

## German households' portfolio decisions and balance sheet dynamics from a monetary policy perspective

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### Abstract

Financial accounts provide valuable insights into households' financial portfolio behaviour and allow drawing implications with regard to the impact of monetary policy on the macroeconomy through households' balance sheets. The analysis of German households' portfolio decisions in the context of changing portfolio returns and evolving macroeconomic dynamics reveals a persistent liquidity preference and risk aversion, even in the current low-interest-rate environment. In fact, real portfolio returns do not turn out to be a major determinant of households' investment behaviour and the Eurosystem's Asset Purchase Programme seems to have induced household portfolio rebalancing only to a limited extent. Moreover, the reaction of household spending to changes in liquid asset holdings is different from the reaction to changes in less liquid asset holdings, debt or housing wealth. Therefore, these components of household balance sheets are likely to impact on consumption behaviour in different ways. Analyses suggest that monetary policy transmission through the household sector in Germany is different from that in Anglo-Saxon economies: Other things equal, rises in house prices reduce aggregate consumption, and lower interest rates are likely to be less effective in stimulating household spending.

**Keywords:** wealth effects; rate of return; low interest-rate environment; portfolio choice; consumption.

### 1. Introduction

Nominal interest rates have fallen to historically low levels since the outbreak of the great financial crisis, particularly for bank deposits. Their nominal interest rates are now at zero or in some cases even in negative territory. More specifically, while many banks have increased the fees they charge for banking services, a few of them even started charging negative nominal interest rates on savers' transferable deposits. This has affected German households and their financial portfolios, as they traditionally hold a significant portion of their financial assets in the form of deposits. Thus, the property income they earn on a substantial part of their portfolios has shrunk to unprecedented levels in recent years. These developments have caused an ongoing public debate whether saving is still worthwhile when interest rates tend to zero or whether households could just as well lower their saving efforts.<sup>1</sup>

In order to shed some light on this issue, however, a comprehensive conception of households' financial portfolio returns, which takes into account the complete portfolio structure including all major non-deposit investment instruments as well as controlling for the influence of inflation on purchasing power, is crucial. This real total portfolio return allows for the assessment of its determinants, including the macroeconomic and monetary policy environment as well as households' portfolio decisions. Moreover, the degree to which portfolio returns influence portfolio decisions can be analysed. This influence, as will be demonstrated, is less clear-cut due to additional, more important drivers like wealth, preferences and demographic factors which seem to play a crucial role in determining portfolio decisions.

The current low-interest-rate environment in Germany, moreover, is associated with increases in house prices. This raises the question of whether there is a transmission of these price increases via consumption on economic activity similar to the pre-crisis developments observed during the house

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<sup>1</sup> For examples of this public debate refer to Bindseil et al. (2015).

price booms in the US, UK, Spain or in Ireland. While wealth levels and their prices generally affect households' spending behaviour, the direction and size of this effect is conceptually ambiguous. This financial accelerator effect is likely to be time-varying, country-specific and to depend on factors such as the portfolio structure, credit market architecture and the general institutional setting. In this respect, Germany turns out to differ significantly from the Anglo-Saxon economies.

As financial accounts provide in-depth insights into households' investment and financing behaviour and as they display the relevant developments in the portfolio structure, they are a valuable and readily accessible source of information to address the issues raised above. German financial accounts were first published in 1955 (Stöß (2009) describes their evolution and methodology) and are regularly released on an annual and quarterly basis in different formats, among which Deutsche Bundesbank (2016).<sup>2</sup> To the present day, financial accounts in Germany, which are compiled according to the ESA 2010, are used for economic and monetary policy analyses on a regular basis, such as in Deutsche Bundesbank (2012, 2015), Geiger et al. (2016) and Annuß and Rupprecht (2016). Drawing on some of these analyses, this paper illustrates the links between household balance sheets and the macroeconomy.

