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Manuel Rupprecht

Low Interest Rates and Household Portfolio Behaviour in Euro Area Countries

This paper examines whether household portfolio structures change in favour of riskier assets when interest rates fall. Using euro area financial accounts data from the financial crisis through the present day, it is shown that the current low interest rate environment has not, up to this point, induced euro area households to add further risky assets to their investment portfolios.

After its most recent monetary policy meeting in April 2018, the governing council of the European Central Bank (ECB) confirmed that interest rates will remain very low for some time to come. Based on the ECB's forward guidance, markets do not expect interest rates to rise prior to 2019.¹ While the underlying reasons for the low interest rates are still being discussed, criticism of this policy started early.² A major point of concern is that low, zero or even negative interest rates provide incentives to households to invest in riskier assets, which in turn causes financial stability risks. Some central banks, e.g. in the United States and the United Kingdom, have started to change their monetary policy stances and begun increasing interest rates, and thus the prevalence of investments in riskier assets might decrease in those jurisdictions. In the euro area, however, concerns regarding increased risk-taking by European investors persist.³

Are these concerns justified? Did household portfolio structures change in favour of riskier assets when interest rates started to fall? With regard to euro area households, the short answer is no. Based on recently released financial accounts data, this article shows that, from a macroeconomic perspective, household risk-taking has not increased visibly in recent years, in spite of the low rate of return of safe assets.⁴ On the contrary, the overall results suggest that investments in safe assets have actually gained in importance, confirming research which shows that determinants such as the liquidity, transparency and safety of financial assets are much more important to households than the rate of return they generate. Against this background, the aforementioned concerns about increased incentives for investing in risky assets do not seem to be warranted for the time being.

Existing research addresses the impact of low interest rates on financial risk-taking mainly from the financial stability perspective and thus typically focuses on the financial sector.⁵ Meanwhile, most of the research dealing with households examines the role of microeconomic determinants in household risk-taking. For instance, Ampudia and Ehrmann show that households are more likely to invest in risky assets if they have already done so successfully in the past.⁶ In the same vein, Necker and Ziegelmeier conclude that households that experienced (crisis-induced) wealth losses reduce their risk tolerance.⁷ Financial literacy is also important, as are other socio-economic

1 O. Mangan: Markets believe interest rates will remain very low, Irish Examiner, 5 December 2017, available at <http://www.irishexaminer.com/breakingnews/business/markets-believe-interest-rates-will-remain-very-low-817148.html>.

2 For a discussion on potential reasons for low interest rates, see for instance C. Bean, C. Broda, I. Takatoshi, R. Kroszner: Low for Long? Causes and Consequences of Persistently Low Interest Rates, 17th Geneva Report on the World Economy, London 2015, CEPR Press; as well as R. Sajedi, G. Thwaites: Why are real interest rates so low? The role of the relative price of investment goods, in: IMF Economic Review, Vol. 64, No. 4, 2016, pp. 635-659. Regarding the criticism of this monetary policy, see for instance A. Belke: ECB bond purchases and quasi-fiscal activities, in: Intereconomics, Vol. 45, No. 3, 2010, pp. 134-135; U. Fritzsche, A. Tarassow: Did the ECB overstep its mandate?, in: Intereconomics, Vol. 50, No. 3, 2015, pp. 165-170; as well as A. Bley, J.P. Weber: Highway to the Danger Zone: Die Gefahren des Niedrigzinses nehmen zu, in: DIW Quarterly Journal of Economic Research, Vol. 85, No. 1, 2016, pp. 31-44.

3 This is also true for European central banks, which consider these issues when making monetary policy decisions. See Y. Mersch: Challenges for euro area monetary policy in early 2018, speech at the 32nd International ZinsFORUM, Frankfurt am Main, 6 December 2017, available at <http://www.ecb.europa.eu/press/key/date/2017/html/ecb.sp171206.en.html>.

4 In parts, this article draws upon M. Rupprecht: Income and wealth of euro area households in times of ultra-loose monetary policy – stylized facts from national and financial accounts, in: Empirica, forthcoming.

