

# **Investigating the Effectiveness of Mortgage Demand and the Significant Level of the Changes: Evidence from the Intervention of the Financial Crisis**

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## **Abstract**

*This paper aims at assessing the effectiveness of mortgage loan in order to assess the claims made by the customers regarding mortgage demand resulting from the financial crisis. Multiple method of data collection was used involving the use of questionnaires and semi-structured interviews. The findings revealed that demand have been both effective and ineffective. Demand was found to be effective were customers' mortgage loan applications were turned down because of excess demand over supply. It was also effective where qualified lenders' mortgage loan applications were turned down for reasons associated with nationality status. On the contrary the ineffectiveness of mortgage loan was based on the fact that some of the customers who asked for a loan were not qualified. The findings also revealed a statistically significant mean difference of 0.803, 1.375 and 2.178 in comparing the periods before and during, during and after and before and after the financial crisis respectively at 95 per cent confidence interval.*

## **Keywords**

Mortgage demand, Customers, Financial crisis, Loan, Banks

## **Introduction**

In attempt to understand effectiveness of mortgage demand, the researcher found that the customers blame the banks for not willing to provide them with a mortgage loan. Likewise, the bank thinks that the customers are not willing to obtain mortgage loans. This has necessitated the curiosity to bridge the gap between theory and practice. Besides, a lot of changes have taken place in the mortgage market brought about as a result of the 2007/08 financial crisis. This crisis can be traced from the collapse of the sub-prime mortgage market in the USA which affected nearly all the banks around the world either directly or indirectly, including the UK (Whitehead & Williams, 2011). Long before the financial crisis, some commentators in the UK

had already predicted a downward adjustment even though they did not predict such devastating consequences (Wilcox, 2013).

International Monetary Fund (2011) made it clear that the crisis was clearly foreseen. This is because according to him, all the financial information that had been published by the International Monetary Fund, banks and other international financial institutions created awareness that banks were underpricing their risks. Throughout till mid-2007, banks still did not take enough measures to prevent such risks (Wilcox, 2013). The situation was made worst by the fact that the financial service authority, the Bank of England and the Treasury arrived at an agreement to manage the financial crisis which did not turn out to be successful. The financial service authority failed in their responsibilities to regulate and supervise the activities of bankers and banks. In addition, the Bank of England failed in their operational and managerial procedure, especially as these responsibilities were not understood by themselves (Whitehead & Williams, 2011). Also, the financial service authority did not use their power of open market operation policy and discount rate to influence the market interest rates. On the contrary, they became more restrictive and reluctant to influence these market interest rates (Scanlon et al., 2012).

The UK stands out as being one of the countries where the financial crisis was greatly felt. They faced substantially long term effect and took a longer time to recover. As Ambler (2009); Vuluku, & Gachanja, (2014) puts it, even though the origin of the downturn can be traced to the US, we could also say that the financial crisis in Britain was of its own making. British banks rate mortgages which were valued at 125 per cent of the value of homes. Furthermore, they were issuing millions of credit cards to borrowers without checking their credit worthiness. The regulators did not react to this. Thus, despite the blame on international levels, plenty of homegrown aspects still remained which made the UK uniquely susceptible to it. In the UK, the government continuously encouraged the poor to acquire mortgaged started homes, even when the housing market was falling. The basis for the government action was based on the claim that the poor should have the same access to debt as the affluent sectors in the society.

Many banks in the UK failed as there was a massive rush by depositors to withdraw their money from banks, leading to bank panic and recession. Northern Rock was astounded by customers queuing to withdraw their money for fear of losing it. A similar situation occurred in 2012 during the Greek crisis with customers voicing anger at banks with manifestations (Granitsas, 2012) and Spain crisis (Haugh et al., 2009). Tension was heightened when banks began to tighten their lending policies to other banks and in the international market, fired by the new crashes on other markets. The capital requirement from pillar 1 of the Basel Committee required banks to fulfill requirements related to capital conservation, quality and level of capital, create countercyclical buffer, fulfill capital loss absorption and pay attention to leverage ratio. Risk management was the focus of pillar 2 while market discipline focus on pillar 3 (Bank of International Settlement, 2013)

