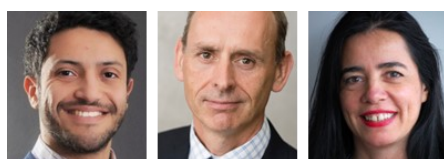


Consumer Savings Behaviour at Low and Negative Interest Rates*



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How does consumer savings behaviour respond to periods of very low and negative interest rates? We show how the likelihood of saving responds positively to changes in the nominal interest rate when interest rates are relatively high but it declines steadily toward zero at lower levels. At very low levels of the interest rate, there is also some weaker evidence that a decline in interest rates may be associated with a higher likelihood of savings. This negative response is shown to be linked to central bank “information shocks” which capture the central bank’s signals about the future state of the economy. These findings resonate with theoretical models that emphasise how such news effects may give rise to state-dependence in the strength and even the sign of interest rate transmission to savings.

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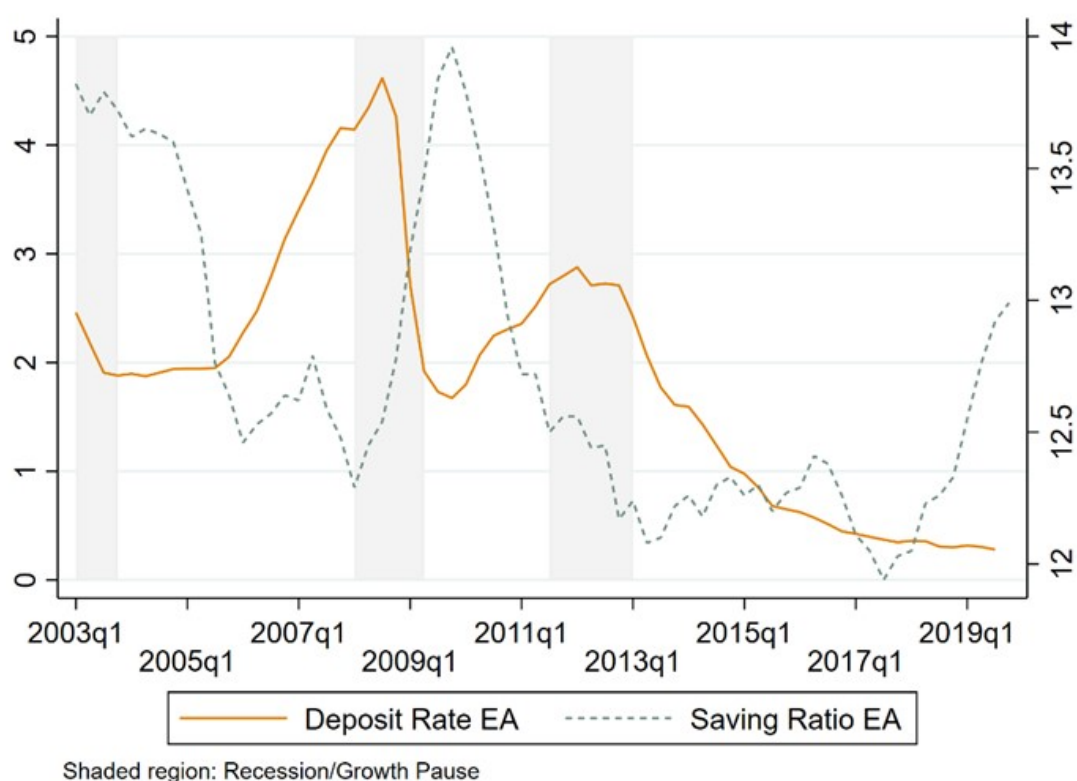
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1. Introduction

In the decade following the Great Recession of 2008-2009, nominal interest rates in many advanced economies were lowered to exceptionally low and even unprecedented levels. In the case of the euro area, in June 2014, the ECB was the first major central bank to cut one of its key policy rates into negative territory to provide more monetary easing and encourage banks to stimulate credit to the economy. Although the prevalence of negative nominal interest rates on household savings remained low, household rates were on average persistently at very low levels, often close to zero. This environment provoked considerable empirical analysis of the effects of low and negative nominal interest rates on bank profitability and lending and firm borrowing and risk-taking behaviour; see, for example, Altavilla et al. (2022) and Abildgren and Kuchler (2020) and Heider et al. (2019).

The possible implications of this low and negative interest rate environment for households or consumers and their savings are instead less explored. While bearing in mind that interest rates and savings are likely to be simultaneously determined at the aggregate level, patterns in euro area macroeconomic aggregates during the period of declining and very low and negative policy rates as depicted in Figure 1 lend some suggestive evidence of the potential special role of nominal rates *per se* and for changes in consumer behaviour at particularly low levels of the nominal rate. For example, although reductions in nominal rates following the Great Recession and subsequent euro area sovereign debt crisis were associated with a clear decline in the household savings ratio, consistent with an intertemporal substitution effect, the subsequent period (2017-2019) of ultra-low interest rates has been associated with a steady increase in the household savings ratio.

