*Discussing the paper "Heterogeneity in the effect of Covid-19 mortgage forbearance: evidence from large bank servicers" by Lan Shi**

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BCBS-CGFS research conference, How effective were policy measures in supporting bank lending during the Covid-19 crisis?
Basel, May 10-11, 2022

*The opinions expressed in the slides are the sole responsibility of the author and should not be interpreted as reflecting the views of Sveriges Riksbank.

Summary of the paper

This paper examines the effectiveness of the CARES Act mortgage forbearance program during the COVID-19 pandemic, in particular,

- Forbearance entry
- Forbearance exit
- Post exit loan performance
- Effect of forbearance on refinancing

Data: FRB Y14 data first lien mortgage loans reported monthly by the largest 18 bank servicers, including borrower- and loan-level information for both origination and loan performance. A 10% random sample from Feb 2020 to July 2021.

Method: Bi-variate analyses and logit regressions

Summary of the paper

Findings:

- Forbearance rate was higher for more vulnerable populations: lower credit scores and facing greater income shocks
- Borrowers with higher credit scores, and facing improving employment conditions exited forbearance faster
- Under forbearance, a significant portion of borrowers still paid; for those who missed payments, a large portion exited by deferring the forborne payments
- Most borrowers were current after exit, likely assisted by the COVID-19 deferral programs, but their serious delinquency risk is higher than those who never entered forbearance
- Forbearance reduces refinancing opportunities
- Banks utilized buyouts to manage nonpaying loans under forbearance

Overview

- A comprehensive study on the effect of COVID-19 mortgage forbearance program
- New insights on forbearance exit and post exit performance, while other studies mainly focus on the entry
- More accurate identification of entry and exit events
- Adding a short description on the CARES Act 2020, and how mortgage market and debt forbearance work generally in the US. will help the readers to understand the institutional background
- A lot of interesting results, perhaps the paper could focus on one or two perspectives and dig deeper

Comments on analyses and results

Comment 1: Show an overall picture of forbearance entry and exit

<table>
<tr><th></th><th>Not entered</th><th>Entered</th><th>Exit</th><th>Post exit</th></tr>
<tr><td>Without financial difficulty (no missed payments)</td><td>Don't need</td><td>a credit line or moral hazard</td><td>• Exit and current
• Refinance</td><td rowspan="2">• Refinance
• Current
• Re-enter
• Delinquency</td></tr>
<tr><td>With financial difficulty (missed payments</td><td>Missed opportunities</td><td>Financial constrained</td><td>• Reinstatement
• Deferring the forborne payments
• Loan modification</td></tr>
<tr><td colspan="3"></td><td colspan="2">Still stay in forbearance</td></tr>
</table>

Suggestions:

- Show the fraction of borrowers in each category
- Compare summary statistics on borrower (and loan) characteristics across borrower types for entry, exit and post exit performance
- Control for entry motivation "missed payments under forbearance" in regression analyses

Comments on analyses and results

Comment 2: Data and sample construction

- Are borrowers defined at the individual or household level? How were joint loans treated? How many borrowers have multiple loans?
- Sample contains loans originated during pandemic
  - Are those loans associated with different characteristics?
  - The "number of months in forbearance" may be less informative for loans that originated during the end of 2020
- A significant number of loans were refinanced by non-banks, can perhaps be excluded as they can no longer be tracked

Comments on analyses and results

Comment 3: Regression analyses for entry and exit

- FICO credit score
  - Use FICO score before Mar 2020 in entry regression analysis for robustness check
  - For bi-variate analyses, better to use the FICO score lagged for a month or before Mar 2020
- Are other borrower characteristics (DTI and LTV) updated monthly? If so, need to use lag or the value before Mar 2020
- The majority of control variables seem to be time invariant.–> Can consider cross-sectional regressions for robustness check, e.g. using 2020/04 for entry analysis
- Perhaps use continuous measures instead of group dummies for control variables?
- For exit regression: shouldn't the dependent variable=1 for both non-prepay and prepay exits?

Comments on analyses and results

Comment 4: Regression for examining the effect of forbearance on refinancing

$$LogitProb(Prepay) = Forbearance(lag) + PaymentStatusCurrent(lag) + Forbearance(lag) * PaymentStatusCurrent(lag) + otherControls$$

To examine the effect of programs such as GSEs promulgated policies that greenlighted the refinance for borrowers

- Under forbearance but still pays
- Exit forbearance and make three consecutive payments

Rerun the regression above using 3-month lag in forbearance and payment status. Should perhaps control for the payment status for all the past three months, not only 3-month before?

Other comments

Tables and Figures: suggestions on the reporting format that can be easier for readers to follow

- Add a description for each table and figure
- Rename the variables (e.g. pct_HH_inc) in tables and figures that are not intuitive
- Report only key variables to avoid long tables
- Use the stars instead of the p-values for showing significance in tables
- Report more decimals if the estimated coefficient is 0.00