The effect of the financial crisis made it increasingly difficult for most banks to find money in both the capital and money markets. To make up for this cost on banks, they intern charge higher borrowing rates for enterprises DN Bulletin (2012). Before the start of the crises,

banks were able to fill their funding gap by borrowing cash from the money and capital market at low rates. Banks in this way ran the financing risk. The crises made it difficult for banks receive funding from the capital and money market. Most banks faced with a liquidity surplus prefer to shift away from the credit risk on borrowing. They prefer to hold the cash excess as a liquidity buffer. Banks therefore prefer to reduce their dependency on the money and capital market and reduce their funding gap by attracting depositors.

Homeownership in the UK has been on an increase since Thatcher introduced the right to buy policy in 1980. This led to an increase of homeownership to a peak of over 70per cent in 2003. Homeowner in 2009/10 is estimated to have declined to 67.4per cent (Heywood, 2011). Heywood predicted that with the declining nature of homeownership, it is expected to fall to 60per cent in 2025. Figures in 1918 shows that homeownership level was as low as 23per cent with housing expenditures falling from 5.6per cent in 1980/81 to 1.3per cent in 1999/20. It continued and was only 2.7per cent in 2008/09. Since the onset of the financial crisis, personal loans and the mortgage market has contracted substantially with the supply of mortgages fairly restricted. Some lenders withdrew from the market. With the launching of a spate of new products, the market is beginning to open up.

### **Empirical Reviews on the Financial Crisis and the Mortgage Market**

The housing market in the UK covers a large part of the country's economy. It is made up of 27.8 million residential properties (Buckley, 2011). Newly build houses usually account for a relatively small portion of most housing markets in most economies in comparison to the sale of the existing homes. Existing houses are usually a substitute for buying a new home. There are some specific reasons that influence home buyers to prefer newly built homes over existing ones. They could be influenced by the existence of government support schemes which are directed specifically at the newly completed housing. Bentzien et al. (2012); McCord et al. (2011); Mints (2009) argued that the impact of the financial crisis made housing less affordable for low income households. It is disputed to constitute a burden if more than 30per cent of household income is spent on mortgage repayment

Scanlon et al. (2012) argued that most of the lending policies used by bank managers to issue out loan before the emergence of the financial crisis was not well scrutinise. This resulted to an increase in mortgage demand by the customers. Non-performing loans were the reason for the collapse of most of their financial institutions as customers hide vital information from bank managers when applying for their loan. Jensen & Johannesen (2015); Ramcharan et al. (2015) also found out that the financial crisis had an induced effect on the contraction in supply of loan to customers. This means the limited available loan was subject to credit rationing. Thus, not all the demand for mortgage loan was met by the supply of it, implying that there was a shortage in the market for mortgage demand over the supply of it. The slowdown on loans was consistent with the view that banks became less able to provide liquidity as they found it very hard to attract depositors.

Banks et al. (2012) studied the effect of the financial crisis on older households in England. Their first aim was to document the effect of the crises on their finances. The second

aim was to estimate the effect of wealth shocks on their household consumption, expenditures and individual future expectations regarding bequest and future resource adequacy. They used a panel survey study on a longitudinal study of the ageing population or over 50 years. A sample size of over seven thousand was considered. Questionnaires were administered and validated both longitudinal and cross sectional. Most customers were discovered to have experienced a severe wealth shock which led them to modest spending. They subsequently had small revisions to expectations regarding future bequests and reducing their mortgage demand.

