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"The German Saver" and the Low Policy Rate Environment

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Halle

"THE GERMAN SAVER" AND THE LOW POLICY RATE ENVIRONMENT

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Reint E. Gropp, Vahid Saadi

1 Introduction

It is widely claimed that "the German saver" suffers (i.e. generates significantly lower returns on her savings) in the low interest environment that Germany currently experiences relative to a high interest rate environment. With "low interest rate environment", the observers tend to mean "low policy rates", i.e. the European Central Bank's (ECB) main refinancing rate. The ECB's main refinancing rate is plotted in Figure 1 and shows indeed the much lower level during the past several years relative to earlier in the decade and even any other post-war period (not shown). The arguments at first glance seem convincing: German households tend to be net-savers. On average, they save significantly more than they borrow. The median household's net wealth (including real estate) is about 50 thousand Euro and the median renter's net wealth is about 10 thousand Euro.[1] Furthermore, they tend to save in liquid (savings-) deposits and life insurance plans, both of which are particularly affected by the low policy rate environment.

In this report, we aim to contribute to this debate by empirically documenting six facts:

1. The return on the portfolio of the average German household was significantly **higher** in 2010 to 2015, i.e. in the low policy rate environment, than in the pre-crisis period of 2003 to 2007 (see Table 1). In real terms, i.e. adjusted for inflation, these differences are even larger. At the same time, households benefited from lower interest on new loans.
2. Aggregating these higher returns in Euro terms across 40 million households in Germany, we obtain a **total Euro benefit of more than 364 billion Euro over a five-year perio**d relative to 2003 to 2007.
3. This is true across the income distribution in Germany, i.e. it holds for low income as well as for high income households, but only for homeowners. Renters were slightly worse off (at most a few hundred Euro over a five-year period). There are a number of reasons for this effect:
    a. Interest rates on savings accounts and other deposits did not benefit very much from the high policy rate environment. Hence, the reduction in yield in the low policy rate environment is relatively small.
    b. At the same time, returns on equity and, most importantly, real estate increased substantially in the low policy rate environment. The increase in returns over-compensates the loss due to savings accounts and life insurance assets.
4. The low policy rate environment re-distributed wealth from low income renters to high income homeowners. 66% of the total benefit of 364 billion Euro accrues to high income homeowners.

[1] For more details consider "The Eurosystem Household Finance and Consumption Survey Methodological Report for the First Wave"; Statistics Paper Series, ECB; No. 1 April 2013.

5. The low policy rate environment benefits those households with a balanced portfolio that includes real estate and equity in addition to savings accounts and life insurance and hurts renters with savings only in deposits.[2]

6. Households also benefited from lower interest cost on new loans taken out in the period. These effects are small (less than 20 billion Euro for all households during the five-year period), because the lower policy rates are not fully reflected in retail interest rates, especially for overdrafts and consumer loans.

2 Return on average households' asset holdings

We take the following approach to analyze the evolution of return on the average German household's portfolio of assets: In order to calculate the portfolio of the representative households in each income quartile, we use the Eurosystem Household Finance and Consumption Survey (HFCS)[3] from 2010. Since this data is only available for 2010, in the following we assume that households do not rebalance their portfolio and keep portfolio shares of different assets at the 2010 level.[4] Figure 2 presents the composition of average wealth of German households in income quartiles. Figure 3 shows the relative amount of each asset class to the total wealth.[5] This is what we use as the households' portfolio weights. The figures confirm common wisdom about the portfolios of German households: The largest share is real estate, followed by deposits and life insurance. Equity investment and bonds are below 2% of portfolios even for households in the top income quartile. Nevertheless, the share of equity and bonds are increasing across the income distribution while the share of deposits is decreasing. In the following, we take these portfolio weights as given and calculate the annual return for each income quartile in each quarter.[6] We compare the current low policy rate period (mid-2010 to mid-2015) to the pre-crisis period (2003-2007), in which policy rates were at "normal" levels (around 2%-4%).

We do not observe the actual returns on the respective portfolios of households. Instead, we use average values and make some simplifying assumptions. For example, we bundle pension-plans, life insurance together with deposits and assume that the households earn the deposit rate on three portfolio components. This is due to the difficulty in finding reliable return data on pension and insurance schemes.[7] The data on average yearly deposit rates with a monthly frequency come from the Bundesbank. We also assume that the average German household invests in the DAX portfolio if she reports any equity holdings. Therefore, we consider the yearly return of DAX as equity returns. Moreover, we assume the investors buy only long-term German government bonds, therefore they earn yields on long-term German bonds for which we collect the data from St. Louis Federal Reserve Economic Database. Finally, we collect house price index from the Bank for International Settlements' Property Price Index.

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2 See also: "Real Net Assets of Private Households in Germany Shrank Between 2003 and 2013"; DIW; Press Release of 19 August 2015.

3 https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn.en.html.

4 We compared the micro data from the HSFC to aggregate data for all German households from the Bundesbank. These data show very little rebalancing of portfolios over time.

5 As is common in the literature, we exclude durable household consumption, such as cars and household appliances from total wealth.

6 At the end of each quarter, we calculate the return of each portfolio during the last four quarters (holding-period of one year). Calendar-year's return on each portfolio is then the average of end-of-quarter yearly returns.

7 This assumption is quite conservative, as one would hope that life insurance companies invest the money of their clients better than by simply putting them on a savings account. It also biases post crisis returns downward.

