How has the financial crash of 2008 affected Housing Affordability for First-Time Buyers?

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EXECUTIVE SUMMARY

Introduction and Brief Background

October 4th, 2018 was a typical cold, wet and windy day in Ireland, but it would also prove to be a significant day in Irish history, the Dail (National Parliament of Ireland) finally accepted that housing and homelessness in Ireland had become a national emergency (Socialjustice.ie, 2018). Housing plays such a critical part in society and if the market is not managed correctly it can be the source of crisis, which was the case in Ireland in 2007/2008. A good stable housing market is vital for any country as it can help steady an economy, it can also help a country recover from economic shocks such as the financial crash. After the housing bubble burst in 2007, Ireland and most of the world, went into a recession in early 2008. This was devastating for people in Ireland as the prospect of owning a home presents a great opportunity for households to build up their wealth. Home ownership in Ireland had always been high and reached a peak of 80% of households being homeowners in 1991.

Before, during and after the financial crash, the Irish housing market experienced some extreme peaks and troughs. Before the financial crash in 2008, Ireland was on the cusp of a wave coming from the Celtic tiger era. Unemployment was at an all-time low (see figure 1), Gross Domestic Product per capita was slightly above $61,000 and many households were availing of 100% mortgages from banks and lending societies. However, it is fair to say that this was too good to last. In 2007, the housing bubble burst and in early 2008 Ireland went into a deep recession, where almost overnight the Irish housing market collapsed. In the months to follow the recession, housing prices started to decline and at the lowest point in the recession some housing prices dropped by a massive 50% or more.

Figure 1 (Central Statistic Office,. 2018)

Fast forward to 2019 and the reality is that Ireland has recovered from the housing bubble busting and recession quicker that first anticipated. In 2013, housing prices started to increase, and unemployment started to slowly decline. From 2013 until the beginning of 2019 the average house price has increased by 34% and the unemployment rate had dropped to 5.4%. This is the lowest rate since the beginning of 2008, just before the recession (Tradingeconomics.com, 2019). These figures indicate that the economy is doing well, and the demand for housing has increased steadily over the last six years. As a result of the faster than expected recovery from the recession, the housing market has once again began to boom. Currently (2019) in Ireland the demand for housing far outweighs the supply and this has resulted in a sever housing crisis. Over a period of 12 years (2007-2019) Ireland has gone through some extreme economic events (i.e. housing market collapsing, 2007; a financial recession, 2008; and housing crisis 2019).

Aims and Objectives

The main aim of this research was to investigate "How the financial crash of 2008 has altered the affordability of housing in Dublin for First-Time Buyers?". It has been over a decade since the global financial crash of 2008 and Ireland is experiencing one of the worst housing crisis in its history. There were several areas that were impacted by the financial

crash, resulting in unaffordable housing. For example, the supply of housing diminished, the construction industry collapsed, the banking sector tightened their lending policies and certain households struggle to obtain a mortgage. All of these areas were investigated in this research to determine whether there is a correlation between the financial crash in 2008 and the current housing crisis. The aim of this research paper was to prove that due to the financial crash, housing has become unaffordable for First-Time Buyers (FTB) living in Dublin. Furthermore, the aim was to investigate whether the financial crash has had a knock-on effect on all the areas mentioned above, thus resulting in housing prices being unaffordable for FTB.

In the next section of this paper, a review of previous literature was conducted on the housing industry in Ireland and the financial crash of 2008. Furthermore, an in-depth view was taken on the following five areas that relate to housing affordability: defining and measuring housing affordability, background of the housing market, demand verses supply, the construction industry and first-time buyers.

LITERATURE REVIEW

Housing affordability is an area that has been researched for several decades. There are a number of universal definitions of housing affordability and how housing affordability should be measured. The aim of this literature review was to evaluate previous studies and their techniques for defining and measuring housing affordability. This review also contains an indebt review of the current housing demand and supply in Ireland. In addition, it provides an insight into the construction industry and a review of what FTB did before the crash and after it.

Defining and Measuring Housing Affordability

In the United States, during the 1960 and 1970, they used a standard of 25% of income to measure housing affordability. This meant that if a household spent over 25% of their income on housing costs they may qualify for housing benefits (Herbert, C., Hermann, A. and McCue, D. (2018). Since 1970, the Department of Housing and Urban Development (HUD) in the United States increased this number to 30% of a household's income. Due to the simplistic

nature of this measurement this has now become the benchmark for measuring housing affordability worldwide (Herbert,. 2018).

The HUD states that "families that spend over 30% of their income on housing costs are cost burdened and many find it increasingly difficult to afford other necessities such as food, clothing, health care, child support and transport" (Cai and Grover, 2017). In relation to Ireland, it is stated that if a household is paying more than 30% of their income on housing costs, they may find themselves experiencing relative Material Deprivation. Material deprivation is an index of 11 items (see Figure 2) that a person or household should be able to afford after housing costs. If a person or household is unable to afford two items on this list due to lack of income, then they are experiencing material deprivation. This means that they do not have enough disposable income (i.e. money remaining after housing and non-housing costs have been deducted). In 2010, shortly after the recession, there was just over 1 million people in Ireland that experienced material deprivation, which is the highest on record ever Welfare.ie, (2012).

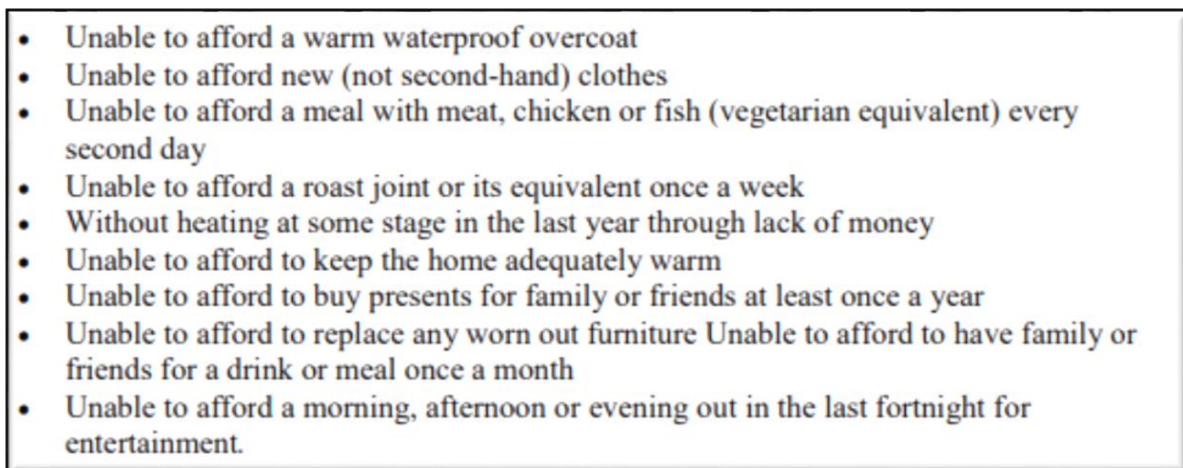
- Unable to afford a warm waterproof overcoat
- Unable to afford new (not second-hand) clothes
- Unable to afford a meal with meat, chicken or fish (vegetarian equivalent) every second day
- Unable to afford a roast joint or its equivalent once a week
- Without heating at some stage in the last year through lack of money
- Unable to afford to keep the home adequately warm
- Unable to afford to buy presents for family or friends at least once a year
- Unable to afford to replace any worn out furniture Unable to afford to have family or friends for a drink or meal once a month
- Unable to afford a morning, afternoon or evening out in the last fortnight for entertainment.

Figure 2 (Welfare, 2012)

By using the 30% rule as a measurement of affordability, it has become easier to identify households that are experiencing material deprivation. Over the last few decades this measurement has gone on to be known as the 30% ratio or Price to Income ratio (PTI).

This 30% rule or PTI is recognised worldwide and is used by many countries, including Ireland, as a bases of measuring housing affordability. This measurement is very easy to calculate and can be used over a long period of time but there are some limitations to it. It is widely believed that this measurement makes a lot of assumption and is very rigid. For

example, it assumes households with varied income can all afford the non-housing expenses with 70% of their income, which is not the case (Cai and Grover, 2017). Households in the lower quartile (Bottom 25%) of the income distribution scale would have considerably less disposable income than households in the upper quartile (Top 25%) of the income distribution scale.