Dagher & Kazimov (2015) studied the financial crisis in relation to bank exposure to liquidity shocks. They used loan level data while isolating supply-side effects they found a negative relationship between the supply of mortgage and the financial crisis. The work was limited to only the supply side of housing finance. Similarly, Vuluku & Gachanja (2014) empirically studied the supply side of residential housing in Kenya. He used time series analysis for a period of 31 years, ranging from 1980 to 2011. The instrumental Variable estimation technique was applied and a regression analysis was done for two towns in Kenya – Nairobi and Mombasa. From their result, it was seen that the important determinants of housing were: lending rates, labour and input cost index, plinth area and cost of supply, real interest rates and inflation. For Mombasa, the coefficients were commercial bank rates, the cost of building a house and their lagged values. The study found mortgage demand to be effective for most customers.

### **Demand and Supply of Houses in the UK**

The housing market in the UK covers a large part of the country's economy. It is made up of 27.8 million residential properties (Buckett, 2014). The Office of National Statistics UK estimated the total value of outstanding mortgage to be £1,281 billion in 2014. According to an article by Mishkin (2010) mortgage demand in the UK is increasing at a very fast rate. The estimate in 2007 by the labour government of a targeted number of homes to be built a year by 2016 was 240 000. Despite the continuous increase in mortgage demand, this target has never been met. Conditions worsen between 2006 and 2007 when as low as 135 500 new homes were built. More than 300 000 new homes used to be built on a yearly basis few decades after the Second World War. In 2013, the home building industries shrink by 6.5 per cent.

This came as a result of the financial crisis (Alakeson, 2011). The Bank of England's governor, Mark Carney on May 2014 complained that home building did not match the size of the population. He compared this with the fact that the UK has about twice the size the population in Canada, but home building in Canada is about twice that of the UK. Consequently, prices have been rocketing in areas like the South East of England, London and other areas between 2000 and 2007 where house prices increased to 124 per cent. In 2010, house building levels fell to its lowest levels, creating a supply shortage of 140 000 homes. The estimate by the Barker Review of Housing Supply a decade ago was that 250 000 new homes needed to be built each year in order to prevent the high mortgage demand which causes spiraling home prices (Barker, 2004).

The mortgage suppliers in the UK housing market are made up of the banks, building society and other smaller lenders. Building societies are the pioneer suppliers of mortgages

customers. The banks and other lenders only joined the market in the 1970s when restrictions placed by the cartel were removed. One of the ways of getting onto the property ladder is through the reserved right to buy scheme which was introduced in the UK in the 1980s. Thatcher in her policy of encouraging homeownership among households who were council tenants. Recently, the government in 2013 increased mortgage demand through its help-to-buy policy which is encouraging for first time buyers.

### **Reviews on Financial crisis**

The financial crisis period has been defined by different researchers in different ways with the same meaning. Fraser (2012) and Freeman & Sudarsanan, (2012) identified the financial crisis in the UK to run between 2007 and 2009. Fraser further divided this into two phases with the first running from 2007-2008 identified with liquidity problems, following the bail out of Northern Rock by the Bank of England. The second phase was from 2008-2009 with the liquidity problem becoming a more severe issue of insolvency. Mishkin (2010) described this period to be characterized by falling world commodity prices. It is associated with the time when it became apparent that the crisis was reverberating across a wide range of financial institutions and other areas (Ryder, 2014). Another definition identified the financial crisis period to run from 2007-2009, associated with one or more of the following: large scale balance sheet problems, changes in credit volume and asset prices, large scale government support, and severe disruptions in financial intermediations and the supply of external financing to various actors in the economy (Claessens & Kose, 2013).

From the above definitions therefore, the financial crisis has clearly been identified to run between 2007 and 2009. It can be defined as a period where households are unable to meet up with their routine financial commitments due to stringent lending from liquidity problems, other related problems and disruptions in the supply of external financing, requiring government support. This study is divided into three periods. These are periods before the financial crisis, during the financial crisis and after the financial crisis. It runs from 2003-2013. The three different phases includes 2003-2006 (before the financial crisis), 2007-2009 (during the crisis) and 2010-2013 (after the crisis). The other two phases are established by taking equal year's interval before the financial crisis and after the financial crisis so as to be able to clearly differentiate the significant changes between these periods.