Figure 4 presents the average yearly return on deposits, bonds, equities and real estate separately. Average yearly deposit rate has been about 2% since 1996 until 2008 where it starts to gradually decline to just above zero in 2015. Yields on long-term bonds decline from 8% in 1990 to about 4% prior to the financial crisis and to just above zero in 2015. Equity returns are more volatile with two sharp declines for the dot.com bubble burst of 2001-02 and the financial crisis of 2008-09 and a strong increase recently. Finally, the non-commercial real estate market did not show any particular trend until 2009. Since then, real estate prices have appreciated strongly in Germany. Even at this level of analysis, it is clear that the question to which extent the average German household "suffered" or "benefited" in the low policy rate environment depends on her portfolio. While households that invested only in deposits may indeed have suffered, a low policy rate environment benefits those that hold a more diversified portfolio that includes real estate and equity.

Combining the return data with the household portfolio share data, we obtain a stylized portfolio return for German households. We calculate these portfolio returns across the income distribution for homeowners as well as renters and in nominal and in real terms (adjusted for ex post inflation). The results are presented at Figures 5-8. For households with an average portfolio composition performance during 2010 to 2015, when monetary policy rates declined rapidly to zero, was significantly better than in the years 2003 to 2007, when monetary policy rates were at "normal" levels of 2%-4%. The improvement is very substantial at around 10% over the five-year period and benefits both low and high income households (see Table 1). In real terms, the low policy rate environment was even more beneficial to essentially all households. The only exception being renters, i.e. households without real estate, who earned lower returns of about 1%-2% over five years.

We can translate these differences in returns into Euro amounts. For households with some real estate, the gains are quite substantial and vary from 5,000 Euro for low income households to more than 30,000 Euro for high income households. For renters, there are small losses that vary from 340 Euro to 1,400 Euro across the income distribution.

3 Interest cost on average households' liabilities

The net savings position of a household not only depends on her assets, but also on her liabilities. It is obvious that in a low interest environment, those that borrow money may benefit. However, as we will see, this benefit is surprisingly small due to the incomplete pass through of policy rates to retail interest rates.

Unlike for household assets, where we can simply use the asset composition of households, for liabilities we need to distinguish between loans taken out before the low policy rate environment and new loans. The interest saving effect arises only for new loans. While this distinction makes little difference for short term loans like overdrafts or consumer loans, it is important for mortgages. At the same time, mortgages are the single largest liability of households. Since we do not have access to representative data on the distribution of new loans taken out across the income distribution, we instead use aggregate monthly issuance of mortgages, consumer loans and overdrafts for all households complemented by the respective interest rates. Both data were obtained from the Bundesbank.[8]

Using total monthly issuance of different types of debts to all households in Germany and the corresponding interest rates, we can calculate the total interest payments of households during 2010-2014. Next we can compare this with a hypothetical case where the same amounts are assumed to be

[8] http://www.bundesbank.de/Navigation/EN/Statistics/Time_series_databases/Macro_economic_time_series/macro_economic_time_series_node.html.

borrowed during 2003-2007. The difference between these two gives us the benefits accrued to households due to lower interest rates.

Figure 9 shows the monthly amount of borrowing by German households in aggregate. In total, Germans borrow about 70 billion Euro per month. Most of this comes in the form of overdrafts on checking accounts. Mortgages comprise about 15 billion Euro and consumption loans about five billion Euro per month. Figure 10 shows the interest rates that households have to pay on each class of liabilities. As it is seen in the figure, interest rates on almost all types of debt instruments have declined during the last few years, although for some debt categories this decline has been surprisingly small. The pass through from policy rates to retail rates is asymmetric. All interest rates rise sharply in response to contractionary monetary policy (prior to the financial crisis), but only decline slowly or not at all in the recent low interest rate environment. Among the different debt categories, mortgage rates are more sensitive, whereas consumer loans and credit card debt show only very sluggish downward adjustment.[9]

To calculate the interest payments, we assume a maturity of twelve months for consumption loans and one month for credit card debt. For mortgages, to be conservative, we only consider the interest payments from the time of issuance until the end of the period under study, i.e. December 2014. Finally, we sum up the interest payments of the issued loans during 2010-2014, and compare it with the total interest payments of exactly the same borrowing but under the assumption that the interest rates were equal to those of 2003-2007. The difference between these two is 19 billion Euro. This is the benefit from total borrowings of German households during the recent low-interest environment in comparison to the years prior to the crisis. The bulk of this benefit comes from mortgage borrowings, due to the longer maturity of mortgage loans and sharper decline in mortgage rates after 2009.[10]

4 Aggregate effects

As a final step, we calculate the overall effects on households in Euro terms by income quartile. We obtained the average household size in Germany of 2.04 individuals in 2010 from the HFCS. For simplicity, we assume that it has been constant at 2 individuals per household during the last decade. That implies that there are about 40 million households in Germany, hence in each income quartile there are ten million households. Homeownership varies across the income distribution. Homeownership rate is 20% for low income households, 39% (49%) for the second (third) quartile and 70% for high income households. Using this information and multiplying the total benefits (relative to 2003-2007) from assets (see Table 1) that we calculated in previous sections for each income group, we find a total benefit of 9.4 billion Euro for low income households (households in the first income quartile), 36 (69.5) billion Euro for the second (third) income quartile and a total benefit of 230 billion Euro for high income households. In total, German households are better off due to higher returns on their savings in the low policy rate environment relative to 2003-2007 by 345 billion Euro (see Table 2).

