Discussion of "Stable NIM and Interest Rate Exposure of US Banks"

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4th Bank of Canada FSRC Macro-Finance Conference

May 17-18, 2021

What is this paper about?

1. It challenges income-based measures of banks' interest rate risk (IRR) exposure

($\Delta NIM/\Delta r$) [NIM= Interest income- Interest expense]

- By construction, $\Delta NIM/\Delta r$ is low, but IIR/duration risk may be still present

2. Low interest income β^{inc} (ΔInterest income/Δr) and low interest expense β^{exp}

(ΔInterest expenses/Δr) form stable NIM, which may not translate into low IRR exposure

3. Questions "Banking on deposits: Maturity transformation without interest rate risk"

(DSS) by Drechsler, Savov and Schnabl

- no evidence of matching of β^{inc} and β^{exp}
- no room for deposit market power (i.e., low β^{exp}) as a hedge to IRR exposure

What is this paper about?

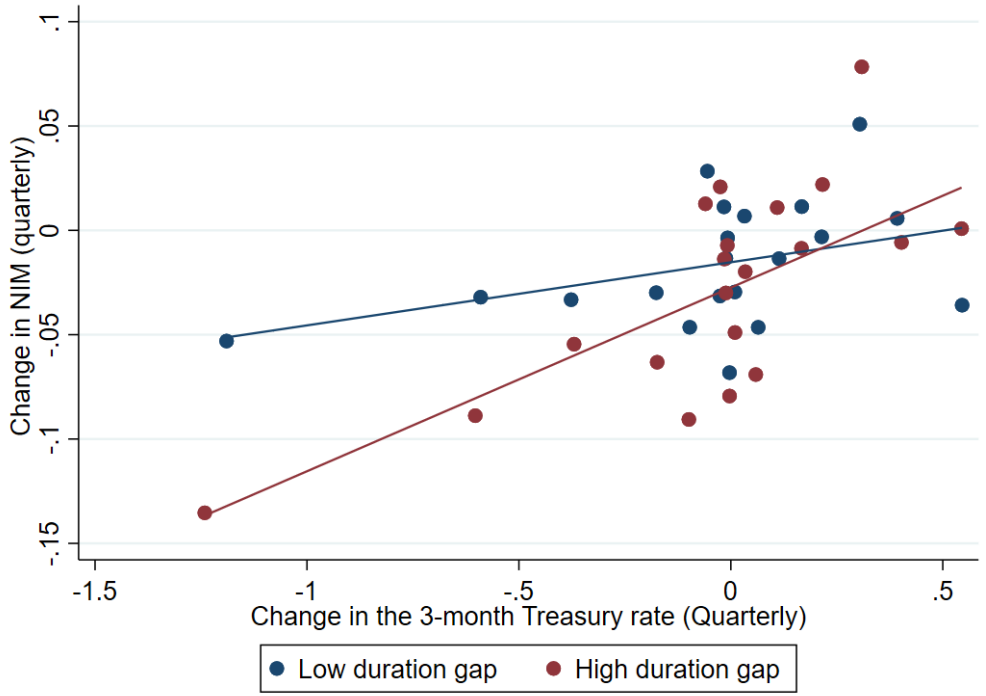
- Very interesting, thought-provoking paper, stirs up discussions!
- Definitely, check out what will happen next!

Comment 1: Are US banks exposed on interest rate risk?
Plenty of evidence!

Comment 1: Example 1

- Binned scatter plot of ΔNIM on Δr
- NIMs sensitivity to the 3month rate for high duration gap > NIMs sensitivity for low duration gap
- Banks with high duration gap:

  1 st.dev Δr ~ 0.04 pp ΔNIM
  (mean ΔNIM 0.03pp)



Comment 1: Example 2

- ΔNIM/Δr changes with the monetary policy tightening regime
  - For example, in 2015-2018, the NIM is positive (mean NIM is 340 bsp, change is 38 bsp)

Table 2: NIMs Decomposition Relative to the Federal Funds Rate after First 175 Basis Points of Increases

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Monetary Policy Tightening Episode	Cumulative Change in FFR in bps (1)	Cumulative Change in NIMs in bps (2)	Cumulative Change in NIMs over Cumulative Change in FFR (3)	Cumulative Change in II/IBA over Cumulative Change in FFR (4)	Cumulative Change in -IE/IBA over Cumulative Change in FFR (5)
2015-18	175	38	0.22	0.49	-0.28
2004-06	175	-16	-0.09	0.28	-0.37
1999-2000	175	-13	-0.07	0.35	-0.41
1994-95	175	-1	-0.01	0.33	-0.34

Note: NIMs are net interest margins. FFR is target federal funds rate. II/IBA is interest income over interest-bearing assets. IE/IBA is interest expense over interest-bearing assets. NIMs at the beginning of an episode are 4-quarter trailing averages. Data for the 1994-1995 period begin in 1993:Q4 and end in 1994:Q4. Data for the 1999-2000 period begin in 1999:Q2 and end in 2000:Q3. Data for the 2004-2006 period begin in 2004:Q2 and end in 2005:Q2. Data for the 2015-2018 period begin in 2015:Q4 and end in 2018:Q3.