### **Population Growth and Housing Demand**

The growth in the population of the country has been accelerating. Between 1971 and 1981, it increased by 0.4 million. Between 1981 and 1991, it rose by 1.05 million. Between 1991 and 2001, it increased by nearly 1.6 million. This growth is not only as a result of natural increase, but also with immigration. Natural increase is the excess births over deaths. In the 1970s and early 1980s, the number of people who leave the country exceeded the number that entered the country. In the mid-1980s, however, the reverse was true (Fraser, 2012). The number of emigrants exceeded the number of immigrants and that pattern has continued at a higher and

rising level. Of these immigrants, a greater proportion is made up of the young adults (Holmans et al., 2006). For natural increases, England had a baby boom period in the late 1950s and 1960s. The increase began in 1956 and attained a peak in 1964 of over 200 000 higher than 1955. After this period, the number of births began falling yearly until 1973 where it returned to the same level as in 1955. Between 2009 and 2011, the population increased from 62.3 million to 63.3 million. The growth rate remains constant at 0.8per cent annually.

In 2012, the population increased to 63.7 million and reached 64.1 million in 2013. In both 2011 and 2012, the population increased, but the growth rate declines to 0.6 where it remained constant for both years. London has experienced an outright fall in household numbers in the 1970s and early 1980s, but between 1991 and 2001, it had a net increase of between 250 000 to 300 000 (Jihad, 2015). This was basically due to the rise in inward migration from outside the UK, most of which settle in London. The number and nature of separation in households are so fundamental in understanding the demands and needs of housing as well as the number and age structure of the population. From 1999-2009, the total number of households increased by 7per cent with London having the highest overcrowding of 7.2per cent (Jensen and Johannesen, 2015). This high population growth increases the mortgage demand. Unfortunately, the supply of mortgage loan has not been able to meet up with the increasing demand.

### **Summary**

From the review of related literature, it is observed that no previous research has been done to ascertain the quantitatively the significance of the changes in the UK mortgage market from the intervention of the financial crisis. It has also identified the gap to the claim by the households/customers that the banks are not willing to give out mortgages to them. The population of the UK in general and England in particular has been on a continuous increase with increasingly high demand for housing which exceeds supply.

### **Research Method**

In order to answer the research questions formulated, this study made use of primary as well as secondary data. The primary data involved the use of questionnaire survey and semi-structured interview. For the questionnaire survey, random sampling was used to collect data from customers so as to avoid the issue of bias. The same random sampling technique was used to contact household participants for the semi-structured interview. For the high street banks or housing finance providers, the approach used to collect the primary data was the purposive sampling as well as the snowball sampling technique. Purposive sampling was selected because the researcher was interested in obtaining data from particular experts which in this case was mortgage advisors of the high street banks. Given that it is not easy to contact them on a random basis due to the confidentiality of their banking information, snowball sampling emerged to be the best sampling technique which provided the desired result.

The questionnaire survey involved the use of 320 participants while the semi-structured interview was conducted on 43 participants. Comry & Lee (1992) argued that in conducting a

questionnaire survey, a sample size of 100 is considered poor, 200 if fair while a sample size of 300 is considered to be good enough for a large sample study. Tabachnick & Fidell (2007) confirmed that it is alright to have at least 300 sample sizes, especially if the study makes use of factor analysis. Therefore, a sample size of 320 is considered a good sample size for the study. Out of the 43 semi structured interview, 31 were customers or the demand side of housing finance while 12 were from the supply side or the banks, represented by the mortgage advisors. A tape recorder was used for most part of the interview while a few others were done through note-taking for interviewees who remained adamant to accepting that their information will be kept confidential. The questionnaire was analysed using cross-tabulation, chi-square test and t-test with the use of SPSS. Cross tabulation describes the relationship between variables while chi-square provides evidence of the relationship between variables. T-test was used to test the statistical significance of the differences in variance. The interview questions were analysed through categorizing and coding with the use of NVIVO.

