



EUROPEAN CENTRAL BANK

EUROSYSTEM

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Household vulnerability in the euro area

IFC-NBB Workshop

*Data needs and statistics compilation for
macroprudential analysis*

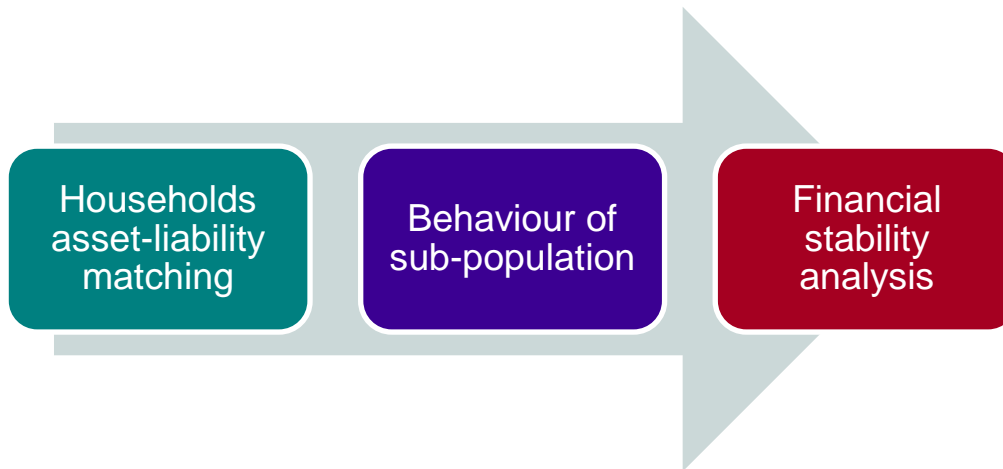
19 May 2017, Brussels

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Overview

- 1 Introduction
- 2 Vulnerability of households
- 3 Nowcasting by adjusting HFCS data to NA levels and structure
- 4 Nowcasting with microsimulation modelling
- 5 Conclusion

- **Motivation:**



- **Dataset:**



Household Finance and Consumption Survey

- Data mostly for 2010 and 2014
- Available every 3 years
- Euro area countries (without LT), Hungary and Poland
- Cross-country comparable micro data on assets and liabilities, income, consumption and credit constraints

