Central Bank Digital Currency and Banking Choices

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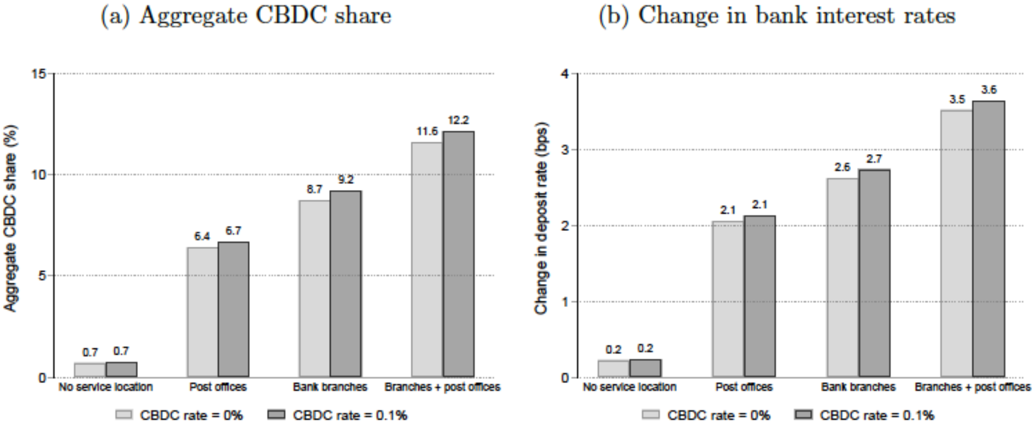
Summary

- **Research Questions**
  - How would a **CBDC** affect **demand** and **supply** of **banks' deposits**?
  - How would banks' **financial products** and **branch network** influence the effect?
- **Model** of **deposit demand** and banks' **interest rate** competition where
  - **Households** choose **cash** vs **deposit** holding, and **deposit** among **banks** differentiated in **branch network** and complementary **financial products**
  - **Banks** compete Bertrand-Nash on deposit **interest rates**
- **Counterfactual** with a **CBDC** as alternative to bank deposits, with
  - 0/0.1% **interest rate**, **service locations** (none, post offices, bank branches)

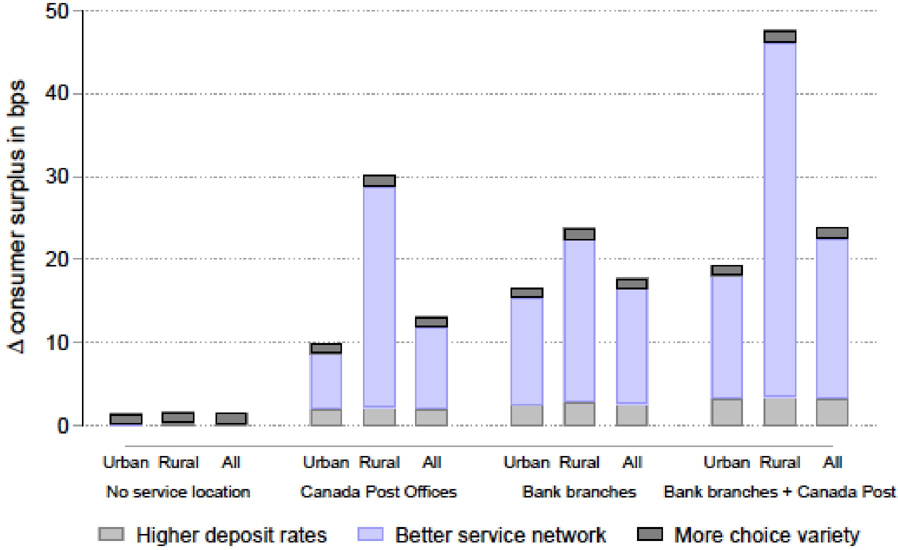
Summary

- **Data** on 2010-2017 Canadian banking sector including
  - Household survey with household's **deposit** and **loan bank**, allocation of **liquid assets** (cash vs deposit), residential **location**
  - **Addresses** of all **bank branches**, assume limit on household's travel distance
  - Bank-level **interest rates** on **deposits** and mortgage loans
- **Results** show that **CBDC** take up depends on
  - **Service location**: 0.7% without, 11.6% with post offices and bank branches
  - **Complementarity**: Without it, CBDC could reach 38% share
  - **Holding limit**: A CAD25k limit would reduce CBDC share by half