Based on "Changes in Monetary Policy and Banks' Net Interest Margins: A Comparison across Four Tightening Episodes" Feds Note, April 19, 2019; "Why Are Net Interest Margins of Large Banks So Compressed" Feds note, October 5, 2015

Comment 2: This paper vs DSS

Comment 2: What are the hypotheses of banks' IRR exposure?

- Traditional view: banks are exposed to IRR because they engage in maturity transformation, i.e., extending long-term loans that are financed with short-term deposits

- Alternative view: banks match the interest rate sensitivity of their assets and liabilities, and thus bear no interest rate risk ($\beta^{inc} \sim \beta^{exp}$)

  - Hellwig (1994): banks offer variable-rate deposits and invest in variable-rate assets; duration is perfectly matched and hence no exposure to IRR
    - ✓ "Liquidity provision, banking, and the allocation of interest rate risk." European Economic Review 38, 1363–1389

  - DSS (2021): banks have deposit market power (i.e., β^{exp} is low) and deposits behave as long-term liabilities. Banks optimally invest in long-term fixed-rate assets (i.e., β^{inc} is low) and manage to hedge IRR (but with maturity transformation)

  - Both models are plausible and offer relevant and important testable hypotheses
  - In practice, banks construct replicating portfolios of fixed-income assets that mimic the interest rate sensitivity of their deposits

Comment 2: Where is DSS' Achilles heel?

- Both models assume that assets can be chosen *frictionlessly,* which allows for perfect maturity match of assets and liabilities
- This is very unlikely! Finding evidence that all banks are in an optimal state of A/L matching is beyond reach
- There could be multiple frictions:
  - Frequent asset matching is costly
  - Regulatory requirements: what if a bank must hold certain assets (i.e., LCR)
  - Currently environment: massive deposit growth + weak loan growth, banks invest in longer maturity assets because they try to decrease the cost of deposits (high reserves); this seems consistent with market power story, but it is likely not
- Nevertheless, there can be certain banks that are successful in doing this. Which banks cannot use their market power to match assets to liabilities? What is the friction that distorts the optimal outcome?

Comment 2: how does this paper go against DSS?

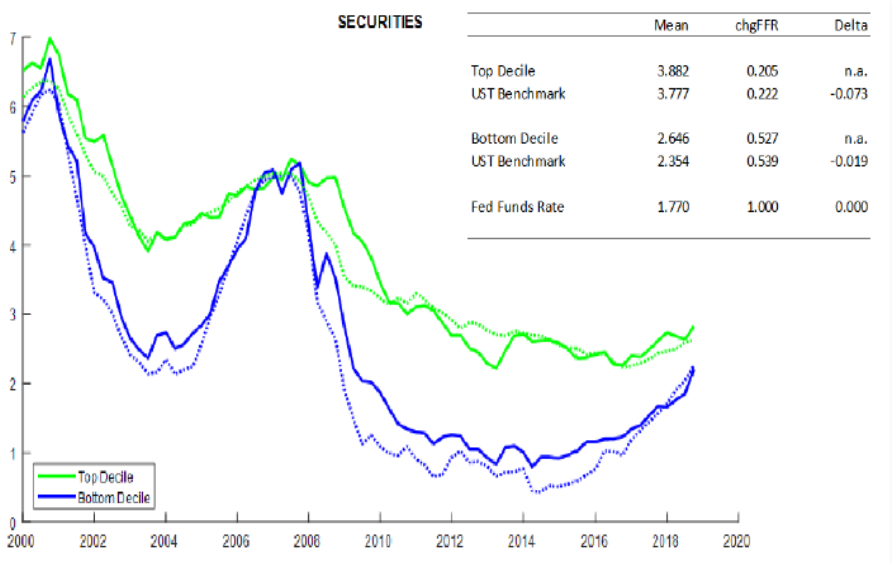
- **Argument 1**: No evidence of bank A/L maturity matching (including through market power)
  - Argument 1a: deposit market power does not explain interest expense β^{exp}

- **Argument 2**: the so-called matching (low β^{inc} and β^{exp}) is still associated with exposure to IRR due to mismeasurement (discussed in Comment 3)