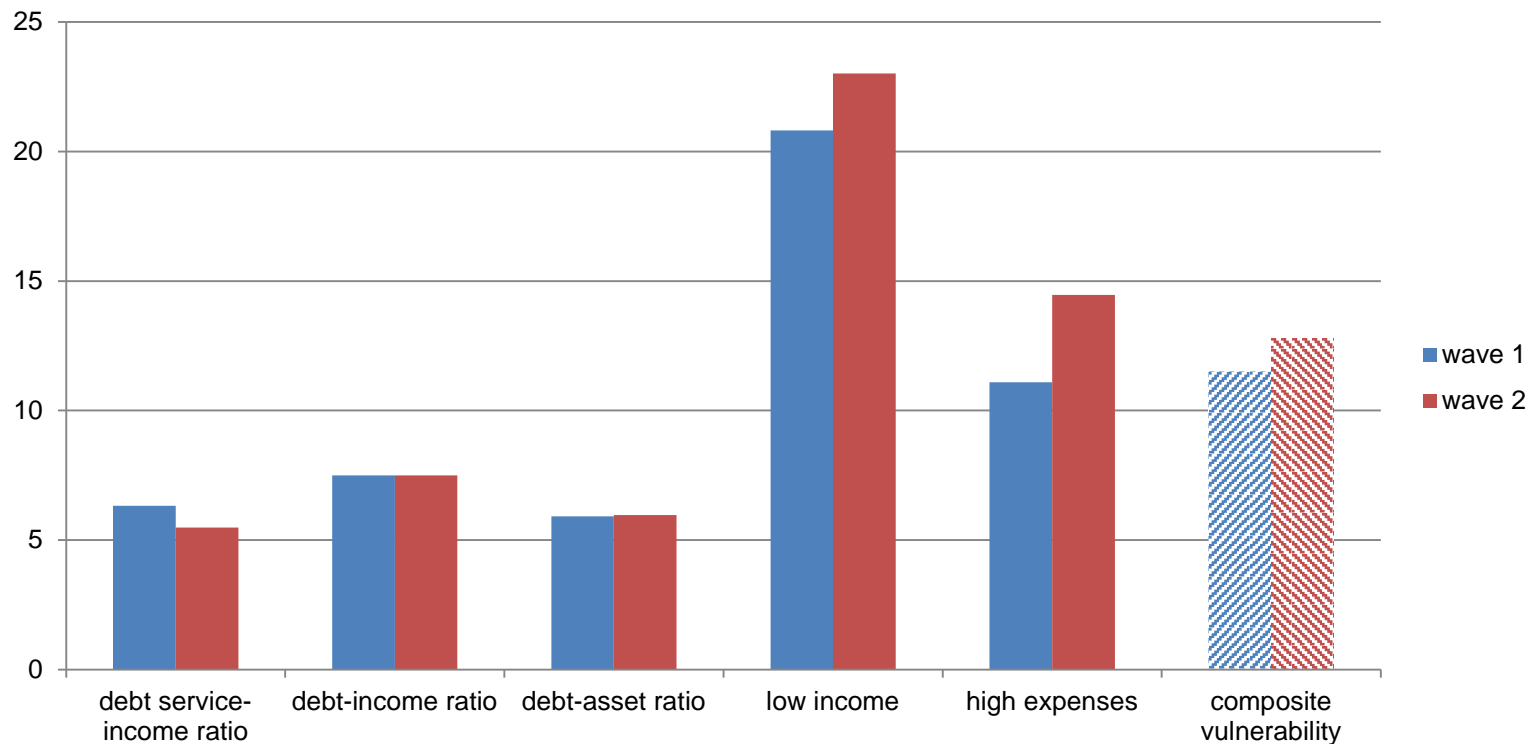
Measures of vulnerability

- A. Focused on debt burden for indebted households (from the perspective of repaying debt):
- **Debt service to income ratio** (threshold: > 30%) – financial burden of interest and loan repayments;
 - **Debt to income ratio** (threshold: > 300%) – level of outstanding debt compared to household income;
 - **Debt to asset ratio** (threshold > 90%) – level of outstanding debt compared to the values of household's assets.
- B. Focused on the overall income situation (from the perspective of affecting consumption), qualitative self-assessment:
- **Income defined as “low”** in the reference period of 12 months;
 - **Expenses exceed income** in the last 12 month.

Composite measures of vulnerability

- It defines households as **potentially vulnerable** if the conditions for **two or more** of the debt burden or income indicators are met
- It is sensitive to the shocks related to i) **the interest rates** ii) **income** and iii) **accumulated assets** thus not exclusively focusing on the ability to repay debt but also on the expenditure side of the low income households

