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Finance, Innovation & Growth (FINNOV)

Wealth Accumulation and Home Ownership of US young adults: 2005-2009

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Abstract:

This paper describes how home ownership decisions of US American young adults may have changed with the financial crisis of 2008. It uses the NLSY97, a panel data set which follows individuals from their childhood until their early adulthood. It asks individuals who have turned 25 years of age what their assets, earnings and home situation are. By looking at how these answers differ over time, and between home owners and renters, we assess how the 2008 crisis has impacted on the differences between home owners and renters. Results suggest that the earnings distribution of renters remained more or less constant throughout the period, in nominal prices, while the divide between earnings of buyers and renters increased. At the same time, rental costs have increased, which suggests that the inequality between these two groups may have increased. Renters also seem to have become more risk takers and try to compensate by having larger than usual risky assets in their portfolios.

Keywords: buying or renting, inequality, financial regulation, US.

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1 Motivation

Home ownership allows individuals to add a very important asset and equity to their savings, but can result in high levels of indebtedness. Before the financial crisis in 2008, most economic models assumed housing was the safe or less risky asset and could be used as a hedging investment for other risky assets, or simply income risk. Yao & Zhang (2005) presents a model of home ownership with stochastic income, equity investments, down payment and transaction costs in the housing market, and housing consumption derived from either owning or renting. They find from numerical simulations that holding all else constant, households prefer to own rather than rent due to the tax benefits of mortgages and the moral hazard problems of renting. Households rent when their holdings of liquid assets, stocks and bonds, are low, and buy a house when they are no longer liquidity constrained. An additional finding is that when households are indifferent between owning and renting, they make very different investments when they own rather than when they rent. Households that own a house reduce the proportion of stock holdings in their net worth, which is made up of stocks, bonds, and housing equity. They however hold a higher stock proportion in their liquid portfolio of stocks and bonds than renters. This is explained by the desire to diversify between the two risky assets, housing and stocks. The theoretical findings are supplemented with empirical estimations using PSID data, with a two-step kernel weighting procedure combining conditional logit regressions with OLS to jointly account for selection into stock market participation and individual unobserved heterogeneity. Cocco (2005) presents a similar structural model, and argues that the positive correlation between mortgage debt and stock holdings is explained by variation in human capital across households. Those with more human capital buy larger houses and borrow more to do so. These households also buy more stocks because human capital resembles the safe asset, namely bonds or treasury bills, in terms of returns despite being somewhat risky. These assertions are backed up by structural estimations of the model using PSID data.

The financial crisis of 2008 showed housing can be a risky asset when expectations fail to anticipate sharp decreases in market value of houses. Banks et al. (2010) argues that increased volatility in house prices induces individuals to become home owners earlier, and also to ascend the housing ladder (buy a bigger house) faster. The paper presents a theoretical discrete-time model illustrating the three main purposes of housing ownership; consumption, investment, and as a hedge against future house price volatility higher up the housing ladder. The main driver of the decision to buy the first house is anticipated partnering and fertility, which is modeled

as a choice between renting and buying a property upon leaving the parental home. The model is then used to generate predictions on the age of initial home ownership, whether or not to refinance, and the quantity of housing wealth or number of rooms owned over the life-cycle. Probit estimations of ownership are used to verify the results from model simulations, showing that risk aversion leads individuals to buy their first home earlier when house prices are volatile and when expected capital gains from home ownership are high. This paper however, assumes that individuals make rational expectations about the expected value of their homes, and cannot say much about the incentives to become a home owner when expectations are not self-fulfilling. A companion study [Banks et al. \(2010\)](#) finds that the elderly, already home owners, reduce their housing consumption and wealth faster in the face of greater house price volatility, which suggest that the investment incentive of housing becomes weaker under increased volatility, and so does the attractiveness of holding housing wealth versus liquidity.

An important paper that acknowledges that rental markets are also risky is [Sinai & Souleles \(2003\)](#). This is because renters purchase housing services in a spot market, exposing themselves to annual fluctuations in rental prices. Home owners on the other hand buy a guaranteed stream of housing for a known immediate price, and receive annual dividends from the house equal to its ex-post rental price. In a simple model of tenure choice, this paper shows that households with longer horizons choose to own homes in the face of rental risk. This is because house price risk at the time of sale is farther away in the future, and therefore small in present value, and also because renting increases exposure to rental price risk over a longer time horizon. They also find that home ownership increases with greater house price correlation across different housing markets, as the sale and repurchase prices of homes are likelier to offset, which reduces housing price risk and lengthens the households effective horizon. These results are empirically verified using data on median house prices in the US from the 1990 Census, combined with growth rates of the Freddie-Mac repeat sales house price index to derive annual house prices. Data on rents are taken from surveys of “Class A” apartments by Reis, a commercial real estate company. Data on home ownership and demographic characteristics are taken from the 1990 and 1999 Current Population Survey March Annual Demographic Supplements.

In the current context, also banks have increased barriers to home loans by decreasing the loan-to-value ratio and making access to credit overall more difficult, forcing individuals, often first-time buyers who cannot afford to pay or borrow a high initial down payment, out of the housing market. [ORTALO-MAGNÉ & Rady \(2006\)](#) develops a lifecycle model of home ownership with down payment credit constraints and a property ladder. The model

shows that income shocks to young households that determine their ability to afford the down payment on their first “starter” home are an important source of housing price volatility. It also identifies the capital gains channel as important for price “overreaction” of larger trade-up homes, as households wishing to climb the property ladder increase the demand for such homes by trading up from starter homes that appreciate in value. This capital gains mechanism explains the positive correlation between house prices and transactions seen in the UK and US data. Yao & Zhang (2005) show how liquidity constraints, which worsen with a higher down payment, are the main factor delaying home ownership.

Literature has suggested that institutions, loan arrangements and tax systems can substantially impact on individual decisions to buy or rent a home. Brueckner (1986) presents a two period model where the size of the down payment discourages home ownership and a more progressive tax system increases home ownership by allowing households to shift purchasing power to the present when their incomes are lower and thereby spurring savings. Ozyildirim et al. (2005) presents a discrete-time, discrete-state Markov decision model of tenure choice for households that explicitly incorporates the probability of moving in the future, and depends on mortgage rates, taxes, transaction and rental costs, house prices, and various other factors. They find heterogeneous effects over the life-cycle from simulations, with housing ownership increasing more for younger households with lower market interest rate-mortgage rate spread and higher income tax rate than for older households. A greater home appreciation rate increases home ownership of the young, but reduces that of the old. Higher transaction costs lower home ownership across all ages, but more so for middle-aged households. Higher rents relative to house prices leads households to become home owners sooner, with steep reductions in propensity to own homes with declining rents. Banks et al. (2010) on the other hand, conclude that higher rents can discourage *both* renting and home ownership by delaying the decision to leave the parental home. Ortalo-Magné & Rady (2002) presents a dynamic model of tenure choice which treats rented and owner-occupied housing as perfect substitutes, thus linking tenure choice explicitly to returns from non-housing consumption. The analytical results show that households are likelier to own homes when the covariance between incomes and rents declines, and when households plan to spend a long period of time in the house so that they can lock in future rents at their expected value. However, households may own a house even when they plan to buy another one shortly as the gains from ownership increase as the covariance between prices of all the houses that are part of the household’s housing plan increases.