Despite the flaws of the 30% ratio, it is still widely used today and is evident in many research papers. In a recent paper *by Eoin* Corrigan (2018), Daniel Foely, Kieran McQuinn, Conor O'Toole, Rachel Slaymaker (2018), they measured affordability by using the 30% rule; however, they also used a second method that is commonly used and is known as the 30-40 rule. The 30-40 rule analyses households that spent 30% of net income on housing, however, Corrigan et al. (2018) only focused on people in the lower 40% of the income bracket in their study. By doing this Corrigan et al., (2018) were able to get a better understanding of a specific sample size of population, which can help determine affordability for that population. One of the major issues with the 30-40 rule is that by focusing on the bottom 40% of income earners you include the bottom 25% of households on the income distribution scale. By doing this researchers results may be flawed as the bottom 25% of households are known to have high rick of housing affordability problems. It is stated in the paper that 70% bottom quartile (25%) of income earners living in private rental conditions have always experienced housing cost difficulties. This means that out of the 40% they are considering 17.5% has already been proven to face high housing costs, which may skew their findings.

Several years prior to *Corrigan et al. (2018)* study, in a research by McCord, McGreal, Berry, Haran, Davis (2011) the 30% ratio was used to measure affordability; however, they used this measurement technique for a specific group of people, which was FTB in Northern Ireland. Based on the 30% ratio, it was proven that for many FTB interested in buying a house in Northern Ireland it was not affordable. By paying such high housing costs, FTB would struggle to buy basics such as food, clothing and health care and some of these households may also face material deprivation. As previously mentioned in this paper, the 30% ratio and the 30-40 rule are the two of most common used methods of measurements. However, the type of measurements can change depending on what is intended to be measured. For example, if there is an injection of housing supply in the market, then it is common to measure house prices to income ratios.

Moreover, using the 30% measurement gives researchers the ability to make comparisons between Dublin and another county (Whitehead et al., 2008). When taking this approach, it is more beneficial to look at whether housing is affordable for a specific household (e.g. FTB) or existing homeowners. This is evident in many studies such as Corrigan, McCord, Whitehead and is very similar to the 30% ratio and 30-40 rule. This method can also help identify the number of households that are unable to afford the market value of housing, if affordability is set at 30% of net income (Whitehead et al., 2008).

Although there are several limitations to using the 30% ratio and the 30-40 rule, many countries continue to use them as a measurement technique. Before the financial crash, other researchers measured affordability slightly differently. In a paper by Michael E. Stone in (2006) he encouraged the U.K to adopt what is known as the "residual income concept" (Stone, 2006), Stone believes this method of measurement can help identify the amount of disposable income a household would have, after housing costs were deducted. He also believes by having access to this information, such as disposable income, mortgage lenders would be able to measure the success of long-term sustainability of housing investment. This residual income concept has been evaluated for its validity in some major metropolitan areas in the United States by Herbert, Hermann and McCue, (2018)**.** They used the 30% ratio and the residual income concept to measure affordability in 3 cities (i.e. Los Angles, Phoenix and Cleveland) and the results were slightly different. By comparing the 30% ratio and the residual income concept they discovered that over all the results were similar but not exactly the same using both methods. Interestingly, they discovered that by using the 30% ratio it would take a higher percentage of income to cover housing costs, compared to residual income measurement.

In Figure 3 we can see there is a difference in the results, when using the 30% ratio of Income and the residual income method. When calculating affordability, two out of the three cities reported a higher percentage of income was needed for housing costs when using the 30% ratio.

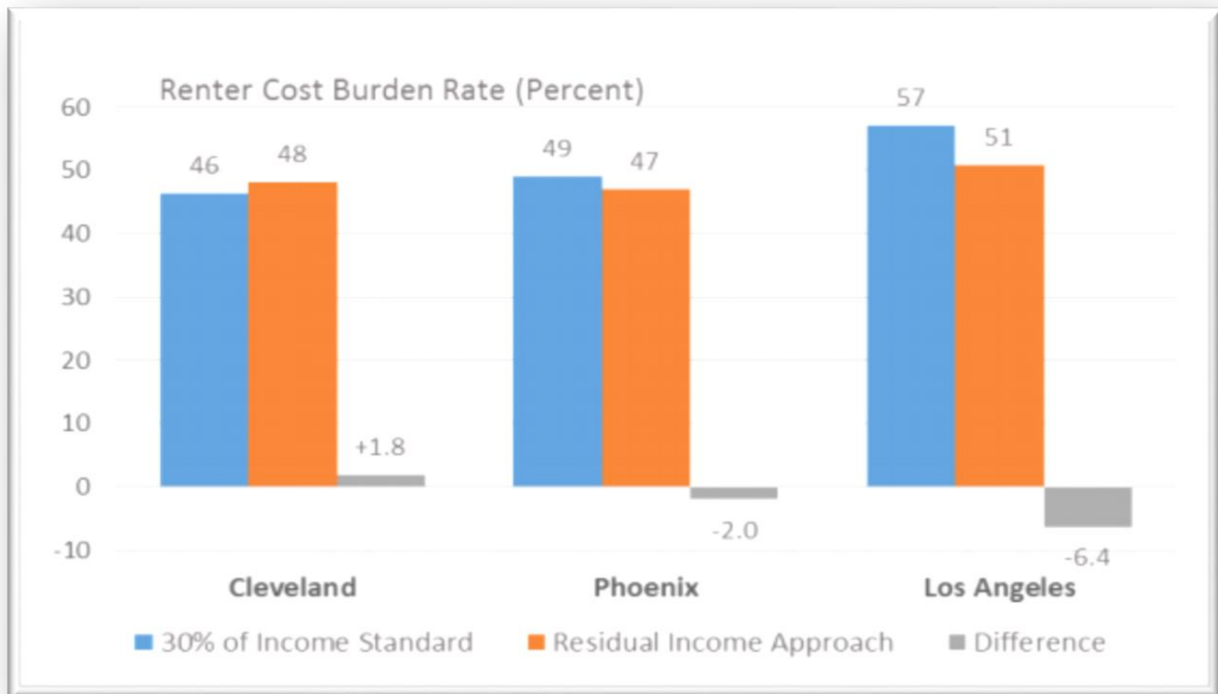

Figure 3 Herbert, Hermann and McCue, (2018)

All three measurements of affordability have their own advantages and disadvantages, but all three measurements are relevant to this research to some degree. One of the biggest concerns regarding the 30% ratio and 30-40 rule is that the premise for these rules were introduced back in the 1970/80's. Over the past four decades there has been a huge amount of economic growth and globalisation; therefore, these measurements may be outdated. In the methodologies section of this paper, all three measurements would be analysed further, and previous finding would help determine which measurement is relevant for this study. Although, it is evident that defining and measuring housing affordability can be difficult, it is also very important to understand why we are experiencing this current housing crisis in the first place. The next section of this research provides a background of the housing market, discussed the demand and supply of housing, the construction industry peaks and trough and what it means to be a first-time buyer in Ireland.

Background of the Housing Market

Since 2013, the housing market began to show signs of recovery and housing prices have continued to increase since then. This increase has continued to a point where the Dail had to declared a housing crisis back in 2018. One of the major reasons for this current housing crisis is the lack of supply in the housing market. The current supply of housing in Ireland is well below the demand and this is a major problem. It is estimated that the current demand for housing in Ireland stands at around 35,000 per year at least, but in 2017 there was only as little as 14,446 new dwelling completed across the entire country, excluding Northern Ireland (Central Statistic Office, 2018). The lack of supply has been a problem for years and there are many reasons as to why this is. Many people including members of the government believe there are is a simple solution to the problem, build more houses. In theory this is a simple solution but there are many factors that must be considered when building new dwellings. For example, does the construction industry have the resources to match the demand and if so is there a sufficient amount of land in which to build these new dwellings.

Since the recession of 2008 the construction industry has never been able to recover to the heights it once was. At its peak in 2005/06, there was over 90,000 houses built in Ireland. This was largely down to the fact that 1 in every 8 people in Ireland worked in the construction industry, but this has changed dramatically (Construction, 2018). With a smaller work force comes less supply and when demand is surpasses supply prices will increase thus creating affordability issues. Another major influencer in the housing market is the availability of land. With a shortage of land in high populated areas such as Dublin it can be difficult to find areas to build new dwellings.

