

Do homeowners save more? – Evidence from the Panel on Household Finances (PHF)

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Abstract:

In this paper we analyse the impact of property ownership on the saving behaviour of households. We are particularly interested in investigating whether homeowners save more than renters or not. A related question is whether mortgage payments and other regular savings are substitutes or complements for German households. To answer these questions we use a large cross-sectional dataset on individual households' finances and employ a matching estimator. We find that households owning property and repaying mortgages do save more than renters, if contractual savings and mortgage payments are summed up. However, the difference between regular savings flows of renters and owners is small and insignificant. Owners do not seem to substitute contractual savings with mortgage payments.

Keywords: household saving, homeownership, survey data

JEL-Classification: D14, R21, D31, D91

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1. Introduction

Different homeownership rates have been identified as one of the main explanatory factors for the differences observed in net median wealth of households across Euro Area countries. Recent evidence based on household surveys with detailed wealth information not only confirmed that homeownership rates vary considerably across countries, but also that homeowners are on average and in the median considerably richer than renters in all countries (HFCN (2013), Christelis et al. (2013)). In Germany, for example, the mean net wealth of owners is about 8 times higher than the mean net wealth of renters. Why is this the case? And how are homeowners different from renters in Germany? In principle, buying a home is simply an exchange of financial assets (and debts) for real assets. If this line of reasoning is correct, there is no a priori reason why owning a home is a good predictor for high wealth, as renters should just hold their wealth in investments other than property. Why differences between homeowners and renters exist nonetheless, can have many reasons, e.g. differences in the distribution of inheritances/gifts, income differentials, different asset price developments of real versus financial assets, different propensities to save and different levels of savings of homeowners versus renters.

In this paper we investigate the saving behaviour of renters and owners. Our main research question is whether renters (all other things equal) save less and consume more than owners. There are good reasons to assume that this is indeed the case. Usually buying a home is linked to transaction costs as well as considerable debt burden and repayment obligations vis-à-vis a financial institution. The repayment obligations require the owner households to save a fixed amount each month, whereas renters do not accumulate wealth by paying rent. In theory, the rent should only be as high as the interest payments of the owner plus some compensation for depreciation, for the same level of housing services. In this situation renters should (everything else equal) have income left for consumption or savings that is not spent on mortgage repayments. In other words, differences in the wealth of renters and owners can only manifest if renters consume a large fraction of their income that they would otherwise have to spend on mortgage payments had they bought a house. A second research question concerns the link between mortgage payments and other (regular) savings. If owner households reduce their savings in financial assets because they have to repay mortgages, the effect on net wealth would be smaller than if the mortgage repayments are complementary to other savings. If full substitution took place, owner households would only become relatively richer if house prices outperformed the return on other investments.

We use the new Bundesbank survey on household finances in Germany (“Panel on Household Finances” – PHF¹) to analyse these questions. This survey presents an excellent data source to analyse both the saving behaviour of German households and the differences between rent payments and repayments on mortgage loans. In particular, the dataset includes monetary stocks and saving flows of households’ regular and discretionary savings into a variety of investment vehicles and detailed information on mortgage payments as well as rental payments. To answer our research questions we use matching techniques to match renter and owner households with similar characteristics.

We find that homeowners save substantially more than renters when we compare otherwise equal households. This difference can mainly be attributed to the fact that homeowners and renters exhibit comparable flows for regular savings as renters, and in addition save on top by repaying their mortgages.

The rest of the paper is organized as follows: section 2 outlines the theoretical framework for our study. In section 3 we present a description of the dataset and variables, before we move on to explain our empirical strategy, i.e. the matching procedure, in section 4. We outline the results of our empirical analysis in section 5, before we conclude in section 6.

2. Literature Review and Theoretical Framework

There is ample evidence that homeownership is correlated with higher levels of wealth accumulation than renting (see e.g. Di et al. (2007), Dietz and Haurin (2003)), and various reasons have been put forward in the literature why homeowners are richer than renters. Classical arguments include house price developments, different returns from housing versus financial assets or differential savings behaviour of owners and renters.