5 For a comprehensive overview of research in this regard, see Bank for International Settlements (BIS): Global financial markets under the spell of monetary policy, 84th Annual Report, Chapter 2, 2014, pp. 23-39.

6 M. Ampudia, M. Ehrmann: Macroeconomic experiences and risk taking of euro area households, in: European Economic Review, Vol. 91, 2017, pp. 146-156.

7 S. Necker, M. Ziegelmeier: Household risk-taking after the financial crisis, in: The Quarterly Review of Economics and Finance, Vol. 59, 2016, pp. 141-160.

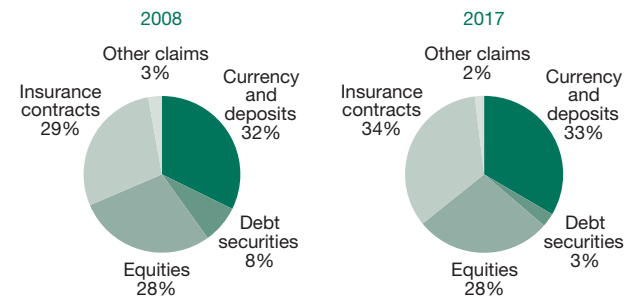
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factors.⁸ Marek is one of the few who endeavours to disentangle the specific effects of low interest rates on households' portfolio choices.⁹ Based on survey data, he demonstrates that low interest rates have induced around 16% of German households to change their savings behaviour. Unfortunately, he provides no information on the extent or form of these changes. Beer et al. find similar evidence for Austria, which suggests that households there have increased their financial risk-taking only to a very limited extent.¹⁰ Based on an experimental approach, Lian et al. find that US individuals tend to invest in riskier assets if interest rates decrease below historical norms; however, the extent of this increased risk-taking remains an open question.¹¹ To the best of my knowledge, studies that explicitly address this question for the euro area from a macroeconomic perspective are virtually non-existent.

This paper aims to contribute to this debate. It discusses the financial portfolio structure of euro area households from a macroeconomic perspective over time.¹² Both the euro area as a whole as well as the individual member countries are examined. The latter is done in order to identify potential heterogeneity in household behaviour against the backdrop of the ECB's single monetary policy. If there is significant heterogeneity among countries, the national economic policy responses, if deemed necessary, would need to vary correspondingly. The analysis presented here takes advantage of a recently updated dataset from euro area central banks, specifically on financial accounts data. This data provides comprehensive, consistent and internationally comparable macroeconomic data on the financial portfolios of euro area households on a quarterly basis.

Figure 1 illustrates the financial portfolio structure of euro area households for mid-2008, when ECB policy rates peaked on the eve of the financial crisis, and for mid-2017,

Figure 1
Financial portfolio structure of euro area households
in % of total financial assets



Notes: Households, including non-profit institutions serving households. Equities include shares and mutual fund shares, as well as other equities. Other assets include loans, financial derivatives and other accounts receivable. Both 2008 and 2017 refer to data at the end of the second quarter.

Source: Quarterly sector accounts published by the ECB; own calculations.

which represents the latest data available. At both times, the portfolio mainly consisted of three components: currency and deposits, insurance contracts (including both claims on life insurance policies and non-life insurance policies) and securities, mainly equities. The primary importance of currency and deposits as well as pensions and life insurance schemes in euro area household portfolios is well known.¹³ Among other determinants, this reflects the presence and design of Europe's social security systems and tax regimes, as well as the dominating role of banks in the financial system. However, what comes as a surprise is that the proportions have barely changed since 2008. Although ECB policy rates and thus the returns on assets that are commonly perceived to be safe – such as cash, deposits and insurance contracts – have continuously decreased since then, the proportion of these assets has increased, albeit only slightly. Accordingly, securities lost importance to a minor extent, in spite of the stock market booms throughout the euro area in recent years. Table 1 provides supplementary information for the large euro area countries. It reveals that, although the proportion of the respective asset classes varies across countries, the developments over time largely follow the same pattern, albeit to somewhat varying degrees. In the other euro area countries (not shown here), similar developments occurred. Therefore, from this perspective, the data suggests that risk-taking among euro area households did not increase but in fact declined.