With a limited amount of land in areas that are highly populated, it becomes difficult to provide the adequate amount of housing for the existing demand. In Ireland (especially in Dublin), housing types in demand has also changed drastically. Currently the demand for one- and two-bedroom apartments outweigh the demand for larger homes in Dublin (Lyons, 2019). The alarming fact is that a vast majority of housing being produced is actually in large estates around the country and not in Dublin city center, where demand is highest (Lyons, 2019). Dublin has become a hotspot for many young working professionals and is now one of the most sought-after cities to live in Europe and as a result of this the demographic and

preference has changed drastically. There is no longer a demand for larger three- and four-bedroom home but there is a huge demand for one- and two-bedroom apartments and flats.

Over the last few years Dublin has witnessed some huge demographic and economic changes and both of these elements play a huge part in any housing market especially regarding supply and demand (Whitehead, C., Monk, S., Clarke, A., Holmans, A. and Markkanen, S. 2008). We can see in Figure 4.the population of Dublin, which has increased over the last number of years. This growth is predicted to continue up until 2040. This only adds to reasons why it is vital to improve the current housing market (Worldpopulationreview.com, 2018).

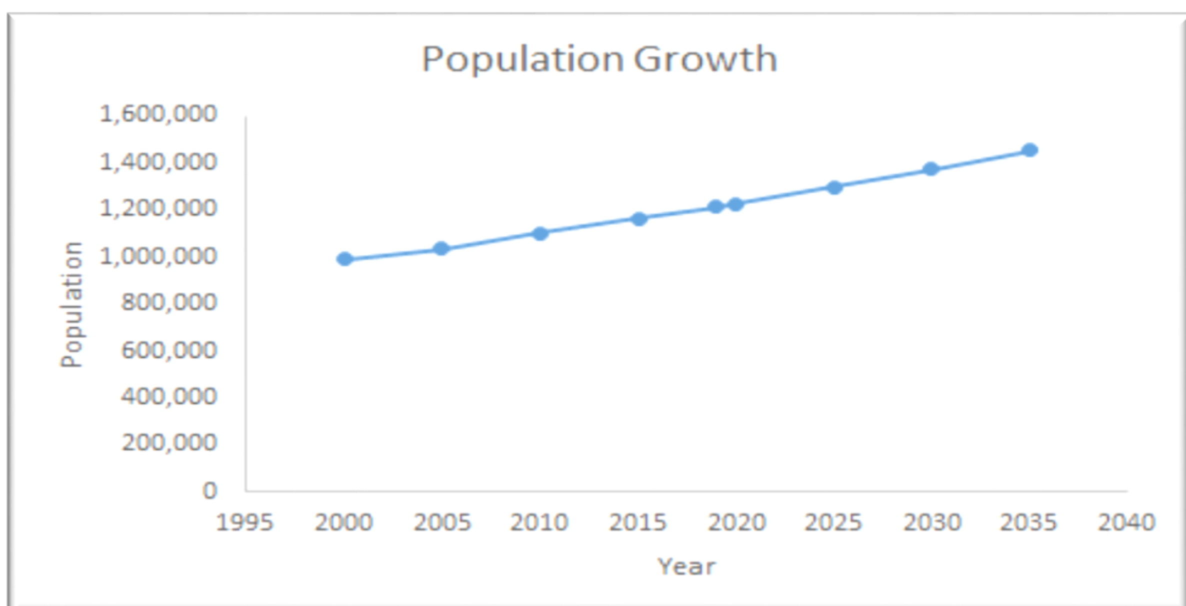

Figure 4 Population Growth (Central Statistic Office, 2018).

People are flocking to Dublin for one key reason, which is employment. Currently unemployment in Dublin is at one of the lowest points in Irish history and it has recently reached the same levels it was at just before the financial crash. There are several industries that are doing increasingly well such as technology industry, the pharmaceutical industry and the financial sector. With Brexit still looming over Ireland, some of these industries that are thriving may face new threats to their success. However, many organisations and firms are looking at these threats and using Dublin as a solution to BREXIT and to maintain their foothold in Europe. An example of this happened in 2017, J.P. Morgan announced that it would be moving hundreds of jobs to Dublin as a result of Brexit and many companies will most likely follow (Brinded, 2017).

Although this is great news for the economy and local business, it would also put a lot more stress on the housing market in Dublin. With more job opportunities in the offing, Dublin has become a hotspot for young working professionals, and this is putting a strain on the housing market. Many of these working professionals, just like myself, are finding it extremely difficult to find affordable suitable housing in and around Dublin. This has left young professionals and students with limited options but to pay increasingly high rent in private rental accommodation. People are moving to Dublin to be closer to new job opportunities, but they are then forced to use an increasing amount of income just be able to afford the accommodation. With the population of Dublin looking set to increase over the decade, it is imperative that the housing market to be stabilised. To do this, there needs to be a huge injection into the housing market of new housing to keep up with demand, currently the supply is nowhere near the levels that are being demanded. In the next section of this paper an analysis of the past and current demand and supply of housing would be conducted. This would be followed by an in-depth review of the construction industry before and after the financial crash. Lastly, there would be a look into what first time buyers may need to be able to afford a house in Dublin.

Demand verses Supply

It is clear that housing affordability can be defined and measured in several ways. No matter how housing affordability is measured, injection of new housing into a housing market can reduce housing cost considerably. The demand and supply of housing in Ireland has fluctuated massively over the last 20 years. At its peak there was a supply of over 90,000 homes in Ireland in a single year, most of which were in housing estates. According to Ronal Lyons (an Assistant professor at Trinity College Dublin, 2019), the current demand in Dublin is for one-and two-bedroom homes for the rental market. Despite this demand shift, three and four-bedroom dwellings is predominantly what is being supplied.

As a result of this shortage, house prices and rental prices have risen dramatically, the average house price in Ireland has been on a gradual increase since early 2013 and the average price in 2017 was €379,922 (Skehan, 2017). Since 2011 the average price of rent has increased by 70% and has now surpassed the peak of 2008. In 2017, the average rent was actually 22% higher than that of 2008 and in Dublin rent is closer to 30% higher. In a research

by McCoy and Phillips (2018) they summed it up as "The rise in house prices and rents experienced across all parts of Ireland has been a consequence of a significant imbalance between supply and demand following the crash". (Static.rasset.ie, 2019).

Since 1987, housing completion in Ireland had increased every year until 2007. On average there was 20,000 to 25,000 new homes built per year but, as a result of the financial crash, housing completions fell dramatically (Skehan, 2017). From 2011 to 2016 there was an average of only 10,000 houses completed throughout Ireland. In 2015, 23% of new completions were built in Dublin County and this increased the following year to 28%, but in 2019 Dublin need around 50% of all new housing units to keep up with demand (Norris and Coates, 2013).

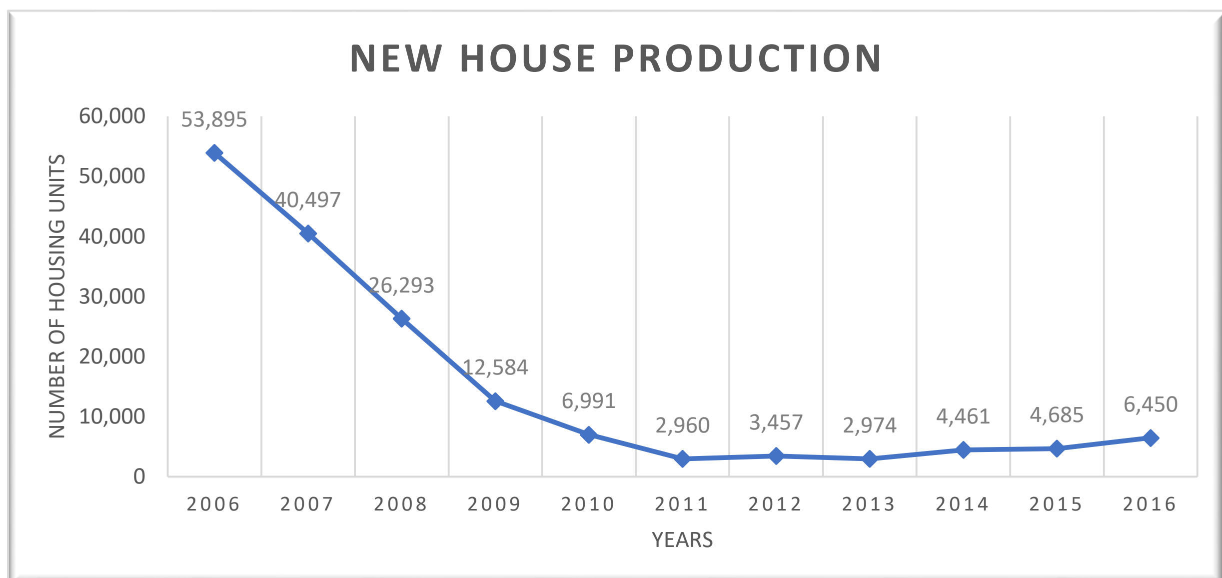

Figure 5 (Department of Housing, Planning and Local Government, 2019) (Esb.ie)

Demand has been an issue in previous years in Ireland, during the Celtic Tiger era, the supply of housing was slow, in a 4-year period (1996-2000) housing output only increased by around 16,000 new homes (49,000 in total) but from 2000 onwards until 2006 housing output witnessed a dramatic increase reaching a peak of over 93,000 (Figure 5) new homes in 2006 (Healy and Goldrick-Kelly, 2018). The data in Figure 3 may be skewed slightly as it is based new electricity connects but also reconnections, for example, if a house is unoccupied for over 2 years the ESB counts it a new house.