Figure 1: Euro area household nominal deposit rate and the household saving ratio



Note: The euro area deposit rate (left axis) is the average annualised agreed rate on household deposits with maturity of up to 1 year. The euro area saving ratio (right axis) is the gross saving of households as a ratio of adjusted gross disposable income. Recession/growth pause as defined by the CEPR business cycle dating committee.

Due to its unique and persistent experience of low and negative policy rates, the euro area provides an ideal case study to identify possible changes in the interest rate responsiveness of savings. Although several recent papers, including van den End *et al.* (2020), have provided macro evidence about how interest rate transmission may weaken or even change sign as the level of interest rates falls, to our knowledge the issue has thus far not been comprehensively or explicitly studied at the micro level and for household-specific savings measures.

2. Interest rate regimes in a multi-country panel of consumer cohorts

In our forthcoming study (Felici, Kenny and Friz, 2023), we address two related and important empirical questions: First, what can the micro evidence tell us about how households take interest rates into account when they change their savings behavior? And, second, does the nature of the household savings response to interest rates depend on the level of interest rates? These questions are central to discussions of monetary transmission and they took on an added relevance in the aftermath of the Great Recession where central banks have lowered policy rates to very low and even negative levels, thus putting increased pressure on the financial system to pass these low rates onto the rates offered on household deposits and savings accounts.

To tackle these challenging empirical questions, we design a novel empirical strategy that combines variation in savings behaviour across similar cohorts of consumers with cross-country variation in household deposit rates to identify interest rate transmission over different interest rate regimes that are well supported in our dataset. By focusing on the variation in the likelihood to save for different cohorts of consumers, our proposed strategy also allows us to suggest a new disagreement-based measure of consumers' uncertainty about their future financial situation that can be used to control for a precautionary savings motive. As it is based on the disagreement within groups of consumers that share similar characteristics, the proposed uncertainty measure is also akin to a peer group uncertainty effect (see, for example, Bailey *et al.*, 2018), an aspect which – to our knowledge – has also not yet featured in the literature examining the measurement and transmission of uncertainty (as surveyed, for example, in Bloom, 2014). Our work also relates to the broader empirical research on household savings, as previously surveyed in Browning and Lusardi (1996), as well as to the more recent and growing empirical literature on household expectations and behaviour using survey-based measurement. This literature, recently surveyed in Coibion *et al.* (2018), has highlighted sharp inconsistencies with the traditional rational paradigm that is assumed in many formal economic models.

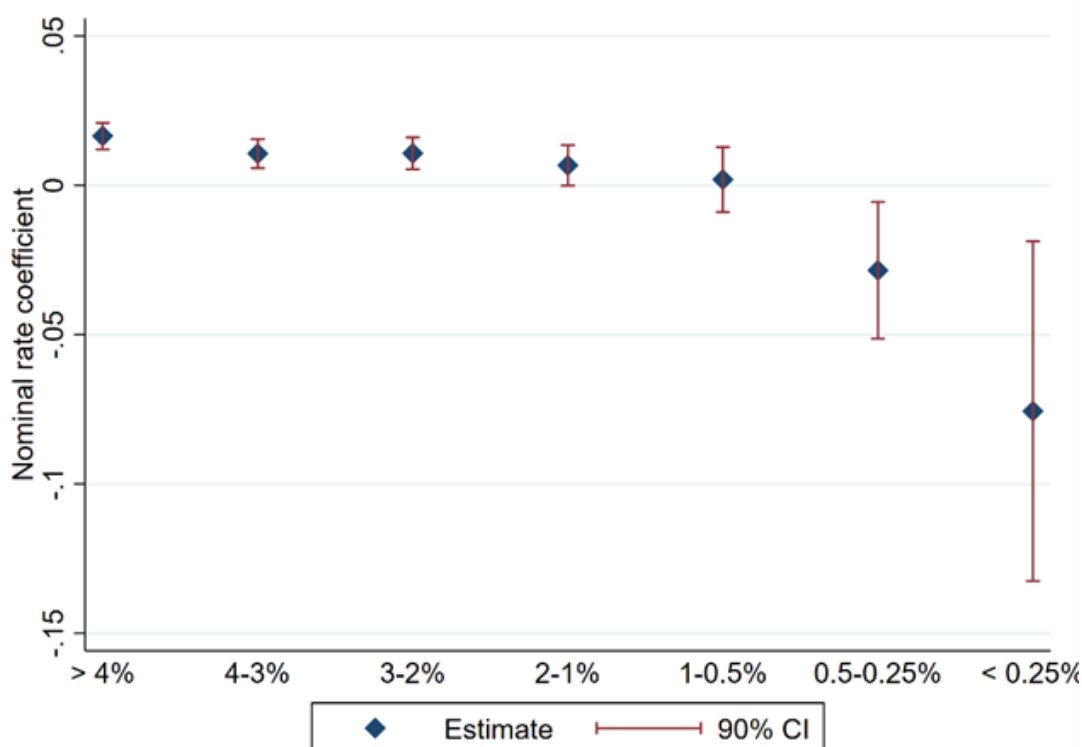
The analysis exploits a very rich and powerful consumer microdata set across 19 euro area countries, the EU Business and Consumer Survey, and exploits consumers' subjective inflation expectations with matched horizon term-deposit rates to help distinguish real from nominal channels of interest rate transmission. Most importantly, we use fixed-effects threshold regressions as well as instrumental variables estimation using exogenous monetary policy and central bank information shocks identified with high frequency data (Jarociński and Karadi, 2020) to control for potentially important sources of simultaneity between savings and interest rates changes. Combined with our reduced form evidence, this conveys a more causal interpretation on our identified interest rate transmission.