- 8 For a recent survey of potential determinants, see C. Badarinar, J.Y. Campbell, T. Ramadorai: International comparative household finance, in: *Annual Review of Economics*, Vol. 8, 2016, pp. 111–144.
- 9 P. Marek: Saving patterns in the low-interest-rate setting – results of the 2016 PHF summer survey, *Deutsche Bundesbank Research Brief*, No. 12, 2017.
- 10 C. Beer, E. Gnan, D. Ritzberger-Gründwald: Saving, portfolio and loan decisions of households when interest rates are very low – survey evidence for Austrian households, in: *Oesterreichische Nationalbank: Monetary Policy & the Economy*, No. 1, 2016, pp. 14–32.
- 11 C. Lian, Y. Ma, C. Wang: Low Interest Rates and Risk Taking: Evidence from Individual Investment Decisions, *Harvard University Working Paper*, 2017.
- 12 In what follows, non-financial assets such as real estate are not considered. This is done mainly for two reasons. First, investments in this kind of assets are often made for reasons other than making a profitable return. In the case of real estate in particular, the main motivating factor is often the desire to own property, regardless of any potential returns on investment. Second, limitations in the availability and comparability of adequate data would considerably hamper the analysis.

- 13 See C. Annauß, M. Rupperecht: Anlageverhalten privater Haushalte in Deutschland: Die Rolle der realen Renditen, in: *DIW Quarterly Journal of Economic Research*, Vol. 85, No. 1, 2016, pp. 95–109; and M. Andreasch: Households and their financial behavior, in: P. van de Ven, D. Vano (eds.): *Understanding financial accounts*, Paris 2017, OECD Publishing, pp. 139–176.

Table 1

Financial portfolios of households in the largest euro area countries

in % of total financial assets

	2008				
	Euro area	France	Germany	Italy	Spain
Currency and deposits	32.1	28.5	36.5	27.2	42.4
Securities	36.1	31.3	29.1	53.1	39.7
Debt securities	7.8	2.1	6.6	19.2	2.7
Equities and investment fund shares	28.3	29.1	22.5	33.8	37.0
Insurance contracts	28.5	34.7	33.5	16.3	14.6
Other assets	3.2	5.5	1.0	3.4	3.4
Total financial assets	100	100	100	100	100
	2017				
	Euro area	France	Germany	Italy	Spain
Currency and deposits	33.3	28.0	39.1	31.7	40.1
Securities	30.7	28.3	23.7	41.7	40.7
Debt securities	2.8	1.2	2.7	7.9	1.6
Equities and investment fund shares	27.9	27.1	21.0	33.8	39.2
Insurance contracts	33.7	38.4	36.5	23.5	16.8
Other assets	2.2	5.3	0.6	3.1	2.3
Total financial assets	100	100	100	100	100

Note: Households, including non-profit institutions serving households. Equities include shares and mutual fund shares, as well as other equities. Other assets include loans, financial derivatives and other accounts receivable. Both 2008 and 2017 refer to data at the end of the second quarter.

Source: Quarterly sector accounts published by the ECB; own calculations.

However, a simple comparison of portfolio structures at two different points in time is misleading. This is mainly because, alongside financial investments, portfolio structures are significantly influenced by the valuation changes of particular instruments, especially securities. In other words, if the market value of these instruments increases (as in the context of the aforementioned boom), their portfolio proportions will increase as well, everything else being equal.¹⁴ These holding gains, however, do not necessarily imply that the willingness of households to accept higher risks in their financial portfolio has also in-

creased. In light of modern portfolio theory, it is also likely that this willingness would remain unchanged and, hence, a higher proportion of risky assets due to holding gains might induce households to reduce financial investment in these assets in order to restore the envisaged portfolio structure.¹⁵ It is therefore necessary to take a different approach. This approach should aim to better identify the actual impact of financial investment on changes in the portfolio structure, since financial investment reflects households' intentions more appropriately.¹⁶

One reasonable option is to take advantage of the consistency of this financial accounts data over time, specifically the consistent compilation of data on stocks (financial wealth) and transactions (financial investment). In order to illustrate the role of financial investments for the development of the portfolio structure, I use the stock of financial assets as of mid-2008 and update it with the transactions made up to mid-2017. The results show how the financial portfolio would have changed since mid-2008 in the absence of any valuation effects. Based on this data, it is therefore possible to derive tentative conclusions regarding households' intentions to change their portfolio structure, e.g. in favour of riskier assets.