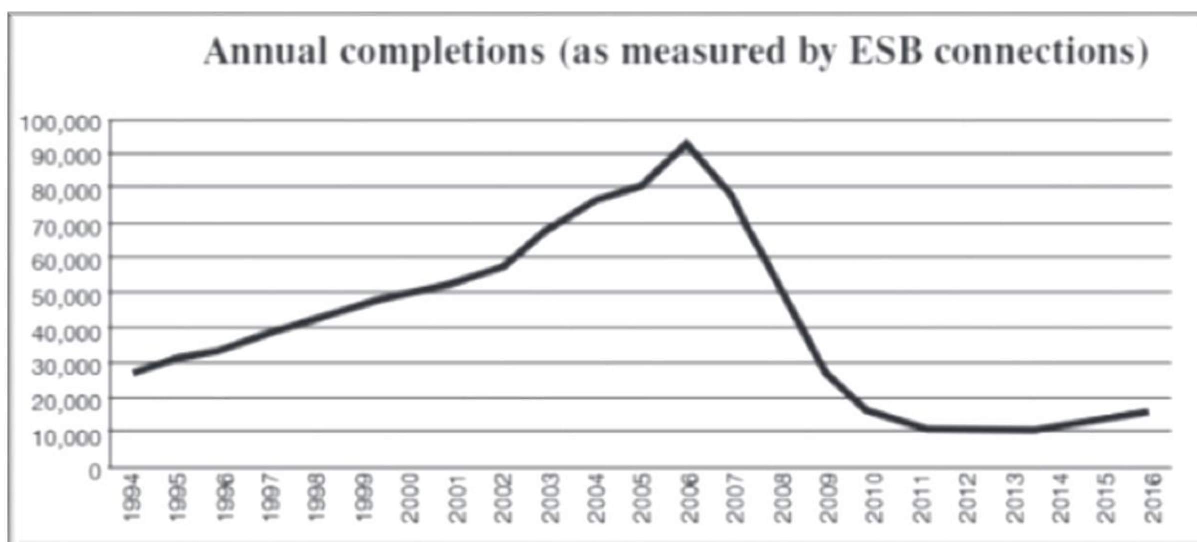

Figure 6 (Healy and Goldrick-Kelly, 2018)

To fully understand this level of output of new housing in Ireland we can compare Ireland's output to that of England. In 2006 England had a population of around 60 million people, Ireland had 4 million people but both countries were witnessing a rise in the economy as well as demand for housing. During the time of the housing boom England produced double the amount of housing compared Ireland, yet they have 15 times the amount of people as Ireland *(Norris and Coates, 2013).* As a result of the housing boom, specific industries began to thriving such as the construction industry. The surge in the construction industry continued all the way up to the point of the recession and this is why the construction industry that was felt the biggest impact of the housing market collapsing.

Construction Industry

The construction industry was one of the worst affected industries post 2008. In late 2005, there was almost a quarter of a million people working in the construction industry, that was equal to one person in every eight people in Ireland. This industry was seen as the backbone of the Celtic Tiger era, the output per capita at the time was the highest in Europe and was double of what was being produced in the U.K. (Central Statistics Office, 2019). The current labour force in the construction industry has never reached the heights it did before the financial crash. In a period of six years (2008/2014) the industry lost close to a quarter of the companies in the industry (Construction, 2018).

As a result of sever job losses and unemployment in the construction industry, Ireland witnessed some highs and lows regarding immigration. At its peak in 2007 there was over 150,000 people that immigrated to Ireland, but at the lowest point around 80,000 people left each year from 2011 to 2013 (Conefrey and McIndoe-Calder, 2018). It is difficult to know exactly how many of the immigrants were former workers in the construction industry, but in a study by Conefrey and McIndoe-Calder, 2018, they found that in 2010 there was almost 70,000 construction workers unemployed and they believe that a considerable number of these unemployed workers never returned to the industry (Conefrey and McIndoe-Calder, 2018).

The lack of skilled labourers is a major concern for construction industry, the levels of migration after the crash was huge in Ireland and many people have yet to come back. Many skilled workers began to look for opportunities elsewhere in countries such as Australia, New Zealand and Canada (Construction, 2018). With the industry improving ever so slightly each year from 2013 onwards, it is still some way of from the peak of the housing boom. In 2016, there was over 135,000 people registered to be working in the industry, which is considerably less than a quarter of a million in late 2005 (Construction, 2018).

Since the crash, the number of people working in the construction industry has never reached the same level it once was at. Before the financial crash the construction industry was a lucrative industry to work in but now more people are opting to stay in the education systems longer. In 2007, at the peak of the boom, only 28% of the construction workers had third level education, but over the years this has changed. Fast forward ten years and in 2017, over 47% of people working in construction now have third level education. As a result of people spending more time in the education systems the average age of a construction worker has now increased. In 2007, the average age was 35.6 years old but in 2017 it had risen up to 42.3 years old (Conefrey et al, 2008). In Figure 7 you can see an increase year on year since 2011 in the amount of construction workers ages between 41 and 50.

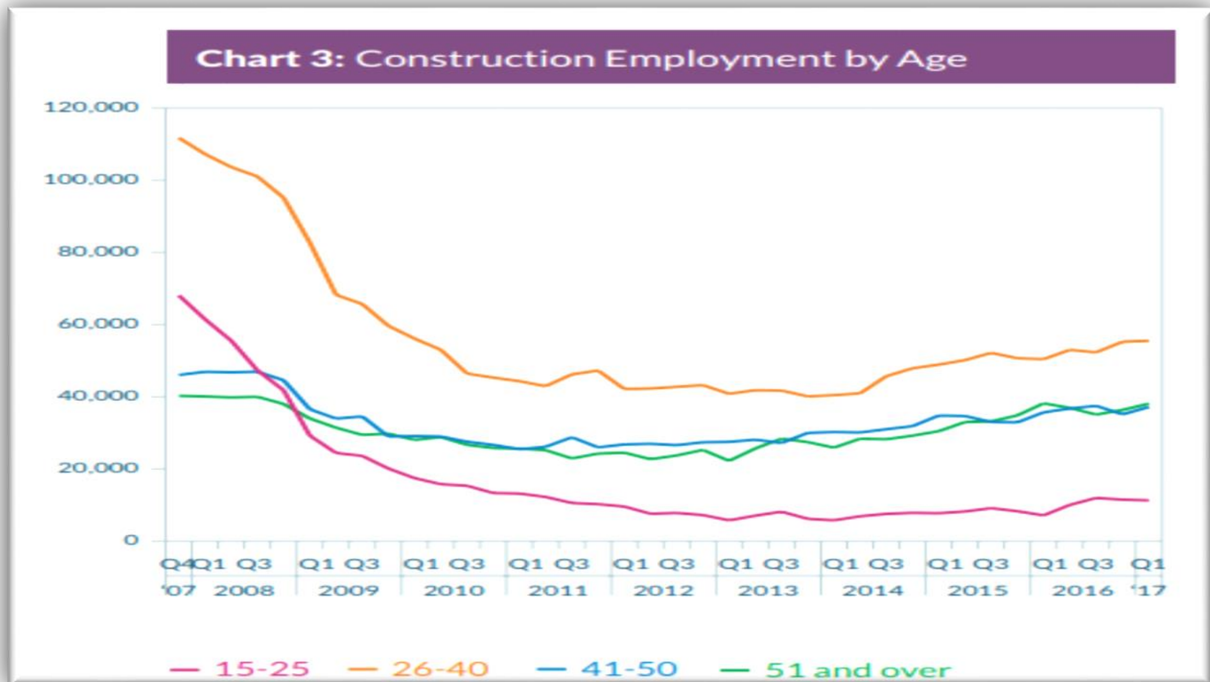

Figure 7 Source CSO, (Conefrey and McIndoe-Calder, 2018).

