

# Discussion of “The Macroeconomics of Central Bank Issued Digital Currency”

by John Barrdear and Michael Kumhof

2nd International Workshop on P2P Financial Systems

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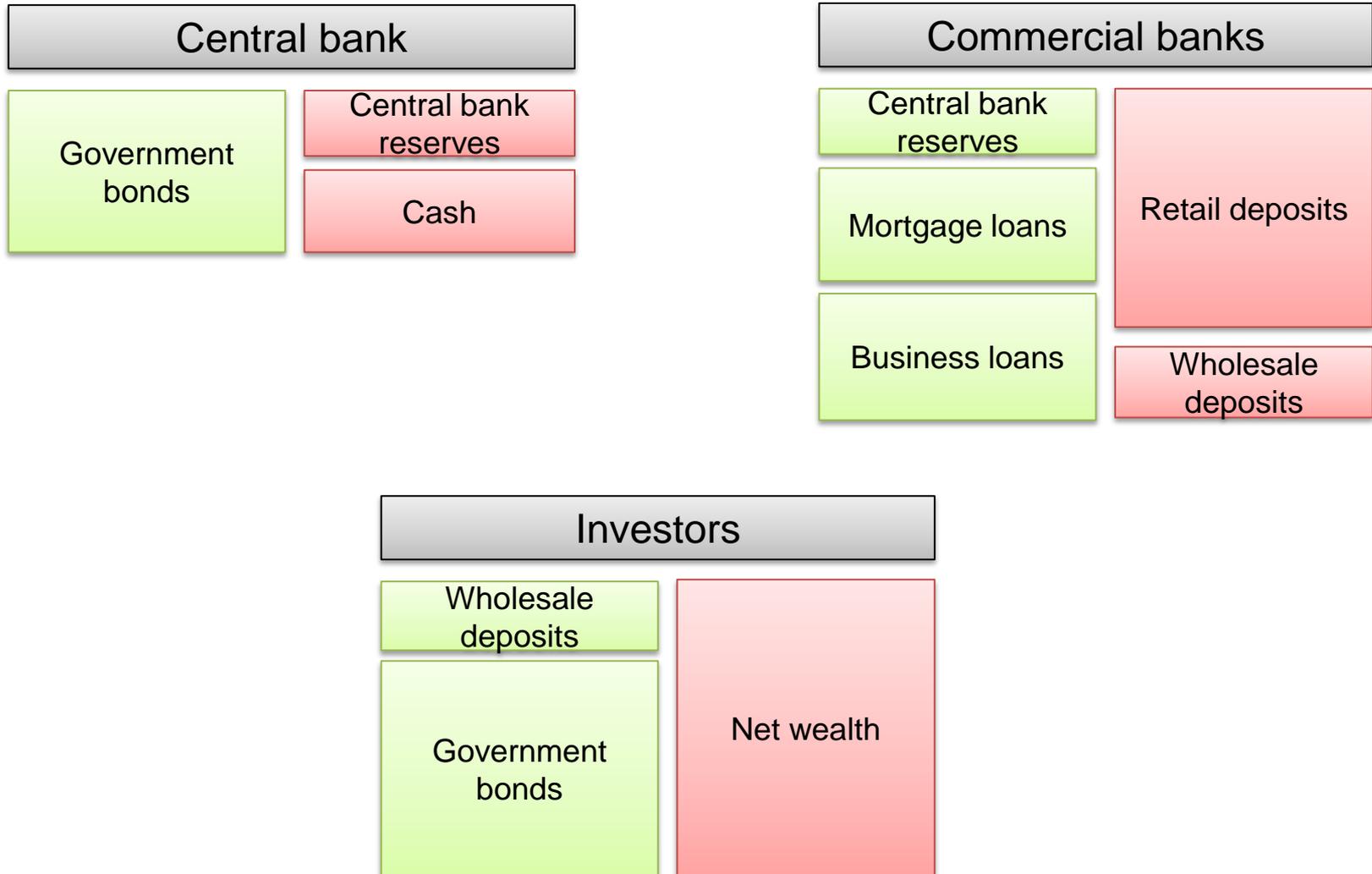