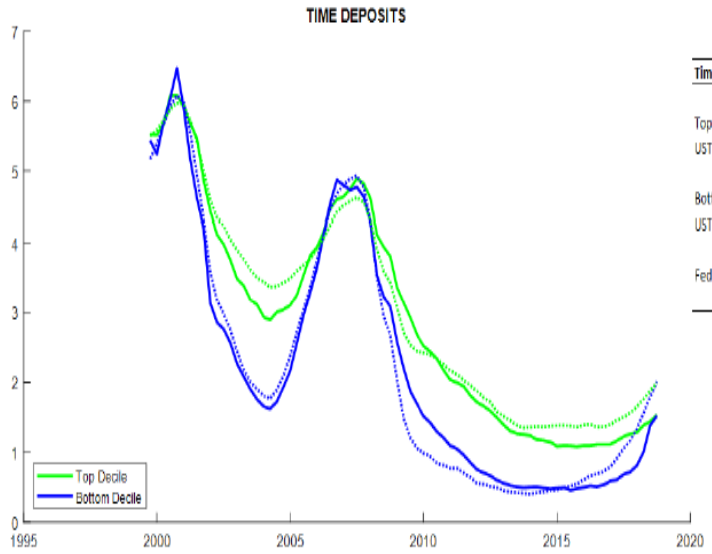
Argument 1: Construct US Treasury portfolios as a benchmark to synthetic bank portfolios

Securities and time deposit portfolios' returns between synthetic bank and US Treasury portfolios match well!

- Evidence of no A/L matching



	Mean	chgFFR	Delta
Top Decile	3.882	0.205	n.a.
UST Benchmark	3.777	0.222	-0.073
Bottom Decile	2.646	0.527	n.a.
UST Benchmark	2.354	0.539	-0.019
Fed Funds Rate	1.770	1.000	0.000



Time Deposits	Mean	chgFFR	Delta
Top Decile	2.90	0.280	n.a.
UST Benchmark	3.01	0.231	-0.027
Bottom Decile	2.23	0.474	n.a.
UST Benchmark	2.23	0.470	-0.010
Fed Funds Rate	1.82	1.000	0.000

Argument 1:

- This is very clever exercise!
  - It raises the question of what is the value of banks?
  - If anyone can replicate banks' returns, we can all be bankers (given certain skills)
- Note: not clear how the synthetic bank portfolio is constructed; also it is only for securities (30% of banks balance sheet) and time deposits (core deposits are key, see graph at the end)
- Can you match the entire set of asset and liabilities ?
- But this exercise does not disprove that banks can still match their A/L through market power;
  - same outcomes can be achieved in multiple ways

Argument 1a: β^{exp} and deposit market power

- The purpose of this exercise is to gauge the explanatory power of HHI vs maturity on spread beta/mean deposit rate
- The conclusion is that HHI does not matter but time deposit (?) maturity does
- Is this a relevant exercise?
- In DSS, banks actively manage their portfolios' durations because of market power (low interest expense beta), i.e., HHI and A/L maturities evolve endogeneously
- From DSS: higher HHI → lower interest expense betas (Figure 10) → higher asset duration (Figure 9) , which can also affect deposit duration

- The question is whether HHI is a sufficient statistic for deposit market power(β^{exp})
  - deposit rates sensitivities may not be entirely driven by market power (Ex: massive deposit growth, weak loan growth, IOER is the yield on deposit investment → limited scope for market power)
  - β^{exp} can also include other aspects of market power that are not captured in HHI, such as consumer related variables (switching costs)

Comment 3: Another look at IRR exposure measures

NIM vs Present Value

- Income sensitivity is about *short-run* change in income that will re-price in one year

$\{CF^A_{t+s}\}^{\infty}_{s=0}$ and $\{CF^L_{t+s}\}^{\infty}_{s=0}$ are re-pricing cash flow from A and L, where s is the repricing maturity in years.

$Gap_{t+s} = CF^A_{t+s} - CF^L_{t+s}$ is the difference for a given maturity

$\Delta\text{NIM} = Gap_{t+1} \times \Delta r$ (change in the rate)

- Net worth sensitivity is about the change *in net worth over the entire maturity span*

$$\Delta\text{PV} = \sum_{s=0}^{\infty} \frac{Gap_{t+s}}{(1+\Delta r+r_s)^s} - \sum_{s=0}^{\infty} \frac{Gap_{t+s}}{(1+r_s)^s}$$

This is the most convincing part of the paper

- This paper questions income-based IRR sensitivities
- It argues for *present value sensitivities of cash flows (as opposed to NIMs)* which will capture the value change over a long horizon
  - For which banks income-based IRR measures do well? (e.g., fully floating assets and liabilities)
- If you measure IRR/duration with PV approach, no need of portfolio benchmarking and HHI explanation of spread beta as these arguments do not disprove DSS
- One needs re-pricing buckets on deposits, which is challenging

Conclusion

- Very interesting paper!
- If the authors manage to measure precisely bank duration with PVs, this paper can have very important implications
- Stay tuned for the next version!

Additional

Deposit Classification

- Use different deposits splits as time deposits comprise small portion of the entire balance
- An alternative (based on Y-9C) is to use short-/long-term deposits and core deposits. Short-term is liabilities with maturities =< 1 yr, trading liabilities, repos, CP and foreign deposits. Long term funding: other borrowed money, subordinated notes and large time deposits with maturities > 1 yr.
- Core deposits comprise most of the balance sheet and increase over time
- Core deposits include checking accounts, savings accounts (> 1yr maturity), and certificates of deposit