Campbell and Cocco (2007) find that rising house prices in the UK have large positive effects on (older) homeowners’ consumption while there is no effect on (young) renter households which they attribute to a wealth effect of homeownership. On the other hand, a large literature has argued that simultaneous increases in house prices and consumption may be driven by common factors contradicting the wealth channel from house price growth to consumption (see Attanasio and Weber (1994), Attanasio et al. (2009) and Attanasio et al. (2011)). For the US, Engelhardt (1996) finds an asymmetry in the saving behaviour of households with total and unanticipated real housing capital gains. Households experiencing a real gain in housing

¹ For more information see v. Kalckreuth et al. (2012) and www.bundesbank.de/phf

do not reduce their saving while households with real housing capital losses increased their saving in response to a real house price appreciation.

While house price increases in other countries in the Euro Area might be one main determinant of the high net wealth of households in these countries with respect to German households (see HFCN 2013, Christelis et al 2013), the German housing market has displayed virtually stagnating prices in the last decade. Additionally, the mostly required large down payments and high transaction costs for buying a house², a long waiting time to convert the traditional contractual savings for housing (“Bausparverträge”) into a mortgage credit and a large and well-functioning rental market have characterised the German housing market as one traditionally without notable price increases until 2010.³ These institutional features make the German market a good example to analyse differences between owners and renters as there is a good alternative for owning a house.

Apart from offering a service stream, buying a house is also an investment in a risky asset, and naturally the expectation of the house price development will also determine the decision to buy a home. A large literature has used simulated returns from owning a house relative to renting under various model assumptions about financing, mortgage plans and alternative investments, which renters could have undertaken with their down payment (see, for example, Goodman (1997), Goetzman and Spiegel (2002) and Belsky et al (2007)). When comparing the user cost of capital of home owners to the cost of renting, most of these studies find that for the U.S. home returns are higher than inflation but below financial market returns. Important determinants are the holding period that is analysed as well as the quality of the house and the location of the building.

A related question is whether homeowners have different portfolio profiles than renters and how their asset portfolio interacts with their housing stock. Flavin and Yamashita (2002) estimate the risk and return to financial assets and real estate and calculate optimal portfolios of homeowners. They show that young households which are typically highly leveraged and have high housing to net worth ratios prefer to reduce the risk of their portfolio by either paying down mortgage or by holding bonds instead of stocks while older households have a

² See Chiuri and Jappelli (2000) for an overview of credit market imperfections in an international context.

³ A reversal of this trend is only notable after the Great Recession (see Deutsche Bundesbank, 2013).

higher optimal portfolio share of stocks as their housing to net worth ratio is lower.. Hurst (1998) finds that better balanced portfolios of homeowners lead to higher levels of wealth than portfolios that only hinge on homeownership. Several other papers have studied the optimal evolution of housing and non-housing consumption over the life cycle (Yang (2009), Cocco (2004), Yao, Zhang (2004)).

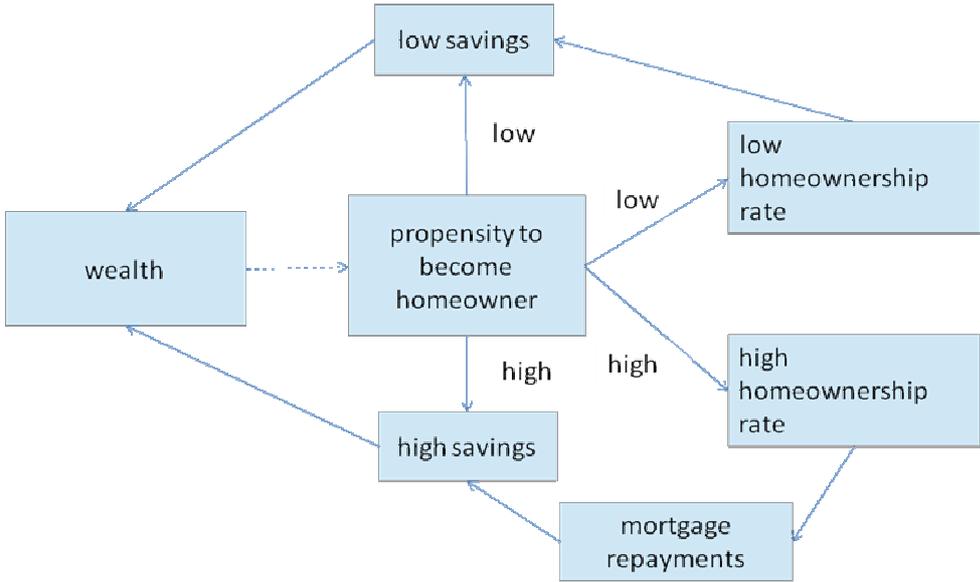
Another channel towards the higher wealth accumulation may be that home owners have a higher propensity to save than renters, both before and after buying their main residence and are also different from renters as they prefer to commit to save. Therefore, an interesting group to study are renters who plan to purchase a house in the future and whose ability to make a down payment may be affected by a house price increase. They can respond to house price increases either by an increase in savings or by a reduction if they decide to postpone buying a house. Sheiner (1995) finds that renters living in high house price areas accumulate significantly more net worth than those living in less expensive areas. She concludes that young people are indeed liquidity constrained as they save more in order to be able to make a higher down payment.