With the current demand for housing in Dublin at an all-time high and people spending more time in the education system rather than the construction industry, the chances of increased supply look bleak. With less people opting to work in the construction industry the chances of an increase in the supply of housing look further in doubt. As a result of limited supply of housing, FTB may find it increasingly difficult to buy a house in Dublin.

First Time Buyers (FTB)

The demographic of this research is FTB living in Private Rental Accommodation (PRA) looking to buy a house in Dublin. For many people wanting to buy a house in Dublin it is very difficult and even more so if you are an FTB living in PRA. Research by McCord et al., 2011 illustrated a high number of FTB were priced out of the housing market in Northern Ireland in the years leading up to the financial crash. The average house price in Northern Ireland in 2011 was around £80,000 but six years later (2007) the price rose to £250,000 at its peak in 2007 McCord et al., (2011). Subsequently, in Ireland the average house price at that time (2007, Q1) was around €340,000, which was almost double from what it was in (2001, Q1) €190,000 (Central Statistics Office, 2019). Currently housing costs such as rent in Dublin at an

all-time high, which means people that are renting are paying a substantial amount of their income on rent alone. This results in less residual income available to FTB that want to save and buy a house.

In January of 2011, a FTB couple in Dublin would have to dedicate around 20% of their net income combined to afford an average FTB property in Dublin city. This number has now increased to around 28% in September 2014. The reason for this increase is due to the fact that Ireland's economy has recovered a lot quicker than expected after the financial crash. In addition, housing supply is not meeting the demand, therefore the housing prices have been increased. It was only at the beginning of 2013 (5 years after the crash) that the job market started to turn around, initially the turnaround was predicted to take twice as long as that. Remarkably, since the end of 2012, "the total number of people at work has increased by an average of 1,000 a week" this is according to data on the CSO (Taylor, 2018). Although the employment status has increased, the disposable income has not increased as much. This is the reason behind the Central Bank introducing new measurements to support FTB.

In a bid to try and counter act this increase in housing cost, the Central bank introduced two new ratios to help curb the increasing trend for FTB. These were the Loan to Value ratio (LTV) and the Loan to Income ratio (LTI). These new lending ratios were designed to help reduce the percentage of housing cost, which was at 28% in September 2014, and for a short period of time the LTV and LTI ratios did do that. In December of 2014, the percentage that an FTB couple would use for housing cost was 27.5%. In December 2015, the percentage dropped slightly down to 25.9%, but since then, it has increased each year up until 2017 to 29.2% (Ebs.ie, 2019). In the period of 2 years, there has been an increase in the average price of a house for FTB in Ireland. It has increased from €208,366 in 2015 to €245,662 in 2017 by 18%. To put it into greater context, the average disposable income for the same period had risen by just 3% (Ebs.ie, 2019).

With the introduction of the LTV and LTI ratio banks are trying to make it more affordable for households to afford housing. As we can see from the literature review there are several methods to measure housing affordability. The 30% rule seems to be the most common measurement used worldwide until specific samples are needed to be analysed. This is why researchers developed the 30-40 rule. This rule give a clearer insight into the bottom 40% of the income distribution scale but can also look at samples such as FTB. In more recent years, researchers had begun to use an alternative to the 30% rule and the 30-40 rule. This

method is known as the residual income method. All three measurements have their own advantages and disadvantages and each method provides a slightly different insight into housing affordability. In the next section (i.e. methodologies), there would be a critique and analysis of all three measurement methods. Each method has its limitations and through this analysis and critique the aim would be to discover if any of these methods of measurements are applicable for this research.

METHODOLOGIES

As previously mentioned "The purpose of this research paper was to analyse "How the financial crash of 2008 has altered the affordability of housing in Dublin for First-time Buyers". To do this it was important to understand what housing affordability is and how it is measured. As discussed in the literature review, the three most commonly used measurements for housing affordability are: the 30% rule known as the Price to Income ratio (PTI), the 30-40 rule and the Residual Income method. In this section each of these measurements would be discussed, analysed and critiqued.

30% rule PTI Ratio

As we now know, one of the most commonly used measurements to housing affordability is the 30% rule (Price to Income ratio). The purpose of this measurement is to determine whether a household is spending over 30% of their income on housing cost. If this is proven to be the case, then it would be deemed unaffordable housing. Previous studies by Herbert et al,. (2018), Corrigan et al. (2018), Cai and Grover, (2017), and McCord et al, (2011) used this method of measurement in their research. One of the main reasons for the continued used of the 30% rule is due to the fact that it is easy to implement, calculate and compare over a long period of time. However, there are several limitations to using this method.

To begin with, this method does not distinguish between households choosing to spend over 30% of their income on housing costs and household needing to spend 30% or more on housing. Currently in Dublin there are households that spend over 30% of their income on house costs such as rent, utilities, maintenance. By paying over 30% for housing

costs, households could find themselves living below the socially acceptable standard of living set by the Minimum Essential Standard of Living (MESL) report (MacMahon, Thornton and Moloney, 2017). The MESL work in conjunction with Irish government to determine the socially acceptable standard of living. A major limitation of the 30% rule is the inability to identify which households are paying more than socially acceptable.

Moreover, the 30% rule does not provide any insight into individual households themselves. More specifically, it does not determine the number of people living in a household, nor it investigates how many are contributing to the sustainability of the household. This method of measurement provides a general overview of all households in Ireland and as a result, portrays an unrealistic picture of housing affordability.

Furthermore, the 30% rule does not take into consideration fluctuations in interest rates and mortgage repayment, which can affect housing affordability. Household that are paying a high housing cost are very vulnerable to shocks in the economy, which is what happened in 2008. In a recent study by ERSI and the Department of Finance (2019) on the European Central Bank they predict that interest rates will soon begin to increase due to another economic shock. This would inevitably increase interest rates and mortgage repayments resulting in affordability issues for many households (Ní Aodha, 2019). Although the financial crash in 2008 was devastating for many households, it did expose the vulnerabilities that can occur when the housing market is not managed properly. The financial crash highlighted the importance of suitable affordable housing for households' long term. By using the 30% rule as a method to measure housing affordability, researchers are not getting insight into housing market, households within that market and the implications of economic shocks.

30-40 Rule

In a bid to counteract the limitations to the 30% rule researchers such as Corrigan et al., (2018), Borrowman et al,. (2017) and McCord et al,. (2011) took the 30% rule a step further and analysed a specific set of households. The 30-40 rule is used to measure which households in the bottom 40% of the income distribution scale are paying over 30% of their income on housing costs. In 2011 McCord et al,. (2011) used this rule measure affordability for first-time buyers in Northern Ireland, (see Figure 8). They took the average lower quartile

(bottom 25%) of house prices (PaLQ) and divided it by the average lower quartile of income (1naLQ) for first-time buyers in Northern Ireland.

$$AR = \frac{\mathrm{P}_{aLQ}}{\mathrm{ln}_{aLQ}} \qquad (1)$$

Figure 8 McCord et al,. (2011)

All three studies focused on the bottom 40% of the income distribution scale and any households in the bottom 25% of that scale are known as low-income earners. Just like Meen,. (2018) study, Corrigan et al., (2018), Borrowman et al., (2017) and McCord et al., (2011) found that households in the bottom 25% of the income distribution scale face the highest housing costs most often. Some households in the bottom 25% of the income distribution scale that are privately renting or paying a mortgage are paying on average four tenths of their income on housing costs. This is a considerable amount when considering the cost of living has increased dramatically over the last number of years, but the average income has not risen nearly as much.

In fact, from 2013 to 2019 the average wage in Ireland has only increased by 8% from €35,951 to €38,871. However, when we compare this number to the increase in property price over the same period, it puts everything into context (C. Delmendo, 2019). Over the same period of 2013 to 2019 property prices alone have increased by 55% (C. Delmendo, 2019). With an increase of over 50% in property prices and only an increase of 8% in income, it would almost seem inevitable that more people would struggle to afford housing. Currently it costs a couple (2 people living together) without any children, €1488 per month on expenses. This is excluding housing costs (rent/mortgage) and childcare expenses, which could be thousands more per month.

