Committee on Payments
and Market Infrastructures

BIS

Designing Central Bank Digital Currencies

Discussant: M Bech

The Paul Woolley Centre for the study of Capital Market Dysfunctionality, 7 June London

Usual disclaimer applies

$MM_0GA!$

Making M_0 Great Again!

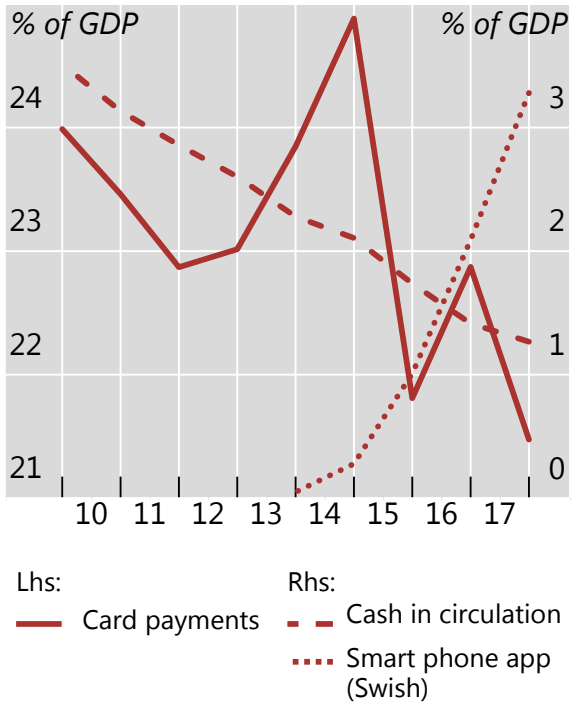
Game plan

- **Context**
  - Cash is disappearing …
  - Payments are the new cool
  - What are central bank digital currencies?
    - Anonymity and privacy
  - Are central banks really thinking about this?
- **Model**
  - All models are wrong - some are useful
  - Let us draw
- **Sum up**

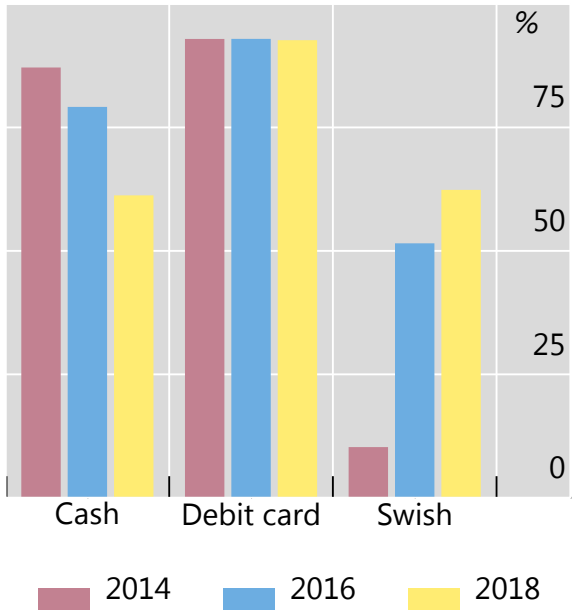
Context

Why? Cash is disappearing …

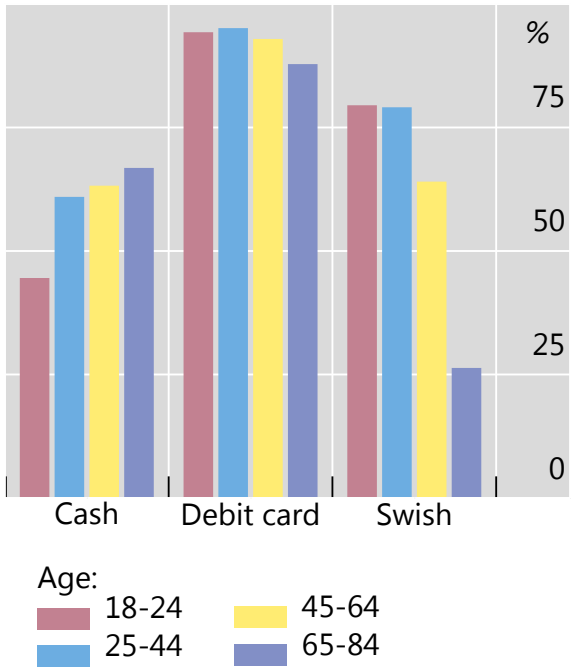
Sweden



Means of payment



Means of payment for different age groups



Sources: Sveriges Riksbank; CPMI Red Book statistics.

