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The Future of Irish Household Deposits: A European Perspective

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During 2020 and 2021, Irish household deposit growth accelerated to more than three times the pre-pandemic average resulting in "excess" deposits of around €16 billion. Consequently, Ireland was amongst the top euro area countries for pandemic deposit growth. In addition to the consumption-curbing effect of the virus and public health restrictions, relatively higher real income growth appears to explain the Irish figures.

This *Letter* presents an analytical framework to support future deposit scenarios for policy makers. Beyond the pandemic, the erosion of real income by current higher living costs could reduce the existing deposit stock and curtail further savings capacity. Economic uncertainty is, however, also high at present and a marked deterioration in households' forecasts of unemployment or economic growth could lead to precautionary savings among those who can afford it. The net effect of liquidity needs versus precautionary motives will likely determine future deposit growth. Over the longer term, an increasing old-age dependency ratio in Ireland could reduce the population's capacity to save requiring future planning.

1. Introduction

Bank deposits are an important financial asset and source of savings for Irish households. Personal savings are of particular interest to policymakers given their impact on future consumption and economic activity. In addition, deposits are important for retail banks to fund future lending to households and firms. Whilst already growing steadily before the pandemic, levels of Irish household deposits held at banks and credit unions increased sharply over 2020 and 2021.

Deposit growth peaked in early 2021, resulting in a high level of deposit savings for Irish households. At the time of writing, deposit growth has moderated, recording similar figures to those in mid-2019. As at June 2022, Irish consumer sentiment remains below the historical average, amidst higher costs of living and recent survey evidence of expected higher inflation and expected lower real earnings, on average among workers (Cunningham et al., 2022). Although Irish economic conditions are currently favourable, uncertainty is high given lower global growth prospects, the War in the Ukraine, an on-going challenging trade environment and high inflation (see <u>Central Bank of Ireland Quarterly</u> <u>Bulletin, July 2022</u>). Policy makers are keen to understand how depositors will behave in this uncertain environment, to assess future economic growth and household resilience.

Deposits also grew across Europe and internationally during the pandemic. Recent micro-level studies focus on *who* saved during the pandemic to understand how consumption might evolve in the near term (Lydon and McIndoe-Calder, 2021, Batty et al., 2021, MacGee et al., 2022, Battistini et al., 2022). To cover all potential scenarios, a broader approach focusing on historical and cross-country deposit

¹ Statistics Division, Central Bank of Ireland. The views expressed in this Letter are those of the authors and do not necessarily reflect the views of the Central Bank of Ireland. We thank colleagues across the Central Bank for their useful comments on previous drafts.

dynamics both during and prior to the exceptional pandemic experience is useful. Additionally, as deposits serve a dual purpose as a source of household savings and bank funding, a macro-financial framework is required for assessing future deposit growth. This *Letter* therefore investigates recent Irish deposit growth in a euro area context and presents a framework of potential deposit drivers. Micro and macro studies on post-pandemic consumption and projected bank lending would help complement this analysis.

First, the Letter analyses the Irish deposit experience during the pandemic.

- While all euro area countries experienced above-average deposit growth, the growth in Irish household deposits was among the highest, exceeded only by Baltic countries. However, unlike Ireland, these countries had very high pre-pandemic deposit growth, marking the Irish experience as exceptional.
- By end-May 2022, Irish household deposits stood at €144 billion -almost 30 per cent higher than at the onset of the pandemic. Had Irish deposits continued at 2019 growth rates rather than accelerating, total deposits would have been around €16 billion lower by end-2021. Across the euro area, only Estonia had a higher percentage share of *excess* deposits.
- In addition to the consumption-curbing effect of the virus and related restrictions, relatively higher real income per capita growth in 2020 appears to explain the Irish performance. Many countries with higher growth in per capita real income also experienced relatively higher deposit growth in 2020.

Second, the *Letter* looks beyond the pandemic and presents a potential analytical framework drawing on the literature and a longer-run representative, European panel dataset.