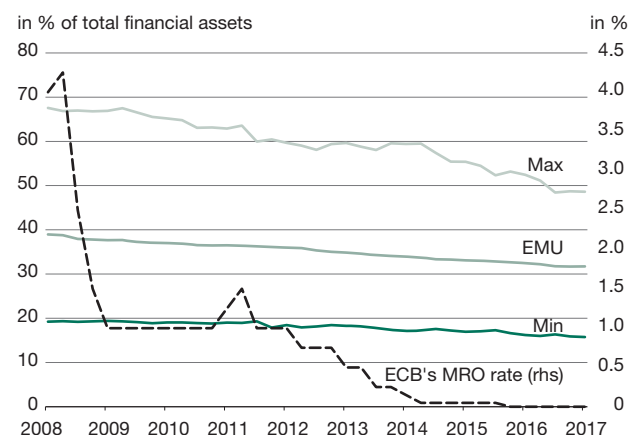
Figure 2 illustrates the results of this exercise. Are there any signs of increased risk-taking by households in the euro area? If risky assets are defined as the sum of debt securities, equities and loans, as well as other claims, the overall answer is no. As can be seen from the figure, risky assets actually declined in importance, in spite of the significant reduction of policy rates in the period under review. In addition to the fact that risky assets almost continuously lost importance in the euro area as a whole, the range of the proportion of risky assets at the country level decreased as well. Whereas in mid-2008 proportions ranged from 67.6% in Lithuania (Max) to 19.3% in Ireland (Min), in mid-2017 the highest proportion of risky assets was just 48.6% (still in Lithuania, Max), and the

14 For a comprehensive discussion of the compilation and effects of such valuation changes with respect to German financial accounts, see M. Rupprecht: Zur Einführung des ESVG 2010 in die deutsche Finanzierungsrechnung, in: R. Mink, K. Voy (eds.): Die gesamtwirtschaftliche Finanzierungsrechnung – Revision und Anwendung in ökonomischen Analysen, Marburg 2017, Metropolis, pp. 147-167.

15 E. Elton, M. Gruber, S. Brown, W. Goetzman: Modern portfolio theory and investment analysis, New York 2003, John Wiley & Sons. This aspect is likewise related to the discussion of the transmission of monetary policy via asset markets, in particular stock markets, and its potential redistributive effects among households as discussed, for example, by Deutsche Bundesbank: Distributional effects of monetary policy, Monthly Report, September 2016, pp. 13-36. However, this link goes beyond the scope of this paper and is therefore not discussed further.

16 The pattern of household financial investments is closely linked to their motives for saving, e.g. savings for old-age provisions, precautionary savings or savings for major purchases. For a detailed discussion in this regard, see Deutsche Bundesbank: German households' saving and investment behavior in light of the low-interest-rate environment, Monthly Report, October 2015, pp. 13-32; as well as D. Rodríguez Palenzuela, S. Dees (eds.) and the Saving and Investment Task Force: Savings and investment behavior in the euro area, ECB Occasional Paper No. 167, 2016.

Figure 2
Proportion of risky assets in euro area households' financial portfolios, 2008-17



Note: Proportions were compiled by adding financial transactions after mid-2008 to the stock of the relevant financial asset as of mid-2008 ("notional stocks"). Valuation effects are not included. Risky assets are defined as the sum of debt securities, loans, equities and other accounts receivable. The ECB's MRO rate reflects the ECB's rate for main refinancing operations.