Once renters become owners, making mortgage payments is a form of forced savings, and hence owners may save more than renters after achieving homeownership simply because they have to. Di et al. (2007) use the PSID to examine how actual tenure choices made by households have affected wealth accumulation over long periods. They find that homeownership itself is strongly correlated with greater future net wealth rather than the propensity to save prior to acquiring a home. Using the same data set, Skinner (1989, 1994) finds mixed evidence of owning a house on saving rates by home owners. Krumm and Kelly (1989) argue that overall savings do not seem to differ between renters and owners but that owners substantially increase their non-housing savings beyond that of renters. For Germany, Grunert (2003) documents that the average savings rate of homeowners is more than double the average savings rate of renters. She attributes the higher savings rate to the forced savings due to mortgage redemption and to a habituation effect after the full mortgage repayment.

Our study differs from previous empirical work as we use matching techniques to compare homeowners with a mortgage and renters employing a new cross-sectional data base comprising savings flows and wealth levels at a very detailed level.

The following graph depicts the relationships we propose between wealth, saving and homeownership⁴. We argue that households with a low propensity (or willingness) to become a homeowner have only little or no reason to accumulate substantial amounts of financial assets. They will not have to finance a down payment and other savings motives are less relevant in Germany than in other countries. The household with a high propensity and maybe even concrete plans to buy property on the contrary, will save for the down payment, transaction costs and probably also build up buffer stocks for future mortgage repayments or renovations. This would lead to different savings levels even before the actual purchase of a property takes place. What is more, if those households then actually buy properties, they commit to mortgage repayments. If these mortgage repayments do not fully substitute other (contractual) savings, the owner households will continue to have higher savings rates compared to the renter households. It is likely that no substitution takes place if the households choose debt burden levels (repayment + interest) that are comparable to the rent they used to pay before they bought a house. In theory rents should represent the user costs of capital, i.e. the interest payments on the mortgage plus a compensation for depreciations. Thus, owner households should not be able to simply substitute rent and debt payments. If this equality does not hold, however, and rents also cover (parts of the) mortgage repayments, then some reduction in savings other than mortgage repayments can be expected for owners.

Figure 1 Schematic overview of theoretical framework



⁴ For the sake of simplicity it shows just one reason why a household may have a low propensity to become a homeowner, his level of wealth. Of course there are other reasons like household size, preferences, etc.

Taking these mechanisms and arguments together may explain the higher wealth of owner households compared to renter households.

We will test the following hypotheses below:

H1: Households which own their main residence and repay a mortgage are saving more than renter households, if saving is defined as the sum of contractual savings, discretionary savings and mortgage repayments.

H2: Households owning their main residence do not fully substitute contractual savings with mortgage repayments.

3. Data, Key Variables and Descriptive Statistics

In this section we describe the dataset, the key variables of our empirical analysis and provide some descriptive statistics.