Empirical analysis of renters is often not as widespread as the empirical

analysis of buyers because longitudinal surveys tend to underrepresent renters who are more likely to attrite and move. However, the simultaneous analysis of the incentives of home owners and buyers is needed to explore how added risk and uncertainty impact on their choices and consequent income and wealth trajectories. This paper aims to fill in this gap, by looking at how renters and buyers' financial health compare and changed as a consequence of the 2008 financial crisis. It uses the NLSY97, a panel data set which follows individuals from their childhood until their early adulthood. It asks individuals who have turned 25 years of age what their assets, earnings and home situation is. By looking at how these answers differ over time, and between home owners and renters, we assess how the 2008 crisis has impacted on the differences between home owners and renters. Results suggest that the earnings distribution of renters remained more or less constant throughout the period, in nominal prices, while the gap between earnings of buyers and renters first increased and then decreased during the crisis. At the same time, rental costs have increased, which suggests that the inequality between these two groups has increased.

The next section describes the NLSY97 and the sample used in this paper while section 3 shows the difference in indicators of financial health between renters and buyers, and how this difference has evolved with the presence of the crisis in 2008. Section 4 concludes.

2 Data

Analysing home ownership decisions requires good data both on homeowners and on those who are renting. Most panel data sets underrepresent the sample of those renting due to the higher chances these individuals attrite between sample years. The NLSY97 samples individuals who were in their early adulthood years when the financial crisis broke out. This panel data set is nationally representative of the cohorts who were 12 to 16 years old as of December 31, 1996. By 2008, this means our sample was aged between 23 and 28. Round 1 of the survey took place in 1997. In that round, both parents and youth were interviewed and demographic information collected on young adults, on who they live with and their immediate family living elsewhere (e.g. if parents divorced, those living with the young adult, whether biological or step-parents would be interviewed, and so would biological parents living elsewhere). Youths are interviewed on an annual basis. Last round used is 2009, the last round available at time.

The NLSY97 is designed to document the transition from school to work and into adulthood. It collects extensive information about youths' labor

market behavior and educational outcomes. It also includes detailed information about topics which tend to affect young people’s outcomes, such as their relationships with parents, contact with absent parents, marital and fertility histories, dating, sexual activity, onset of puberty, training, participation in government assistance programs, expectations, time use, criminal behavior, and alcohol and drug use. This questionnaire also includes questions about wealth and earnings. Youths are asked many of these asset questions in the first interview after they become independent, turn age 18, turn age 20, and turn 25 (in Assets 25 section). We will use the information respondents provide when they turn 25. This is because the share of young people who are home owners by the age of 20 is too low, and no one from this survey will have turned 30 by 2009 - in fact, only rounds 2005 until 2009 have individuals aged 25, which reduced our sample to 5150 individuals who are either buyers or renters at the age of 25. We also observe the moment at which youths become independent may have changed with the crisis, hence the need to compare youths from different cohorts at a specific age¹. This paper will look at the differences in terms of home ownership and wealth measures across these different cohorts who have turned 25 in different years. Wealth measures include the household net worth, house value and house debt of their primary housing, which may include their parental home. Table 1 includes summary statistics about some of these measures. None of these values have been adjusted by inflation.

Table 1: Wealth measures of youth who turned 25, nominal average values

Year turning 25	N	Earnings	Household Net worth	House Value	House Debt	Financial Assets	Nonfinancial Assets	Debt
2005	877	24520	34327	34804	21885	10299	26217	11925
2006	1084	26982	37721	44504	29562	13203	26370	12331
2007	1081	27466	32382	36781	24891	12971	24387	14624
2008	1075	27027	30471	30522	21393	12654	23698	13457
2009	1033	28929	29080	32417	26484	12522	23647	12487

Table 1 shows a clear story of how financial health changed with the crisis. In 2006, wealth indicators show a healthy scenario, where the house value of youths primary housing is much larger than house debt, and both are at their historical highest. Household financial net worth is also considerably higher than primary house value, showing how most households managed to

¹We are not analysing the group of individuals who are still with in their parental home, despite this being a very interesting research agenda given the pressure on older individuals to provide for their own pension at the same time as having to continue supporting their children for longer. Results do show that, as a result of the crisis, the group of 25 year olds who turned 25 during the crisis increased by almost 10 percentage points.

accumulate liabilities and wealth coming from their investments. The impact of the crisis meant that in 2009, house debt has remained high, even if not as high, but house value shrunk dramatically for 25 year olds of younger cohorts. What is also alarming is that household net worth also decreased in 2009 and is barely larger than house debt, which suggests the inability of financial markets to make investments profitable for most youths. This image becomes somewhat clearer when we look at types of assets and non-housing debts. The average value of financial assets youths have has not decreased substantially, but potentially their return did. Non financial assets on the other hand seem to have decreased, together with non-housing debt, which suggests a delay in acquiring durables such as cars for instance. All in all, youths have less leverage to make investment decisions, specially if they have invested in housing at this stage in their life.

On the other hand, average earnings seem to be increasing throughout the period. However, these values conceal distributional considerations, specially because the proportion of youths who have become buyers at the age of 25, has also been decreasing since the crisis. As noted earlier, this decrease comes at the cost of those who have remained with their families. However, only looking at renters and buyers, from a maximum of 24.2% of buyers at the age of 25 in 2006, the share of home buyers decreased to below 20% in 2008 and 2009. The next section will show how the distribution of these variables has changed over time for buyers and renters separately, and has also changed between them.

3 Results

Figures 1 and 2 show the distribution of earnings buyers and renters at the age of 25 had in different years. Prior to the crisis, the distribution of earnings of buyers was spreading to the left, which meant more and more low earners were entering the housing market (part of which constituted subprime mortgages). This mechanism was so strong that we can actually observe a bimodality of the earnings curve in Figure 1. In its peak year, 2007, the proportion of these low earners or subprime mortgages was at his highest. By 2009, this lower second hump of the distribution disappears, and the curve shifts back to the right. Earners have become richer. At the same time, part of these buyers who cannot access the housing market are renting, which is shown by the shift of the earnings curve of renters to the left in Figure 2. Earnings of renters stopped increasing while the earnings of buyers became higher, which has bridged a clear divide between these two groups of youths. This result seems to be confirmed by comparing Figures

3, 4, 5, 6 and 7, which track the year-by-year comparison of the earnings distributions of buyers and renters. In 2005 and 2006, these two curves were a horizontal shift of each other, where buyers were higher earners. Inequality and dispersion increased over this 5 year period for both groups, but the distribution of renters remains concentrated around a low average value while the distribution of earnings of buyers spreads to the right.