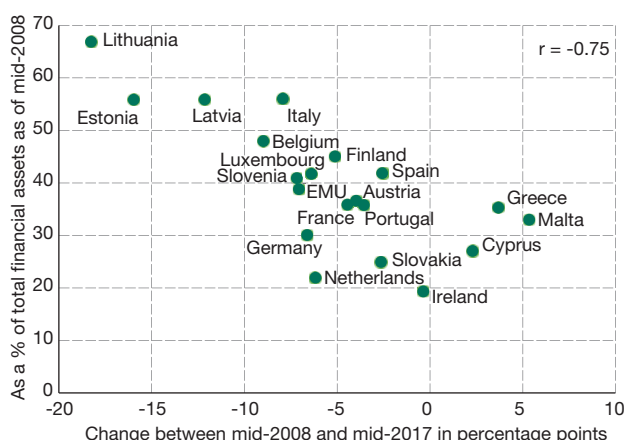
Source: Quarterly sector accounts published by the ECB; own calculations.

minimum had declined to 15.8% (in the Netherlands, Min). Although not visible in the figure, the standard deviation had also declined significantly by about 30%, from 12.3 in mid-2008 to 8.7 in mid-2017.

This reduction occurred in almost every country of the euro area. Its extent, however, seems to be closely related to the importance of risky assets in mid-2008. As Figure 3 shows, countries in which households exhibited a relatively high propensity to own risky assets on the eve of the financial crisis (such as in Lithuania, Estonia or Belgium) also tended to have undergone the most pronounced reductions in such assets. In contrast, countries where risky assets were of minor importance in mid-2008 (such as Ireland or Slovakia) only saw minor changes. Cyprus, Greece and Malta stand out, since risky assets actually gained in importance in these countries; however, this only occurred from comparatively low levels and to a minor extent.

Furthermore, the data suggests that these transaction-based changes in the financial portfolio structure are somewhat related to the extent of the holding gains of risky assets that occurred since mid-2008. That is, countries in which these holding gains were comparatively high also tended to see a more pronounced reduction in the investment-driven role of risky assets. In other words, when the proportion of risky assets in the financial portfolio increased due to valuation effects, households – in

Figure 3
Risky assets in household portfolios in euro area countries



Source: Quarterly sector accounts published by the ECB; own calculations.

line with modern portfolio theory – apparently tended to reduce their investments in these assets in order to return to their envisaged (risk) structure.

It goes without saying that these results do not mean that households refrained completely from investing in risky assets. However, the overall magnitude of these investments was comparatively low, indicating their loss of importance in the portfolio structure relative to safe assets (deposits, cash and insurance contracts). Furthermore, the results do not rule out the possibility that individual households even increased their investments in riskier assets, as indicated by Marek as well as by Beer et al.¹⁷ According to Annuß and Rupprecht, this may be particularly true for households with good financial literacy skills.¹⁸ At the macroeconomic level, however, no portfolio restructuring of this kind can be observed.

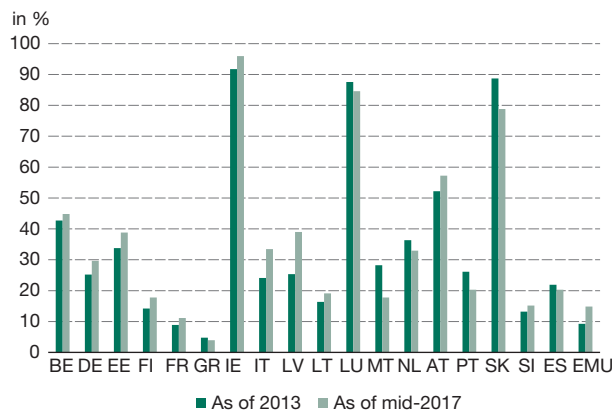
This notion is further supported when the debtor structure of risky assets is investigated more closely; due to limited data availability, however, this is only possible for shares and only from 2013 onwards. Figure 4 shows shares issued by foreign corporations as a proportion of households' total direct holdings of shares for 2013 and mid-2017, following the same approach used above. Two aspects are worth mentioning. First, with only a few exceptions, households clearly prefer to invest in domes-

¹⁷ P. Marek, op. cit.; and C. Beer et al., op. cit.

¹⁸ C. Annuß, M. Rupprecht: Savings in times of low interest rates – are German households in need of public support?, in: Wirtschaftsdienst, Vol. 97, No. 2, 2017, pp. 130-134.