# Importance of macroeconomic perspective

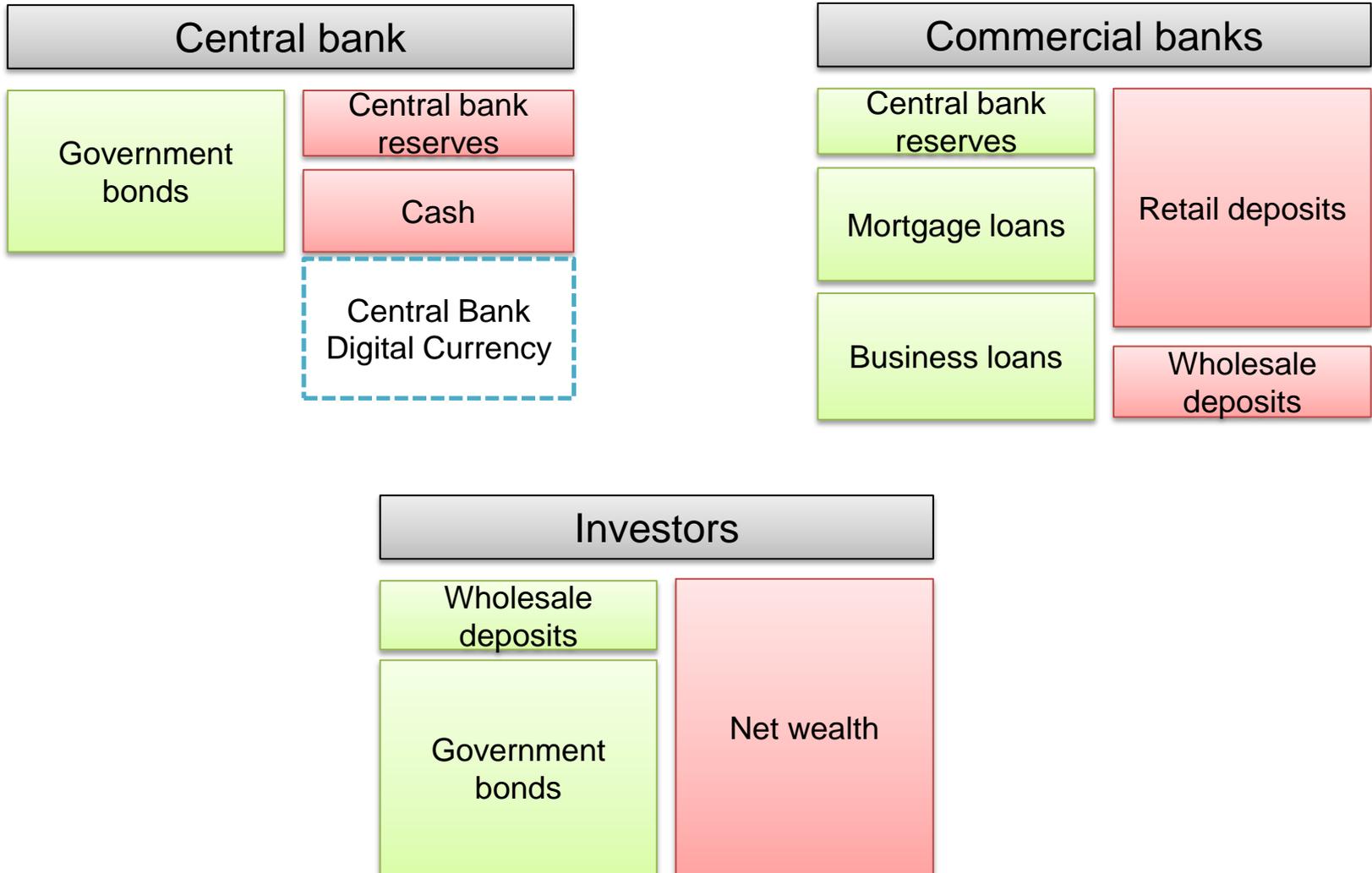
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The macroeconomic perspective chosen by John Barrdear and Michael Kumhof is an important step towards a better understanding of the economic issues related to the introduction of (central bank) digital currency.