Figure 1: Earnings distribution of home owners by age 25

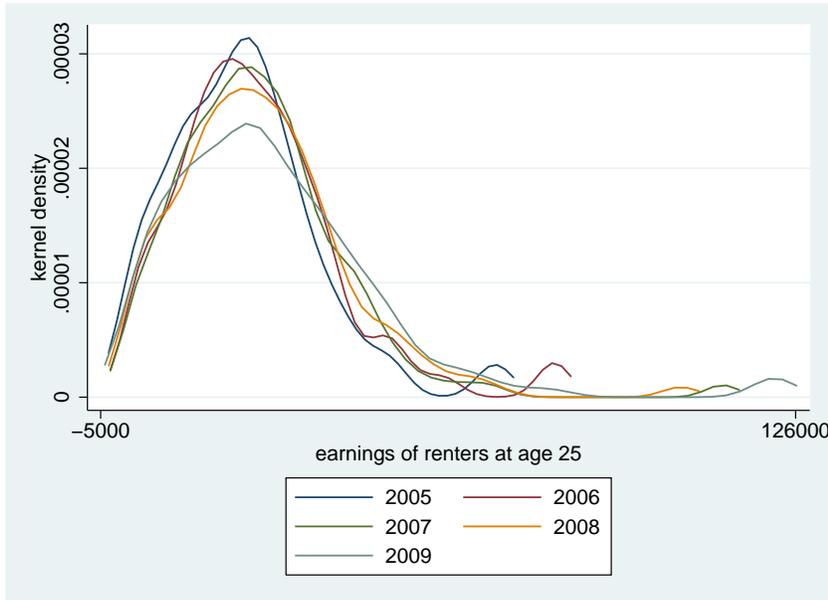


Figure 2: Earnings distribution of renters by age 25



Figure 3: Distribution of earnings of young adults who turned 25 in 2005

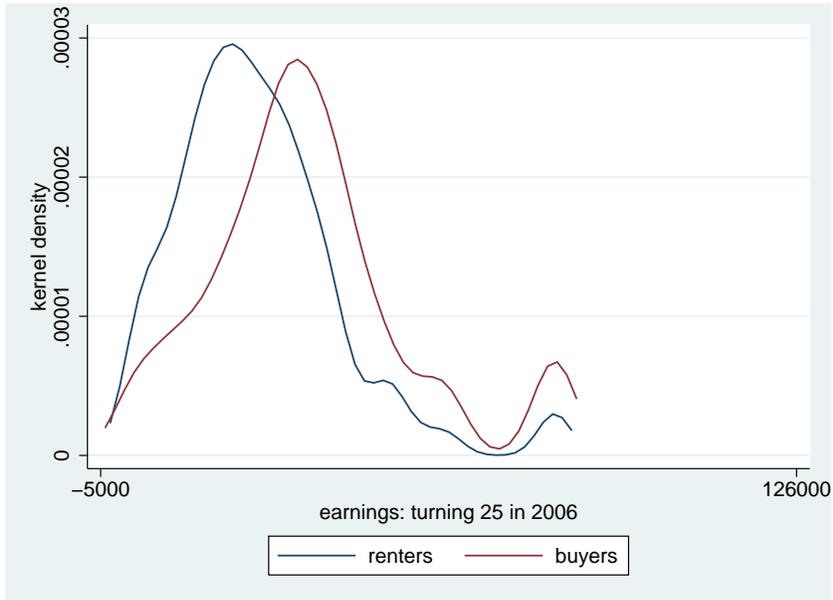


Figure 4: Distribution of earnings of young adults who turned 25 in 2006

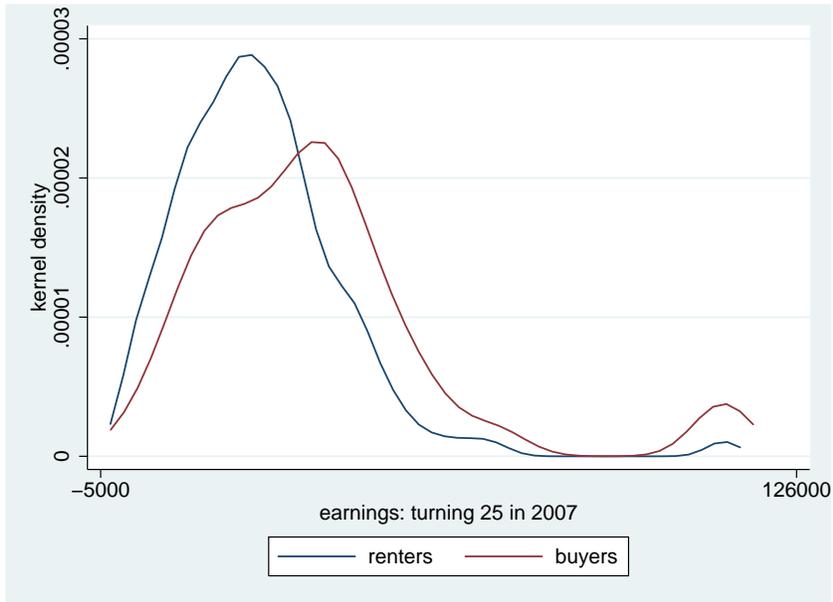


Figure 5: Distribution of earnings of young adults who turned 25 in 2007

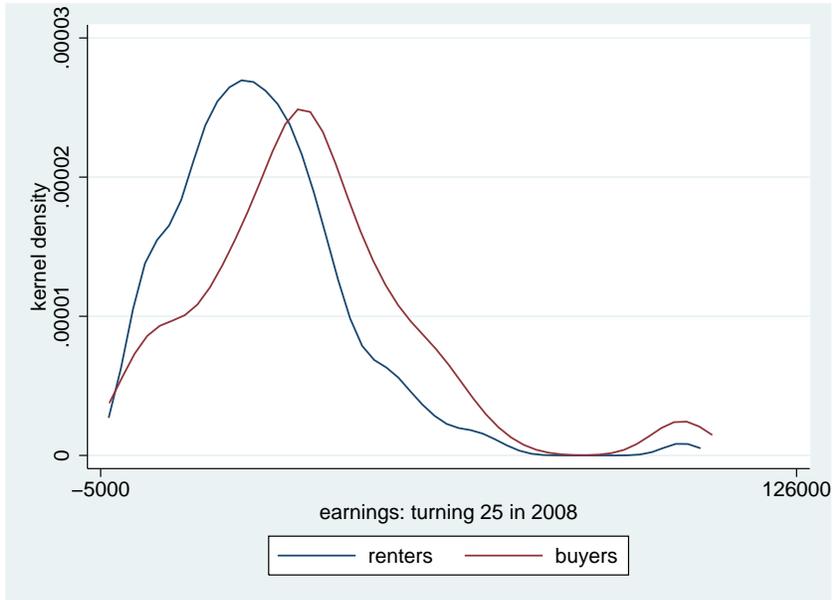


Figure 6: Distribution of earnings of young adults who turned 25 in 2008

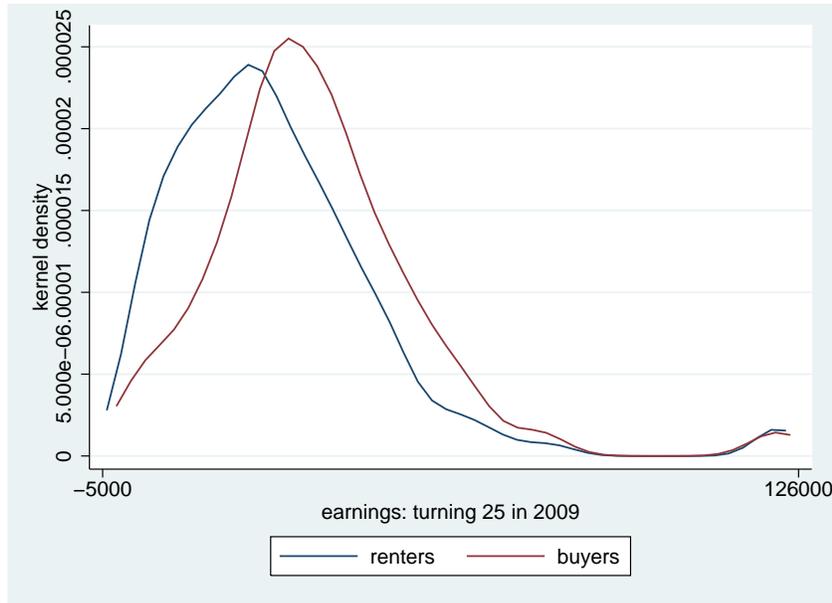


Figure 7: Distribution of earnings of young adults who turned 25 in 2009

Wealth measures associated with primary housing are represented in Figures 8, 9 and 10. The first two figures relate to the household net worth, assets minus liabilities, of buyers and renters who turned 25 in the different years, whereas Figure 10 shows the distribution of the buyers' equity. Figure 8 shows a very clear shift to the left of household net worth for buyers over the years, which means that younger cohorts of buyers have a lower buffer against shocks to income and wealth. The distribution of household net worth of buyers has become less dispersed and with a lower mean. On the other hand, the distribution of household net worth for renters in 9 shows a very concentrated distribution, much more so than for buyers who can use their home to increase their liabilities (as long as there is positive equity) whereas renters cannot. This distribution has however become more dispersed in 2007, but has reverted back to the shape it had in 2005. Figure 10 shows how the distribution of home equity has changed between 2005 and 2009 for youths who were buyers at the age of 25 in these different years. This figure shows that the distribution of home equity has become less dispersed and has suffered a shift to the left so that, even though most home owners at the age of 25 still have positive home equity², equity has shrunk. Home buyers, even though wealthier than renters, do not benefit from the large equity

²The estimation method used to estimate these distributions continues the left tail because of continuity of the kernel used. But the number of actual observations which fall below zero used to estimate these curves is very small.

and speculative prices which were common before the crisis. This process was not gradual however. The most concentrated and to the left curve is from 2009, but this is followed by the curve from 2007, and only then by the curve in 2008. This may partly be explained by the positive selection in 2008 of buyers who, from figure 1, seem to have been much better off than their counterparts in 2009. The earnings figures however refer to earnings gained in the year prior to the interview, so in effect, the positive selection happened during the crisis broke out.