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[9] This is consistent with recent academic evidence. See for example *Gropp, R. E.; Kok, C.; Lichtenberger, J.-D.:* The Dynamics of Bank Spreads and Financial Structure, in: Quarterly Journal of Finance, Vol. 4 (4), 2014, 1-53. They show for a set of European countries that the speed of pass through from policy rates to retail rates depends on competition among financial institutions and on competition between financial institutions and financial markets.

[10] Note that we do not consider the whole lifetime of the mortgage until maturity. We only consider the difference in interest payments from the time of issuance until the end of June 2015. If we consider that mortgages mature on average after 20 years, our results will become much stronger. Moreover, we ignore all the benefits from refinancing opportunities (It is shown in the literature that households with an outstanding mortgage in fact benefit from lower rates (*Di Maggio et al.,* 2014)). Again, our results are very conservative in the sense that we assume nobody refinances his/her outstanding mortgage.

This total benefit hides some important distributional effects. High income home owners benefit disproportionally, renters lose. 67% of the total gains accrue to high income homeowners. At the same time, the Euro amounts of the losses to renters are small and vary from less than 100 Euro for low income households to just above 1,300 Euro for high income households for a five-year period, i.e. less than 20 (260) Euro per year for low (high) income households.

Given data limitations, we are unable to allocate the total savings from reduced interest rates on new household debt that we calculated in the previous section (19 billion Euro) across the income distribution. However, given that these interest savings largely arise from new mortgage debt, we would conjecture that these benefits also disproportionally accrue to high income households, who are more likely to be homeowners. Nevertheless, taking the higher returns and the lower borrowing cost together, the low policy rate environment resulted in a benefit to German households of 364 billion Euro during 2010 to 2015.

5 Conclusion

The low policy rate environment affects both the return of savers on their assets as well as the interest rate borrowers pay on their liabilities less than commonly thought. Households' average return, even for low income households, is not significantly different in the low policy rate environment as it has been in more "normal" times. Considering that inflation rates were also lower in the low policy rate environment, real returns to most households were higher than in 2003 to 2007, largely due to the appreciation of real estate prices. At the same time, while households that borrow benefit from low policy rates, they do not benefit by as much as previously thought due to the fact that banks are slow to pass on low policy rates to their customers. On a net basis, the average household in Germany, despite being a net saver, benefited from the low policy rate environment. Of course for each individual household, this depends crucially on the composition of her portfolio. Households with a balanced portfolio including real estate and equity fared better than those with all of their savings in savings accounts. This result simply re-iterates what many observers have emphasized for a long time: The low share of homeownership and the low participation rate in the stock market hurts the return German households are able to obtain on their savings.

Aggregating these higher returns and lower interest costs across households, households benefited from the low policy rate environment by 364 billion Euro in real terms, i.e. adjusted for inflation. There are, however, significant redistributive effects. Low income renters do not benefit, but lose under the low policy rate regime, although by individually small amounts. High income homeowners benefit disproportionally, because they benefit from lower interest on mortgages and from the appreciation of real estate values. We concede that the gains on equity and real estate are unrealized gains and therefore have a somewhat different quality than interest income from a savings account. Hence, ideally one would need to calculate risk adjusted returns, but this is beyond the scope of this note.

What are the theoretical underpinnings of this result? The costs and benefits in terms of deposit rates and borrowing cost to consumers coming from a central bank's policy rate depend on the speed of and extent to which these policy rates are passed through to retail rates. The literature shows that this speed is a function of the competition between financial institutions, and the competition between financial institutions and financial markets. In the absence of such competition, policy rates have an effect on retail rates that is asymmetric in two dimensions: One, it is asymmetric in the sense that high policy rates are only partially reflected in deposit rates. This is the reason for the surprisingly small effect of the low policy rate environment on deposit rates: Deposit rates even in the high policy rate environment were quite low and, hence, in absolute terms had little room to decline when policy rates

declined, even though banks reacted quickly to the low policy rate environment. Second, borrowing rates fully reflected the high policy rate environment, but with the exception of mortgages did not decline by the full change in policy rates. This is especially true for rates on overdrafts of checking accounts.

Finally, it is not a coincidence that equities and real estate values appreciated in the low policy rate regime. Standard finance text books show that stock prices are simply the discounted value of future corporate profits. If firms face lower costs on debt and profits are discounted by a lower discount rate, stock prices tend to rise. Similarly, if interest rates on mortgages fall, demand for real estate may rise, leading to an appreciation of house values. Further, households may find the return on savings accounts unsatisfactory and switch to other asset classes, resulting in an appreciation. This is precisely why one should be concerned about the formation of bubbles both in equity and real estate markets in the context of a low policy rate regime. The true cost to households may indeed only arise once the central bank ends the expansionary monetary policy, not while the expansionary monetary policy is ongoing.