The PHF survey

We use data from the “Panel of Household Finances” (PHF) , a new household survey on wealth in Germany. The PHF was conducted between September 2010 and June 2011 by infas on behalf of the Deutsche Bundesbank⁵. It is part of a larger effort to collect harmonized wealth data in the Euro Area, the so called “Household Finance and Consumption Survey” (HFCS). In contrast to most other studies in the Euro Area, the PHF has a special focus on savings. It collects for all asset types, not only the value of the asset but also the amount invested in the asset on a regular basis. The questions on regular savings are supplemented with questions on discretionary savings and savings motives in the PHF. The survey also collects detailed information on homeownership and mortgages. The unit of observation for the survey is the household. Most information is therefore available on the level of the household, with the exception of income and pension questions which were asked to individual household members older than 16 years which can be aggregated to the household level. The random sample is representative for households German. It was designed to oversample households living in wealthy areas. In total 20,100 households were sampled of which 3,565 households were successfully interviewed. Due to item non response, a pervasive phenomenon in survey data, the data set was multiply imputed.⁶

⁵ See Von Kalckreuth et al. (2012) for details on the methodology.

⁶ Referenz ecb and Junyi

Key variables

At the core of our analysis is the saving behaviour of households in Germany. The PHF was designed to collect qualitative and quantitative data on regular savings attached to financial assets. It also collects information on all private pensions and has a summary question on discretionary savings. Furthermore, interest payments and mortgage repayments are collected for every secured and unsecured loan. This comprehensive coverage of savings allows us to differentiate between gross savings and net savings. Gross savings is the sum of all investments in assets (savings and repayments) by households; to arrive at the net savings we subtract all savings that have been dissolved in a given year as well as new consumer loans taken on. We further differentiate within each of these two broad categories, by calculating savings rates, including all loan repayments (excluding mortgages on secondary property), only mortgage repayments for mortgages secured with the household main residence and no loan repayments at all⁷.

A key ingredient of our analysis is the identification of homeowners (with a mortgage) and renters in our sample. This is straight forward as the PHF contains direct questions on the homeownership status and on whether the household is servicing a mortgage loan. We put a household in the “homeowner with mortgage” group if the household owns its main residence at least partially and has a mortgage attached to this property.

Descriptive Statistics

The unweighted sample sizes for our analysis are as follows: of the 3,565 households about 56% or 2,013 households own their main residence, 1,552 are renters. Only 40% (812 households) of those owners still have to pay back a mortgage. After dropping cases with missing values on the degree of urbanization and the observations of common support (7 owner households) as well as households with negative gross savings rates, we end up with 768 treated households, i.e. owning their main residence and paying back a mortgage on the residence, and 1,510 renter households in the control group.

⁷ Please note that we analyze differences in the actual savings amounts and not the savings rate in our matching procedure below. Our propensity score estimation includes the net household income as a regressor. As a result, we will compare households with the same or a very similar net income after the matching is done.

Table 1 Net wealth holdings of households by type of homeownership, weighted, in euro, implicate 1

<i>Net wealth in euro</i>	Mean	P25	Median	P75
Renters	53,464	1,320	11,300	38,600
Owners with mortgage	283,222	71,200	167,200	319,650
Owners without mortgage	464,169	140,380	257,100	455,100
Total	202,353	7,250	53,420	218,300

Source: PHF 2010/11 – Implicate 1

The data confirms other studies, in that it shows substantial differences in both mean and median net wealth between owners and renters. One may argue that this is only an effect of including real estate in the net wealth concept. But the differences are also there for financial wealth (Table 2), indicating that owners are wealthier on average than renters.⁸

Table 2 Financial wealth holdings of households by type of homeownership, weighted, in euro, implicate 1

<i>Financial wealth in euro</i>	Mean	P25	Median	P75
Renters	31,622	1,880	8,330	31,100
Owners with mortgage	64,501	14,800	36,500	84,058
Owners without mortgage	89,975	14,000	44,000	103,200
Total	52,889	4,000	19,200	56,600

Source: PHF 2010/11 – Implicate 1

The variable we are most interested in is the savings behaviour of owners and renters. The descriptive statistics show that homeowners do on average save more than renters. Obviously this would be the case if mortgage repayments are included in the savings concept, but the difference between the two groups remains if one focuses on all regular savings – excluding mortgage repayments - only (see Table 3).