### **Analysis and findings**

#### ***Was there an Effective Demand?***

The purpose of this section is to determine the effectiveness of the claim made by the high street banks customers to the statement that the banks are not willing to lend mortgage loan to them. There is the need to know whether these customers asked for mortgage loans, but were not given or they just assume that the banks would not give it to them. If they probably did ask for the loan and were not given, there is the need to know why they were not granted access to this loan. That is, whether they qualified or not. If they were qualified, there is the further need to know why they still did not obtain the loan. On the other hand, if they just assume that the loan would not be given to them, then there is the need to check their claims properly.

#### ***Respondents who's Loan Requests were rejected***

The respondents were asked to state their level of agreement/disagreement to whether they have ever asked for a mortgage loan from the bank but it was not given to them. Their responses are displayed in Table 1.

**Table 1.** Mortgage loan request

Response	Frequency	Percent
Yes I did	174	54.4
No, I just assumed it will not be given to me	76	23.7
Not applicable	70	21.9
Total	320	100

From Table 1 above, it can be depicted that out of this 320 respondents, 23.7per cent of them agreed that they did not bother asking for a mortgage from the banks because of their perception that the bank will not give it to them. A majority of respondents reaching 54.4per cent accepted that they did ask for a loan, but it was not given to them because of some of the factors listed in Table 2. Also, 21.9per cent of the respondents rated this question as inapplicable to them.

***Reasons for Rejecting Customer’ Mortgage Application***

The factors in Table 2 accounts for the reasons why customers who wanted to upgrade their homeownership status from tenants to homeowners were limited from doing so.

**Table 2.** Reasons for rejecting customers’ mortgage application

	Not important at all (%)	Low importance (%)	Slightly important (%)	Neutral (%)	Moderately important (%)	Very important (%)	Extremely important (%)
Credit rating	1.6	1.9	2.8	10.3	16.3	33.1	34.1
initial deposit	0.3	0.9	1.6	7.5	14.4	36.6	38.8
Status of my visa	18.8	20.5	16.6	12.7	11.3	10.0	10.3
Economic situation	21.3	11.3	10.5	8.8	6.4	15.0	26.9
Employment status	14.8	10.4	5.3	12.2	8.1	22.8	26.6



Table 2 identifies some of the factors by the respondents based on the claim that they asked for a mortgage from the banks but it was not given to them. In terms of credit rating, 34.1per cent, 33.1per cent and 16.3per cent of the respondents rated this factor to be extremely important, very important and moderately important respectively only 1.6per cent, 1.9per cent and 2.8per cent of them rated the factor as not important at all, of low importance and slightly important respectively since it was not the main reason for their application being rejected. Looking at the initial deposit, a total of 89.8per cent respondents rated this factor to be important in three varying degrees of agreement while a total of 2.8 rated the factor to be of no importance to them. 7.5per cent of the respondents remain neutral to the validity of the factor.

A total of 31.6per cent of the respondents responded that their visa status was the reason why they were denied access to the loan, despite the fact that they fulfilled other criteria. 54per cent of them did not consider this factor to be an important reason at different degrees of importance. Some of the respondents also declared that the economic situation was another important factor. Generally, 48.3per cent of the respondents at different degrees considered this factor to be important to them while 42.8 of them rated that this factor was not one of the important reasons. The employment status of some respondents also hindered them from accessing housing financial assistance. More than 56per cent people considered this factor to be important while 30.6per cent respondents denied that this was not a reason why they were not given the loan.

### ***Affordability and Attempts at Demanding or a Mortgage Loan***

To further understand why the respondents asked for a mortgage loan from their banks and it was not given to them, a cross tabulation is done between the affordability of the respondents and the validity of the statement that they asked for a loan and were not given. The cross tabulation results are displayed in the Table 3.