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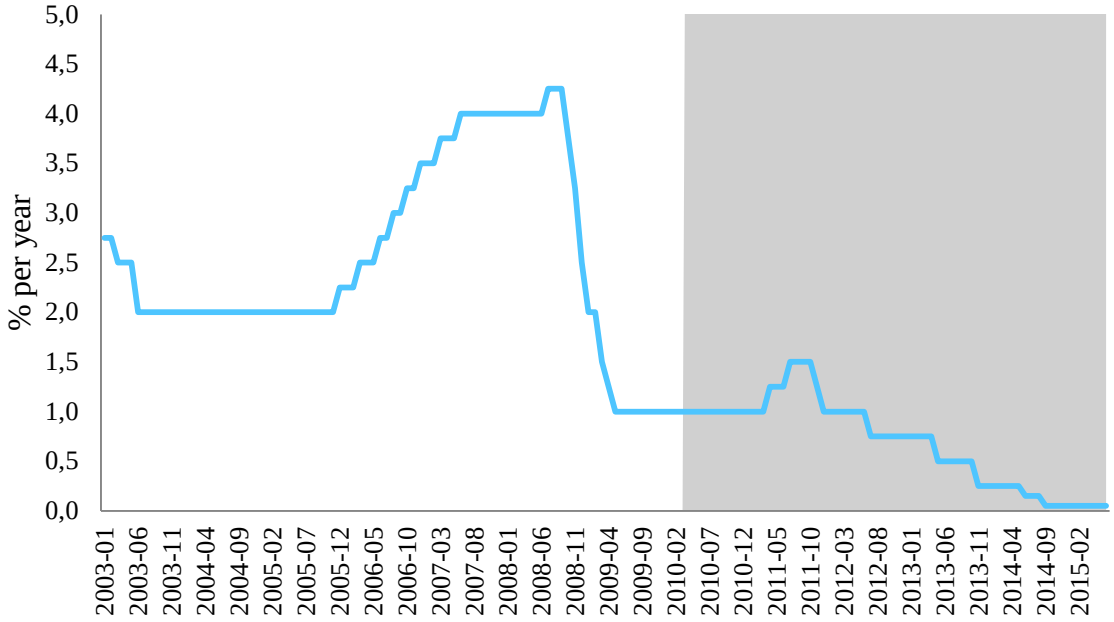
The Eurosystem Household Finance and Consumption Survey Methodological Report for the First Wave; Statistics Paper Series, ECB; No. 1 April 2013.

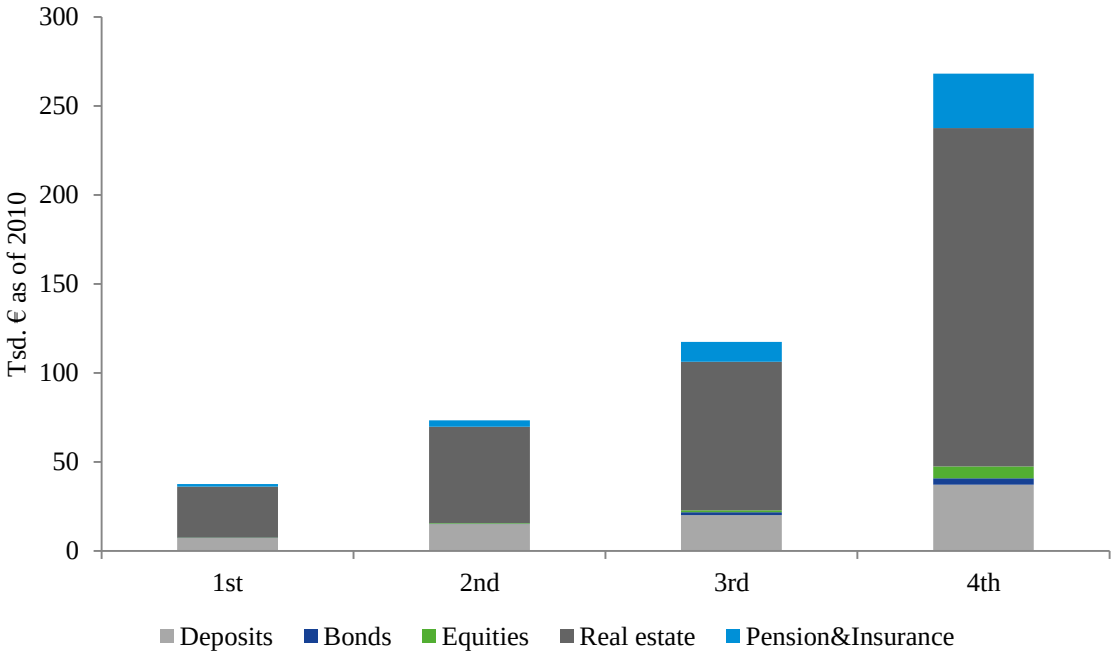
Figures

Figure 1:
Monetary policy rate
ECB's main refinancing rate



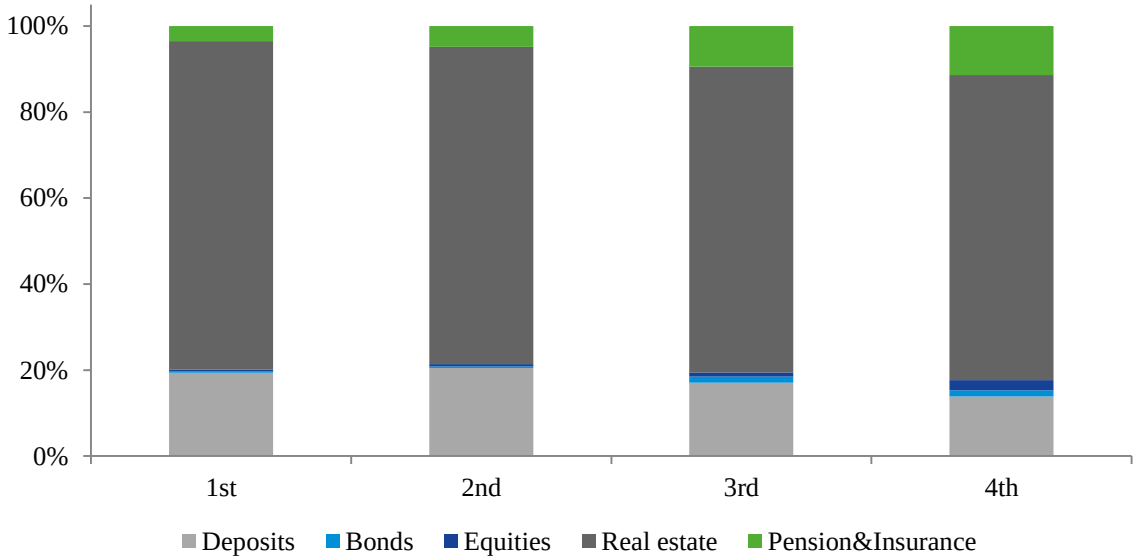
Sources: Bundesbank's Time Series Database; own calculations and illustration.