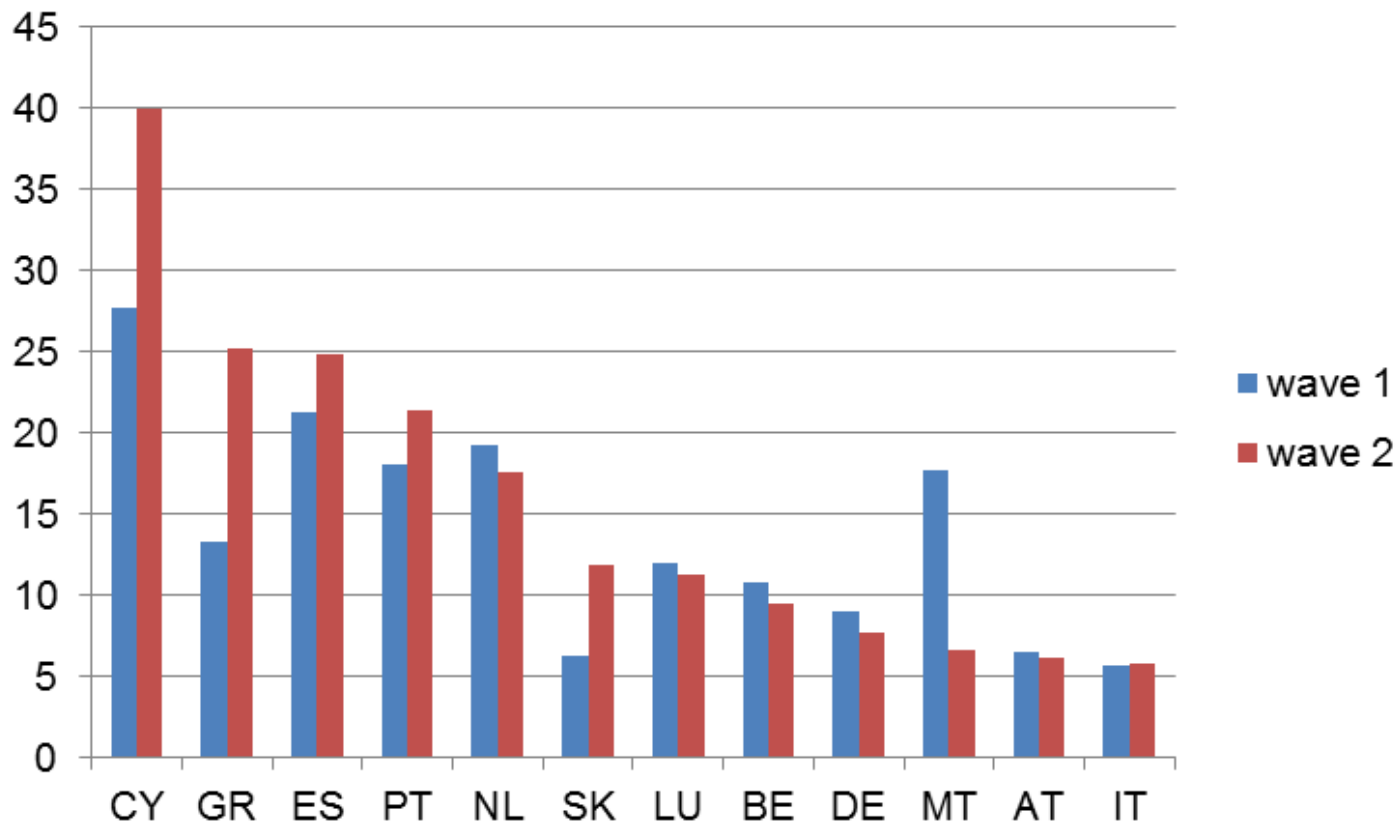
Share of households characterised by different measures, in %



Note: euro area figures in wave 1 exclude FI, FR, IE, EE, LT, LV and in wave 2 exclude FI and LT.

Source: HFCS and own calculations.

Share of vulnerable households by country and wave, in %



Note: data for IE, EE, LV are available only for wave 2. Data for FI and FR are excluded due to missing indicators for some of the measures.

Source: HFCS and own calculations.

Main characteristics of vulnerable households

The group of households defined as vulnerable in wave 2 compared to non-vulnerable ones includes more:

Middle size HHs
of 3-4 members

HHs with
mortgage on the
household main
residence

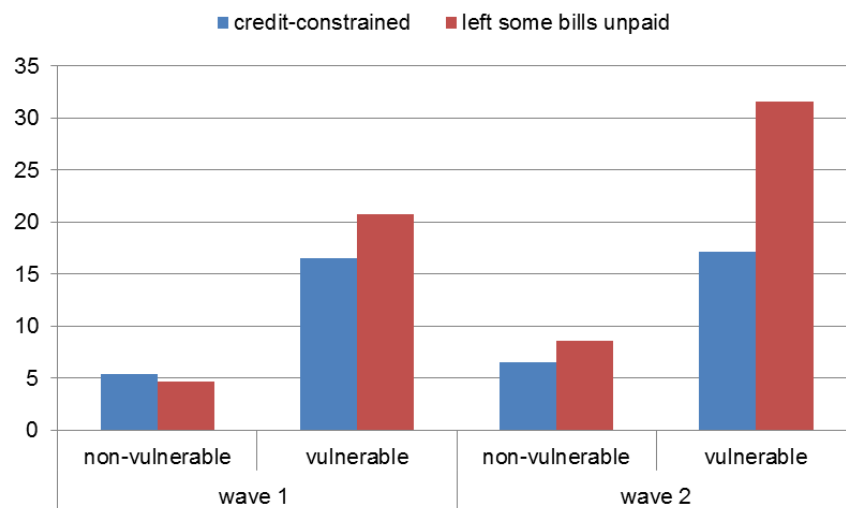
HHs from
bottom income
quintile

self-employed
and not working

credit-
constrained

prone to have
bills left unpaid

Selected features by vulnerability groups,
in %

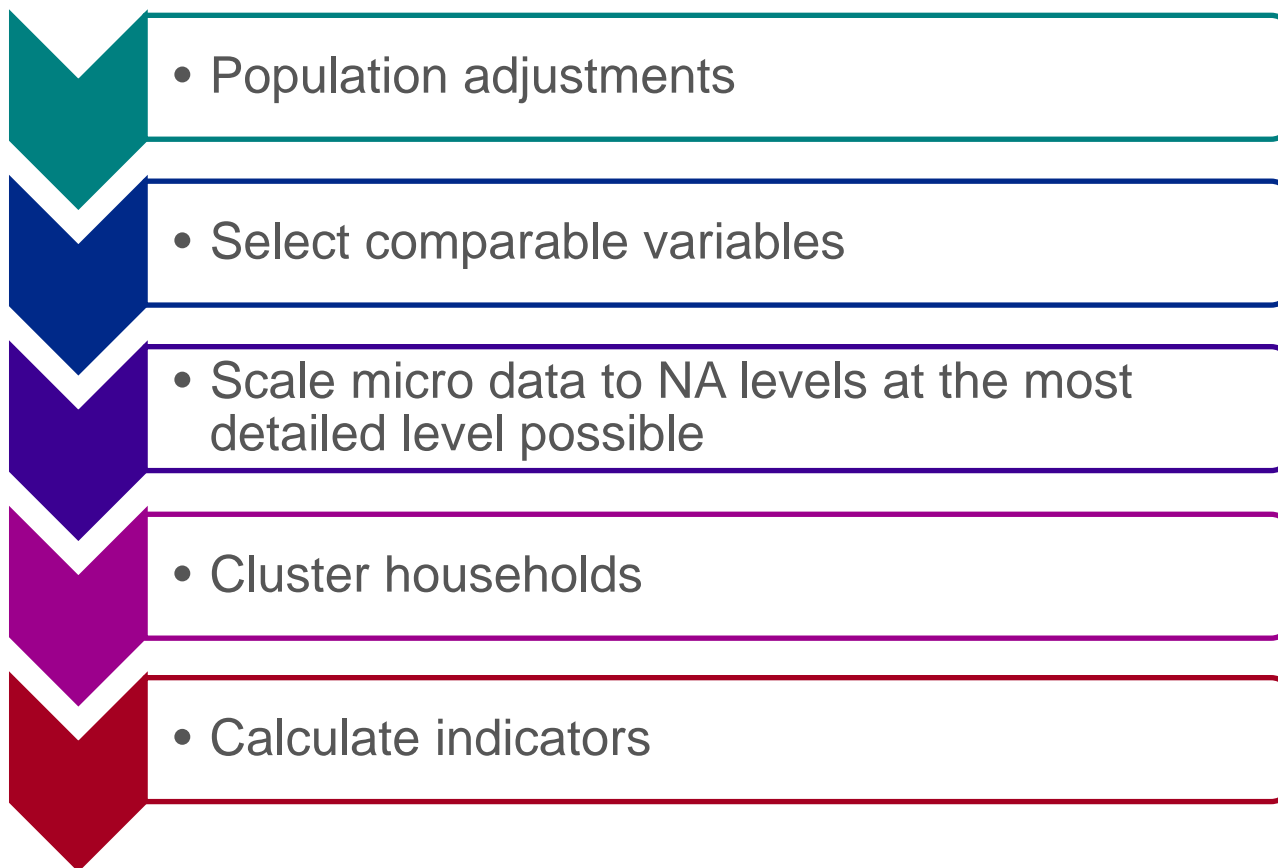


Note: euro area figures in wave 1 exclude FI, FR, IE, EE, LT, LV and in wave 2 exclude FI and LT.

Source: HFCS and own calculations.

Distributional information from National accounts

- Combining macro aggregates and household surveys to get **timely indicators** on the distribution of income, wealth and indebtedness consistent with **NA levels**