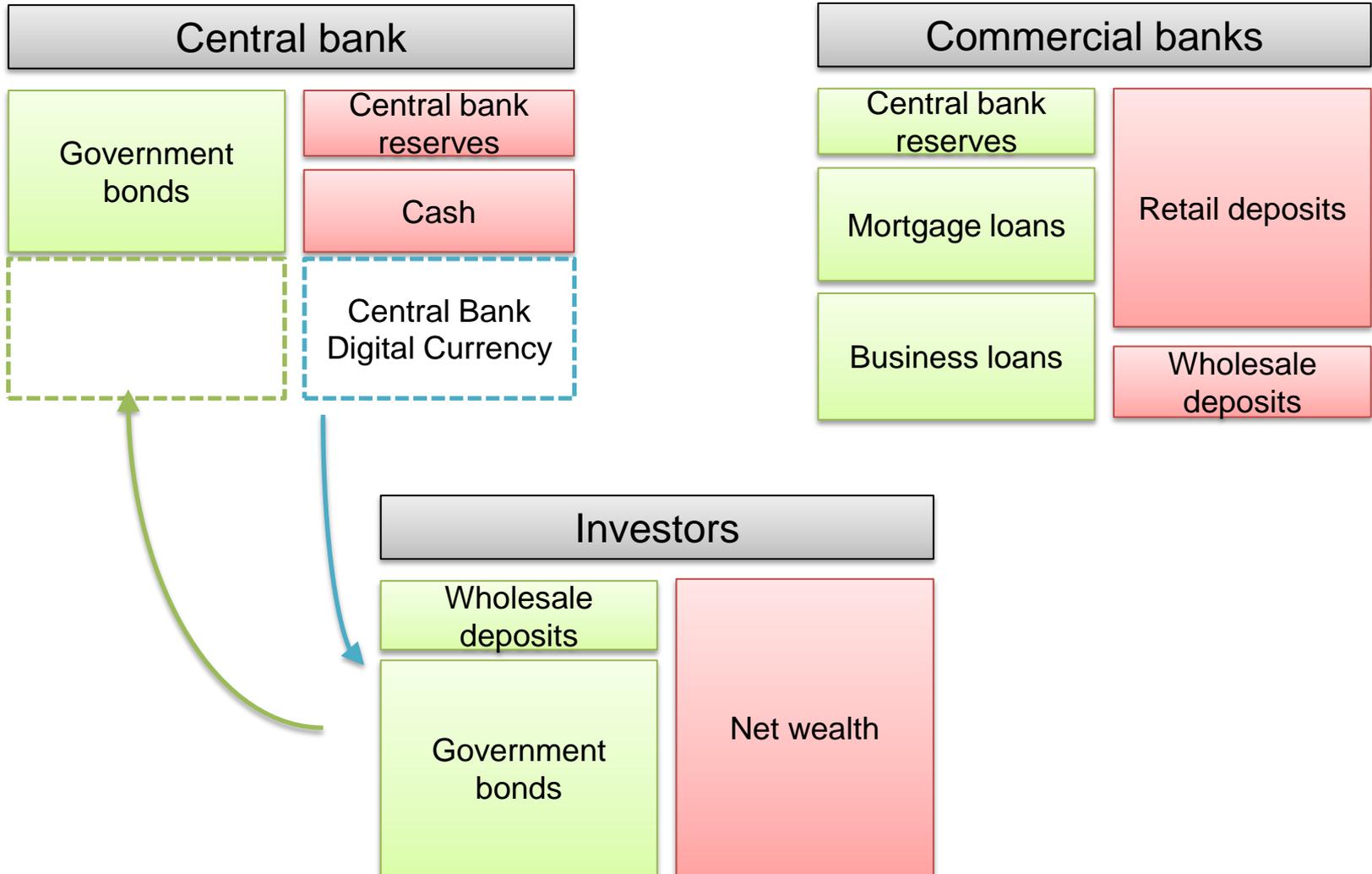
# Importance of macroeconomic perspective