Figure 2:
Households' asset holding in absolute terms
for households in each income quantile



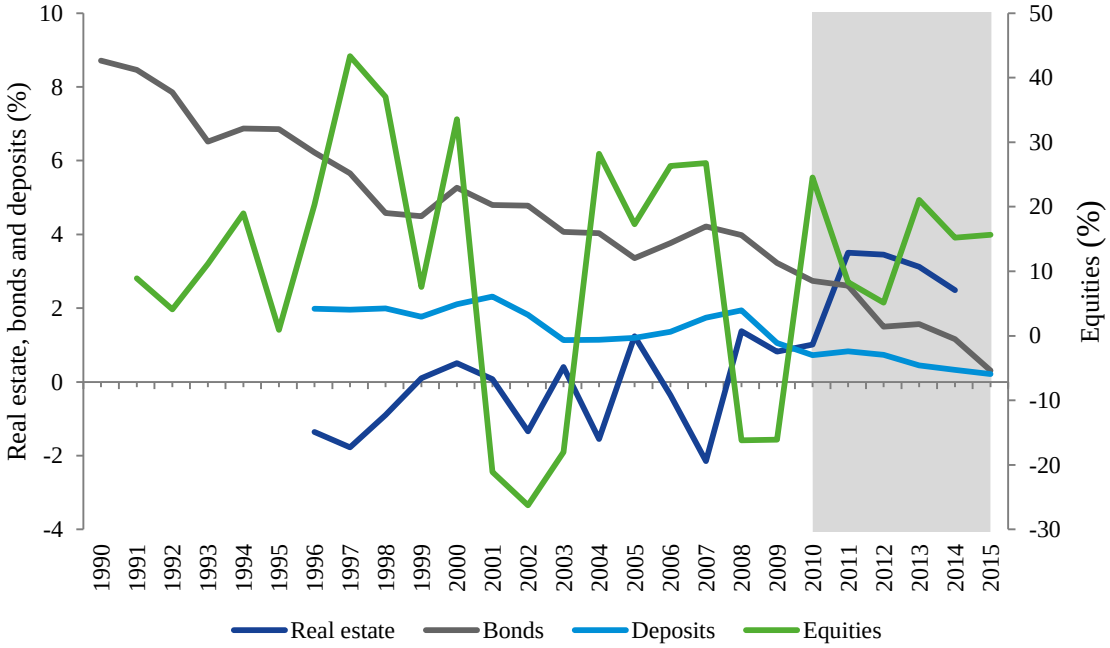
Sources: Eurosystem's HFCS; own calculations and illustration.

Figure 3:
Households' portfolio weights
for households in each income quantile



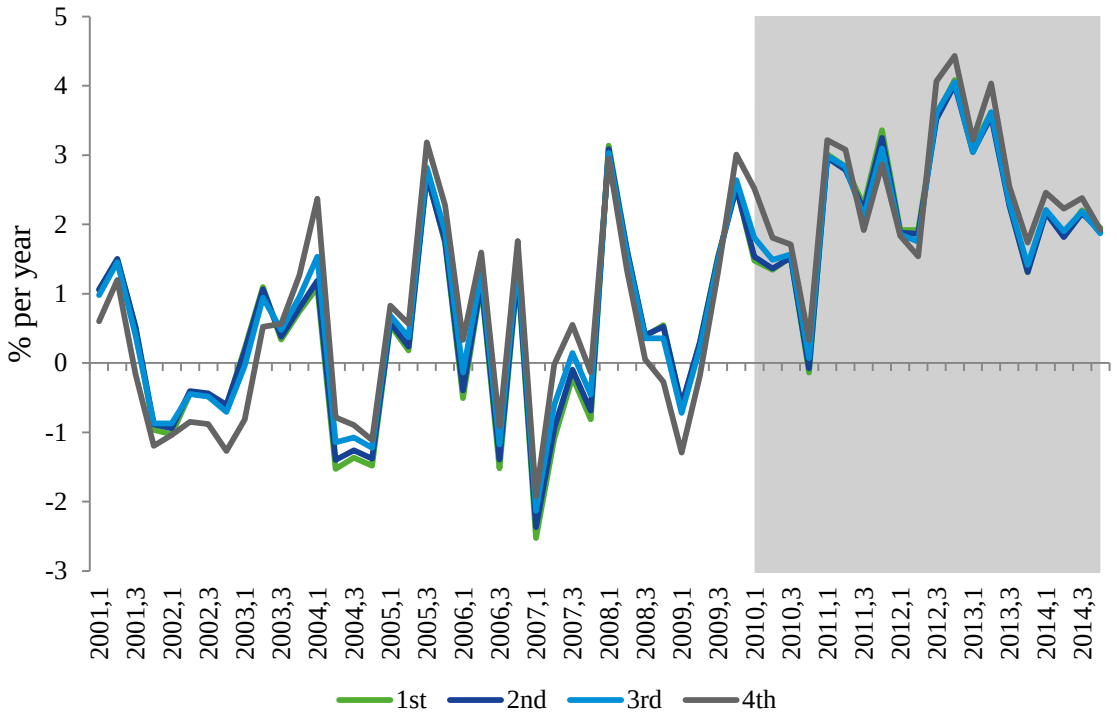
Sources: Eurosystem's HFCS; own calculations and illustration.

