Today’s presentation is based on three papers

- Engert, Fung and Hendry, in progress, “Is a cashless society problematic?”
Central bank digital currency (CBDC)

- CBDC: monetary value stored electronically that
  - represents a liability of the central bank
  - widely available to the general public
  - can be used to make payments

- Attributes/technology of CBDC are important and need to be determined
Possible motivations for issuing CBDC

- Respond to declining bank notes, preserve seigniorage and ensure adequate central bank (outside) money
- Improve contestability and efficiency in payments
- Enable additional monetary policy tools: reduce the lower bound on interest rates and facilitate quantitative easing
- Improve financial stability
- Promote financial inclusion
- Inhibit criminal activity
## Organization of the presentation

<table>
<thead>
<tr>
<th>Cashless</th>
<th>Contestability in the payments system</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Is a cashless society problematic?</td>
<td></td>
</tr>
<tr>
<td>• If so, should the central issue CBDC in response?</td>
<td></td>
</tr>
<tr>
<td>• Should a central bank issue a CBDC to promote contestability?</td>
<td></td>
</tr>
<tr>
<td>• How?</td>
<td></td>
</tr>
<tr>
<td>• What are the implications for the financial system and the economy?</td>
<td></td>
</tr>
</tbody>
</table>
Canada (and many other countries): cash use has been declining

Cash payments in Canada

Cash versus other payment methods

Payment share as a percent of value

Source: Estimated using data from TSI International.

Source: Canadian Financial Monitor
Are we moving towards a cashless society?

Source: Bank for International Settlements, Riksbank

Source: Bank of Canada
Implications of a cashless society

- Central bank seigniorage, central bank balance sheet and financial stability intervention, and monetary policy
  - A central bank could raise revenue and expand its balance sheet through other measures, e.g. issuing reserves to buy government bonds
  - Cash does not play a significant role in monetary policy

- Payments
  - Cash plays no role in large value payments
  - People who are forced to rely on cash (unbanked or no access to electronic payments) would be worse off (but there are very few of them in Canada). So what should be the response?
  - Would the disappearance of cash reduce competition and lead to increased concentration in retail payments?
Financial system in a cashless society: cash and market discipline (ex ante)

- When depositors (individual and business) become concerned about the financial health of their banks and the safety of their deposits, they can reduce their deposits (market discipline) by
  - Withdrawing cash from their accounts
  - Transferring deposits to another bank
  - Buying government bills and bonds

- If all banks were pursuing short-term profits and increasing system-wide risk,
  - Depositors are likely to behave in a myopic way as well, as deposit rates might have increased, thus failing to provide market discipline.
  - Some concerned depositors could reduce their deposits by buying government bonds, thus triggering further reactions in other markets

- Experiences in the U.S. (Rose 2015) and the U.K. (Shin, 2009) tend to suggest that during episodes of significant financial instability, wholesale runs (by large firms) were more important than retail runs (by small individual depositors), especially in-branch runs to cash

- Prudential regulation would also continue to constrain bank risk-taking ex ante
After banking system breakdown: a sharp increase in the demand for safe store of value – cash (central bank money)

The demand for bank notes in Iceland increased sharply during the financial crisis in 2008

People were still using debit and credit cards to make payments during the financial crisis,

Source: the Central Bank of Iceland
Options to meet the increased demand for risk-free assets in a systemic banking system collapse

- The central bank maintains a large inventory of bank notes, even if the demand for cash is very small in normal times
  - The Central Bank of Iceland (CBI) was holding sufficient cash reserves to meet the initial increase in demand in 2008 (near doubling/tripling)

- Rely on government securities as a safe store of value
  - Perhaps consider issuing government bonds of smaller denominations to provide for a wide access to the general public

- Introduce central bank digital currency
  - As the risk of running out of bank notes increased in 2008, the CBI was preparing additional measures to meet the increase in demand for cash, e.g. allowing depositors who had withdrawn bank notes from banks to deposit them to an account with the CBI in their own name (CBDC)
  - Could a central bank issue a CBDC to meet the demand for central bank money only when it is necessary to do so?
Organization of the presentation

Contestability in the payments system

- Should a central bank issue a CBDC to promote contestability?
- How?
- What are the implications for the financial system and the economy?
Should the central bank consider issuing a CBDC to promote contestability and efficiency of payments?

- Would a digital currency improve contestability and efficiency?
- Would the private sector be able to provide such a digital currency?
- Would issuing a digital currency be the role that a central bank should play?
If desirable to issue a CBDC, how? What are the attributes?

<table>
<thead>
<tr>
<th>Attributes</th>
<th>CBDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denomination</td>
<td>In national currency: e.g. CAD, GBP, USD, ...</td>
</tr>
<tr>
<td>Legal tender</td>
<td>Yes</td>
</tr>
<tr>
<td>Convertibility</td>
<td>Par exchange between bank notes, reserves, and CBDC</td>
</tr>
<tr>
<td>Interest bearing</td>
<td>Capable, but can be positive, zero or negative</td>
</tr>
<tr>
<td>Fees</td>
<td>None</td>
</tr>
<tr>
<td>Access/use</td>
<td>Non-exclusive</td>
</tr>
<tr>
<td>Availability</td>
<td>24/7</td>
</tr>
<tr>
<td>Supply by central bank</td>
<td>Perfectly elastic; demand determined</td>
</tr>
<tr>
<td>Distribution channel used</td>
<td>Through regulated FIs that have accounts at the CB, who also ensure AML/KYC</td>
</tr>
<tr>
<td>Confidentiality</td>
<td>Counterparty anonymity, but not anonymous to the issuer or FIs (to meet income tax requirements and to inhibit criminal uses)</td>
</tr>
<tr>
<td>Finality/irrevocability</td>
<td>Close to real time, timing of irrevocability depends on technology solution</td>
</tr>
<tr>
<td>CBDC payment network structure</td>
<td>Distributed, bilateral; not tiered</td>
</tr>
</tbody>
</table>
What are the implications of such a CBDC?

- CBDC is likely to reduce cash demand but would overall increase central bank seigniorage
- There would likely be shifts from deposits to CBDC
  - CBDC is like bank deposits: safe-keeping of wealth, earn interest income, and make payments
  - CBDC is also risk free
  - Banks would compete to keep deposits by raising deposit interest rates and bundling services, rely more on other sources of funding or else reduce lending
  - Possible scenario: people and firms hold bank deposits during normal times, and shift to CBDC when under stress
- There would likely be effects on monetary policy
  - Give the CB ability to directly influence interest rates affecting consumers and businesses, especially when policy rates are negative and banks are not passing on negative rates to their customers (cash supply restricted)
  - But direct control of consumer rates might not be desirable
Conclusions

- More work needs to be done on the motivations for issuing CBDC, e.g.
  - Is a cashless society problematic? Is there a need to provide the public access to a risk-free, liquid central bank money?
  - Is issuing a CBDC the best way to promote retail payments contestability and efficiency?

- Need to better understand the potential implications of CBDC, especially for the financial system
  - Some degree of anonymity may be desirable, but full anonymity would facilitate criminal activity
  - If interest bearing – could lead to some redistribution of returns away from financial intermediaries, perhaps a (modest) contraction of intermediation, and increased volatility/instability

- This analysis does not consider the technological challenges and the costs of issuing CBDC (setup and operating costs, cyber risks, and reputational risks)
Thank you