- The panel analysis confirms the positive role of real household income on future deposit growth between 2004Q1 and 2019Q4. Higher costs of living are currently reducing real income in Ireland, which if accompanied by lower economic growth in the near term could reduce the existing deposit stock and constrain future savings capacity.
- Negative economic sentiment and elevated uncertainty can increase deposits during crisis periods suggesting potential precautionary savings motives among depositors. While economic conditions, particularly in the Irish labour market, are currently favourable, a marked deterioration in economic sentiment could lead to higher deposits among those that can afford it.
- Longer-run structural changes such as an aging population could lead to slower Irish deposit growth in the future based on the analysis and in line with the broader savings literature.

While deposit growth rates as at May 2022 have slowed, the growth over the first five months of the year remain in line with equivalent 2019 figures. An established savings habit and limited alternative investment options could lead to continued deposit growth but perhaps at lower levels if the current high stock has resulted in savings goals being realised and as spending opportunities return. Based on the analysis, the net effect of liquidity needs versus precautionary motives will determine future deposit growth highlighting the importance of income growth and sentiment for deposit decisions.

2. Exceptional Irish deposit growth during the pandemic

In 2020, the Irish household sector as a whole experienced the largest saving rate increase among the euro area countries, due to both large falls in consumption and continued income growth, despite the pandemic (Figure 1). Specifically the Irish household savings rate reached 25 per cent in 2020 compared with an average of around 10 per cent in the previous three years. The quarterly rates, peaking at 33 per cent in Q2 2020, did moderate over 2021 but remain high at 19 per cent in the first quarter of 2022 (<u>Central Statistics Office</u>). <u>European Commission</u> forecasts for 2022 and 2023 as at May 2022 suggest rate moderation although as noted by <u>ESRI, (2022</u>) future savings rates could vary across the household sector.

The Irish <u>quarterly household financial accounts</u> show that higher gross savings mainly flowed into currency and bank deposits during the pandemic. In fact, since 2019, quarterly bank deposit transactions have outpaced household investment in other key financial instruments such as insurance, pensions and financial market products despite low deposit rates. Survey data show that in common with many other euro area countries, Irish households are heavily reliant on deposits with relatively smaller participation rates in other financial assets (i.e., 2017 <u>HFCS</u> – Table C1). Indeed, household deposits were also the main destination for increased <u>euro area savings</u>. For the United States, <u>Batty, Deeken and Henriques Volz, (2021</u>) present a similar story of relatively higher deposit flows in spite of higher household exposure to capital markets.

Figure 1 | Annual change in the household saving rate, personal disposable income and final consumption (2020, euro area)



Source: Eurostat and authors' calculations.

Notes: Data are annual gross household savings rates for households and non-profit institutions serving households. Countries with provisional data are marked with *; data are unavailable for Malta. Downloaded in June 2022.

The acceleration in Irish household deposit growth from the start of the pandemic is remarkable, jumping from 6 per cent at end-2019 to almost 13 per cent at end-2020 (Figure 2). The series peaked in February 2021 with an annual growth rate of circa 14 per cent, more than three times its prepandemic average. This growth is also significant in the European context. In 2020, all euro area

countries recorded higher deposit growth relative to 2019 and exceeded pre-pandemic averages (Figure 2). Irish household deposit growth was amongst the highest in the euro area, exceeded only by Lithuania, Latvia and Estonia. Unlike Ireland, these countries were already recording relatively high rates of deposit growth pre pandemic.

During the pandemic, the combination of reduced spending opportunities under public health restrictions and elevated economic uncertainty created both "forced" and perhaps to a lesser extent "precautionary" savings in Ireland and across the euro area (<u>Byrne et al., 2020, Dossche and Zlatanos, 2020, Dossche, Krustev and Zlatanos, 2021</u>).



Figure 2 | Annual growth rates of domestic household deposits in euro area countries

Source: European Central Bank, Central Bank of Ireland and authors' calculation Notes: Underlying data are adjusted growth rates. Downloaded in June 2022.