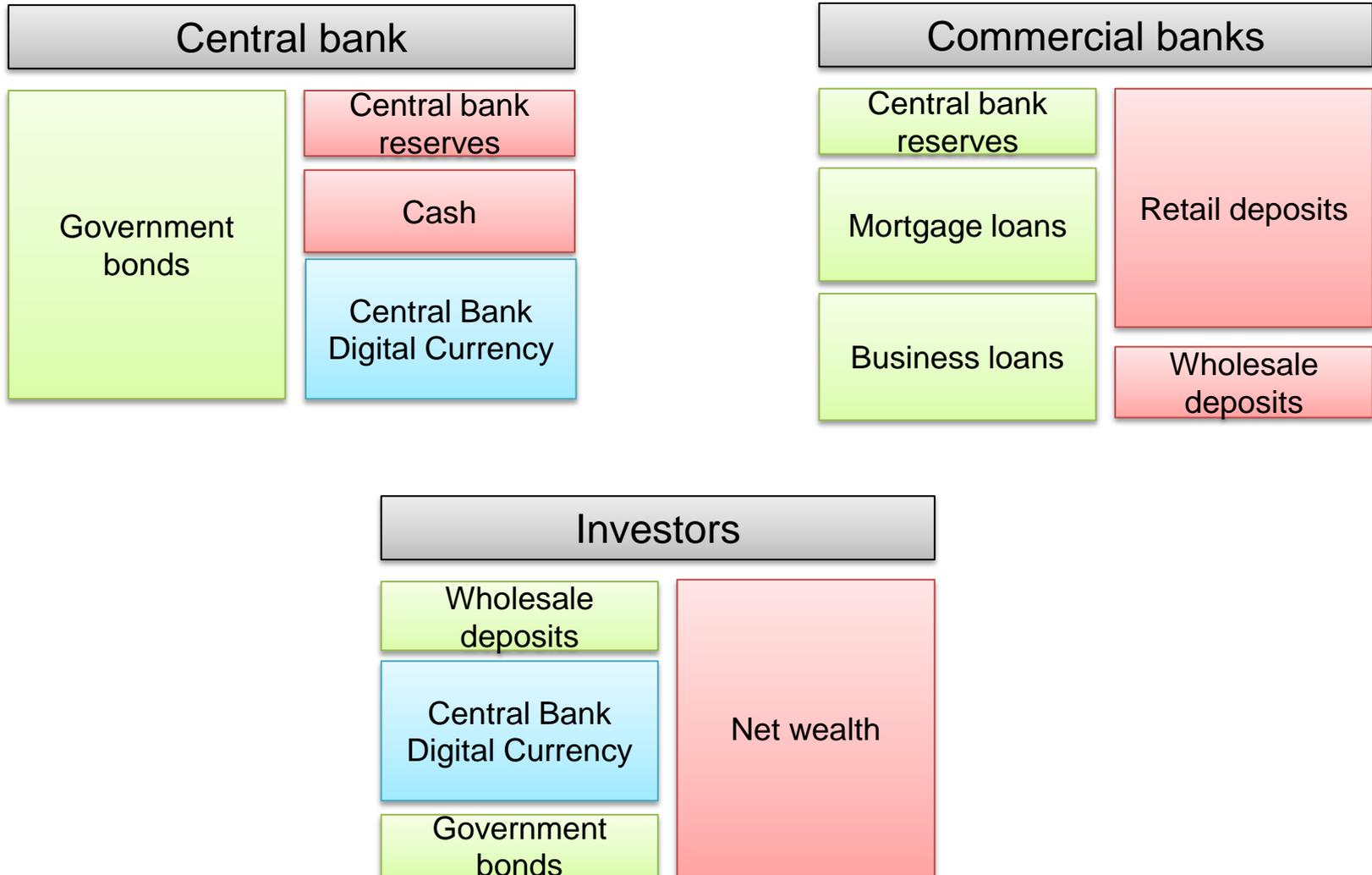
# Importance of macroeconomic perspective