## 2. Households' real portfolio returns and portfolio decisions

The nominal interest rate on bank deposits – which denotes the income from a financial investment in the form of interest payments in relation to the nominal value of the investment – is a particularly easy notion to grasp for private savers. However, nominal rates neglect the variation in purchasing power of interest income due to price level changes. Therefore, a more appropriate indicator for the rate of return on deposits is the real interest rate, which approximates the difference between the nominal interest rate and the expected rate of inflation.<sup>3</sup>

As interest is just one form of income from a financial investment, other components need to be taken into account as well when considering portfolio returns. As opposed to income from bank deposits (and also from claims on insurance corporations and pension funds), income from securities is driven to a large extent by changes in their prices. Shares and certain types of investment funds, in addition, usually also accrue dividends. Together, these income components, as a percentage of the amount invested, represent the return on an investment. Adjusting the nominal return for inflation expectations yields the real investment return. However, data on households' inflation expectations is scarce and the intended investment horizon in most cases is unknown. Therefore, the realised inflation rate is used as an approximation in the remainder of this paper.

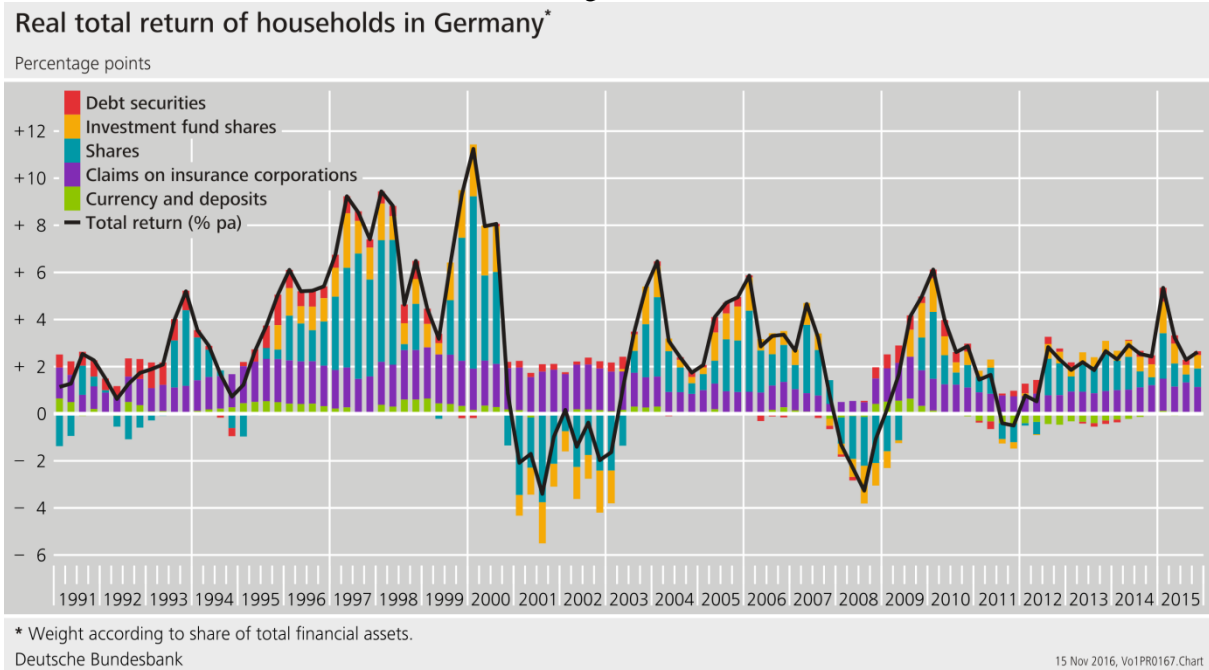
Based on this concept, real returns on the financial assets held by households in Germany were calculated, taking into account the structure of households' financial portfolio. Details about the underlying assumptions, data sources and calculations can be found in Deutsche Bundesbank (2015). Weighting the individual asset returns with their respective portfolio share results in the real portfolio return, which is displayed in figure 1. Contrary to what part of the public debate suggests, the real portfolio return has not been extraordinarily low, even in the current low-interest-rate environment: For the year 2015 the total real return amounted to 3.4 %, which lies above the long-term average. It should be noted that these results are merely backward-looking and do not attempt to predict future developments should the low-interest-rate environment persist. Nor do these results reveal anything about the distribution at household level.

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<sup>2</sup> Time series can be downloaded from the Bundesbank website via the following link:  
[http://www.bundesbank.de/Navigation/EN/Statistics/Time\\_series\\_databases/Macroeconomic\\_accounting\\_systems/macroeconomic\\_accounting\\_systems\\_node.html?anker=GESAMTFINANZ](http://www.bundesbank.de/Navigation/EN/Statistics/Time_series_databases/Macroeconomic_accounting_systems/macroeconomic_accounting_systems_node.html?anker=GESAMTFINANZ).

