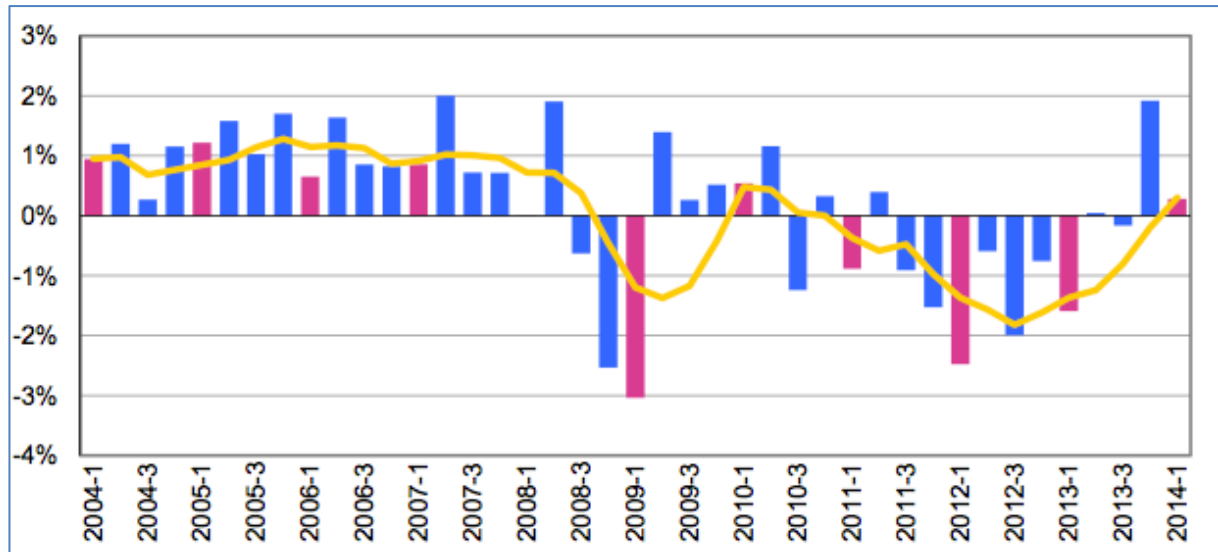
Figure 7: Time to sell (days and market general)



Source: (NVM, 2014)

The data indeed shows and backs up the claim of one of the interviewees that time to sell has shown an increasing trend. According to the literature reviewed in this study, this could imply that sellers indeed prefer longer selling times, and that this is likely to be caused by loss aversion. However, there is also empirical evidence pointing out that the situation is much more complicated. The relationship between price and selling time is, as pointed out in section 2.1.3, is a positive one. A higher price will lead to a higher time to sell. According to the interviewees, sellers usually have to lower their price in order to sell. This would imply that the time to sell would decrease, but we are seeing the opposite as time to sell approximately tripled, compared to pre-crisis levels.

Figure 8: Transaction price development



Source: (NVM, 2014)

Figure 10 shows evidence of the contradiction pointed out earlier. The transaction price has shown a small decreasing trend, especially after the crisis which, based on the literature, implies that time to sell should have been decreased. But reality seems to indicate that the opposite holds.

To sum up, the evidence seems to point out that loss aversion exists and could be related to the realized selling times. People nowadays are likely to be more patient compared to people before the crisis took place, as the data points out that selling time approximately tripled. However, the addition provided by the interviewees place some doubt on this way of reasoning. They mention that due to the weak position of sellers, they simply have to accept lower prices than usual. Theoretically, it is unlikely to have both scenarios, as it is not plausible to have lower prices while time to sell has tripled. Due to this contradiction in the empirical evidence, the second hypothesis is **not well supported by the data**. This is primarily due to sharply declining market circumstances and consequential lower asking prices. The second hypothesis should therefore be adapted:

**H0: “Loss aversion leads to the preference of longer selling times over lower transaction price, although longer selling times do not attenuate price declines”**