Using the 30-40 rule does help capture a specific set of people or households, which is needed for this research. However, this rule does have its limitations. As a rule, to measure how households are doing in Ireland, the 30-40 rule works relatively well. However, it does not paint a true picture, just like the 30% rule. The 30-40 rule allows researchers to cut out the households that have a higher level of income and focus on those households with lower levels of disposable income, which is a limitation of the 30% rule. One of the most important areas that this rule highlights is that households in the bottom quantile (25%) of the income

distribution scale can face very difficult challenges regarding housing affordability. The bottom quantile only receive 8.3% of all the disposable income in Ireland, whereas, the top quantile make up 39.9% of the disposable income. It is for that reason that some households are able to pay more than 30% on housing and not run the risk of enforced deprivation.

Although this measurement is focused on specific sample sizes and cuts out the high-income earners one of the biggest limitations is the arbitrary (random or personal preferences) cut-off points Corrigan et al., (2018). Both the 30% rule and 30-40 rule have cut-off points imposed on them and this is why other researchers such as Kelly, McCarthy and McQuinn, (2012) and Stone, (2006) suggest a measurement known as the residual income rule. The residual income rule uses a different approach compared to the other two methods used (i.e. the 30% rule and 30-40 rule). The residual income method focuses on non-housing costs of a household rather than housing costs.

Residual Income Method

The residual income method was identified in the late 1960's, one of the first researchers to identify this method was Cushing Dolbere. Dolbeare recognised the impact the ratio measurements had on the results of previous research and decided to approach it from a different angle.

This measurement focuses primarily on non-housing cost such as food, clothing, healthcare, transportation, education and etc. (Kishor and Marfatia, 2017)**.** Once all these non-housing costs are subtracted from the income, the remaining income should be enough to cover housing costs (i.e. rent or mortgage repayments). If the remaining income does not cover housing costs, non-housing cost may have to suffer, thus resulting in households living below the socially acceptable standard of living (MacMahon, et al., 2017). There has been extensive research conducted over the years using the residual income method and some of the results are very interesting. For example, Stone (2006) identified 32.1 million households that were living in shelter poor situations (living below the socially accepted basic standard) using the residual income method. For the same period Stone (2006) applied the 30% rule and this produced results much higher. When applying the 30% rule for the same period of time, Stone identified 34.6 million households living in sheltered poverty. This implies that by using the residual income method researchers would have more accurate set of results.

Although the residual income method does produce a more accurate result, there are limitations within this method as well.

The level of data required to apply the residual income method is extremely complex and is very difficult to accumulate. On a micro scale, it may be possible to get an average cost for non-housing items for a small sample but to do this would require extensive research. The major risk of using this method is the extensive time and effort it would take to conduct the research. The complexity of the data needed for this research may not be available to the researcher. The most difficult aspect of the residual income method is the fact that it depends on individual household preferences. For example, some households will choose to buy food from a more expensive store than other, or some households will have childcare cost whereas others do not. Defining the non-housing budget would implausible but not impossible. With daily, weekly and monthly price fluctuations for non-housing items (i.e. food, clothing, childcare, etc.) it would be seemly impossible to make comparisons over a long period of time.

Regardless of which method is used to measure affordability for housing, there is one very strong common denominator in all three measurements, the income. If a household is in the low-income bracket (bottom 10%) they may be provided subsidies and grants from the government to cover housing costs. If a households has a vast amount of residual income remaining after paying housing costs they still can be labelled as living in unaffordable housing. To fully understand how income has a massive part to play in the affordability of housing it is important to understand how the income is being distributed in Ireland.

Income Inequality

Illustrated in the graph below (The Lorenz Curve) is the income distribution of Ireland. The blue line (A) in the graph represents perfect equality in income distribution. For example, in perfect equality income distribution would be divided equally. This is where the bottom 40% of households would earn 40% of the income distributed, 60% of households would earn 60% of the income distributed a so on. The yellow line in the graph (B) illustrates the actual income distribution of Ireland in 2017. In 2017, 60% of households in Ireland only accounted for 38% of the overall income distribution. This means that over 2.9 million people in Ireland received less than 40% of all the income in the country. The other 1.5 million people enjoyed

over 60% of the income for the entire country, these figures show us exactly where the majority of people are on the income distribution scale.

The graph also highlights that the bottom 40% of households are receiving only 21% of all the income generated in 2017. With housing prices currently higher than they were back in the peak of the housing boom (2007), households in the bottom 40% of the income distribution scale would inevitably have difficulties affording housing costs today.

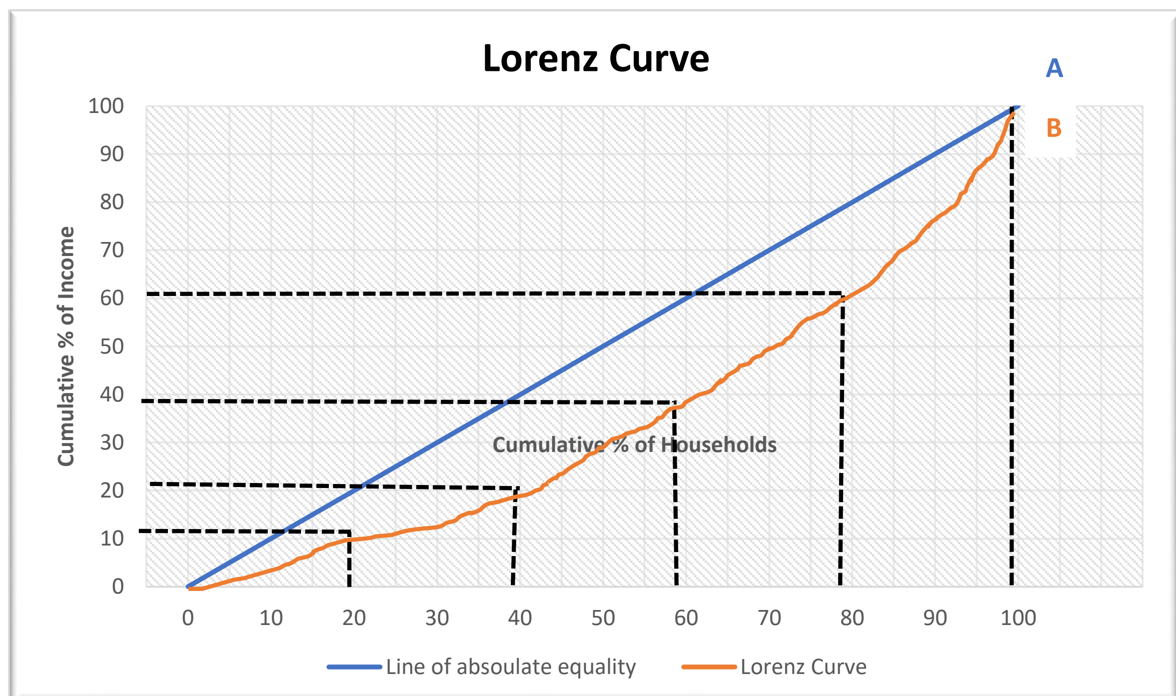

Figure 9 (Tradingeconomics.com, 2019)

The graph above (Figure 9) outlines the inequality in Ireland in regard to income distribution. Sadly, the richer are getting richer and the poor poorer. As it is in most nations across the world, the vast majority of wealth is in the hands of very few. In a study by an organisation known as TASC (independent think tank specialising in inequality), they found that since the 1970's all the way to the peak of the housing boom (2007), the average income for the top one percent increased by almost five times. To put this into perspective, the average income in Ireland was €35,000 in 2006, but for the top 10% it was almost four times of that amount. For the top 1% in Ireland, it increased from €90,000 to almost half a million euros between 1970 to 2006 (TASC - Think-tank for Action on Social Change, 2019). Not only Ireland has income inequality issues, it is actually known as the most inequal country in the

in the OECD (Organisation for Economic Cooperation and Development) which is made up for 34 democracies (O'Brein, 2015). As a result of these reports, the ability to live in affordable housing begins to diminish.

Although Ireland has the lowest unemployment rate in decades, the income distribution across the country is seen by many as the worst in Europe. Sadly, low unemployment does not mean that there is equal pay for every households or FTB. This may mean FTB need to live at home for a few more year to be able to afford housing in Dublin. When it comes to measuring affordability for FTB, there needs to be a clear understanding of what to measure. For example, do FTB not have enough income to qualify for a mortgage, are the repayments too high for them to be able to pay it back and maintain all other non-housing costs. All these details will be covered in the research and analysis section below.