For Ireland, movements in quarterly deposit transactions appear to move broadly in tandem with a composite indicator of quarterly stringency (Figure 3). Quarterly deposit transactions peaked in Q2 2020 when nationwide measures were high. Although early 2021 also saw countrywide restrictions in Ireland, deposit transactions remained high but did not reach the earlier peak. Households and firms may have adopted spending and selling behaviour in this second nationwide Level 5 lockdown: credit card spending data appeared to be slightly stronger than in mid-2020. In Q2 2020 and early 2021, containment measures in Ireland were among the strictest in the euro area, which saw a wide heterogeneity across countries and time, with Finland and the Baltics at the lower end (see Muggenthaler et.al. 2021 for a euro area discussion).

While almost all euro area countries experienced consumption falls (Figure 1), relatively higher income resilience and capacity to save may further explain why Irish deposit growth was so high. In 2020, Ireland was among those countries that recorded both relatively higher real income growth and higher deposit growth (Figure 4). Many studies have examined euro area economic variation highlighting factors such as the structure of national labour markets, share of economic activity in high contact services and reliance on tourism, public income support measures and pre-pandemic financial health of households and firms (Haliassos, 2021, Muggenthaler et al., 2021,). In the Irish case, Cahill and Lydon (2021) discuss the role of government payment supports for household income over 2020.



Figure 3 | Quarterly transactions in household deposits and average quarterly pandemic stringency index (2020Q1-2021Q4)

Source: Central Bank of Ireland, Oxford COVID-19 Government Response Tracker (OxCGRT) in <u>Hale et al., 2021</u> and authors' calculations. Notes: The stringency index includes policies that primarily restrict people's behaviours as well as public information campaigns. Shaded area covers the min-max range of the average stringency index across the euro area. Downloaded in June 2022.

Relative to 2020, deposit growth over 2021 slowed in the majority of euro area countries, as vaccination programmes accelerated and economies reopened (<u>ECB Financial Stability Review Nov</u> 2021). Aggregated euro area figures for the first 5 months of 2022 show a continuation of this trend. Irish annual growth rates for May at 5.4 per cent per annum are in line with the equivalent 2019 figures. As noted in <u>Heffernan et al., (2020)</u>, however, Irish household deposits growth had begun to pick-up pre-pandemic with 2019 growth moving above historical averages.

As at end-May 2022, total Irish household deposits of just under €144 billion were 30 per cent higher than at the onset of the pandemic. Had deposits continued to grow at 2019 rates over 2020 and 2021, total deposits would have been roughly €16 billion less. By end-2021, only Estonia recorded a higher percentage share of excess deposits using this measure across the euro area.

A higher stock of deposits could provide a buffer against current higher costs of living and any future shocks (see <u>Central Bank of Ireland Financial Stability Review 2022:1</u>). However, as noted in <u>Battistini</u> <u>et al., 2022</u>, higher pandemic deposit savings vary across the wealth distribution at a euro area level, with higher-income households continuing to hold relatively more deposits. Combined with an uneven crisis impact across the household sector and the potential for inflationary impact to vary by income (Lydon, 2022) further inequalities in terms of liquidity buffers could affect future resilience. Government income supports undoubtedly mitigated some of these effects for affected households during the pandemic. Future Irish household Distributed Wealth Accounts and survey data (i.e., <u>Household Finance and Consumption Survey</u>) on the pandemic period will help to complete the picture.



Figure 4 | Household deposit growth versus growth in real disposable income per capita in 2020 (Irish 2019 figures included)

Source: European Central Bank, Eurostat and authors' calculations Notes: Adjusted deposit growth rates (See Table B). Disposable income figures from Eurostat are adjusted gross household disposable income in real terms per capita. Data on disposable income unavailable for Malta. Downloaded in June 2022. Provisional income data for 2020.

While recent events are exceptional, understanding the standard determinants of Irish household deposits along with real income growth can provide a useful framework to guide future deposit scenarios. Therefore, in the next section we draw on the literature and investigate potential explanatory factors using a longer-run European panel dataset.