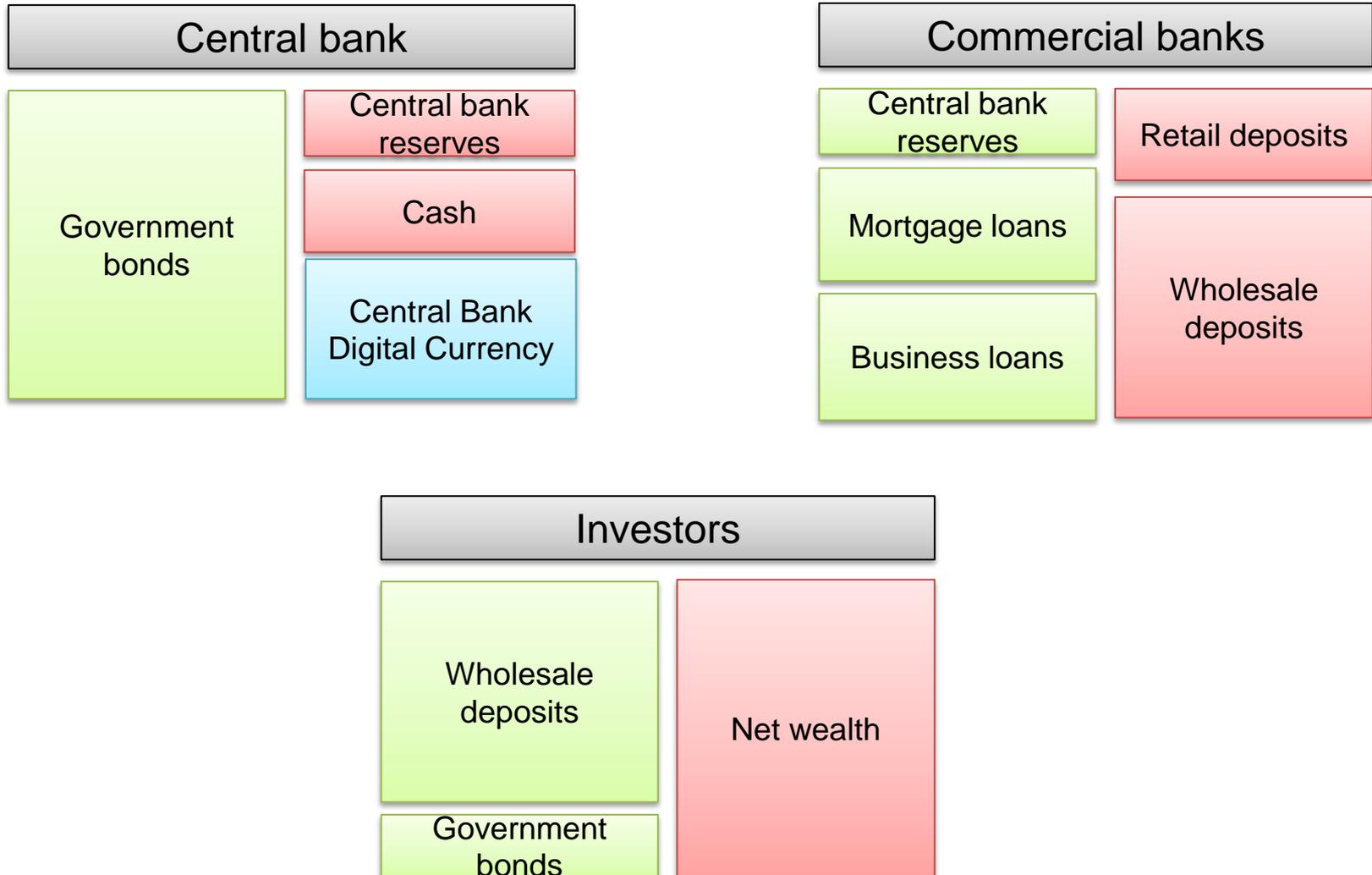
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# Overall macroeconomic impact