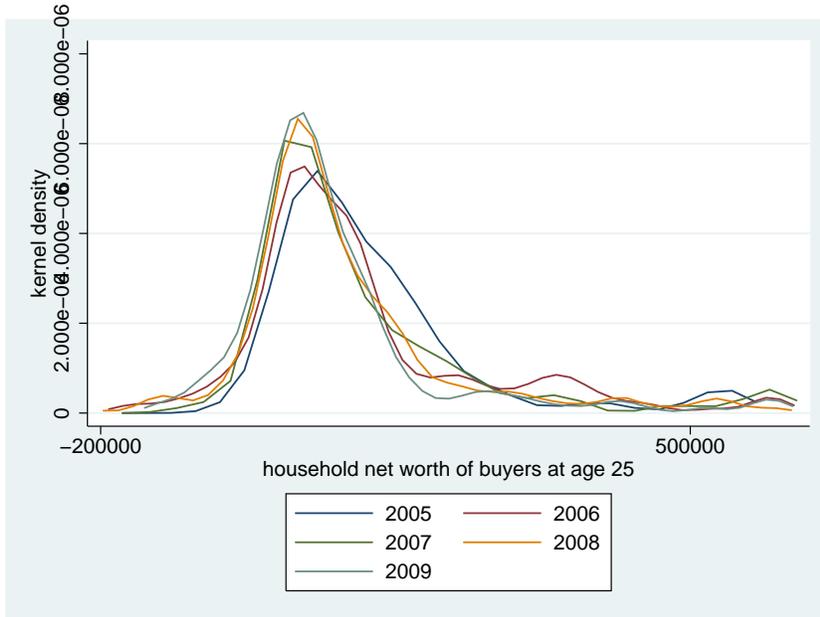


Figure 8: Distribution of household net worth of home owners by age 25

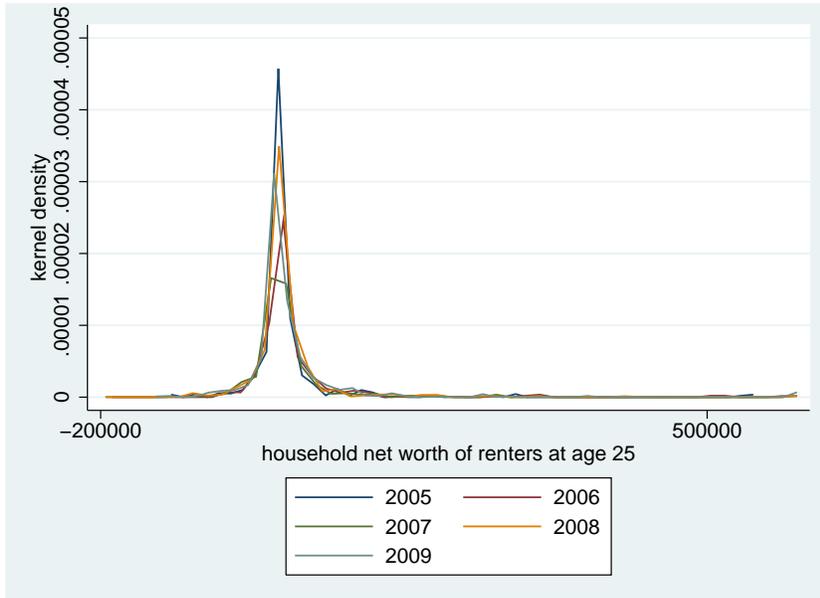


Figure 9: Distribution of household net worth of renters by age 25

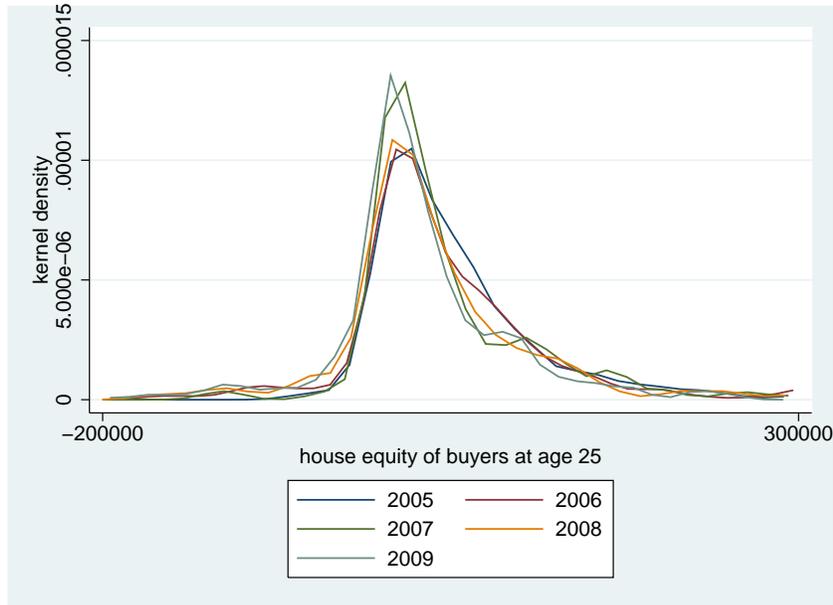


Figure 10: Distribution of primary housing equity of home owners by age 25

In terms of portfolios of other investments, and given that buyers tend to be higher earners than renters, it is surprising to observe that while buyers holdings of other assets increase up to 2008, these have decreased thereafter whereas for renters, this has not been the case. This is very clearly shown in Figures 11 and 12 for financial assets. For buyers, the distribution of financial assets shows larger holdings for buyers between 2006 and 2008, and 2009 values become as small as 2005 values (all nominal prices). On the other hand, and even though buyers do hold more financial assets than renters, the latter has increased their holdings more or less homogeneously though time, younger cohorts who rent seem to invest a larger share of their earnings in financial assets than older cohorts who rent. This may imply renters with lower earnings and often not being allowed to enter the housing market due to low loan-to-value ratios required by financial institutions, may be resorting to high risk / high expected returns in the hope of accumulating some capital, but more research would be needed to pursue this further. If it is confirmed, this is a very alarming conclusion given the debility and instability of financial markets at the moment. In terms of non-financial assets, the story told by Figures 13 and 14 is somehow similar, even if not as clear. While home owners have decreased their holdings of non-financial assets in 2008 and 2009, renters have increased their holdings in this period.