**Table 3.** Cross-tabulation between affordability and mortgage demand

		Asked but not given		Total
		Yes	No	
Afford just what I need with nothing left over	Count	48	26	74
	Expected Count	43.0	31.0	74.0
	% within What aspect can your money cover?	64.9%	35.1%	100.0%
	% of Total	15.0%	8.1%	23.1%
Afford what I need with little left over	Count	90	65	155
	Expected Count	90.1	64.9	155.0
	% within What aspect can your money cover?	58.1%	41.9%	100.0%
	% of Total	28.1%	20.3%	48.4%
Afford what I need with much left over	Count	37	34	71
	Expected Count	41.3	29.7	71.0
	% within What aspect can your money cover?	52.1%	47.9%	100.0%
	% of Total	11.6%	10.6%	22.2%
Cannot afford what I need and struggle to survive	Count	11	9	20
	Expected Count	11.6	8.4	20.0
	% within aspect can your money cover?	55.0%	45.0%	100.0%

It can be observed from Table 3 that majority of the respondents who asked for a mortgage loan, but it was not given to them are found among those who can hardly afford for it. 58.1per cent of those who can afford what they need with just a little left over are among those who responded that they asked for a mortgage loan but were not granted access to. Also, 64.9per cent of those who can only afford what they need with nothing left over attested that they asked for a housing finance but were not given access to. 45.0per cent of those who cannot afford all their needs, but only struggle to survive did not bother asking for a mortgage loan. 41.9per cent of those who can afford for their need, but have only little left also did not bother asking. 35.1per cent of those whom after affording for their basic needs have nothing left also did not ask for a loan. These categories of respondents already know that they are not qualified for the loan.

It is necessary to look at the various years of mortgage demand so as to understand the particular years in which the customers’ applications were rejected. Table 4 below is a cross-tabulation which establishes the relationship between mortgage providers and the period of time or the year in which the mortgage loan was obtained.

**Table 4.** Cross-tabulation between mortgage provider and year of mortgage demand

		periods obtaining the mortgage(s)				Total	
		0	before 2007	2007-2009	2010 - 2013		after 2013
mortgage provider	0	100.0%					100.0%
	Bank		11.8%	64.7%	14.7%	8.8%	100.0%
	Building society		47.6%	14.3%	33.3%	4.8%	100.0%
	Council		27.8%	33.3%	27.8%	11.1%	100.0%
	Islamic provider		29.4%	23.5%	29.4%	17.6%	100.0%
	Others		33.3%	8.3%	33.3%	25.0%	100.0%

It is observed in Table 4 that for the period before 2007, both banks and other housing finance providers were providing mortgage loans to households. However, the building society and other providers provided more loans than the high street banks, giving a percentage of 35.7 per cent, 50.0 per cent and 11.8 per cent respectively. During the financial crisis period, the situation was reversed; the banks provided more loans than all of the other providers. The proportion of loan provided by the bank was a majority of 64.7 per cent. After the financial crisis period, the proportion of loan provided by these high street banks dropped to 14.7 per cent of all respondents while that of the other housing finance providers increased.

The cross tabulation above provides the relationship between the variables but does not actually provide any evidence of the relationship. To know the significance of the relationship between the mortgage providers and the period of mortgage provision, the chi-square test is used as in Table 5 below.

**Table 5.** Chi-square test for mortgage provider and year of mortgage demand

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	402.692 <sup>a</sup>	20	.000
Likelihood Ratio	427.501	20	.000
Linear-by-Linear Association	204.649	1	.000
N of Valid Cases	320		

From the Pearson chi-square test in Table 5, it is observed that the coefficient of the test is 406.173 at 20 degrees of freedom. The test is proven to be significant as the p-value of the test is 0.000 which is less than 0.05. This means that the null hypothesis can be rejected while retaining the alternative hypothesis. Thus, the relationship between the period of mortgage

provision and the type of mortgage provider also confirms the intervening influence of the financial crisis in mortgage demand.

**The financial crisis and changes in mortgage demand**

The changes in mortgage demand have been categorized in three distinct periods. These periods include before, during and after the financial crisis. Comparing these three periods will give a clear explanation of the changes and significant levels of these changes.

**Comparing Before and During the financial Crisis.**

The mean difference and significance in the difference between the period before the financial crisis and the period after the financial crisis is represented in Table 6 using a paired sample t-test.