⁸ Further differentiating households by the age cohort of the main income earner shows, that substantial difference in wealth between owners and renters can be observed for all age cohorts. Results are available upon request.

Table 3 Net annual savings of households by type of homeownership (excl. mortgage repayments), weighted, in euro, implicate 1

<i>Annual net savings (excl. mortgage repayments) in euro</i>	Mean	P25	Median	P75
Renters	958	0	300	2400
Owners with mortgage	3,184	240	2,400	6,656
Owners without mortgage	3,467	0	1,229	5,880
Total	2,016	0	720	4,066

Source: PHF 2010/11 – Implicate 1

The comparisons presented above do not take into account, however, that owners and renters do not only differ in terms of their housing situation, but along several other dimensions as well. Therefore, the observed difference in savings levels cannot be attributed to the ownership status (alone). If the two groups differ along income levels, these differences could be responsible to the observed savings levels.

The two groups – renters and owners with a mortgage - differ significantly with respect to several standard socio-demographics and other characteristics in the expected manner (see table 5 in the appendix – line “unmatched”). The most marked differences between owners and renters show up for the household size, income, and regional indicators. Homeowners with mortgages are on average larger, richer, and more likely to be found in rural areas and suburbs than renters.

4. Empirical Strategy – The Matching Procedure

As the descriptive analysis above has shown, homeowners and renters do not only differ in terms of wealth, but also along several other dimensions, like income, household size or employment status. As these variables are influencing the savings behavior of households they need to be controlled for in order to estimate the effect of housing alone on savings levels. In order to test our hypotheses we will therefore look at the savings behavior of renter and owner households with similar characteristics. The characteristics we want to equate can be classified as follows: household demographics, characteristics of the main income earner, region and an indicator for mobility: Household demographics are the household-size (head

count) and the logarithm of household's net income together with an indicator variable of whether the household has received a substantial gift or inheritance in the past. The main income earner's characteristics are the age (also included as a square term), the marital status and the level of education. To account for regional factors we include the degree of urbanization (city centre, suburb, rural area) of the municipality the household lives in. Mobility is represented by a dummy variable indicating that the household has lived in the dwelling he is currently in for several years as opposed to moving in the year of the interview.

One possible standard approach to address this issue would be to estimate a simple OLS regression that controls for various household characteristics and includes a dummy variable for homeowners. With this approach we would have faced the problem of endogeneity of the ownership variable. Furthermore we would have to assume that homeownership and saving levels are related in a linear fashion. In the absence of a good exclusion restriction to alleviate the endogeneity problem (through IV estimation) and no clear guidance on why the effect should be linear, we opted for the matching procedure. The matching approach allows us to compare the savings behavior of renters and homeowners with similar characteristics, without the problems the standard approaches are faced with. The matching approach has its roots in labour market research (Heckman et al. (1998); Heckman et al. (1999); Lechner (1998)), but has been applied in many other fields as well.

The basic idea of the matching methods is to re-establish the conditions of an experiment where a number of households are randomly assigned to a "treatment" group or a control group of similar households which do not receive the "treatment" (Dehejia and Wahba (2002)). If no experimental data is available it is difficult to answer the question, how a household would have behaved if it had not received the treatment ("counterfactual situation"). Simply comparing statistics of the treated and control group, leads to biased results, because the two groups vary along several dimensions other than the treatment status. It is therefore essential to make sure that similar households are included in the comparison. The matching procedure does just that, it is an algorithm to match each treated household to an untreated "twin" household, which shows the same characteristics except the treatment status. By comparing the outcome for the treated households in the hypothetical state (counterfactual) with the actual outcome, the impact of the treatment on savings ("average treatment effect on the treated (ATT)") can be isolated from other influences while keeping the heterogeneity of the households intact. This is an advantage over regression analysis, where the mean impact would be evaluated. Another advantage of the matching over

conventional regression type analysis is that it does not require any assumption about the functional form of the link between treatment and outcome.