### **5.3 Hypothesis 3**

The third hypothesis deals with consumer trust in the future financial system. One of the interviewees gave a very simple, yet effective example of how the market could be described. An individual who is planning on buying a pair of headphones around, say 50\$, will use all tools necessary to make sure he is not overpaying for a given pair of headphones. The person can also make sure that he does not overlook other options that would make the individual happier. Now, imagine the individual was in the real estate market, looking for a house to buy which costs significantly more. With larger magnitude comes a larger potential loss, which basically pushes the individual to ask for much more information. Adding the crisis to this picture and assuming trust has decreased, the individual is now hypothesized to require even more information. This interviewee clarified the situation by mentioning that the demand for information has indeed increased. The easiness at which information can now be retrieved makes it beneficial for most people to actually put time into collecting more information. Of course, this was the case in the pre-crisis situation as well, however, trust was much better before. As a result in of the crisis, trust was damaged in the short-run. The people did not require as much information, because the belief that everything would be fine was relatively higher. In addition, individuals require an entity that can successfully interpret the data for them. He/she says that real estate brokers are usually the persons that can interpret the data in a right way, as they are experts in the field of real estate.

According to an interviewee, during the aftermath of the crisis, people were less sure about the future. This professional gave an example about the market recovery. The point being made is founded on the way of defining recovery, the interviewee mentioned. Demand can be based on two concepts. First of all, you can measure the people who can actually buy a house at the moment. Second, you can measure the people who would like to buy a house, which is called in Dutch, the “latentvraag”. There is a fundamental difference in these two approaches. I can give myself as an example, I would like to buy a house but I cannot because I do not have the means to actually do it. According to the interviewee, the recovery is based on the latter; people want to buy houses, but most of them cannot accomplish this. This is also in line with earlier findings about the relative supply and demand levels, in which there was an indication that demand decreased. This demand is very likely to be based on the people who can actually afford the house. An explanation provided by the interviewee for this

development is based on trust, which according to more interviewees, has increased over the last few years, after the full effects of the crisis have been absorbed.

One of the interviewees mentioned how the situation in reality was right after the crisis. When people are unsure about the future. People have the means to compensate for the lack of trust in the future. This can be done by using information, or by simply exploiting their stronger position in the market by being extremely picky. In other words, buyers are as mentioned before, much more careful when buying a house. They want to make sure that, even though they are unsure about the future, that they minimize the risks they are exposed to when buying a house. On top of this, the further development of the Internet and the ease at which information is retrieved nowadays is the core foundation of why information demand has increased, as stated by one of the interviewees.

Some interviewees did mention that trust has increased over the past few years. This development is also backed up by “Vereniging Eigen Huis (VEH), which provides a trust indicator that has increased from 90 to 93 during the period between May 2014 and July 2014, while 100 indicated neutrality (Elsevier, 2014). This could pose a contradiction with the demand for information, which has increased. Yet, some interviewees mention that this is not solely dependent on trust. The nature of the market (large scale), and the developments in the ICT industry are the main drivers of the demand for information. Information demand has increased, however, an interviewee did not mention how information demand affected the prices in the market. There is indication that prices are independent of information demand. To sum up, trust has decreased in the immediate aftermath of the crisis. This could be a factor that explains the increased demand for information, however, based on the further development of trust it should decrease again. The only conclusion we can draw from this is that there are other, perhaps even more important determinants of information demand. Most importantly the impact on reservation price seems to be non-existent. Therefore, the third hypothesis is **not well supported by the data** and needs to be adapted.

**“As an effect of the crisis, risk aversion has led to an increased demand for information, without a clear impact on reservation prices of buyers”**

## 6. Conclusion & Discussion

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The goal of this study was to identify the factors that have an impact on reservation prices, and to find out how it was affected by the financial crisis of 2008. Based on literature review, several factors were identified to have an effect on sellers' and buyers' behaviour in the real estate market. Sellers' behaviour is affected by the concept of loss aversion, which drives the price they ask up. Losses are experienced much more intense relative to gains of a similar size. The desired time to sell also affects the reservation price of sellers. A person that needs to sell as soon as possible will have to ask a competitive price in the market, because otherwise, it will simply not sell given the qualities of the house. This reasoning was also used to turn the concept of time to sell to an indicator of the change of reservation prices; higher time to sell might indicate higher reservation prices because people are now more patient. The third and fourth factors were identified to be information supply and holding costs. Information is crucial for optimal behaviour in the market. When a seller has wrong or no information on the market conditions, he or she might behave non-optimally by asking a lower price than what he or she might ask with full information. The last factor, holding costs, play a role in the following way. A person that wants to move out and sells his house, would want to do this as soon as possible because of monthly mortgage and upkeep costs. Adding to this, the perceived utility is not sufficient after the decision to move to another house.