**Table 6.** Paired sample t-test – before and during the financial crisis

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Obtaining a mortgage before the 2007 financial crisis - obtain a mortgage between 2007 and 2009	.803	1.945	.109	.589	1.017	7.387	319	.000

Table 6 illustrated that the mean difference between the two periods is 0.80, at 95 per cent confidence interval. The difference in the means lies between 1.02 as the upper limit and 0.589 as the lower limit. A t-value of 7.39 with 319 degrees of freedom, the t-test is statistically significant with a significant level of 0.001 which is less than 0.005. This indicates that there is a difference in mortgage loan between the two periods

**Comparing Before and After the Financial Crisis**

Table 7 below is a paired sample t-test used to test the mean difference between periods before the financial crisis and periods during the financial crisis. It also tests the level of statistical significance between these two periods.

**Table 7.** Paired sample t-test – before and after the financial crisis

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Obtaining a mortgage before the 2007 financial crisis - Obtain a mortgage between 2010 and 2013	2.178	2.506	.140	1.903	2.454	15.550	319	.000

The results in table 7 indicate that there is a statistically significant difference in the provision of housing finance between the two periods at a significant level of 0.000 which is less than 0.05. The mean difference is 2.18 which have a lower bound of 1.90 and a higher bound of 2.45 at 95per cent confidence interval.

**Comparing During and After the Financial Crisis**

Table 8 illustrates a paired sample t-test for the mean difference between periods during the financial crisis and periods after the financial crisis. It also tests the level of statistical significance between these two periods.

**Table 8.** Paired sample t-test – before and after the financial crisis

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Dev.	Std. Error	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Obtaining a mortgage between 2007 and 2009 - Obtaining a mortgage between 2010 and 2013	1.375	1.778	.099	1.179	1.571	13.830	319	.000

The paired sample t-test for the two periods in Table 8 indicates that there is a mean difference of 1.38 with a lower bound of 1.18 and an upper bound of 1.57 at 95per cent confidence interval. This gives a t-value of 13.83 at 319 degrees of freedom and a statistical significance level of 0.000. Thus the null hypothesis is rejected while the alternative hypothesis that there is a difference between the two periods is retained.

**Discussion**

***The Effectiveness of Mortgage Demand***

In assessing the effectiveness of the customer’s claim that the banks were not willing to lend mortgage loan to them, two categories of responses were discovered: effective demand and ineffective demand.

For the effective side of demand, the banks made it clear from the interview schedule that their willingness to lend was restricted by the strict regulations put forth by the regulators which led to credit rationing. Thus, they try to lend responsibly and to the most trustworthy customers. Besides, “we cannot give what we do not have.” The demand for mortgages far exceeds the supply of it, making it difficult for each applicant’s loan application to be granted. On the demand side, some customers claimed that though they fulfilled all the lending criteria, the banks found one reason or the other to reject their application. The newly self-employed for example said that the banks were just being skeptical of them while some immigrants said that the rejection was based solely on their immigration status. Similar results were obtained in studies carried out in the USA Cahill and Franklin (2013), Amuedo-Dorantes and Mundra (2013). However, (Krueckeberg, 1999), everyone should be given equal opportunity in the mortgage market. Besides, most of these immigrants have already established strong commitments to their host country which they now consider as their home (Constant et al, 2006). Borjas (2002)

found that some mortgage loan applications were turned down due to the location of the applicants, since some locations are already overcrowded.

For the ineffective side of demand, 54.4 per cent of the customers agreed that they asked for a mortgage loan from the bank, but their application was turned down for several reasons. Most respondents' applications were not accepted because their net incomes were very small that it could not take care of the monthly repayment. This result is contrary to that of Leece (2006) whose study considered applicants' incomes to be insignificant in determining their eligibility for a mortgage. Early researchers discovered that using the housing expenditure-to-income-ratio, an average household should be able to spend 25-30% of their income on housing (Smets, 1999). Other reasons included poor credit rating. Aalbers (2008) had a similar result in his study in the USA where credit rating was a limiting factor to the granting of a mortgage to applicants. Limited initial deposit was also another limiting factor. For the remaining group of the respondents, some of them simply did not bother asking for a loan because they either did not intend to remain in the country after the purpose of their visit or they were already homeowners. The last group of respondents reported that they did not ask for a loan because they knew the loan would not be given to them.