3. The outlook for deposits: what can we learn from past trends?

Given our forward-looking perspective, the exceptional deposit changes during the pandemic are excluded from the analysis in this section. Our data cover the period 2004Q1² through 2019Q4 and focus, where possible, on countries in the European Monetary Union over our full sample to create a peer group for Ireland³. Ten countries are included namely, Ireland, Austria, Belgium, Germany, Spain, France, Italy, the Netherlands, Portugal and Finland.

Households save to protect future consumption from liquidity/borrowing constraints or future emergencies (e.g., buffer-stock savers, <u>Deaton</u>, 1991). In addition to lifetime consumption smoothing, prudence and household uncertainty about future income growth can create precautionary savings (<u>Lugilde, Bande, Riveiro, 2019</u>). Recently released <u>Irish Household Finance and Consumption survey</u> data for 2020 confirm these theories with almost 60 per cent of households reporting saving for unexpected events while 38 per cent save for old age or retirement. Other slightly less popular factors cited were saving to support dependents, holidays, large scale purchases, buying own home and debt

² Data availability determine our starting point as harmonised European statistics on resident household deposits begin in 2003.

³ Luxemburg is not included due to data availability of certain explanatory variables over the sample. Greece is also omitted, as volatility in quarterly deposit growth between 2004 and 2019 was much higher than the other countries.

consolidation. Therefore, the household sector's demand for deposits can vary with the prevailing domestic macroeconomic environment, demographics, the sector's existing financial position including indebtedness and the perceived stability of future income or future economic growth.

Household deposits are an important source of funding for retail banks. The relative mix of funding sources, regulatory requirements and funding needs (e.g., asset growth) can affect the banking sector's supply of deposits. During recessions or financial crises, the sensitivity of deposits to income and economic uncertainty could increase, given household liquidity needs and the market-disciplining role of deposits amidst heightened financial or bank stability concerns (Gorton, 1988, Allen & Gale, 1998 and Berger and Turk-Ariss, 2015).

To investigate potential short-run deposit determinants, we therefore run the following simple panel regression for quarterly deposit growth (D):⁴

$$\begin{split} D_{it} &= \beta_1 D_{i,t-i} + \beta_2 DI_{i,t-1} + \beta_3 R_{i,t-1} + \beta_4 UEE_{i,t-1} + \beta_5 UEE_{i,t-1} X \, crisis \, ('08-'12) + \beta_6 EPU_{t-i} \\ &+ \beta_7 EPU_{t-i} X \, crisis \, ('08-'12) + \beta_8 FSI_{i,t-1} + \beta_9 FSI_{i,t-1} X \, crisis \, ('08-'12) + \beta_{10} OLD_{i,t-1} \\ &+ \beta_{11} YG_{i,t-1} + \beta_{12} AT_{i,t-1} + \beta_{12} FA_{i,t-1} + \beta_{13} DT_{i,t-1} + \alpha_i + \varepsilon_{it} \end{split}$$

Deposit growth can be persistent over time due to habit formation or depositor inertia, justifying a lagged dependent variable $(D_{i,t-1})$. Lagged changes in real household disposable income per capita (DI) capture the role of income and economic activity. The lagged real deposit rate proxies the ex post real return on deposits and the deposit funding cost to banks.

To capture wage income uncertainty and potential precautionary saving motives, we include consumers' unemployment expectations (UEE) for the coming year at national level and a general measure of euro area Economic Policy Uncertainty (EPU). In line with banking literature (Berger and Turk-Ariss, 2015), we include the size of the resident banking sector using lagged total asset growth (*AT*) which also controls for any deposit growth driven by banks' desire to match funding requirements for higher lending. Last quarter's country-level index of financial stress (*FSI*) based on Duprey, Klaus and Peltonen, (2015) is an additional macro-financial control for financial conditions and systemic risk. We interact a binary variable (*crisis ('08-'12))* taking the values of one between 2008 and 2012 with our measures of uncertainty and financial stress in order to test if the relationships differs in a crisis period.

Borrowing from the cross-country savings literature (Mody et al., 2012), the national demographic profile (i.e., youth (YG) and old age (OG) dependency ratios) is included to control for life cycle effects and preferences. Additional household controls are the growth of non-deposit financial assets (FA) for potential substitution effects and the growth in household indebtedness (DT) for the sector's financial position.