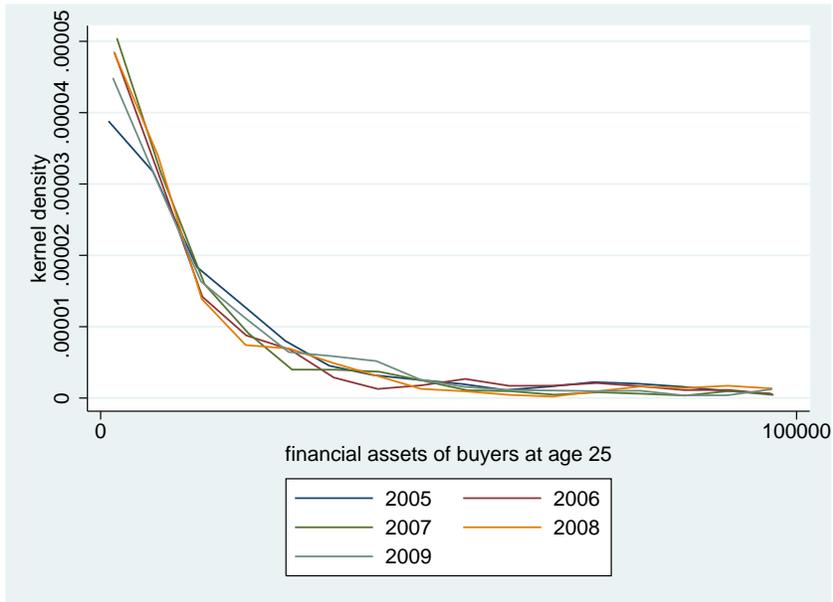


Figure 11: Distribution of financial assets of home owners by age 25



Figure 12: Distribution of financial assets of renters by age 25

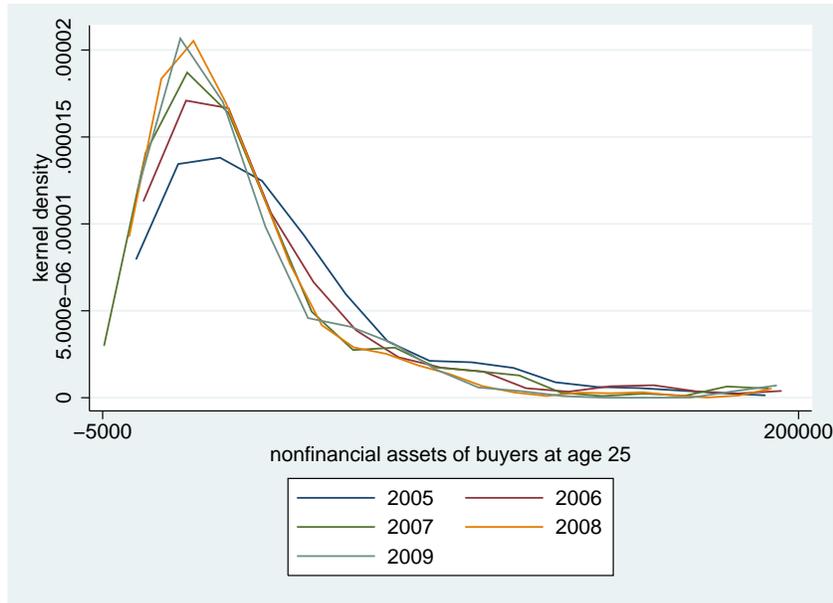


Figure 13: Distribution of non-financial assets of home owners by age 25

These results do suggest that buyers may be faring better because they are higher earners, have larger net worth and positive equity (despite lower than before the crisis); can use housing as an investment and can expect long term returns on their project at relatively low risk, while renters are using stock markets and risky investments to add to their wealth; use housing as a buffer against housing price volatility. Figure 15 shows how rental costs have changed for 25 year olds who are renting, and it shows yet an additional constraint on renters who are trying to save and add to their wealth. Rental costs have increased after the crisis, which adds to the divide of these two groups. Renters not only have lower earnings, who are decreasing in nominal terms, than buyers, but they are also faced with higher rents and even lower income available to save and for consumption. Moreover, uncertainty of the value of these rents and their inability to resort to the housing market makes renters very vulnerable to the rental market price which tends to increase the harder banks make it for young people to access the housing market.