3. State-dependence in interest rate transmission to savings

Our results suggest that households' likelihood of saving is much more responsive to nominal than to real interest rates. The data overwhelmingly suggests that consumers do not take their savings decisions in purely real terms. Although consumers' subjective expectations about future inflation certainly influence the savings decision in line with the expected effect of intertemporal prices, nominal interest rates appear to be more relevant both on average and in absolute terms. As a result, the simple real rates model of interest rate transmission - typical of most conventional macroeconomic models - which is nested within our general framework is strongly rejected by the data. This finding is in line with a large body of behavioural evidence emphasizing the importance of nominal representations in consumer decisions.

Furthermore, there are important non-linearities that arise depending on the level of nominal rates (Figure 2). At relatively high levels of nominal rates, the response of savings to interest rate changes is found to be positive in line with the assumptions embedded in most mainstream economic models. However, we report considerable and quite strong evidence that the magnitude of the savings response to interest rates declines steadily as the level of nominal rates declines. Our results also suggest that it may be possible to causally relate this decline in the responsiveness of savings to interest rates to conventional monetary policy shocks. Moreover, when policy rates are exceptionally low and negative, we find some weaker evidence that the responsiveness of savings to interest rates may even become negative. This finding at ultra-low rates appears causally linked to central bank information shocks.

Figure 2: Savings response to nominal deposit rates over different intervals



Note: For each interval of the nominal rate (horizontal axis), the reported estimates on the vertical axis represent the response of savings to a change in the nominal rate on household term-deposits and its 90% confidence interval.

Interestingly, these estimates are consistent with the general equilibrium effects studied in some theoretical models that emphasise how news effects and concerns about retirement consumption may give rise to state-dependence in the strength and even the sign of interest rate transmission. For example, Bilbiie (2022) discusses how in a confidence-driven liquidity trap, interest rate decreases may be contractionary.

4. Policy implications

From a policy perspective, our evidence on the importance of the level of nominal - as opposed to real - rates for understanding interest rate transmission to households raises important questions. In the first instance, the direct stimulus to demand and household consumption from reductions in nominal interest rates is likely to diminish in potency as interest rates decline. Moreover, reductions in nominal rates to very low levels may potentially give rise to upward pressure on savings as households strive to compensate for the associated decline in nominal interest income. However, our results do not imply that ultra-low rates would necessarily give rise to an overall contractionary impact on the economy. This is because ours are partial equilibrium findings, largely pertaining to the direct or “impact” effect on savings linked to changes in nominal rates, while the full general equilibrium effects of interest rate changes will depend on the overall response of aggregate demand, incomes and any potential re-allocation of household wealth across different asset classes. Indeed, there is considerable evidence that these indirect channels of transmission are more important than the direct channels associated with intertemporal substitution (see, for example, Kaplan, Moll and Violante, 2018).

However, our evidence on the importance of nominal rates combined with the identified role for central bank information shocks certainly suggest scope to improve the public's understanding of the reasons for interest rate changes and the importance of real interest rate considerations in economic decisions. The weaker evidence for a reversal in the response of savings to interest rates appears to be predominantly driven by older consumers and consumers with lower educational attainment who may have lower levels of overall financial literacy. This suggests that the negative response of savings at low interest rate levels may be influenced by households' ability to gradually learn over time. For this reason, as discussed, for example, in Lusardi and Mitchell (2014), public policies aimed at enhancing levels of financial literacy, knowledge about inflation as well as the reasons behind low and negative nominal interest rate policies may be particularly important in enhancing policy effectiveness in a low interest rate environment. ■

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Roberta Friz works at the European Commission since June 2006. She works as an economic analyst in the Business and consumer surveys and short-term-forecast sector, contributing to the Joint Harmonised EU Programme of Business and Consumer Surveys (BCS). Before joining the European Commission, Roberta worked for five years at the European Central Bank (ECB). She also worked for six years at the European Automobile Manufacturers' Association (ACEA). She holds a University degree (master equivalent) in Economics and Banking Economics from the University of Udine (Italy).

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