It is also observed from table 4 that majority of the customers' mortgage demand during the financial crisis period were offered by the high street banks. After 2009 however, most of the mortgage applications made by the customers to the banks were turned down as the banks became strict with great scrutiny on their lending policies, empowered by the mortgage market review. The chi-square test also proved to be significant at a p-value of 0.000 which signifies evidence of the relationship between the distinct periods of mortgage demand (Scanlon et al., 2012).

### ***Findings Related to the Distinct Periods of the Financial Crisis***

The findings revealed that about 70 per cent of the respondents agreed that before the financial crisis period, it was very easy to obtain a mortgage loan from the banks. The interview results attested that the reasons for the easy access of mortgage demand during this period was because of the self-certification of income statements by customers, 100 per cent mortgages offered, low interest rates and the granting of loans to customers who were less able to afford repayment. Some empirical findings (Adair et al., 2009; Buckley, 2011) also confirmed that during this period, there was the availability of credit by the banks. In addition, findings from the interviews with the banks confirm that they were also motivated to lend because of the availability of credit and the rise in house prices. Going by the theory of demand and supply, increase in demand leads to increase in price and increase in price leads to an increase in quantity supplied, everything being equal.

The situation became very different with the emergence of the financial crisis. 49.1 of the respondents supported that it was difficult for them to obtain a mortgage during periods of the financial crisis. This is because of the changes in credit check by the banks, which did not meet many customers' criteria, the implementation of a 10 per cent minimum initial deposit for all customers with many customers less able to afford it. Self-certification which accounted for a high proportion of new lending before the financial crisis was outlawed. The banks also

confirmed that there was a fall in house prices, which had been their motivating engine. There was also limited credit availability (Whitehead et al., 2012). This made many smaller lenders quit the market while the banks became the main supplier during this period. The percentage of the market share occupied by the banks according to the survey rose to 64.7per cent. The financial crisis did not make them quit the market because the government intervened by bailing out some of them.

Lending activities of the banks fell drastically as they employed more stringent lending. The changes made by the mortgage market review required tighter lending criteria entrenched by the banks with closer scrutiny of the borrowers' ability to repay. This means that most of the bank could only lend to the most creditworthy customers. Customers with the slightest blemishes on their credit history were not entitled to any mortgage loan. During this period, most banks retreated from the market. 57.9per cent of the respondents reported that after the financial crisis, it became increasingly difficult for them to obtain a mortgage loan from any of the high street banks (Mintel, 2010). A distinct statistically significant difference was observed from the survey result for the three different phases as abridged below.

### ***Significance Level and Mean Difference between the Three Periods***

At 95per cent confidence interval and a p-value of 0.000 which is less than 0.05, the t-test for differences in the three phases of the financial crisis was found to be statistically significant at 319 degrees of freedom. A mean difference of 0.803, 1.375 and 2.178 were found in comparing the periods before and during the crisis, during and after the crisis and before and after the crisis respectively. These significances in the mean differences confirm that there have been changes in housing finance from the effect of the financial crisis. The period before the crisis and the period after the crisis give the highest mean difference, signifying the great changes that have occurred in the mortgage market in the past decade.

### **Conclusions**

The claim by the households that the banks were not willing to grant mortgage loan to them was found to be true to an extent as 54.4per cent of them agreed to the validity of the statement. The result was enhanced by the significance level of the chi-square test for the relationship between the period of mortgage provision and the mortgage provider. This is not surprising to the case of the UK where mortgage demand always exceeds the supply of it. Some customers however simply did not ask for a mortgage as they insinuated from the economy situation that it is not worth asking. A few customers who asked a mortgage were not qualified for it. The findings also revealed that from the impact of the financial crisis, the three distinct periods had significant differences in their patterns of mortgage demand.

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