The matching method in our case works as follows: We start by splitting the households into two groups, those owning the main residence and those that do not. Note, our theoretical framework implies that owner households with repayment obligations exhibit a different savings behavior than renter households. Instead of matching homeowners and renters we will therefore match only homeowners with a mortgage to renter households. In the classic matching the second step would be to assign each homeowner household with a mortgage one similar “twin” household from the renter households. We use kernel matching, however, which means that not a single household from the control group of renters is linked to each owner with a mortgage, but rather a weighted average of the control group (cf. Lechner (1999); Lechner (2002); Smith and Todd (2001))⁹. The weighting is based on a so called “propensity score” (Rosenbaum and Rubin (1983); Rosenbaum and Rubin (1985)) and in our application an Epanechnikov kernel. The propensity score is estimated from a probit model regressing a “homeownership with mortgage” dummy on several household characteristics. The propensity score indicates the probability for each household to be a homeowner with a mortgage. To improve the quality of the matches we reduce the sample to households with “common support”, i.e. we eliminate households that have a propensity score higher than the maximum or smaller than the minimum in the potential control group (Czarnitzki et al. (2007))¹⁰. We do not use sampling weights to obtain the propensity score. As Fröhlich (2007) argues, weights can be neglected in the estimation of the propensity score if the same sampling methods is used for the source and the target sample, i.e. both the treated and control group are from the same survey, which is the case here.

In order for the matching procedure to yield valid results, the conditional independence assumption (CIA) as described by Rubin (1977)) has to hold. It states that conditional on the propensity score treatment participation (owning the main residence) is statistically independent from treatment outcome (savings behaviour). This CIA helps to overcome the problem that the owner household cannot be observed as a renter household as well, i.e. the counterfactual outcome is unobservable. If the CIA is fulfilled, we can obtain the average outcome of owner households in the absence of ownership from the sample of twin renter

⁹ We also did a classic propensity score matching. The matches were not as good as with the kernel matching. However, the results only changed little.

¹⁰ Only two households owning their main residence and paying back a mortgage had to be deleted from the sample because of lack of “common support”.

households. It implies that all variables that influence the savings behaviour and the ownership status of a household are known and available in the data set (see Aerts and Schmidt (2008)). Unfortunately the CIA cannot be validated empirically (Almus et al. (1999)).

5. Results

At the beginning of the matching process we need to estimate the probability of households to own property. We refer to this likelihood as the propensity score. In order to estimate this likelihood, we specify a probit regression model with a latent independent dummy variable, which is one if the household owns its main residence and is paying back a mortgage, and the above mentioned control variables. The results are presented in table 6 in the appendix. As the descriptive statistics already implied all control variables are significant. The coefficients also exhibit the correct signs, homeownership increases with household size, income and education. Being located in a rural area also increases the propensity to buy a house, whereas being very mobile reduces it. The only surprising result from the probit is the dummy variable of whether the household has received a substantial gift or inheritance in the past. It has a positive sign, one might have expected that receiving an inheritance may reduce the probability of being a owner with a mortgage. The comparison between the control and treatment group after the matching shows, that the matching worked and we are now really comparing similar groups of households, which do not significantly differ on any of our control variables, but on their ownership status (cf. Table 5 in the appendix). The results presented in table 4 below show that ownership is indeed accompanied by higher savings, regardless of whether we look at gross or net savings. Renter households save approximately 4,800 Euros a year or 400 Euros per month less in net terms than similar households that own their main residence, if mortgage repayments on the household main residence (HMR) are taken into account. The differences are highly significant confirming hypothesis one. If one looks at the narrower savings concept and excludes mortgage repayments, the renters save slightly more on average than the owners. The differences are not significant, however. What this finding indicates is that owner households seem to substitute only a small part of their contractual and discretionary savings for mortgage payments. In the absence of mortgage payments owner households would have spent only between 20 and 40 Euro more on other savings.