We are interested in broad trends and therefore assume that the deposit specification is the same for all countries in our panel over the sample. Fixed effects (α) control for relevant fixed national characteristics (e.g., saving culture or institutional issues).⁵ Potential endogeneity is always a concern with macro data and we use lagged values to partly address this issue.

⁴ Variable sources and definitions are included in the Annex.

⁵ While short samples lead to inconsistency in fixed effects models with a lagged dependent variable (<u>Nickel, 1981</u>), the estimated bias is relatively small in our long panel at 0.02%.

Table 1 shows the results. Real disposable income per capita is positively associated with next quarter's household deposit growth over the full sample, all other things being equal. Consumer perceptions of future labour market performance and economic policy uncertainty become particularly relevant during stressed periods. Specifically, higher general policy uncertainty and a deterioration in unemployment expectations at country level are associated with higher deposits in the following quarter during the crisis period. Unsurprisingly we find a highly statistically significant and negative relationship between financial stress and deposit growth during the 2008 crisis. The positive relationship outside of the crisis period is surprising but may reflect that pockets of elevated stress in financial markets do not reduce household deposit demand. Unlike corporates or institutional investors, households may not closely monitor financial market indicators (see McQuinn and Woods, 2012) or even aggregate euro area economic policy discussions, outside of crisis periods.

Somewhat counterintuitively, lower real deposit rates appear associated with future deposit growth over our sample. From the savings literature, we would have expected a positive relationship between real rates and savings (Mody et al., 2012). However, according to <u>Arnold and van Ewijk (2014)</u> the European sovereign debt crisis and its uneven impact across the euro area may have affected the nature of the relationship between nominal deposit rates and customer deposits holdings. The authors find a negative relationship from September 2008 to November 2013, with no clear relationship precrisis (January 2004 to August 2008) using aggregated euro area household and non-financial corporate deposit data. Some countries with relatively weaker banking systems and heightened sovereign risks may have needed to pay a deposit risk premium to attract funding while other countries did not need to attract higher deposits. <u>Drechsler et al., 2017</u> suggest that a negative relationship between rates and deposits could indicate that bank effects are stronger than household conditions. While such factors may partly explain the past negative relationship found here, further country-level analysis on rates is clearly required for future scenarios, especially as monetary policy normalises.

Immediately prior to the pandemic, ample financing conditions and favourable economic conditions created an environment where deposits grew despite low offered rates, particularly in Ireland. Limited alternative investments opportunities for higher income households could also be a factor as earlier survey evidence and the lack of statistical significance for our indicator of alternative financial assets suggests that euro area households may not be actively substituting across financial products. The growth in household indebtedness is also not significant. The constraining impact of high leverage may be limited to certain countries or household cohorts between 2004 and 2019.

Similar to the savings literature (<u>Mody et al., 2012</u>) we find a negative relationship between the oldage dependency ratio and future deposit growth, although the youth ratio is not significant in our regression. Old-age dependency ratios have been increasing among our European sample up to 2019 with median figures suggesting that those over 65 years now account for a quarter of population at working age (Annex: Table A). Across our 10 countries, only Ireland had a youth dependency ratio higher than the old-age ratio by 2019.

In summary, the longer-run panel analysis confirms the importance of higher real household income for future deposit growth, outside of the exceptional pandemic period. At mid-2022, higher costs of living are reducing real income in Ireland, which if accompanied by lower economic growth in the near term could reduce existing deposit stock and constrain future savings capacity.

As noted in section 2, Irish deposit growth in May has eased back to 2019 rates. For many, the existing high deposit stock could have resulted in the realisation of "desired" savings goals. Combined with more spending opportunities future growth rates might therefore slow further. In addition to the return of spending opportunities, prospective homebuyers who managed to save for a mortgage deposit during the pandemic or paused buying will be looking to Irish housing market conditions (see <u>Financial Stability Review 2022:1</u> for a discussion of Irish housing conditions) to inform future savings decisions. In turn, decisions of such savers could affect future housing demand in certain market segments.