Effects on CBDC Shares and Bank Interest Rates



Effects on Consumer Surplus



Comments & Suggestions

1. Complementarity of financial products
2. Single bank for deposit
3. Identification
4. Stability, competition, transmission of monetary policy

Complementarity of Financial Products

Complementary **financial products** (mortgages, credit cards,..) are an important driver of deposit demand but are **exogenously given**

- Banks might respond to CBDC adjusting **loan rates**
  - Better for banks as borrowers are **more elastic** than **depositors**
  - Loan rates can be **reduced** to attract borrowers through complementarity or **increased** if CBDC makes banks' deposit funding more costly?
- Data on **loan rates** used for banks' **profit** function but **not** as determinant of depositors' utility for from financial products

$\Rightarrow$ **Endogenous loan rates** to estimate **demand** for **bundles** (Gentzkow 2007)

  - Currently paper assumes sequential decision (first deposit then loan), if timing is available in CFM household survey provide evidence on sequential vs simultanous

- ω^k exogenous **fraction** of **households** who obtained loan k: demand vs supply?

Single Bank for Deposit

Demand model implies that **deposits across banks** are **mutually exclusive**

- What proportion of households only use a **single bank**?
  - In 2008 Dutch household survey 22% of households deposit across multiple banks
  - Expect **increasing trend** of **deposit multi-homing** though multiple **digital wallets**?
- Depositing across **multiple banks** (CBDC + private bank) would
  - Change interpretation of "constrained households" with **CBDC holding limit**
  - Be more **realistic** in scenario where **CBDC** uses **branch network** for servicing
- If CBDC uses banks' **branch network** shouldn't banks obtain some **revenue**?

Identification

Key parameter for counterfactual results is **depositors' demand elasticity**, which determines substitution between banks and CBDC

$\Rightarrow$ Helpful to compare to literature estimates (Egan, Hortaçsu, Matvos 2017 *AER*)

- Not clear what **variation** in data **separately identifies** effect of bank FE & branch network on deposit demand, benefit from financial products, cash vs deposit
- No need for **instruments** to address interest rate endogeneity?
- Focus only on **household deposits** (insured), what about **firms** (uninsured)?
  - In eurozone (2021) represent 25% of total overnight deposit volume
  - Are **less sensitive** to **deposit rates** and likely to **benefit more** from **complementarity** with financial products, mitigate impact of CBDC?

Stability, Competition, Transmission of MP

Three potential **extensions** to quantify how CBDC affects banking sector's

1. **Stability** (Egan, Hortaçsu, Matvos 2017 *AER*)
   - **Negatively** if deposits are more costly to raise for banks
   - **Positively** if banks' balance sheets shrinks making them less systemic
   - **Positively** if CBDC deposits are lent to banks via lending facilities
2. **Concentration**: Counterfactuals show that larger banks lose less deposit shares
3. **Transmission** of **monetary policy** (Wang, Whited, Wu, Xiao 2022 *JF*)
   - **Negatively** if banking sector becomes more concentrated
   - **Positively** if it can be implemented directly through CBDC deposit accounts

Conclusion

- **Great paper** quantifying effects of introduction of **CBDC** on deposits
- Important **contribution** highlighting importance of **service location**, **complementary financial products**, and **holding limits** for take-up
- Making **loan interest rates** endogenous and including **uninsured deposits**
- Implications for **stability**, **concentration** and **transmission** of monetary policy