IFC workshop on *"Combining micro and macro statistical data for financial stability analysis. Experiences, opportunities and challenges"*

Warsaw, Poland, 14-15 December 2015

Discussion of session 2 on
"New statistical frameworks for financial stability analysis:
experiences and challenges for micro and macro data integration"[1]

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[1] The views expressed are those of the author and do not necessarily reflect the views of the BIS or the central banks and other institutions represented at the meeting.

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Discussion of session 2
"New statistical frameworks for financial stability analysis: experiences and challenges for micro and macro data integration"

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Main focus of the Session

- Usefulness of mobilising micro data and integrating them into a macro framework?

- New trend for the analysis and regulation of financial systems: need to re-engineer current statistical systems?

- Challenges: how to consider multiple risk dimensions?

- Value in sharing experiences?

Five presentations contributing usefully to the debate

- I Kavonius et al (ECB): *"Deriving Household Indebtedness Indicators by Linking Micro and Macro Balance Sheet Data"*

- J Cassidy (CBI): *"Understanding Long-Term Mortgage Arrears in Ireland: Insights from Macro and Micro Data"*

- J Jabłonowski et al (NBP): *"In pursuit for patterns of economic behaviours using cluster analysis and correspondence analysis"*

- G Morandi et al (ECB): *"Setting-up the transmission of individual MFI statistics on balance sheet items and interest rates across the Eurosystem"*

- P Bańbuła et al (NBP): *Which households are really financially distressed: How MICRo-data could inform the MACRO-prudential policy*

Key lessons from the presentations

- Rising demand for more granular information

- Importance of matching micro and macro data

- Integrating micro data poses significant challenges

- A tool kit for micro data users?

- New knowledge opportunities

1. Rising demand for more granular information (a)

- A structural shift towards more micro data information...

  - ➤ Social needs: distribution, inequalities (Kavonius)

  - ➤ New monetary policy needs: eg fragmentation of interest rates across countries, lenders and borrowers (Morandi)

  - ➤ Micro supervision: tail risks

  - ➤ Financial stability: micro data to construct macro prudential tools (Bańbuła)

1. Rising demand for more granular information (b)

- … driven by concrete policy needs

  - ➢ <u>Impact study</u> / effective policy design / cost benefit analysis (Bańbuła)

  - ➢ Complex world leading to <u>complex questions</u>

  - ➢ Example 1 (Cassidy) - <u>Irish mortgages</u>: analysis requires granular details on duration, loan characteristics (geography, instrument, borrowers), and transition between various states of arrears – mobilisation of loan data with 250 fields

  - ➢ Example 2 (Jabłonowski) - <u>Insufficient saving</u> by Polish households?

2. Importance of matching micro and macro data (a)

- Need for an overall framework to integrate data...

    - Disciplining tool to <u>precise</u> the various data formats

    - Dealing with <u>hybrid concepts</u> (no SNA-type standardisation) (Kavonius)

    - Combining <u>different micro sources</u> (eg banks balance sheets and interest rates (Morandi))

    - <u>Mixing</u> micro-level of information (eg household surveys, real assets) with macro-type data (Kavonius)

2. Importance of matching micro and macro data (b)

- ... and in turn to facilitate economic analyses

  - ➢ <u>Macro/micro interactions:</u> eg between monetary policy transmission and banks' business models (funding costs, risk-taking appetite (Morandi))

  - ➢ <u>Dynamic factors:</u> eg micro analysis of transition from long-term arrears to understand the resolution of the Irish mortgage crisis (eg type of resolution, immediate «cure» versus postponing (Cassidy))

  - ➢ Richness of data allows for <u>stress scenarios</u> and calibration of shocks (Bańbuła)

3. Integrating micro data poses significant challenges (a)

- Inherent costs of mobilising and analysing micro data

  - ➢ *"Initial preparation from scratch took around 400 hours of literature review, coding and documenting"* (Jabłonowski)

  - ➢ Analysis is data constrained (data driven (Kavonius))

  - ➢ Data quality issues (eg commercial databases)

  - ➢ Confidentiality and requirement for legal changes (eg new ECB role in prudential supervision (Morandi))

  - ➢ Communication issues: transforming / synthetizing large datasets (innovative tools, visual interpretation) (Jabłonowski)

3. Integrating micro data poses significant challenges (b)

- Difficulties related to the micro / macro integration itself

  - ➤ Timing, sources, frequency (interpolation (Kavonius)), <u>hybrid data concepts</u>...