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Long-term positive effect: approximately 3% of GDP

Primarily as a consequence of:

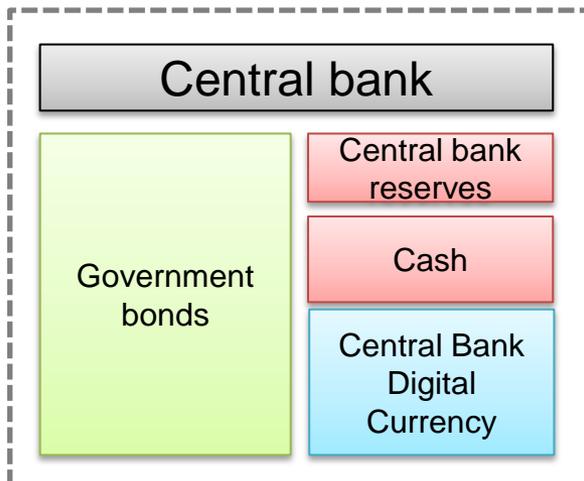
- i. Reduction in transaction costs (“liquidity tax”)
- ii. Reductions in distortionary taxes
  - The interest rate paid on central bank digital currency (CBDC) holdings is lower than that on government bonds
- iii. Lower real interest rates
  - Less government debt associated with lower real interest rates

# Comment 1: non-Central Bank Digital Currency

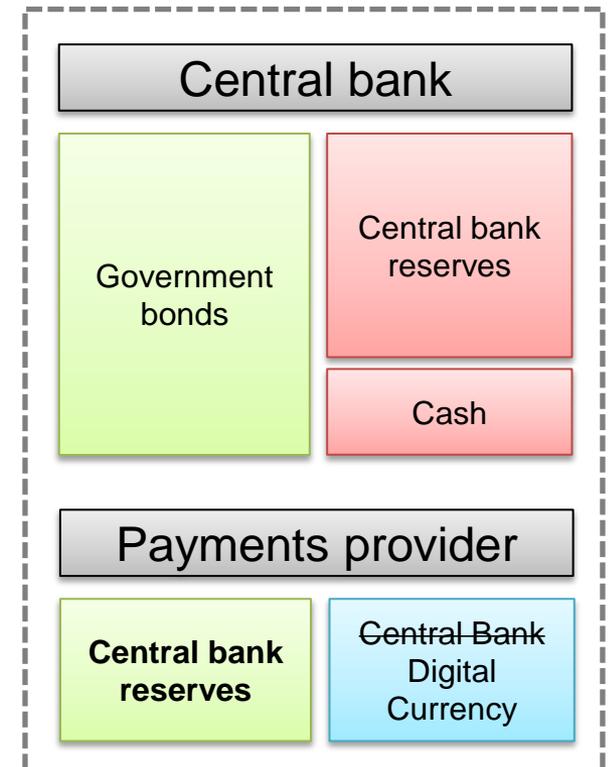
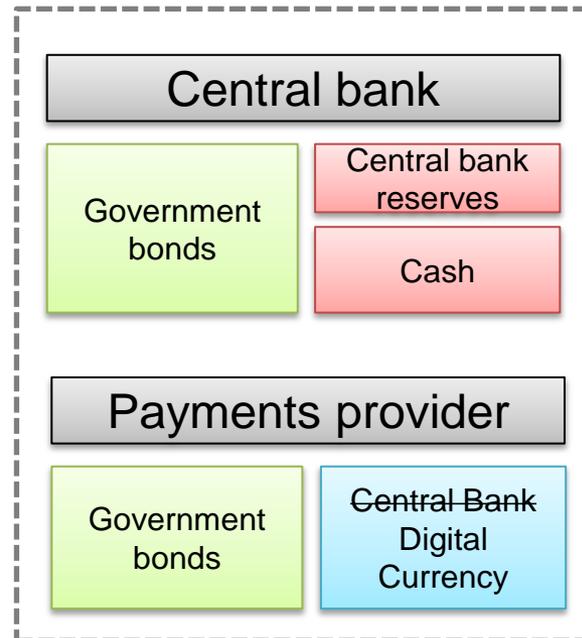
- Digital currency effectively reduces transaction costs in the model. What could the study say about the benefits of issuing digital currency by the central bank versus outside the central bank?