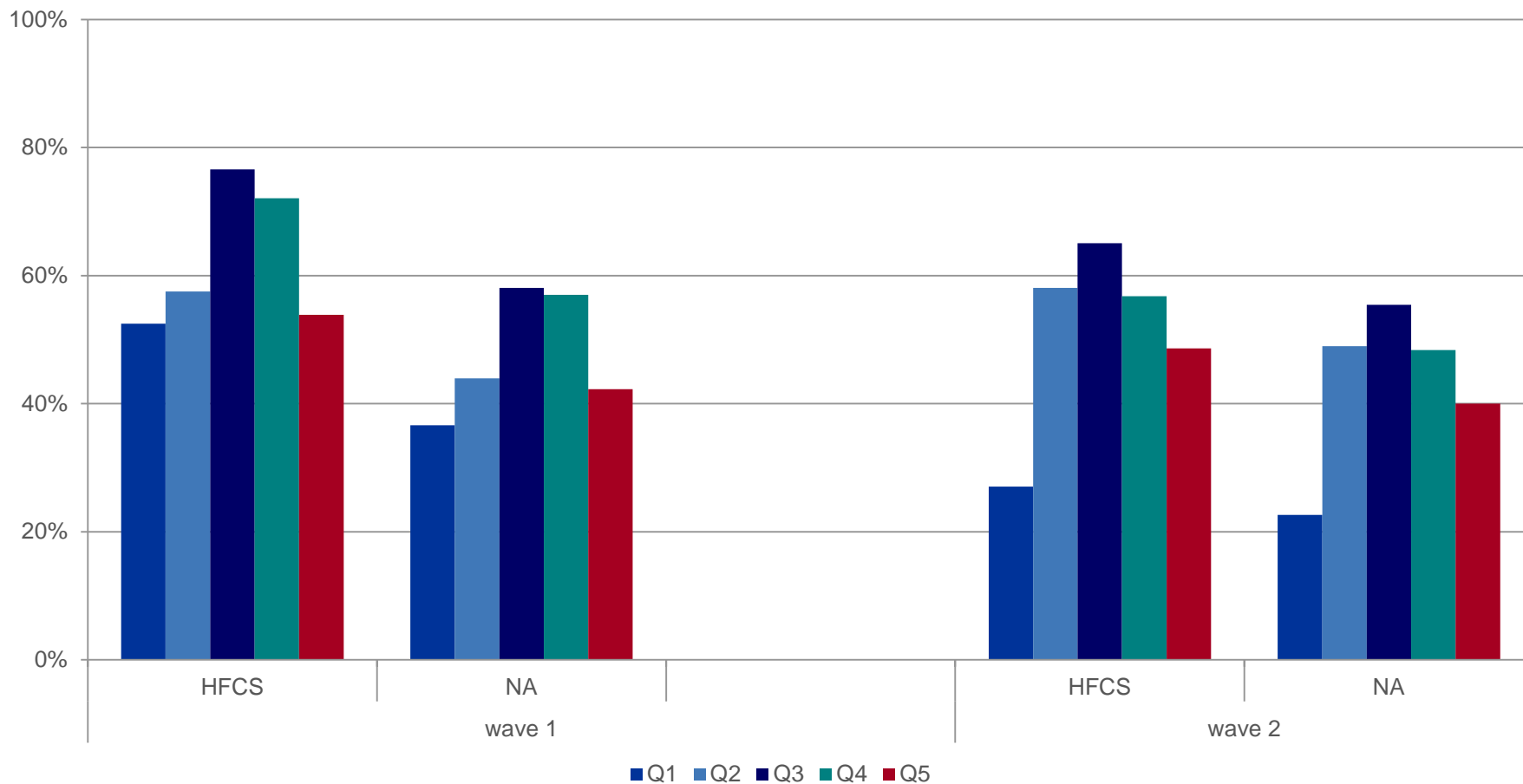




Debt-to-(adjusted)-financial wealth ratio (DTAFW)