Figure 4:
Returns on different classes of assets
average yearly return on assets



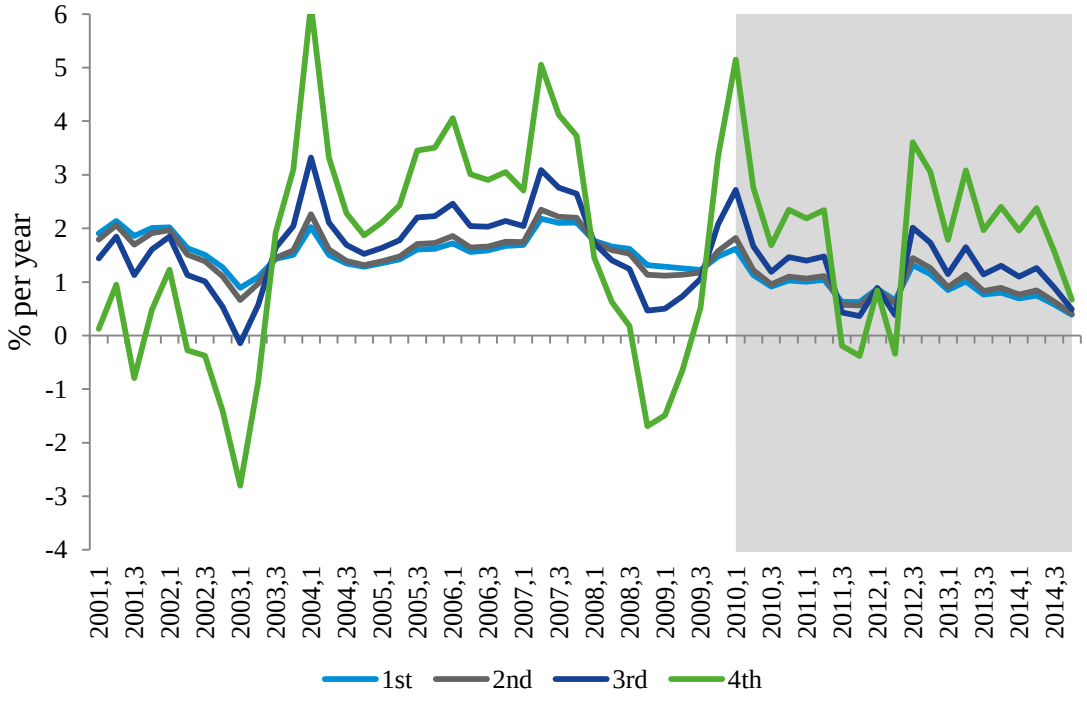
Sources: BIS; FRED; Bundesbank's Time Series Database; own calculations and illustration.

Figure 5:
Return on households' portfolio
for households in each income quantile



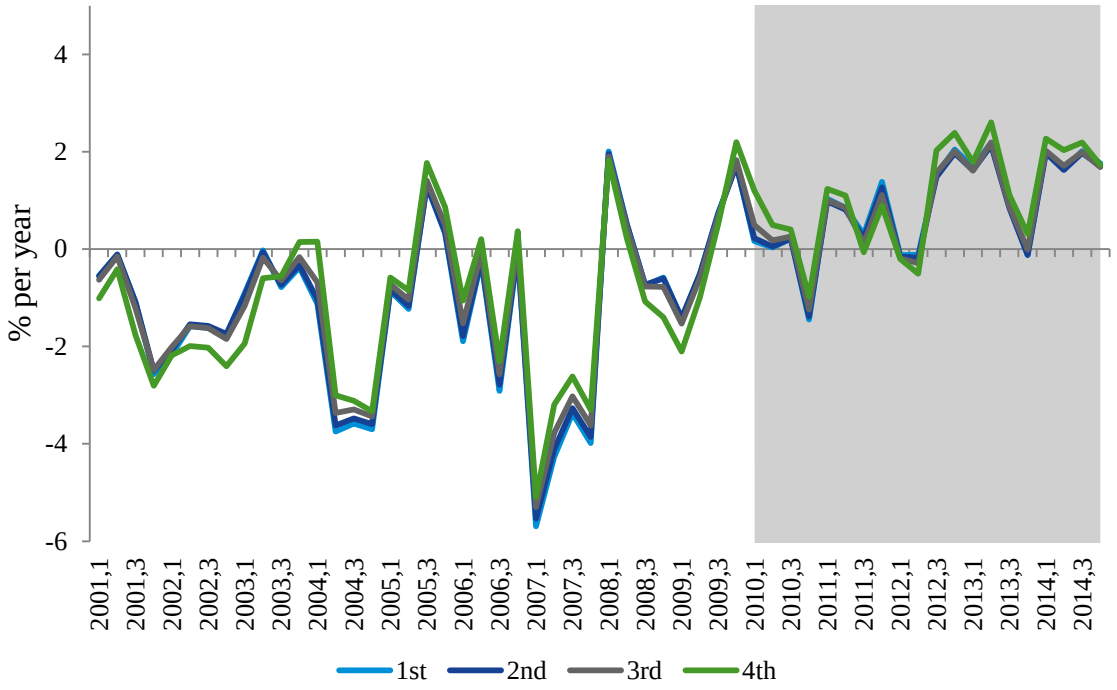
Source: Own calculations and illustration.