(C) ...with access to CB reserves

(A) CBDC



(B) Payments Provider DC



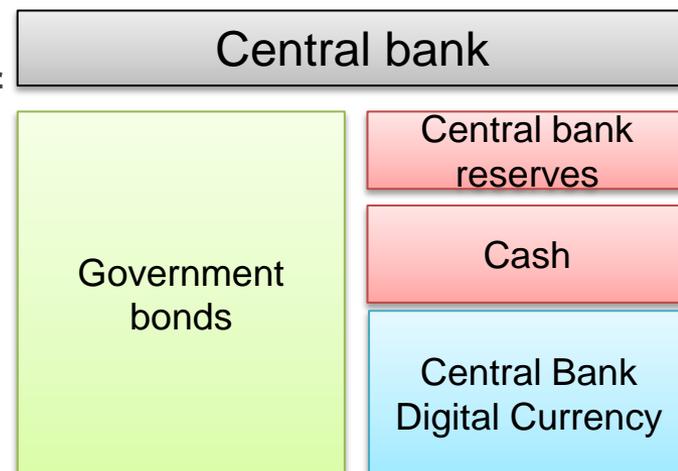
## Comment 2: Reduction in interest expenses, but no cash in the model (1/2)

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In the model, the introduction of CBDC reduces interest expenses by the government. Hence, less distortionary taxes needed to balance the budget.

Return paid on CBDC is lower than that paid on government bonds...  
...but is it also lower than that on cash?

- If agents hold less cash after the introduction of CBDC, interest expenses of the government could increase.
- Depends on the levels of interest rates, degree of substitution between CBDC and cash, velocity of both means of payment.



## Comment 2: Reduction in interest expenses, but no cash in the model (2/2)

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- Cash is also costly for the government, but perhaps relatively cheap...
- Back-of-the-envelope:
  - Total cost of cash from central bank perspective:  $\pm 1$  to 3 bps of GDP in the EU according to Schmiedel et al. (2012).
  - Bank notes in circulation in the euro zone approximately in 2012:  
 $\pm 10\%$  of GDP.
  - Hence, effective nominal interest on “cash borrowing”:  
 $\pm 0.10$  to  $0.30\%$ .
- Steady state effective nominal interest rate on “CBDC borrowing” (assuming zero issuing costs):  
 $\pm 0.9\% + 3.0\% \approx \pm 3.9\%$ .
- Note: difference in cost of borrowing depends on nominal interest rates.

## Comment 3: Reduction in real interest rates (1/3)

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In the model, the introduction of CBDC reduces real interest rates as a consequence of a reduction in the government debt-to-GDP ratio.

Steady state real interest rate with CBDC:  $3.0\% - 30 \times 0.02\% = 2.4\%$ .

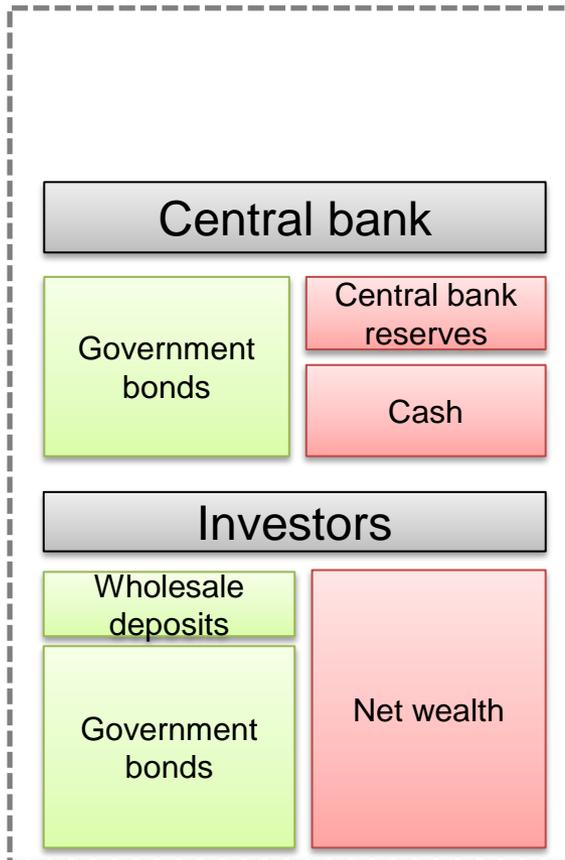
- The 3.0 per cent is the real interest rate without CBDC;
- The 30 is the assumed reduction in government debt in per cents of GDP, after introducing the same amount of CBDC;
- The 0.02 is the presumed reduction in real interest rates for each per cent reduction in the government debt-to-GDP ratio.