Explanatory variables	Coefficient
D: Deposit growth t-1	-0.174**
DI:Real per capita disposable income t-1	4.086**
R:Real deposit rate _{t-1}	-0.189**
UEE:Unemployment expectations t-1	-0.007
Unemployment expectations t^{1*} crisis ('08-'12)	0.026***
<i>EPU</i> : Euro Area economic policy uncertainty t-1	-0.479*
Euro Area economic policy uncertainty t_1 *crisis ('08-'12)	0.315***
FSI: Country-specific financial stress t-1	0.374**
Country-specific financial stress _{t-1} *crisis ('08-'12)	-1.057***
OLD:Old dependency ratio _{t-1}	-2.486*
YG:Youth dependency ratio _{t-1}	-2.107
AT:Growth in banking sector t-1	0.056**
FA:Growth in non-deposit financial assets _{t-1}	0.012
DT:Growth in household indebtedness _{t-1}	0.010
Constant	Yes
Fixed Effects	Yes
No. of Observations	640
R-squared	0.158
No. of Countries	10

Table 1 | Determinations of quarterly household deposit growth (2004Q1-2019Q4)

Notes: *** p<0.01, **p<0.05, *p<0.10. Robust standard errors used. With the exception of adjusted deposit growth, quarterly growth rates are 100 times first difference natural log. Per capita income, EPU, FSI and dependency ratios are in (natural) logs while unemployment expectations are pp balance. Crisis (08-12) is a binary variable taking the value 1 during 2008Q1 through 2012Q4 and 0 thereafter.

Households that can afford it could continue to save for a number of reasons. First, deposits had begun to increase prior to the pandemic and as at May 2022 are currently in line with 2019 growth rates. Given limited alternative investment opportunities, Irish households may continue this savings habit. Second, while we find higher deposit sensitivity to general economic policy uncertainty and

unemployment expectations only during our crisis period, a marked deterioration in economic sentiment by households could lead to precautionary savings. The Irish labour market is currently performing strongly but economic uncertainty remains given the on-going War in Ukraine, inflationary pressures and any legacy impacts of the pandemic. The balance of liquidity needs from inflationary pressures and economic uncertainty induced precautionary savings will determine future deposit growth. Monetary policy normalisation could be beneficial for savers if banks offer higher nominal rates.

Furthermore, longer term, structural changes such as an aging population could reduce savings capacity. Ireland currently has a relatively young population but the old-age dependency ratio is rising.

4. Conclusion

Ireland experienced exceptional household deposit growth during the pandemic with annual rates reaching over three times the historical average. Consequently, by May 2022 deposits were 30 per cent higher compared with the onset of the pandemic. While all euro area countries experienced above-average rapid household deposit growth, the growth in Irish household deposits was among the highest, exceeded only by Baltic countries.

In addition to the consumption-curbing effect of the virus and related restrictions, relatively higher real income per capita growth in 2020 appears to explain the Irish performance. Policy makers are currently interested in the future path of these excess savings for consumption growth and as a potential buffer for real income declines given current inflationary pressures and elevated economic uncertainty. Based on Irish and euro area data, the *Letter* confirms the important role of real household income for future deposit growth between 2004Q1 and 2019Q4. Higher costs of living are currently reducing real income in Ireland, which could reduce the existing deposit stock and constrain future savings capacity. Negative economic sentiment and elevated uncertainty can increase deposits during crisis periods suggesting precautionary savings motives. While economic conditions, particularly in the Irish labour market are currently favourable, uncertainty is elevated. A marked deterioration in economic sentiment could lead to higher deposits among those who could afford it. Longer-run structural changes such as an aging population could lead to slower deposit growth in the future in Ireland based on the analysis and in line with the broader savings literature.

Micro and macro studies on post-pandemic consumption and projected bank lending would complement this analysis and provide a useful guide for policymakers on future deposit savings.