<sup>3</sup> This can be expressed in terms of the equation  $r_t = i_t - \pi_{t+1}^e$ , which is based on the work of Irving Fisher, according to which the expected one-period real return equals the one-period nominal return adjusted for expected inflation over this period.

Figure 1



The question of how households' financial investment behaviour is influenced by interest rates (or more generally: returns) in theory can be approached starting from the theory of money demand in conjunction with basic mechanisms posited in portfolio theory developed by Markowitz and Tobin as is done for example in De Santis et al. (2013) and De Bondt (2009). As households seek to optimise their portfolio structure and as returns affect the utility that a household can derive from holding a financial asset, the demand for certain types of financial asset at the microeconomic level entails a comparison of the anticipated risk-return ratios of different assets. A change in returns disturbs the portfolio equilibrium and thus induces portfolio rebalancing in order to restore the optimal portfolio structure.

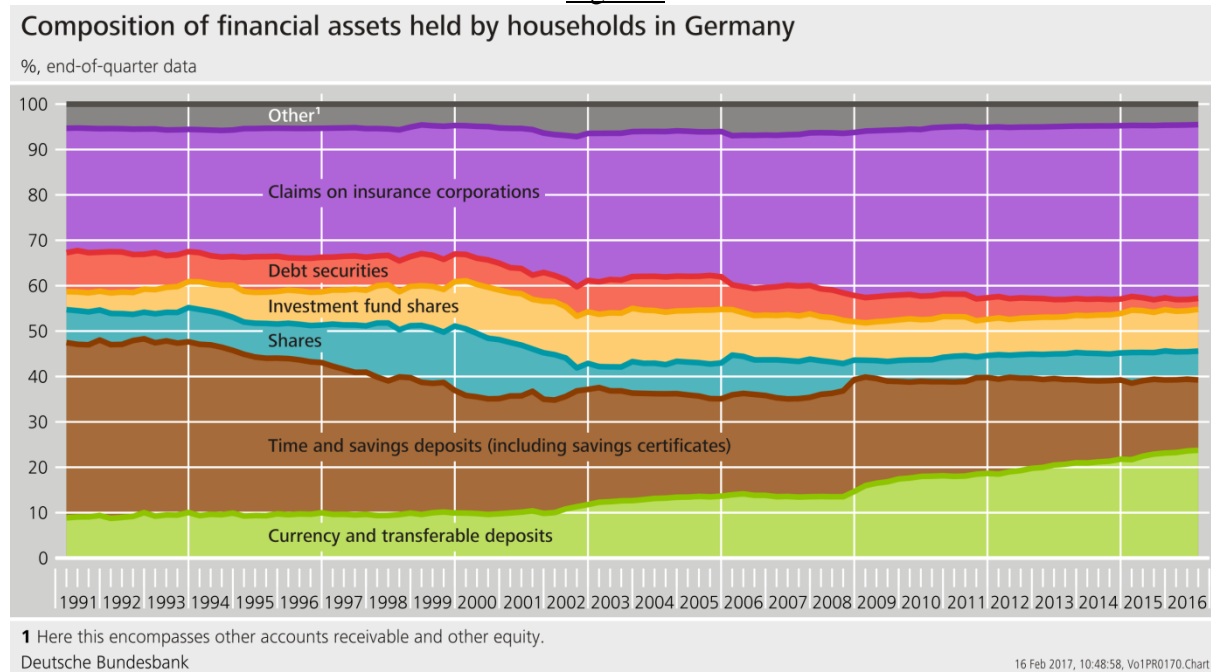
Empirically, the link between returns and the portfolio structure at the macroeconomic level can be analysed in the context of a Financial Almost Ideal Demand System, which is employed for example by Ramb and Scharnagl (2011) or Avouyi Dovi et al. (2013). For German quarterly data from 1980 to 2015, such a multivariate system of demand equations, where different forms of investment are modelled as a percentage of financial assets, suggests that real returns do not have a clear-cut or substantial impact on the portfolio structure. While such econometric analyses at the macroeconomic level have methodological limitations and should be interpreted with caution,<sup>4</sup> the analysis indicates that other factors, such as the age structure or the level of wealth, exert a comparatively clear influence on portfolio structure.