The crisis serves in this study as an intervention in the market. The goal was to monitor the changes in reservation price due to the financial crisis. Based on interviews with real estate brokers, several conclusions can be drawn. It seems to be that the crisis has led to a shortage of buyers, leading to the fact that the buyers that manage to be in the market have a stronger position relative to suppliers. In other words, there is excess supply. Theoretically, this would mean that sellers would have to lower the price, and practically, this has been verified in the interviews. Sellers indeed seem to be forced to lower the price, simply because they cannot afford to hold the house longer and due to excess supply.

Based on the empirical evidence, there seems to be evidence that loss aversion is a concept that is prevalent in the market. People consider their initial acquisition price when they decide what price they will ask, which basically means that they do not want to realize losses on the house. Based on this concept, time to sell was expected to be higher which indeed is the case. However, the addition of lowered prices is a contradiction as its relationship with time to sell

is positive. During the interviews, it is mentioned that sellers usually have to lower their price, which implies lower selling times. But at the same time, we observe that selling times have nearly tripled.

As a consequence of the crisis, it seemed natural for me to assume that people are less sure about the future of the market, and that it should simply be more volatile. In reality, it seems that the opposite hold, namely trust in the future grows. Based on the proposed hypothesis one could deduce that information demand should be even lower. However, an important factor arrives at the scene, namely the development of ICT. Market information and conditions are very easy to retrieve for the average people, compared to 10 years ago. The Internet is accessible through virtually every device that has an Internet connection. This development makes information simply more attractive, because if we define the cost of searching for information as a function of effort and time, it is much more beneficial. Besides the demand for information, the link to reservation prices seems non-existent. It may well be possible that increased trust has an effect on the prices through another link, but information supply/demand does not seem to play a role.

## 7. Limitations

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During the research, I stumbled upon several issues that disabled me from optimally writing this thesis. The most important issue was the fact that I had severe troubles finding real-estate agents that were willing to participate in the interviews. Even though I approached over 15 real estate agencies, nearly all agencies replied that they did not have enough time, because they have a lot of clients to take care of. Some agencies did not reply, even after I called, upon which they promised me that the real estate broker would contact me. For further research, it is of importance to find out how to measure the information supply, as it proved to be returning in nearly every paper I have read so far. Luckily, I managed to have an extensive interview with one interviewee that proved to be very helpful, and a second was able to provide answers in writing. As a positive note, the lack of willingness of most real estate agents to take some time away from their clients may point towards an uptake in the Dutch real estate market.



### 8.1 Question list

1) **On what factors do your customers usually base their asking price?**

2) **Do sellers have to lower their asking price occasionally during the selling process, in order to be able to sell the property?**

Does the initial acquisition price play a role in this? Does this come into play when determining to lower the price or not?

3) **How long do the houses stay for sale on average?**

Is that longer than in the past? What factors are the most important determinants of selling time?

4) **Do your customers have a minimum price, and if so, do they share this with you?**

How is this related to the asking price? What is the minimum price based upon?

5) **Is the minimum price often realised, or do the sellers have to accept a lower bid?**

6) **Do your customers already have another house on the exact moment of listing their old house for sale?**

What about the moment of sale? Or during the selling process? If the customers already have a new house, how different do they behave during the selling process?

7) **How has your number of clients changed over the years? Why? Perhaps due to stricter mortgage lending criteria?**

8) **Do you get lots of bids for the houses your clients try to sell?**

What factors determine this? Does this change per house? How important is the asking price, when the objective is to obtain a bid?

9) **How long does it take on average to find a suitable house for your client, the buyer?**

Could this be related to the supply?

**10) Are your clients more or less unsure about the future of the market?**

Does this play a role in determining the price? Could this be due to the crisis?

**11) After the crisis, do your clients ask more information about market conditions like price trends?**

**12) What role does the mortgage market play in the determination of the price?**

**13) Are buyers aware of how much they can borrow at a max, before they enter the market?**

**14) Do buyers usually have the financing organized, before they place a bid on a house?**

**15) Are buyers less inclined to buy a house?**

What are the causes of this?

**16) Relative to the past, are more houses now being sold without having the financing organized?**

Why does this happen? Are planned purchases being cancelled due to unresolved financing plans?

## **8.2 *Real Estate Agencies***

1) Estata Makelaars

info@estata.nl

2) van Heijnsbergen & Partners

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