Annex

Table A | Summary Statistics (2004Q1-2019Q4)

Variable	N	Min	p25	p50	Mean	p75	Max
Quarterly deposit growth	640	-3.31	0.10	0.89	1.02	1.83	6.02
Real disposable income (per capita)	640	11,413	19,066	21,255	20,206	22,384	25,544
Unemployment expectations indicator (pp balance)	640	-30.23	7.03	19.73	22.11	37.58	79.77
National financial stress index	640	1.22	5.65	8.47	12.09	14.67	82.33
Quarterly growth non-deposit financial assets	640	-9.30	-0.46	1.20	1.01	2.57	10.81
Real deposit rate	640	-2.95	-1.15	-0.41	-0.35	0.40	4.56
Old-Age dependency ratio	640	15.60	24.85	26.95	26.94	30.15	35.70
Youth dependency ratio	640	20.00	21.50	24.20	24.68	26.40	33.20
Quarterly growth in household indebtedness	640	-16.68	-0.50	0.60	0.68	1.82	26.75
Quarterly growth in resident banking sector	640	-24.95	-0.88	0.61	0.83	2.58	28.75
Euro Area Economic Policy Uncertainty Index		60.33	108.82	161.82	162.54	207.73	307.63

Table B | Data description

Name	Source	Description
Household Deposit Growth Rate (D)	European Central Bank and Central Bank of Ireland.	Quarterly growth in domestic household and non-profit institutions serving households (NPISHs) deposits (all maturities) held at credit institutions, adjusted for non-transactional items (e.g., reclassifications, revaluations, exchange rate variations). Monthly data averaged to quarterly
Real disposable income per capita (DI)	European Commission, Eurostat, Haver Analytics and authors' calculations	Ratio of real personal disposable income (calendar and seasonally adjusted) to national population. Seasonally adjusted national HICP used as deflator. Annual population figures linearly interpolated to quarterly.
Real Deposit Rate (<i>R</i>)	European Central Bank, Eurostat and Central Bank of Ireland.	Weighted average retail interest rates on outstanding household deposits with deposit volumes in each maturity category used as weights. Monthly data averaged to quarterly and national HICP inflation used for real figures.
Unemployment Expectations(<i>UEE</i>)	European Commission Harmonised EU Business and Consumer Surveys (Q7 in consumer survey).	Seasonally adjusted balance of percentage positive responses less percentage negative responses (in pps of total answers) on expectations regarding change in number unemployed in respective country over the next 12 months. Monthly figures averaged to quarterly.
Economic Policy Uncertainty (EPU)	FRED Economic data, Federal Reserve Bank of St. Louis and Baker, Bloom and Davis (2012)	Economic Policy Uncertainty Index for Europe, Not seasonally adjusted. <u>News based index</u> for large European Economies. Monthly data averaged to quarterly.
Country-Specific Financial Stress index (FSI)	European Central Bank and Haver Analytics	A composite national indicator of financial stress, covering equity, bond and foreign exchange markets. See <u>Duprey, Klaus and Peltonen</u> , (2015). Monthly data averaged to quarterly and multiplied by 100.
Growth in Domestic Banking Sector (<i>AT</i>)	European Central Bank and Central Bank of Ireland.	Quarterly growth in total resident banking sector assets (MFIs excluding Eurosystem). Monthly data averaged to quarterly
Old Age Dependency Ratio (<i>OLD</i>)	European Commission/Eurostat	Ratio of population 65 and over to population aged 15-64 years (%). Annual data linearly interpolated to quarterly
Young Age Dependency Ratio (YG)	European Commission/Eurostat	Ratio of the population aged 0-14 to population 15-64 years (%). Annual data linearly interpolated to quarterly
Household Indebtedness (DT)	Central Bank of Ireland, Eurostat	Quarterly growth in total household loans as a percentage of annualised disposable income.
Non-deposit financial investments (FA)	European Central Bank and Central Bank of Ireland	Growth rate of quarterly non-financial household accounts. Sum of household financial assets in debt securities (F3), equity/investment fund shares (F5) and insurance/pension/standardized guarantee schemes (F6).



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