Figure 4

Proportion of shares from foreign issuers relative to euro area households' total holdings of shares



Note: Although detailed debtor-creditor information is only available for listed shares, it is assumed that the structure holds for unlisted shares as well. Cyprus is excluded due to limitations regarding the availability of comparable data.

Source: Quarterly sector accounts published by the ECB; own calculations.

tic corporations, confirming the well-known “home bias” phenomenon first described by French and Poterba.¹⁹ Typical reasons include lower transaction costs for domestic shares and poor or incomplete information regarding foreign firms.²⁰ As a consequence of the latter reason, investments in foreign corporations are commonly perceived to be riskier, which is why risk-averse investors prefer the home market. Second, the degree of this home bias decreased between 2013 and mid-2017 in the majority of countries; however, the extent of this decrease seems to be rather low in most cases – about five percentage points on average. Considering the findings of Ampudia and Ehrmann, as well as of Bekaert et al., it is likely that households that already held any shares in 2013 were especially prone to restructuring their portfolio in favour of foreign issuers, whereas those households that did not stayed away from equities.²¹ In contrast, in some

countries the importance of foreign (and, hence, presumably riskier) issuers decreased, sometimes notably.

To sum up: although the findings of this paper need to be treated with caution and indicate that more research is needed in this area, they suggest that – from a macroeconomic perspective – the low interest rate environment itself has not induced households to significantly restructure their portfolios in favour of risky assets. Instead, households in most euro area countries did the opposite, and they followed rather similar patterns in doing so. This happened in spite of the fact that risky assets saw significant valuation gains, while the return on safe assets continuously declined. These developments suggest that interest rates or, more broadly, the rate of return on financial assets are not the dominant factors when households decide on their portfolio structure. Instead, other determinants seem to play a more important role, such as a preference for liquidity, the opportunity costs of particular asset holdings, the uncertainty surrounding future developments as well as more structural factors including demography and regulation. These results also confirm existing research, such as that of Annuß and Rupperecht, that the rate of return generally plays a relatively minor role in portfolio choices for German households, even in times of high interest rates.

From a financial stability perspective, this is good news. The same holds for monetary policy, whose side effects for household portfolios are apparently smaller than expected, at least so far. However, if the low interest rate environment persists, this supposedly cautious portfolio behaviour might strike back in the years to come. Depending on households' saving motives, the fact that they forgo a higher rate of return for their savings might have serious macroeconomic consequences. This is particularly true for savings for old-age provisions. Economic policymakers would therefore be well advised to work to improve the financial literacy skills of households across the euro area, since this could contribute to more advanced portfolio behaviour and therefore a higher rate of return for the households.²² In the same vein, the EU initiative to create a capital markets union would steer investors in the right direction to reduce the persistently high home bias. As a consequence of these and similar initiatives, households' financial risk-taking might eventually increase. However, this increase would not necessarily impose risks for financial stability, since it would reflect not just the mere search for yield but rather more sophisticated portfolio behaviour which balances the potential benefits and costs of such investments – and not only in times of low interest rates.

19 K. French, J. Poterba: Investor diversification and international equity markets, in: *American Economic Review*, Vol. 81, No. 2, 1991, pp. 222–226. The mentioned exceptions in Ireland, Luxembourg and Slovakia are inter alia related to the country size (and therefore the limited availability of shares of domestic corporations) as well as regulatory and tax aspects, that affect the structure of corporations located in those countries.

20 For a recent survey, see I. Cooper, P. Sercu, R. Vanpe: The equity home bias puzzle: A survey, in: *Foundations and Trends in Finance*, Vol. 7, No. 4, 2013, pp. 289–416.

21 M. Ampudia, M. Ehrmann, op. cit.; and G. Bekaert, K. Hoyem, W.-Y. Hu, E. Ravina: Who is internationally diversified? Evidence from the 401 (k) plans of 296 firms, in: *Journal of Financial Economics*, Vol. 124, No. 1, pp. 86–112.

22 M. Lührmann, M. Serra-García, J. Winter: Teaching teenagers in finance: does it work?, in: *Journal of Banking and Finance*, Vol. 54, 2015, pp. 160–174.