  - ➤ <u>Trade-off</u> when mixing micro-macro layers of information: consistency versus information richness

  - ➤ Macro data are usually defined and collected <u>consistently</u>

  - ➤ Micro data have a more <u>limited coverage and/or composition bias</u> (eg Irish mortgages (Cassidy))

4. A tool kit for micro data users? (a)

- When setting up the micro-data framework
  - ➢ Clarify the data models

  - ➢ Optimise the data production processes

  - ➢ Conduct reconciliation exercises: accounting relationships, plausibility checks... (Kavonius)

  - ➢ Connect different data sources: synergies, cross-checking

  - ➢ Conduct judgement-based checks: graphical verification, top down view, peer group comparisons... (Morandi)

  - ➢ Set data quality tolerance thresholds

4. A tool kit for micro data users? (b)

- When using the statistical framework for analysis

  - ➤ Micro datasets can reveal <u>unexploited patterns</u> (Jabłonowski)

  - ➤ The diverse features of the data allows for rich<u>, new ways of analysing</u>: cluster analysis, concentration analysis

  - ➤ <u>Test hypothesis</u> (even if not conclusive…)

  - ➤ Mobilise techniques popular in <u>other scientific branches</u>

  - ➤ <u>Presentation tools</u> eg graphical maps

5. New knowledge opportunities (a)

- More information available

  - ➤ Details on the <u>underlying macro dynamics</u> (eg mortgage arrears (Cassidy))

  - ➤ <u>Un-mask micro heterogeneity</u>: eg distribution across groups is higher than across countries (Morandi, Kavonius)

  - ➤ <u>Influence of time</u>: transition probabilities of moving across groups (Cassidy); distribution changes (Kavonius)

5. New knowledge opportunities (b)

- Micro data can help to think differently

  - ➤ Mix <u>different type of information</u>: eg objective financial macro measure / subjective assessment based on surveys (Bańbuła)

  - ➤ New <u>analytical tools</u> available to understand and make sense of the data: panel data analysis, micro simulation model, logit model (Bańbuła)

  - ➤ Better analysis <u>helps framing policy issues</u>: eg should the resolution of mortgage arrears be based on loss of ownership / forbearance / postponing (Cassidy)? Are Debt Service-To-Income (DSTI) limits useful (Bańbuła)?

A few questions…

- I Kavonius et al (ECB):
  - Value added of a macro framework matched to micro data compared to longitudinal panels, with the identification of the same households over time (and their moving across groups)?
  - Why is interpolation important? Does it bring value? Is it for communication purposes?
- J Cassidy (CBI):
  - How to factor in the difficulties related to composition bias in micro data?
  - Micro data help to assess forbearance strategies. But the crisis showed these strategies were partly a consequence of the macro situation / policies. How to manage this endogeneity?
- J Jabłonowski et al (NBP):
  - Communication challenges posed by methods from other scientific areas eg for policy advise?
  - Trade-off cost of using micro data / risk of inconclusive evidence: is the exercise worth it?
- G Morandi et al (ECB):
  - Issues when matching granular datasets? Importance of a common identifier?
  - How to integrate inter-firms relationships at the micro level (ie the interest rates fixed by a subsidiary may be determined by the balance sheet situation of the group)?
- P Bańbuła et al (NBP):
  - To what extent can cost-benefit analyses based on probabilities and judgement (eg type I and II error ratios) be useful for policies?
  - DSTIs are deemed useful in itself… but compared to other macroprudential tools?