Magnitude of the 0.02 is based on parameter estimates in the studies of Engen and Hubbard (2004), Gale and Orszag (2004), and Laubach (2009).

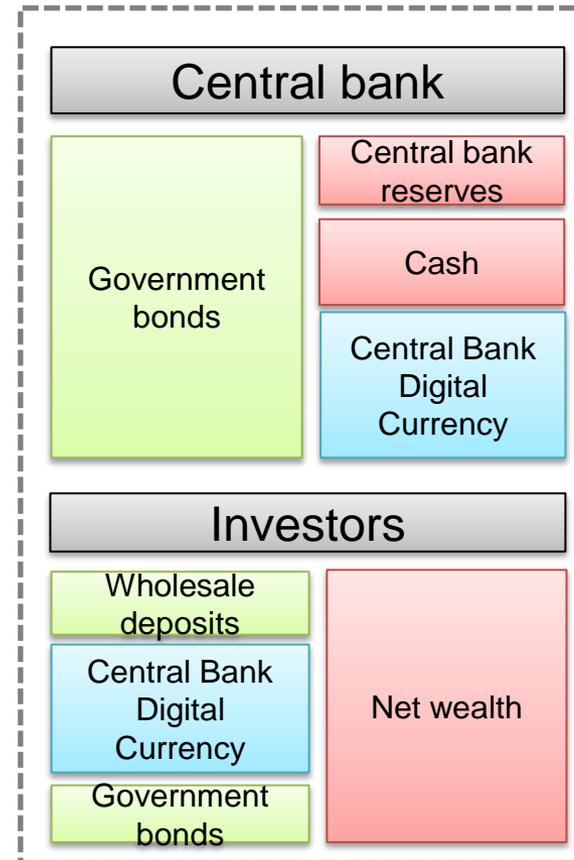
# Comment 3: Reduction in real interest rates (2/3)

Is government debt-to-DGP really smaller after introducing CBDC in the model?

Directly before:



Directly after:



## Comment 3: Reduction in real interest rates (3/3)

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Is government debt-to-DGP really smaller after introducing CBDC in the model?

- *Answer:* Government bonds are moved to the central bank balance sheet. At a consolidated basis, part of the government debt will be financed with CBDC instead of government bonds.

Hence, it depends on the data on debt in the empirical studies that are the source of the assumed coefficient. In particular, is it the level of government debt including, or excluding bonds on the central bank balance sheet (only the latter will be smaller)?

[Gale and Orszag \(2004\)](#), [Engen and Hubbard \(2004\)](#), and [Laubach \(2009\)](#) rely on government debt including bonds on the central bank balance sheet.\* This level is unaffected by the introduction of CBDC in the model.

(\* *Data on U.S. federal government debt held by the public includes debt held by the Federal Reserve (e.g., footnote 7 in Engen and Hubbard, 2004).*

# Concluding remark

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- The macroeconomic perspective provided in this study is an important step towards a better understanding of the economic issues related to the introduction of (central bank) digital currency.
- Since these economic issues are numerous, the authors are sometimes forced to reach conclusions relatively fast, while leaving the reader wonder whether they also hold under alternative choices and assumptions.
- As a consequence, the study provides ample inspiration for future research:  
**Must read for economists in the field.**

# Thank you