ANALYSIS & FINDINGS

The aim of this research is to show that as a result of the financial crash in 2008, housing in Dublin has become unaffordable for FTB and not just those in the lower quantile (bottom 25%). It has already been discussed and proven in the papers included in the literature review that low income households (bottom 10% & 25%) face high risk of living in unaffordable housing. Instead of focusing on households in the bottom 25% or 40% of the income distribution scale population of FTB were the primary focus of this research. Many FTB are in the 40% of the income distribution bracket; however, previous research has shown household in the bottom 10% and 25% of the income distribution bracket have affordability issues. For this reason, the ratio method was not used in this research paper. Instead, the residual income method was used to determine affordability for FTB.

For the analysis and finding of this research, a specific sample of FTB households living in private rental accommodation (PRA) in Dublin were used. As a result of increasing rental prices due to the lack of supply in the housing market, potential FTB living in PRA may find it difficult to save for the deposit needed for a mortgage. With the housing market recovering quicker than first expected, housing prices have increased each year since 2013 and this has had an effect on what FTB can afford. Some FTB have been able to get on the property ladder but there are many living in Ireland that cannot afford to. According to Social Justice Ireland CEO, Paddy Cosgrave, there are over 100,000 households in employment that are known as working poor and are unable to afford housing costs (Sherlock, 2017). This means, even though they are employed, they are living below the poverty line and struggle with everyday expenses, nevermind saving for a mortgage deposit. In order to thoroughly understand the struggles that FTB face, further analysis was conducted on housing affordability for FTB.

For the calculation and analysis, a similar technique to the residual income method was used. This method was discussed in the literature review and methodologies section of this paper. To conduct the analysis, the formula is made up of two stages. In stage one, the average income was taken for FTB living in Dublin (AIFTBD) and the average cost of private rental accommodation were subtracted (i.e. residual income method) (ACORD). In stage two: the average cost of non-housing items (NHID) in Dublin were subtracted from the remaining residual income from stage one. The remaining income would be the household's disposable income that could be used to save for a mortgage (See Table 1 for formula).

Formula for Analysis (Table 1)	
Stage 1.	**(Average Income for First Time Buyer in Dublin) AIFTBD** **Minus** **(Average Cost of Rent Dublin) ACORD** **=** **Residual Income**
Stage 2.	**Residual Income** **–** **(Non-Housing Costs Dublin) NHID** **=** **Disposable Income**
Complete Formula	**AIFTB** **–** **ACOR** **=** **Residual Income** **–** **NHID** **=** **Disposable Income**

The primary source of data that has been used for previous research in this field has been the Central Statistics Office (CSO). Researchers such as Corrigan et al., (2018), Conefrey and McIndoe-Calde, (2018), Clinch, (2016), Norris and Coates, (2013) have all used the CSO as a data sources. The CSO consists of a variety of data sets on areas such as People and Society, Labour Markets and Earnings, Economy and the Housing Sector. These statistics are updated monthly and yearly thus ensuring they are up to date and applicable for this research. For the purpose of this research, the data for analysis and finding were taken from a variety of sources similar to previous studies. For the primary data the CSO was used and for secondary dataset, Daft.ie (Lyons, 2018), The OECD (Clinch, 2016), and Housing.gov.ie. were used, as they also have many secondary data set.

Calculations

By using the residual income method (see table 2 below) the finding show that on average a FTB would have roughly €7,000 disposable income remaining per year after, housing costs and non-housing cost have been subtracted. From the beginning of 2017, FTB looking to purchase a home, would now need 10% of the value of the house as a deposit. This is known as the Loan to Value limit (LTV). In addition, the valuation of the property would also

need to be completed within four months prior to the mortgage being agreed (Citizensinformation.ie, 2018). Since the average house in Dublin costing around €322,000 a FTB would need to save €32,200 as the deposit in order to qualify for a mortgage. This means, it would take a FTB living in PRA roughly 4.5 years to be able to save the 10% deposit for a house and this is assuming all other costs remain equal (i.e. price of housing costs and non-housing costs stay the same).

Calculations **(Table 2)**	
Stage 1.	**(AIFTB) €36,853** **–** **(ACOR) (€1620 x 12 months = €19,440)** **€36,853 – €19,440** **=** **€17,413 (Residual Income)**
Stage 2.	**€17,413 (residual Income)** **–** **€863 x 12 = €10,356 months (NHID)** **€17,413 - €10,356** **=** **€7,057 Disposable Income year**

(MacNamee, 2018), (Payscale.com, n.d.), (Living, 2018)

Although it seems mathematically plausible for a FTB to save for the deposit, it does not seem practical. Since 2013, housing costs in Dublin have increased as to has the population of Dublin and surrounding. The only prediction one can arrive at is that these costs will continue to increase in the future, due to population growth. In conjunction with the lack of new supply in the housing market and the income inequality in Ireland it may take FTB even longer to buy their first home. Therefore, it should come as no surprise then that average age of FTB has increased over the last number of years. Since 2006, the average age of FTB in Ireland has increased by 17% from 29 years old back in 2006 to 34 years old in 2018 (Heneghan, 2017). It seems as if FTB are opting to remain at home in a bid to save for the deposit quicker rather than paying huge PRA costs.

As it was discussed above, it may be mathematically possible for FTB to afford the deposit for a house in Dublin; however, since the financial crash, the length of time needed to save for a deposit has increased substantially. Before the financial crash, many households in Ireland did not have to save any deposit and were able to avail of 100% mortgages. A 100% mortgage would allow a household to borrow the full amount needed to purchase a home. One bank known as Northern Rock were offering up to 125% mortgages, which many households availed of (Gocompare.com, n.d.). The 100% mortgage system enabled may households to get on the property ladder quite easily; however, when the crash hit in 2008, many lost their homes to the banks.

In order to purchase a house in Ireland, commercial lenders (i.e. banks) are commonly used to gain access to a mortgage. Since the financial crisis, many banks tightened up their lending terms and conditions, which has affected the FTB the most. Currently many FTB struggle to qualify for a mortgage, as banks will only allow households to borrow 3.5 times the households income, which is known as the Loan to Income limit (LTI). The average income for FTB was €36,853 per year in 2017 (see Table 2), yet the average cost of a house in Dublin was €322,158 (see Table 4). This ultimately means that even if it is possible for FTB to save the deposit of €32,200, they still would not be able to borrow enough to afford the average house price in Dublin. By taking the AIFTB and multiplying it by 3.5, plus adding the deposit of €32,200, the total would be €161,185. This would be how much a FTB would be able borrow from a bank, under their terms and conditions. This is almost exactly half of the average house price in Dublin, ultimately meaning FTB cannot afford to buy a house in Dublin (see Table 3 below for calculations).

Loan to Income Calculations (Table 3)	
Average Income for FTB (AIFTB)	€36,853 X 3.5 = €128,985 + Deposit €32,200 = €161,185
Average House Price in Dublin (AHPD)	€322,000 - €161,185 = €160,815

As a capital city of Ireland, housing is inevitably more expensive in Dublin. In Figure 10, we can see a breakdown of in the average asking prices for housing across different parts of Dublin and Ireland. Dublin County is broken down into six different areas. In order to get an average price for Dublin, all six areas were added together, then the total was divided by six (see Table 4). Moreover, it is important to note that all the calculations up until this point

have been based on and individual FTB wishing to purchase a home in Dublin. Furthermore, if we apply the same formula to a couple (2 adults) as FTB, it would still leave them unable to afford the average housing price in Dublin (see Table 5).