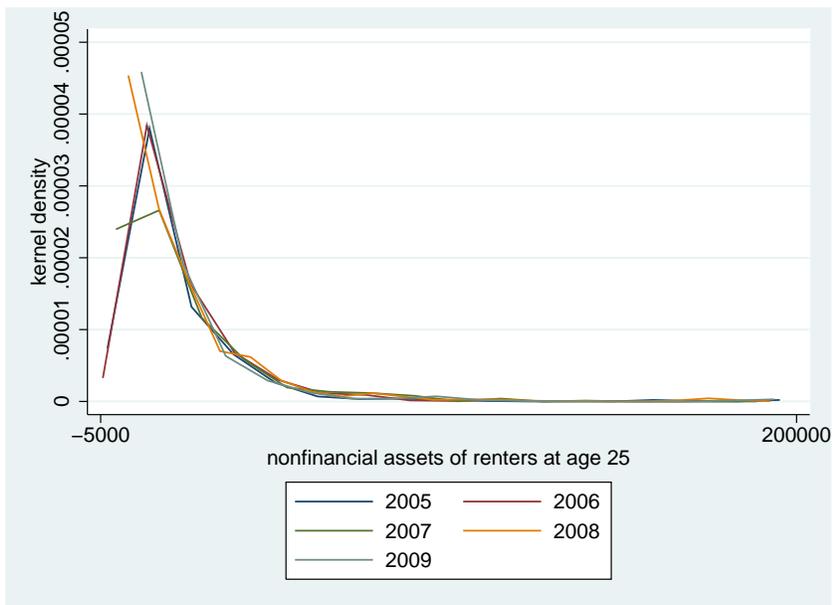


Figure 14: Distribution of non-financial assets of renters by age 25

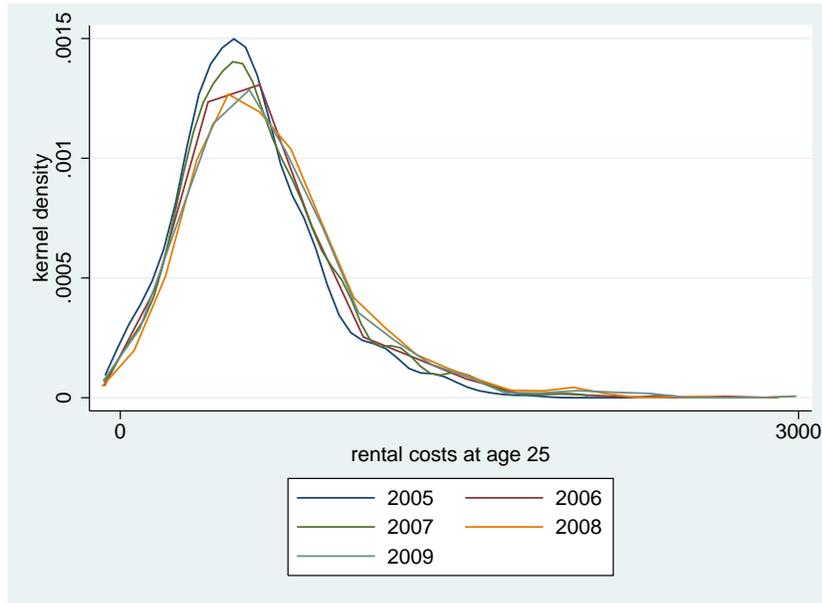


Figure 15: Rental costs by age 25

Most of the literature in models of home ownership and portfolio choice do not account for the influence of changing risk in the choices made by buyers and renters, and on how selection into home ownership works in these cases. We have however seen that renters may be resorting to higher risk strategies to increase their wealth. Figures 16, 17, 18, 19 and 20 show how the risk behaviour of renters and buyers has changed over the period. We use two measures of risk, the first measure represented in these figures is given by the ratio of risky (financial) assets to safe assets (non-financial), which excludes primary housing. The sequence of these figures does show that renters, who traditionally had lower values for this measure, now consume a similar proportion of risky assets, even though their earnings are lower and so his their ability to protect against negative shocks. Another measure of risk attitude we used is the debt levels of home owners and of renters. This debt does exclude housing and is conditioned by borrowing constraints associated with low earnings. Figures 21, 22, 23, 24 and 25 show how debt compares across time and between the two groups. The distribution of debt for buyers remained more or less similar across cohorts whereas the distribution of renters was converging to the distribution of buyers and suggesting higher debt levels, but this convergence was broken with the crisis. What these figures seem to suggest is that the crisis seems to have prevented, and still is preventing, renters from smoothing their income through their lifecycle.

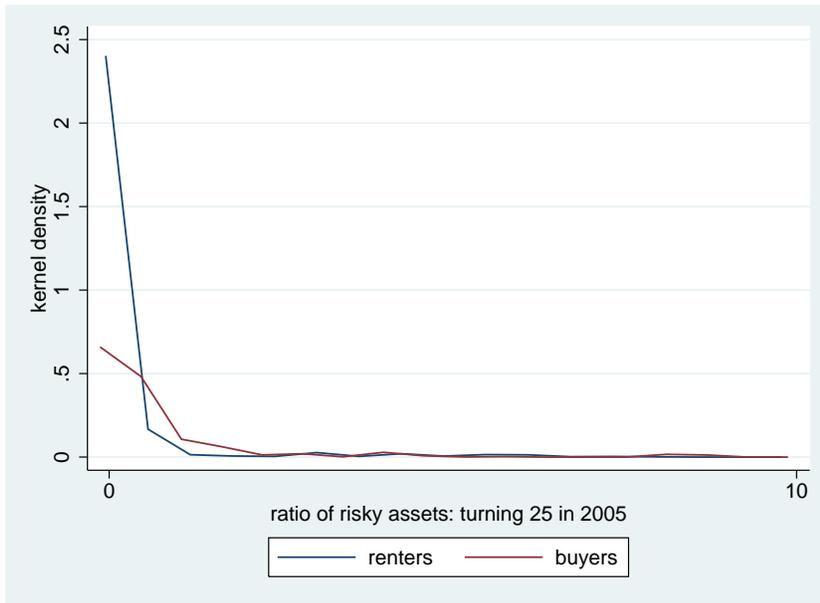


Figure 16: Distribution of the ratio of risky assets of young adults who turned 25 in 2005

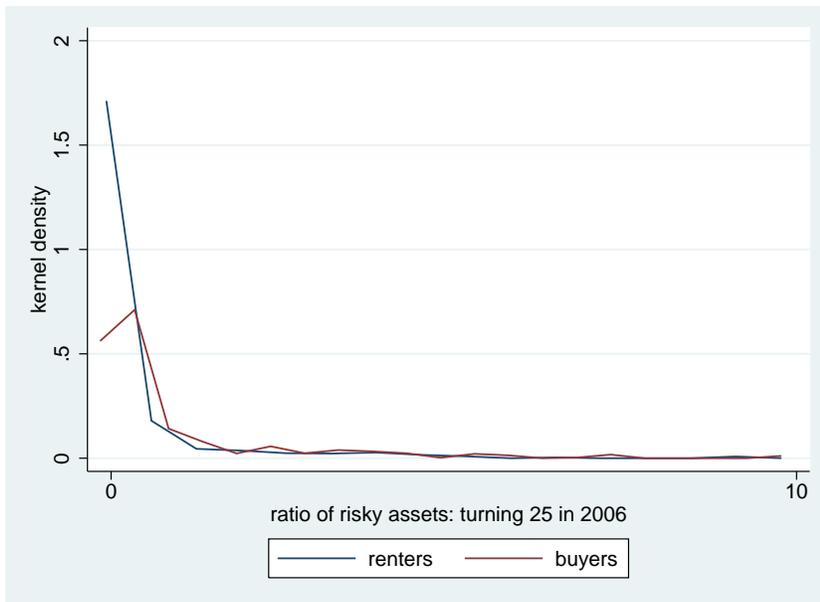


Figure 17: Distribution of the ratio of risky assets of young adults who turned 25 in 2006