T of macro with T of micro

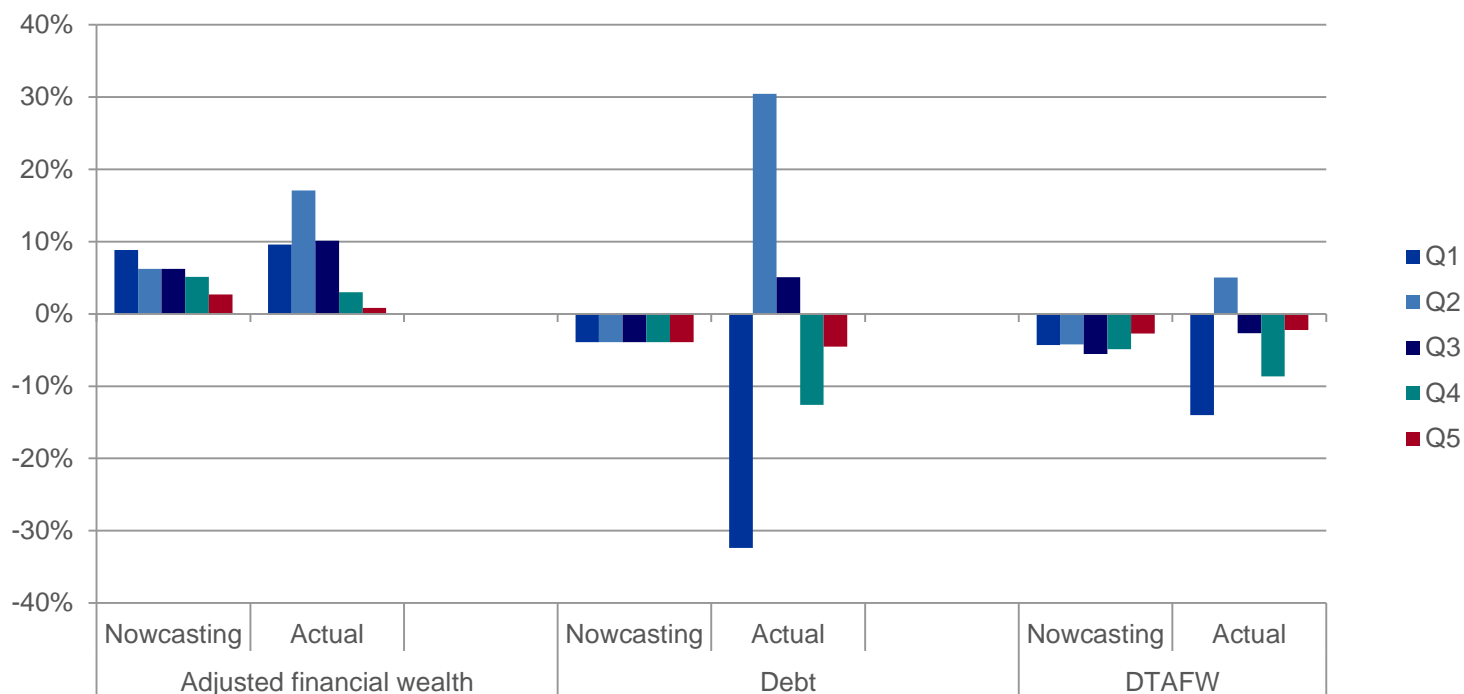
DTAFW ratio by income quintile - Germany, in %