Similarly, figure 2 does not show any major portfolio shifts during the last years which could be clearly attributed to portfolio returns. The sharpest increase is found in the portfolio share of transferable deposits, and a certain rebalancing from time and savings deposits seems to have been in place since 2009. This hints at a pronounced liquidity preference which seems to be a major driver of

<sup>4</sup> For instance, estimates of the partial effects are inaccurate as yields have a high degree of multicollinearity despite various model specifications. In addition, changes in the variability of the yields and/or in risk aversion overall are not modelled here.

households' investment decision. Similarly, claims on insurance corporations and pension funds gained importance, albeit to a smaller degree. The fact that these claims tend to be perceived as comparably safe assets, taken together with the build-up of transferable deposits, suggests a marked degree of risk aversion. This corresponds with the rather weak engagement in capital markets, where only investment fund shares have recorded perceptible inflows since 2013, while the direct demand for shares remained subdued. A reason for this may be that households in Germany prefer to leave investments into what they see as potentially riskier assets to typically better informed professional investors. The demand for investment fund shares is likely to be related to a heightened awareness of returns in the low-interest-rate environment, despite households' risk aversion. Lastly, debt securities have been sold continuously, not least since the start of the Eurosystem's Asset Purchase Programme. As households' sales of debt securities have not significantly increased since the onset of the purchase programme, and as no major portfolio shifts have occurred, its impact on German households' financial portfolios is likely to be limited.

Figure 2



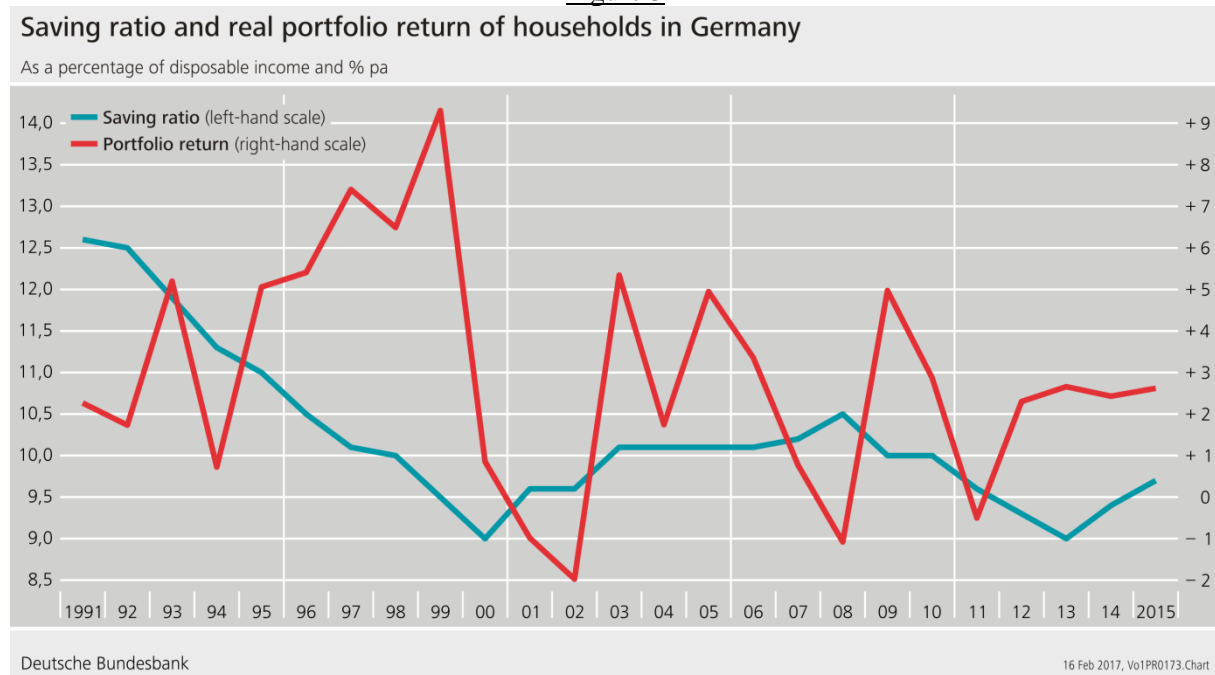
### 3. Balance sheet dynamics and spending behaviour

Apart from the decision for or against certain financial assets, returns and – more generally – monetary policy can also exert an influence on households' decision on the income share which is used for saving. Figure 3 depicts the German household saving ratio in comparison to the real portfolio return, which at a first glance do not display any relationship with each other. In spite of the low-interest-rate environment, there has not been a distinct trend in the saving ratio since 2009 and its movements were confined to a range of only 1 percentage point. In fact, the correlation coefficient of the saving ratio and the portfolio return amounts to only 0.05, implying that there is no strong statistical relationship between those two variables.