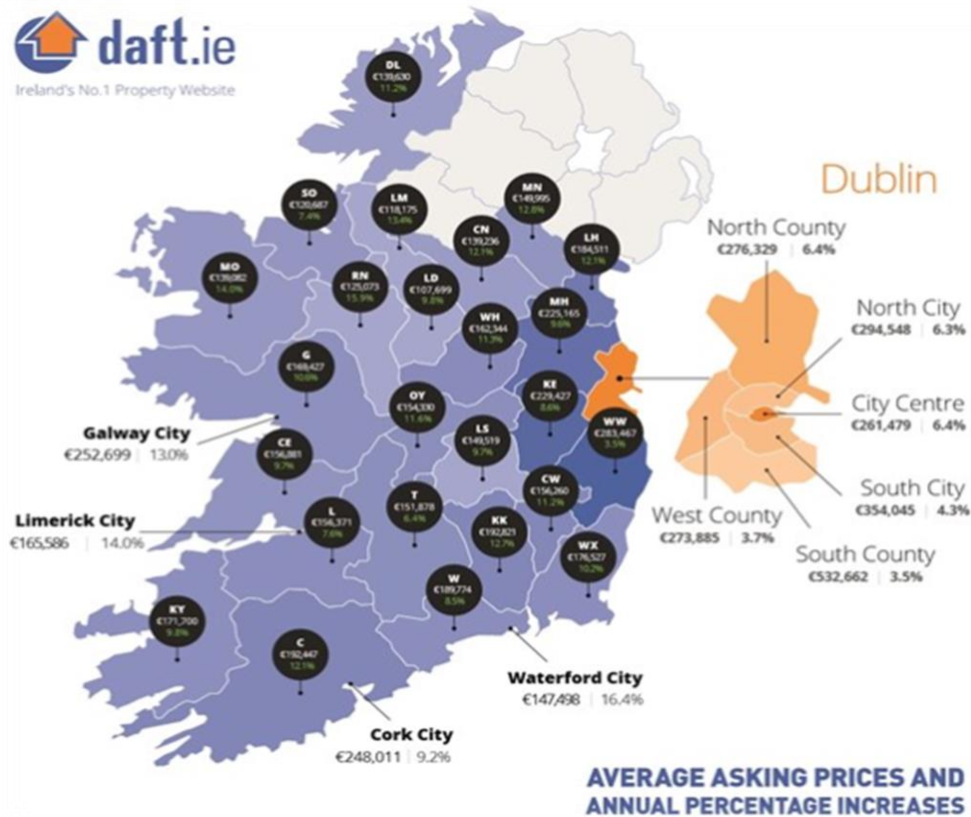

Figure 10 Source: Daft.ie (Rodgers, 2017)

Average asking price for housing in Dublin (2017) (Table 4)	
North County	€276,329
North City	€294,548
City Centre	€261,479
South City	€354,045
South County	€532,662
West County	€273,885
Total	€1,992,948 / 6
Overall average asking price for a house in Dublin 2017 = €322,158	

Source Daft.ie., (2017), (Rodgers, 2017)

Calculations (Table 5) FTB Couple	
Stage 1.	**(AIFTB) €36,853 X 2 (adults) = €73,706** **–** **(ACOR) (€1620 x 12 months = €19,440)** **€73,706 - €19,440** **=** **€54,266 (Residual Income)**
Stage 2.	**€54,266 (residual Income)** **–** **€863 x 12 = €10,356 months (NHID) X 2 = €20,712** **€54,266 - €20,712** **=** **€33,554 Disposable Income year**

Eventhough the combined income for a FTB couple would be double of that of an individual, the non-housing costs of that household would also be doubled. In other words, the non-housing costs of a FTB couple living together would increase but the PRA costs may stay the same. As we can see in Table 5 above the disposable income for a couple would be considerably higher if the couple did not increase their PRA cost. Although they would have a higher level of disposable income, they would still have difficulty qualifying for a mortgage.

With a combined average income of €73,706 a couple would be able to borrow more from a bank. Using the LTI rule that banks use for FTB in Ireland, a FTB couple would be able to borrow 3.5 times their income. The LTI rule would enable the FTB couple to borrow €257,971 (3.5 times their income), which is still considerably lower than the average price of a house in Dublin. By borrowing 3.5 times their income and having the 10% deposit required, a FTB couple would have €290,171 to purchase a new house. However, this is still €31,000 short of the average asking price in Dublin. Some banks do make exceptions to the LTI rule and may be flexible regarding lending terms and conditions. For example, in a calendar year a bank could allow 20% of mortgage applicants to exceed the 3.5 times rule (Citizensinformation.ie, 2018). This is usually at the beginning of the year, thus, for a FTB couple it may be possible to avail of the required amount needed, if they apply for the mortgage at the beginning of the year.

Loan to Income Calculations (Table 6)	
Average Income for FTB (AIFTB)	€73,706 X 3.5 = €257,971 + Deposit €32,200 = €290,171
Average House Price in Dublin (AHPD)	€322,000 - €290,171 = €31,829

CONCLUSION

Throughout this research, the aim was to see how the financial crash of 2008 has affected housing affordability for FTB living in PRA in Dublin. As discussed in this research paper, there were several areas that have been impacted as a result of the financial crash in 2008, thus resulting in higher housing costs.

One of the key areas that is impacting the affordability of housing in Dublin for FTB is the supply of new housing into the housing market. Ever since the financial crash, the housing market has never been able to bounce back to where it once was. With demand currently outweighing the supply, housing prices have increased drastically since 2013. As a result of this, FTB looking to enter housing market are subsequentially being priced out of the market and may have to enter the market later in life, compare to before financial crash.

In addition, there is no promising evidence that in the short-term future the supply of housing would increase. On average, Dublin would require around 35,000 new homes each year for the next five years, just to be able to match the current demand. However, this level of production looks unlikely, due to the scale and size of the current construction industry. Before the financial crash of 2008, the construction industry was booming and employed one in every eight people in Ireland. As a result of the financial crash, the construction industry collapsed and left thousands unemployed. Since 2013, the housing market has begun to improve, however, the construction industry is still nowhere near where it used to be. In addition, the current demand for housing has surpassed the level it once was before the financial crash. Therefore, the construction industry is under severe pressure to keep up with the current demand.

During the Celtic tiger era and beyond, households in Ireland were experiencing some unprecedented luxuries. In the years leading up to the financial crash, households were able to avail of 100% mortgages from majority of the banks in Ireland. This opened the door for all households to apply for a mortgage, many of whom at the time were unable to afford a

mortgage still managed to qualify for one. Once the financial crash hit the world stage, many countries, including Ireland, tightened their lending terms and conditions. Shortly after the crash, 100% mortgages were abolished and any household that could not afford the mortgage repayment lost their home to the banks. There are currently some banks that would offer their customers 100% mortgages; however, this would be under very strict terms and conditions. In regard to FTB, they now have to navigate their way through the strict lending terms and conditions of banks today. With soring house prices and mediocre income increases, households such as FTB are being forced to wait on average five years longer to have the opportunity to buy a home.

Furthermore, as discussed in this paper, there are several methods that can be used to define and measure affordability all with their own advantages and disadvantages. By using the residual income method for the analysis, in this paper it was shown that an individual FTB living in PRA in Dublin would have very little disposable income to save for a mortgage deposit. However, through time, it may be possible for a individual FTB to save for a mortgage deposit, but they would still lack the required income to be able to afford the average housing cost in Ireland. Nevertheless, in this paper it was also shown that by using the residual income method, a FTB couple have a higher chance of buying a house in Dublin with a combined income. By combining their income and not increasing housing costs, they may be closer to affording the average housing price in Dublin than an individual FTB. This would only be possible due to the fact that banks make exceptions for 20% of the households that apply for mortgages each calendar year, so FTB couples stand more of a chance than an individual, qualifying for a mortgage.

Moreover, Ireland was in a deep recession as a result of the crash but recovered quicker than first anticipated. However, this quicker than anticipated recovery has not been evident in every area of the Irish economy. Although unemployment is at an all time low, certain sectors and industries are still trying to recover from what happened in 2008. More specifically, the housing sector and construction industry are still suffering from the effects of financial crash. This is important as both of these areas have a huge impact on the current housing crisis, thus, making housing unaffordable for specific households, notably FTB.

By using the residual income method, I was able to target a specific sample size (i.e. FTB) rather than take an overall view of a household's ability to afford housing. This approach made it possible to determine if FTB faced housing affordability issues as a result of the financial crash. However, there are also some limitation to this approach. One limitation of this research is that while using the residual income method as a guideline, not all non-housing costs may have been accurate. Accessing the specific levels of data needed for the residual income method could take a considerable amount of time, which was not feasible for this research. This is one of the disadvantages of the residual income method, hence the reason why some researchers chose not to use this method of measurement in their study. Moreover, another limitation with the analysis carried out in this paper is that it does not reflect the data for the entire sample. All calculations and analysis were based on an average FTB income and it is impossible to deny that there could be FTB that earn more than the average income. Future research in this field could potentially look at the six areas of the Dublin County individually and apply the same formula to each individual area to ascertain whether housing is unaffordable in specific parts of Dublin for FTB.

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