Source: HFCS, ESA2010 and own calculations.

Nowcasting exercise: T-1 of micro with T of macro

Change in AFW, debt and DTAFW by income quintile in Germany, in % and pp



Source: HFCS, ESA2010 and own calculations.

Overview of microsimulation modelling

- Simulating the effects of macro changes on households, **at a micro level**
- Based on an analytical representation of:
 - the constraints faced by households (**static component**);
 - their behavioural response to the modification of these constraints (**behavioural component**);
 - the way of adapting their behaviour overtime (**dynamic component**).
- Microsimulation can be used for **nowcasting** and **stress-testing** under various hypothetical scenarios
- The quality of the nowcasted results will eventually depend on:
 - The quality of the **microdata** source;
 - The availability of **timely, comparable** and **consistent** macro-level information;
 - **Micro-economic understandings and modelling** of household behaviours.

Review of literature

- Several studies quantified the impact of household vulnerability on financial stability, by simulating changes in **income**, **employment**, **interest rates** and **balance sheet** at a micro level
- Microsimulation studies with the HFCS:

| | Albacete & Fessler (2010) | IMF (2012) | IMF (2013) | Michelangeli & Pietruni (2014) | Ampudia <i>et al.</i> (2014a) | Ampudia <i>et al.</i> (2014b) | Bettocchi <i>et al.</i> (2016) | Meriküll & Rõõm (2017) |
|-------------------|---------------------------|------------|------------|--------------------------------|-------------------------------|-------------------------------|--------------------------------|------------------------|
| Countries covered | Austria | Spain | Italy | Italy | Euro area | Euro area | Italy | Estonia |
| Static or dynamic | Static | Static | Static | Static | Static | Static | Static | Static |
| Nowcasting | ✗ | ✓ | ✗ | ✓ | ✓ | ✗ | ✓ | ✗ |
| Time horizon | | 3 years | | 3 years | 3 years | | 3 years | |
| Stress-testing | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ |

Review of literature: features of the modelling

- **Macro-level information at the EA-level:** EAA, LFS, House Price Index, HICP and other indices (Ampudia *et al.*, 2014)
- Possible components of the nowcasting process:
 - Update **income**, **asset prices** and **debt service**
 - Accounting for **labour market** change and **debt growth** rate
 - Accounting for **demographic** and compositional change
- **Ex post analysis** or **cross-check** are **limited**: only Michelangeli and Pietrunti (2014) for Italy, and Ampudia *et al.* (2014) for Spain
 - Overall **positive conclusions** about model reliability
 - **Further validation** should be performed to determine if further refinements are desirable

- The HFCS captures the **heterogeneity** in household finances
- It is useful to detect **group of households** that displays **various form** of financial **vulnerability**
- However the data is available with a long **time lag**
- Timelier **macro** information can be used to **nowcast** vulnerability

Two nowcasting techniques:

- **Adjusting HFCS data to NA levels and structure**
 - *It fails to capture important developments in the distribution of households' balance sheet*
- **Microsimulation modelling**
 - *Several **static models** have already been implemented to nowcast using HFCS (only one at the EA-level)*
 - ***Validation** procedures are **limited** and should be further developed to determine the need for complex and costly refinements (Peterson and Roberts, 2016)*

Thank you for your attention