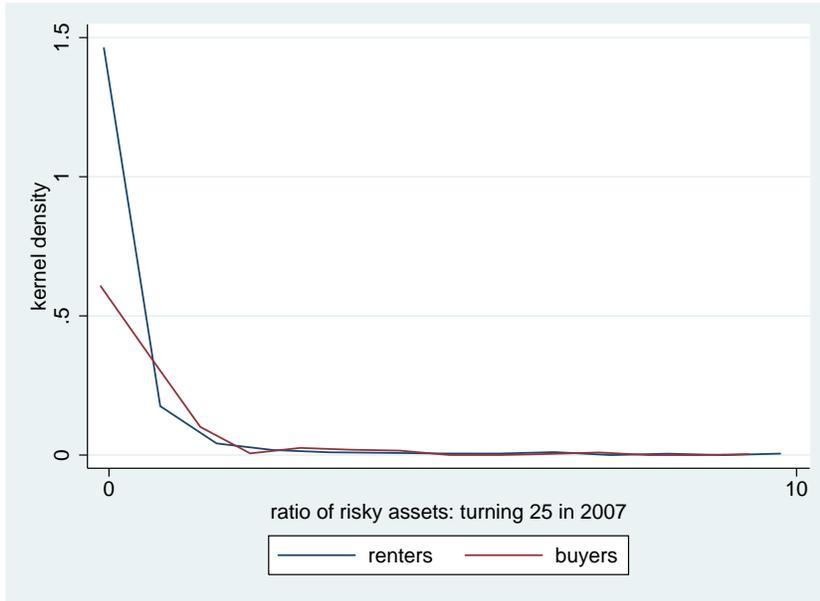


Figure 18: Distribution of the ratio of risky assets of young adults who turned 25 in 2007

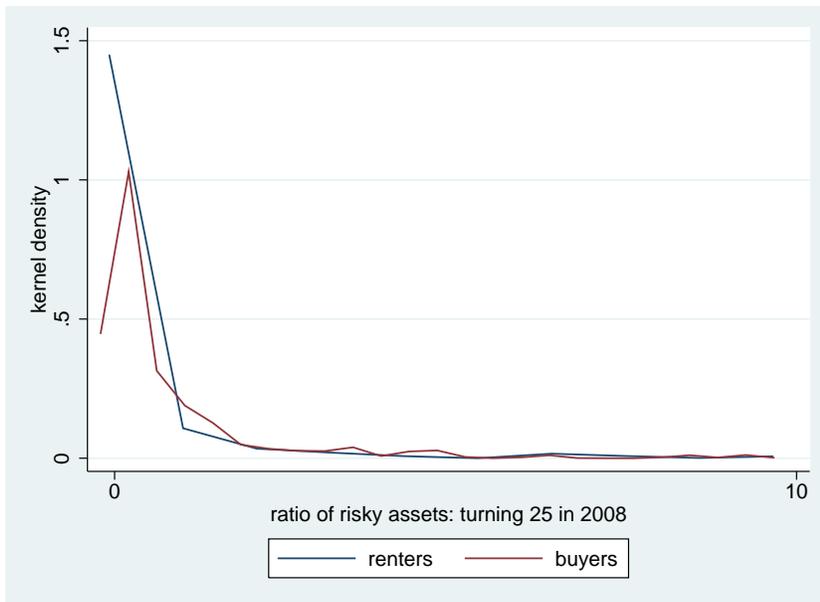


Figure 19: Distribution of the ratio of risky assets of young adults who turned 25 in 2008

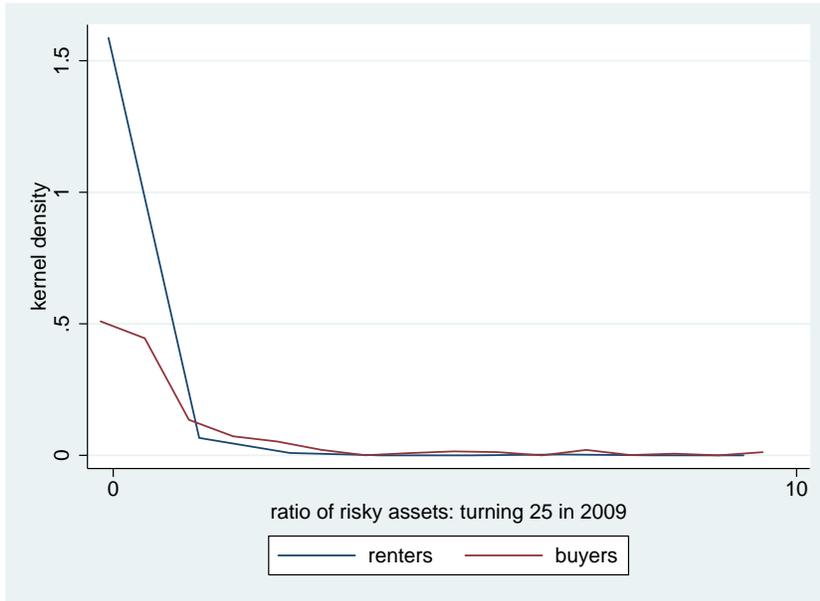


Figure 20: Distribution of the ratio of risky assets of young adults who turned 25 in 2009