This result shows that households do not really change their savings behaviour in general but change their consumption behaviour. Hence, the long term commitment of households for

redemption payment can be interpreted as some kind of forced saving. Our second hypothesis is therefore also confirmed. One reason for the observed behaviour may be that the mortgage rate or debt burden for the mortgage is chosen such that it substitutes the rent payments. This is not the case, however. Table 4 clearly shows that the debt burden is significantly higher (about 200 Euros per month) than the rent payments of comparable households¹¹. Owner households do save something in addition to the interest payments required for the loan, because interest payments only account for approx. 4,400 euros of the annual debt burden of 9,616. The remaining 5,200 Euros are saved.

Table 4 Matching Results – Comparison of means between treated and control group

	Variable	Mean: Treated	Mean: Control	Difference (ATT)	Significance Level
Gross Savings	All repayments ¹⁾	12080	6724	5356	***
	Only hmr mortgage repayments	11507	5975	5532	***
	Only consumer loan repayments	6887	6726	161	
	Without any repayments	6314	5977	337	
Net Savings	All repayments ¹⁾	9406	4618	4788	***
	Only mortgage repayments	8834	3869	4965	***
	Only consumer loan repayments	4213	4620	-407	
	Without any repayments	3641	3871	-230	
Rents and debt service	Rent vs. Mortgage debt service	9616	6887	2729	***
	Rent vs. Mortgage interest rate	4412	6887	-2475	***
	Rent vs. Mortgage repayment	5204	6887	-1683	***

Source: PHF survey 2010-11, implicate 1.

¹¹ Note, for this comparison to be valid we have to assume that owner households bought properties that are similar to those of the renter group we compare them to. This is not controlled for in our analysis.

Notes: All values are annual amounts in Euro. Bootstrapped standard errors (50 replications) used in the calculation of significance tests. *** 99% significance level ¹⁾ excl. mortgages on other properties

6. Conclusions and Future Research

In this paper we analyze the differences in savings behavior of households in Germany. We use the PHF and its large number of questions on savings in the PHF to shed light on the differences in savings behavior between households owning their main residence and renter households. This is an essential topic if one wants to understand the different wealth levels observed for these groups. What is more, cross-country evidence on household wealth suggests that increasing homeownership rates as seen recently may alter total savings by the household sector in Germany.

We show that households which own their main residence do save more than comparable households that do not. The main reason for this seems to be the fact that owner households do not substitute contractual savings with mortgage repayments, but save on top. This is plausible for two reasons: first, a large parts of the savings of households in Germany is usually saved in long term contracts (e.g. pension contracts, whole-life insurance), which are costly to terminate prematurely. If the household can afford to pay the mortgage rates and interest, without dissolving long term contracts, it has every incentive to do so. Second, banks in Germany usually require their borrowers to pay back at least some part of the mortgage loan each month, i.e. households have virtually no option to just pay interest. This system can be seen as inducing some forced savings for owner households.

Appendix

Table 5: Control variables for propensity score model – matched vs. unmatched

Variable		Mean		t-test	
		Treated	Control	t-value	p>t
Propensity Score	Unmatched	0.571	0.221	35.11	0.000
	Matched	0.570	0.566	0.35	0.725
HH-Size: 2 members	Unmatched	0.409	0.368	1.94	0.052
	Matched	0.409	0.397	0.56	0.579
HH-Size: 3 members	Unmatched	0.195	0.126	5.43	0.000
	Matched	0.195	0.206	0.33	0.738
HH-Size: 4 members	Unmatched	0.191	0.074	9.41	0.000
	Matched	0.191	0.231	-1.14	0.256
HH-Size: 5+ members	Unmatched	0.085	0.033	6.27	0.000
	Matched	0.085	0.080	0.93	0.352
Log. of annual net hh income	Unmatched	8.111	7.476	23.40	0.000
	Matched	8.105	8.090	0.57	0.566
Inheritance or Gift received (dummy)	Unmatched	0.420	0.203	11.25	0.000
	Matched	0.420	0.411	0.36	0.719
Age of Referenzperson	Unmatched	50.589	49.749	1.16	0.247
	Matched	50.627	50.828	-0.34	0.737
Refpers. is married (dummy)	Unmatched	0.824	0.457	17.99	0.000
	Matched	0.825	0.823	0.10	0.924
Edu. RP: ISCED-Level 2	Unmatched	0.514	0.562	-2.16	0.031
	Matched	0.513	0.494	0.74	0.461
Edu. RP: ISCED-Level 3	Unmatched	0.432	0.308	5.89	0.000
	Matched	0.433	0.426	0.27	0.784
Loc. of dwelling: close to city centre	Unmatched	0.255	0.357	-4.96	0.000
	Matched	0.255	0.225	1.40	0.163
Loc. of dwelling: suburb	Unmatched	0.355	0.291	3.15	0.002
	Matched	0.356	0.374	-0.72	0.473
Loc. of dwelling: rural area	Unmatched	0.329	0.187	7.71	0.000
	Matched	0.328	0.340	-0.53	0.596
Moved in 2010/11	Unmatched	0.067	0.234	-10.08	0.000
	Matched	0.067	0.067	0.06	0.950