Figure 6:
Return on renters' portfolio
for households in each income quantile



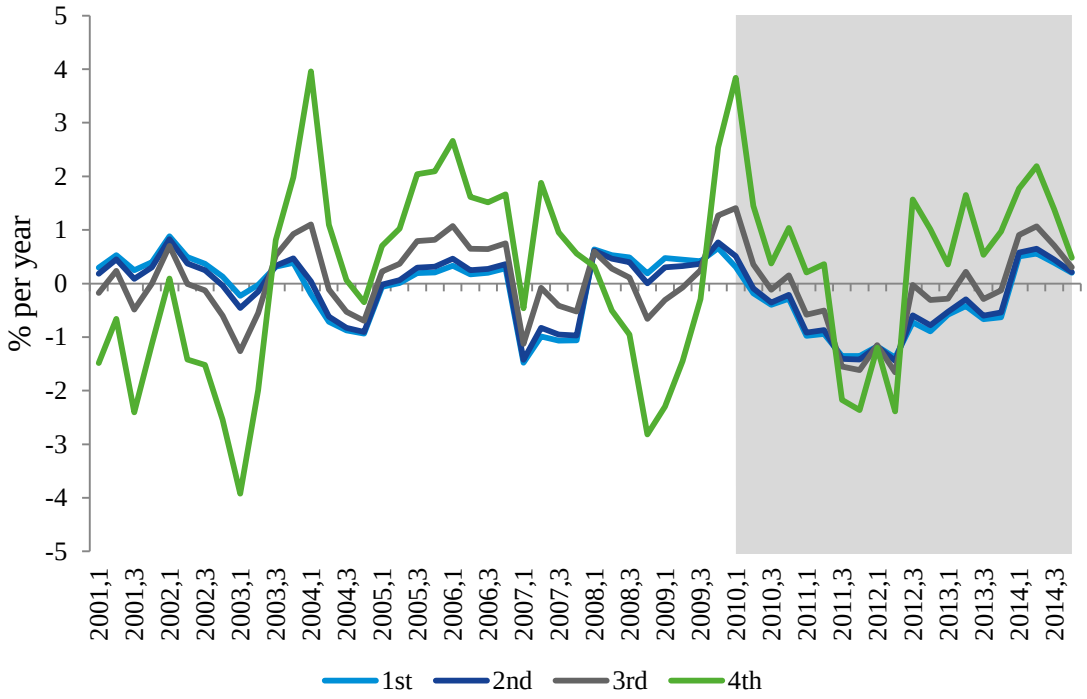
Source: Own calculations and illustration.

Figure 7:
Inflation-adjusted return on households' portfolio
for households in each income quantile



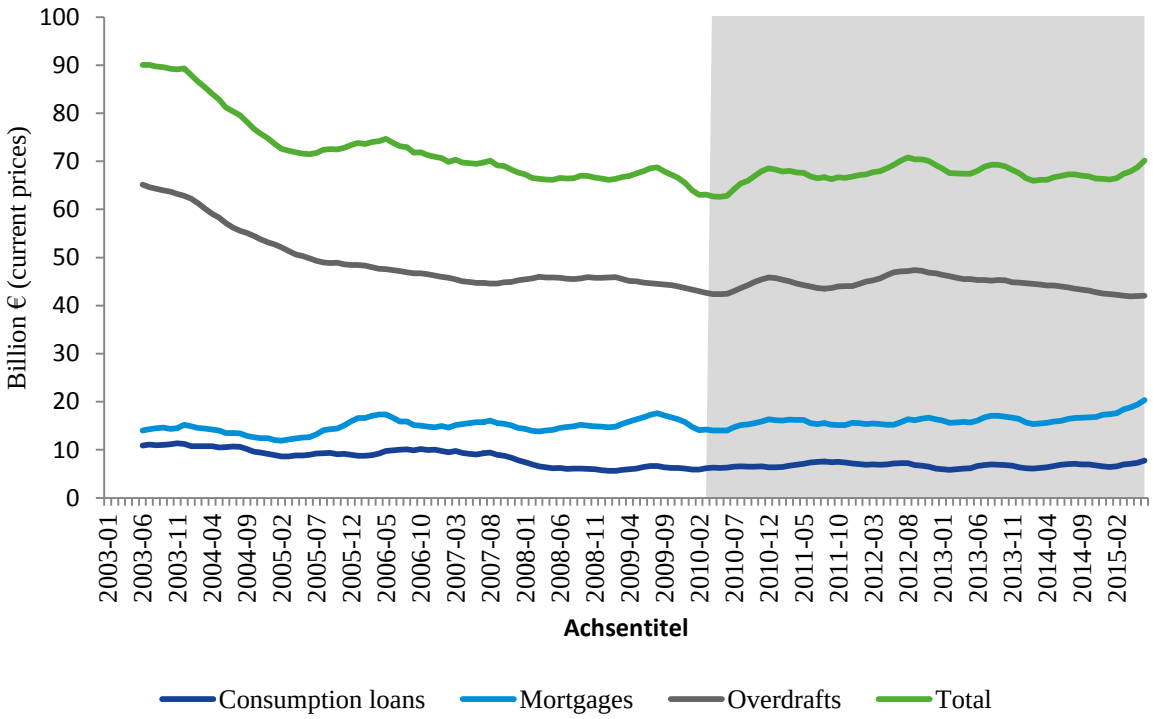
Source: Own calculations and illustration.