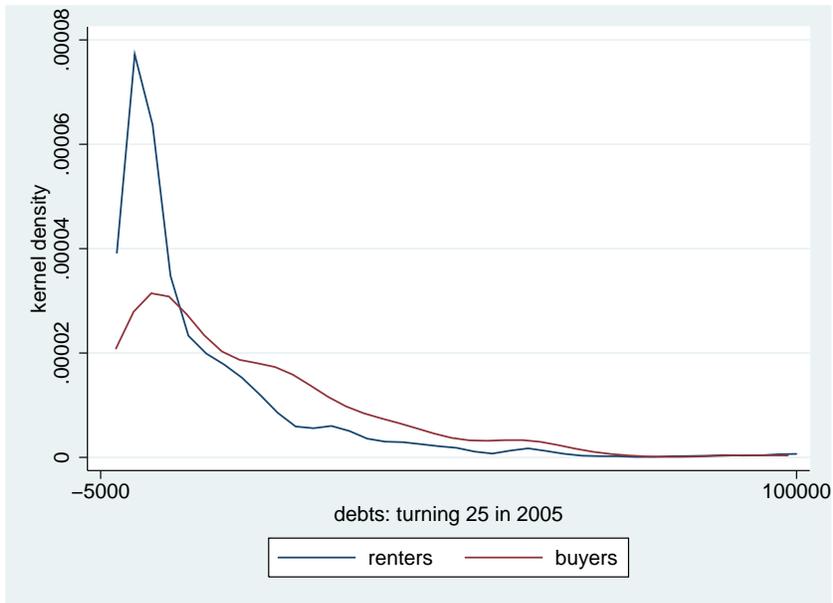


Figure 21: Distribution of debts of young adults who turned 25 in 2005

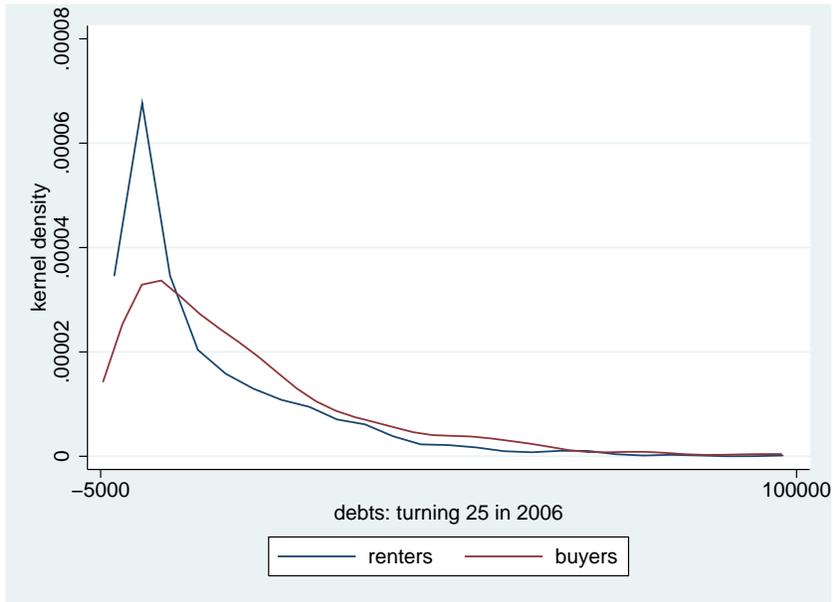


Figure 22: Distribution of debts of young adults who turned 25 in 2006

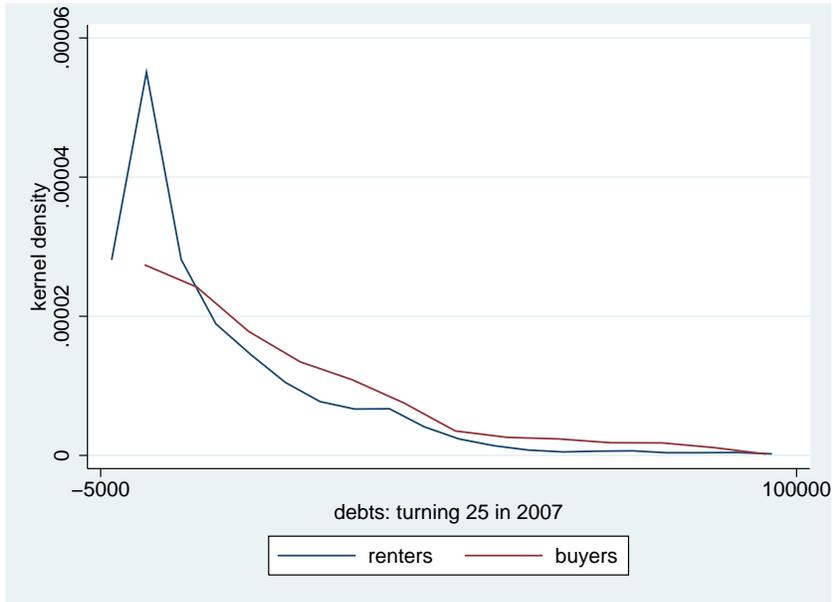


Figure 23: Distribution of debts of young adults who turned 25 in 2007

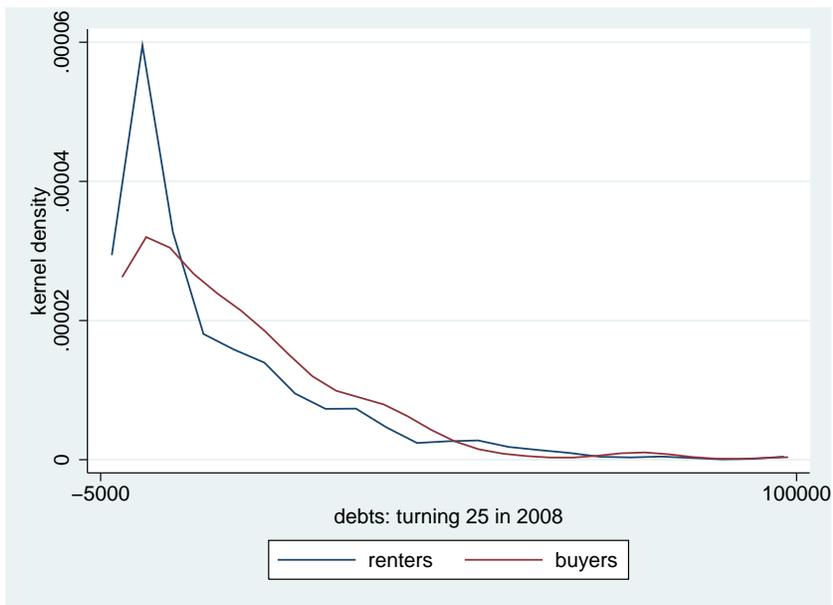


Figure 24: Distribution of debts of young adults who turned 25 in 2008

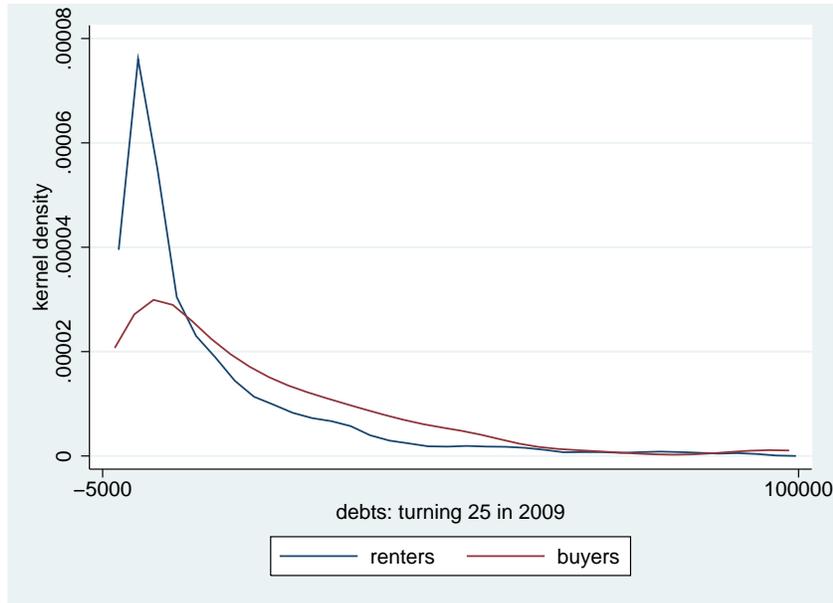


Figure 25: Distribution of debts of young adults who turned 25 in 2009

4 Conclusion

This paper tries to analyse empirically the financial health of buyers and renters in the last few years, and whether the financial crisis had an impact on financial health. This paper has shown that buyers have become wealthier, and still benefit from positive equity and a relatively safe investment. On the other hand, renters are faced with higher and unstable rental costs, lower net worth, lower earnings and seem to be resorting more to riskier portfolios to increase their wealth. The institutional changes made to protect banks seem to be weighing more heavily on the most vulnerable group, who cant buy and is forced to stay in a rental market where equilibrium rental prices seem to be increasing. This paper hopefully has shown that regulation is needed also in the housing market, together with a reevaluation of some of the institutional changes that have been made to banks and loan arrangements, and a reevaluation of fiscal and monetary policies to promote home ownership.

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