Households are faced with the decision to use their income either for saving or for spending. This decision theoretically depends – apart from portfolio returns – on their intended consumption path as well as the structure and development of their balance sheets, where different kinds of assets and liabilities can have different implications for the reaction in saving/spending. Besides the financial assets discussed so far, balance sheets include housing assets, which played a major role in the context of the house price boom in the US, in Ireland or in Spain in the run-up to the financial crisis. Particularly in those economies, sharp increases in house prices were transmitted into economic

activity via household spending (among other aspects). Reasons for this were, among others, that the share of households who own their residence was larger than for example in Germany and that banks' lending standards reflected house price developments and therefore were comparably loose, which allowed for home equity withdrawal on the part of households and additionally fuelled economic activity especially in the construction sector. Taken together, house prices formed an important part of the financial accelerator.

Figure 3



House prices in Germany have increased markedly since 2010 and especially in urban agglomerations they resulted to some extent in an overvaluation of housing, as shown for example in Kajuth et al. (2013), Deutsche Bundesbank (2013) or Deutsche Bundesbank (2017). The financial accelerator ensuing from house prices can generally be influenced by the credit market structure, which in Germany differs substantially from that in the Anglo-Saxon economies, as detailed in Geiger et al. (2016). In particular, home equity withdrawal in Germany is effectively absent and lending standards for housing loans such as loan-to-value ratios tend to be more conservative. In this setting, an increase in house prices at a given income and given expectations with regard to income growth may imply that households who are willing to acquire owner-occupied housing need to increase their saving in order to honour the initial down payments. Similarly, rent payers anticipating higher rents in the future may react by cutting down on spending. This reasoning, which corresponds to a conventional income effect, contrasts with predictions based on substitution and wealth effects. In a six-equation system with German data for the period of 1981-2012, Geiger et al. (2016) find evidence for such an effect, indicating that increases in house prices in Germany do not translate into higher consumer spending. They attribute this relationship to the characteristics of the general institutional setting as well as the credit market structure. Closely related, given the high share of liquid assets in households' portfolio, they find that lower interest rates are less effective than in the US in directly stimulating household spending. As the period under review only lasts until 2012 and as such relationships are likely to be time-varying, the transfer of the results to the current situation should, however, be undertaken with caution.

Geiger et al. (2016) further analyse the role of changes in other balance sheet components in household spending. In particular they present evidence that liquid assets among German households assume the function of a buffer stock and therefore can serve the precautionary saving motive,



especially if access to unsecured credit is constrained and if risk aversion is high. This means that households in Germany build up liquidity buffers in more prosperous times which are used for consumption smoothing during temporary downturns. This matches the current liquidity preference mentioned above, which – compared to many other European countries – turns out to be rather strong.

#### 4. Conclusion

With nominal interest rates at historically low levels, the income households in Germany earn on a substantial part of their portfolios has shrunk to unprecedented levels in recent years. Taking into account households' overall portfolios as well as the effect of price level changes on purchasing power, it can be shown, in contrast, that total real portfolio returns have not been extraordinarily low, even in the current low-interest-rate environment. Analyses based on German financial accounts data, however, suggest that portfolio returns are not a major determinant of households' investment behaviour, while other factors such as wealth, preferences and demographic factors seem to be more important drivers. Moreover, the current low-interest-rate environment in Germany is associated with increases in house prices which – in theory – can be transmitted into economic activity via household spending. For Germany, however, there is no clear evidence of financial accelerator effects as observed during the house price booms in some Anglo-Saxon economies or Spain. In particular, increases in house prices in Germany do not translate into higher consumer spending. This is likely to be due to differences in country-specific factors such as the household portfolio structure, the credit market architecture and the general institutional setting. Taken together, these findings imply that the direct transmission of monetary policy impulses via the household sector may be less effective in Germany than in some Anglo-Saxon countries. As a consequence, monetary policy seems to affect consumption more strongly by indirect channels (via investment and net exports) thereby altering households' disposable income.

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