Source: PHF survey 2010-11, implicate 1

Table 6: Probit Estimation for probability to own household main residence and repay mortgage

Variable	Coefficients and standard errors
HH-Size: 2 members	0.282** (0.116)
HH-Size: 3 members	0.465*** (0.136)
HH-Size: 4 members	0.662*** (0.149)
HH-Size: 5 members	0.720*** (0.178)
Log. of annual net hh income	0.711*** (0.068)
Substantial Gift received	0.428*** (0.070)
Age of Referenceperson	0.128*** (0.015)
Age of Referenceperson squared	-0.001*** (0.0001)
Referenceperson is married	0.276*** (0.092)
Edu. RP: ISCED-Level 2	0.300*** (0.125)
Edu. RP: ISCED-Level 3	0.261*** (0.132)
Loc. of dwelling: close to city centre	0.328*** (0.120)
Loc. of dwelling: suburb	0.571*** (0.118)
Loc. of dwelling: rural area	0.916*** (0.122)
Moved in 2010/11	-0.646*** (0.107)
constant	-10.419*** (0.629)
Number of Observations	2,280
Log Likelihood	-1006.214
Correctly classified observation (Pr(D)>0.5 => dependent variable=1)	78.5%
Pseudo – R2	0.311

Source: PHF survey 2010-11, implicate 1.

Table 7: Matching Results – extended

			Mean in Euro		t-tests		
Variable			Treated	Control	t-value	p>t	
Gross savings	All repayments ¹⁾	Unmatched	12091	3654	27.37	0.000	
		Matched	12080	6724	9.07	0.000	
	Only mortgage repayments	Unmatched	11520	3187	27.75	0.000	
		Matched	11507	5975	9.08	0.000	
	Only consumer loan repayments	Unmatched	6904	3647	11.89	0.000	
		Matched	6887	6726	0.37	0.714	
	Without any repayments	Unmatched	6333	3180	11.87	0.000	
		Matched	6314	5977	0.79	0.428	
	Net savings	All repayments ¹⁾	Unmatched	9425	2123	19.27	0.000
			Matched	9406	4618	10.58	0.000
Only mortgage repayments		Unmatched	8854	1656	18.68	0.000	
		Matched	8834	3869	8.27	0.000	
Only consumer loan repayments		Unmatched	4238	2116	6.03	0.000	
		Matched	4213	4620	-0.74	0.462	
Without any repayments		Unmatched	3667	1649	5.62	0.000	
		Matched	3641	3871	-0.31	0.755	
Rents and debt service		Rent vs. Mortgage debt service	Unmatched	9622	4768	22.09	0.000
			Matched	9616	6887	7.86	0.000
	Rent vs. Mortgage interest rate	Unmatched	4424	4768	-2.09	0.000	
		Matched	4412	6887	-11.14	0.000	
	Rent vs. Mortgage repayment	Unmatched	5198	4768	2.42	0.000	
		Matched	5204	6887	-19.79	0.000	

Source: PHF survey 2010-11, implicate 1.

Notes: All values are annual amounts in Euro. Bootstrapped standard errors (50 replications) used in the calculation of t-tests. ¹⁾ excl. mortgages on other properties

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