Figure 8:
Inflation-adjusted return on renters' portfolio
for households in each income quantile



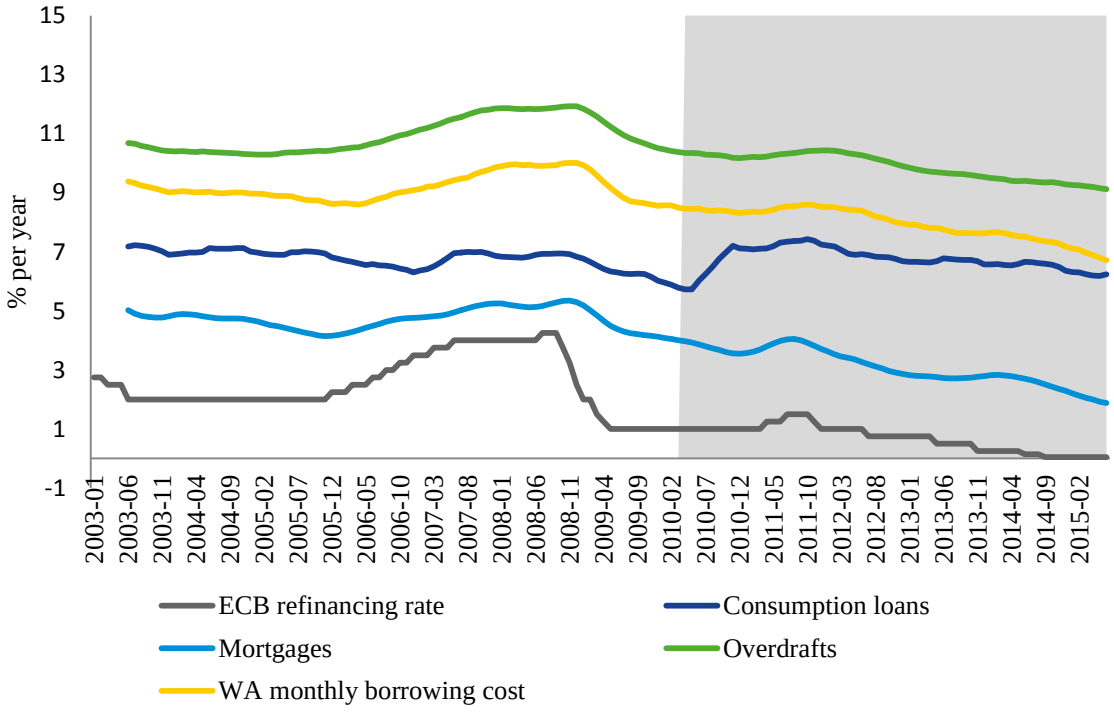
Source: Own calculations and illustration.

Figure 9:
Aggregate monthly borrowing
households' total borrowing per month



Sources: Bundesbank's Time Series Database; own calculations and illustration.

Figure 10:
Cost of borrowing
nominal cost of borrowing



Sources: Bundesbank's Time Series Database; own calculations and illustration.

Tables

Table 1:
Return on portfolios

total return on households' portfolio during 5-year periods				
	2003-2007		2010-2014	
	low income	high income	low income	high income
nominal return (%)	0.0	2.3	11.9	13.1
(in €)	2	6,188	4,478	35,078
real return (%)	–9.0	–6.9	4.5	5.6
(in €)	–3,376	–18,392	1,703	15,063
total return on renter's portfolio during 5-year periods				
	2003-2007		2010-2014	
	low income	high income	low income	high income
nominal return (%)	8.2	14.5	4.5	10.1
(in €)	724	11,335	401	7,875
real return (%)	–1.4	4.5	–2.5	2.8
(in €)	–123	3,538	–220	2,162

Source: Own calculations.

Table 2:
Aggregate real benefits to households

	income quartiles			
	1st	2nd	3rd	4th
homeowners' benefit from asset returns (€ per households)	5079	9574	14676	33455
renters' benefit from asset returns (€ per households)	–97	–216	–483	–1376
homeownership rate (%)	20	39	49	70
real benefit to income group (billion)	9.4	36.0	69.5	230.1
total benefit to German households (billion)	344.9			

Sources: Eurosystem's HFCS; own calculations.

Table 3:
Household's portfolio shares

income quartile	deposits	bonds	equities	real estate	pension&insurance
1st	19.4%	0.4%	0.4%	76.4%	3.5%
2nd	20.5%	0.4%	0.5%	73.8%	4.9%
3rd	17.1%	1.4%	1.0%	71.1%	9.4%
4th	13.8%	1.4%	2.5%	70.9%	11.4%

Sources: Eurosystem's HFCS; own calculations.

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