Ask banks - What financial products & services are:

- **<u>Most affected by technological developments now?</u>**

- **Most affected by tech developments over the next 5y?**

- **Seeing the greatest competition?**

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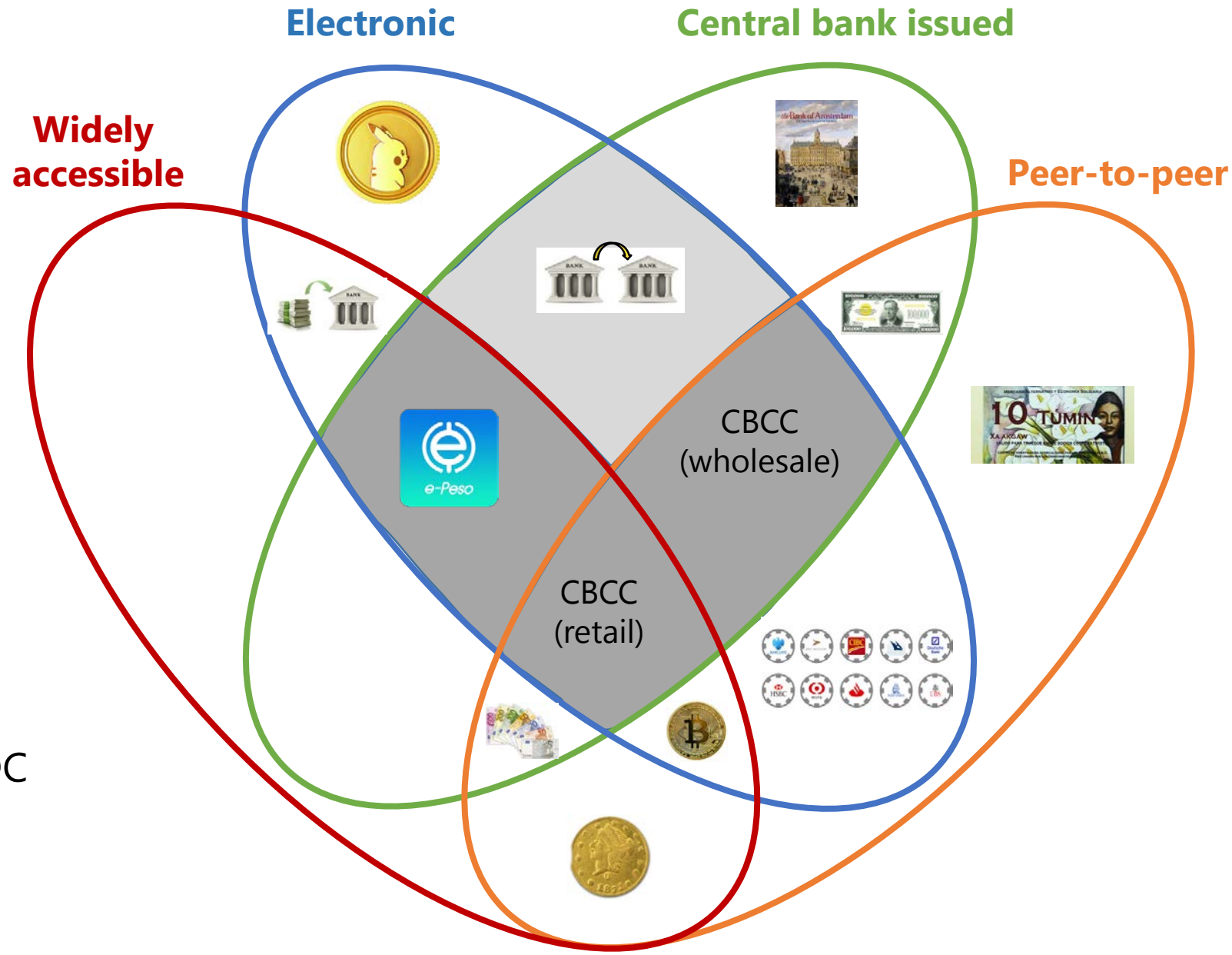
What financial products & services are:

- **Most affected by technological developments now?**

- **Most affected by tech developments over the next 5y?**

- **<u>Seeing the greatest competition?</u>**

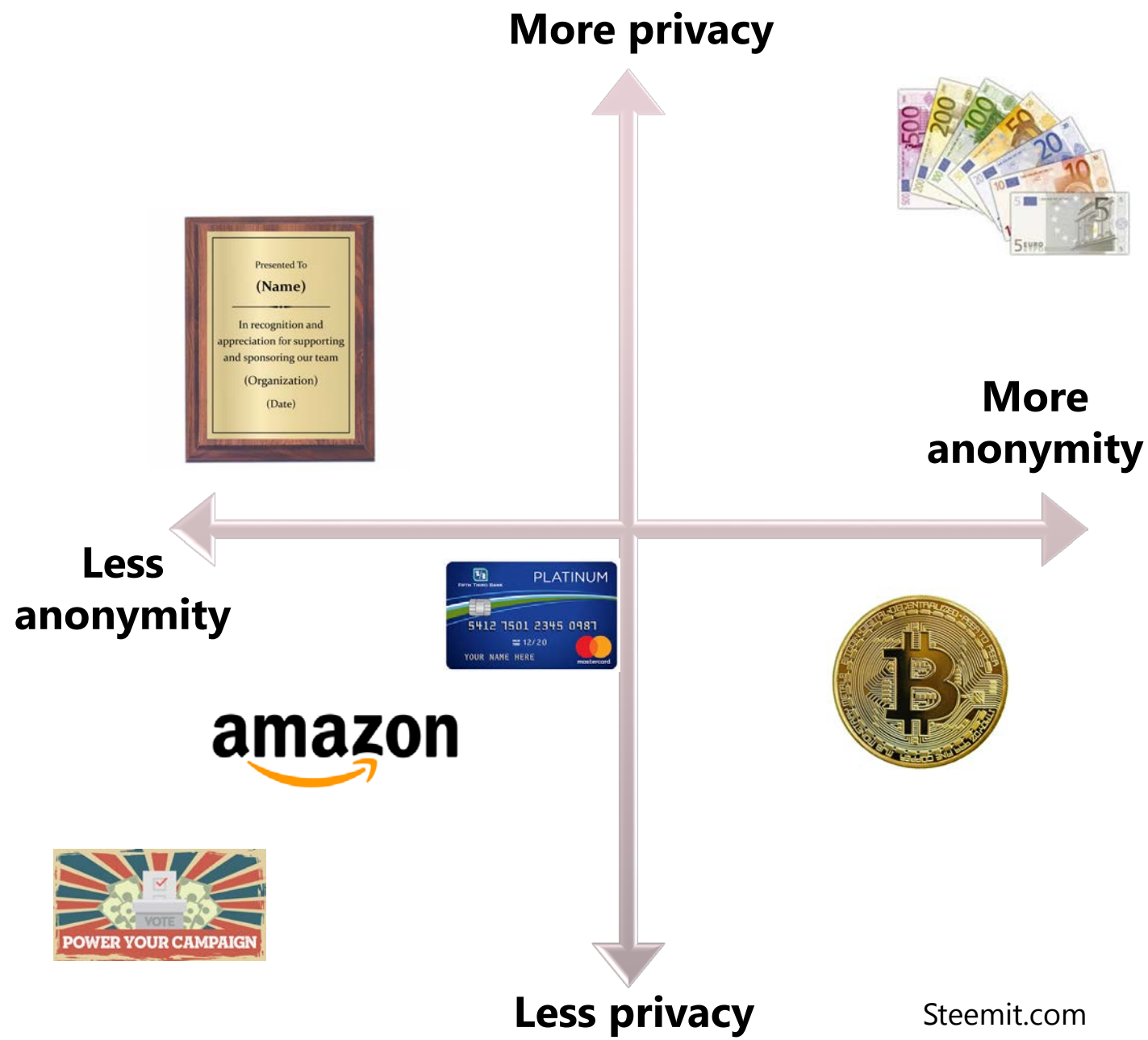
Source: Petralia, Philippon, Rice, Veron. 2019. Geneva Report on the World Economy. Preliminary and incomplete survey results (forthcoming Fall 2019).



Sources: CPMI-MC (2018); Bech and Garratt (2017).

Anonymity and privacy

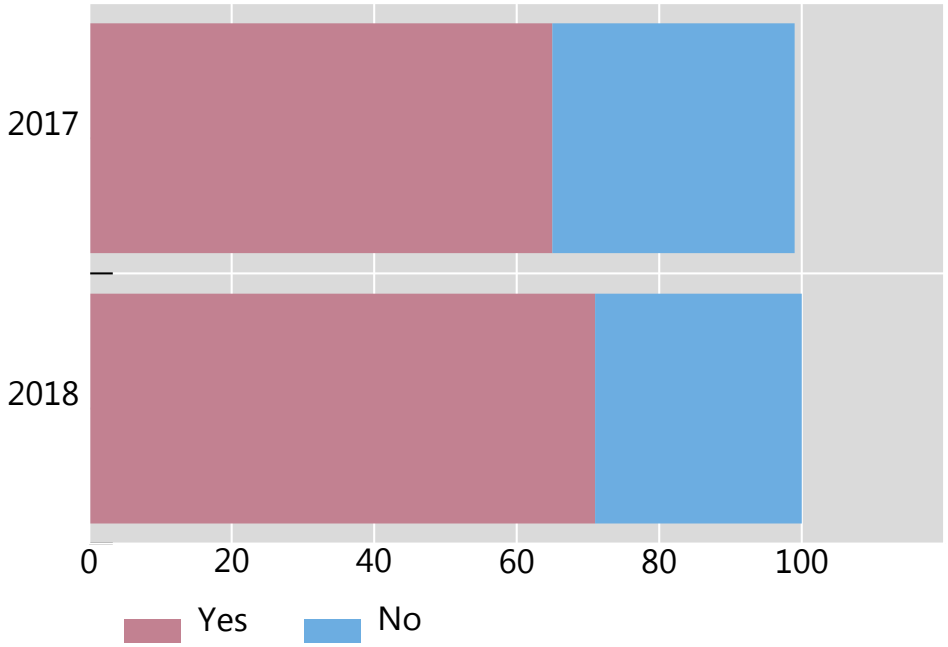
- **Anonymous:**
  - No one knows who you are
- **Privacy:**
  - What you bought and for what amount are unknown
- **Societal preferences?**
  - Regulation
  - Innovations



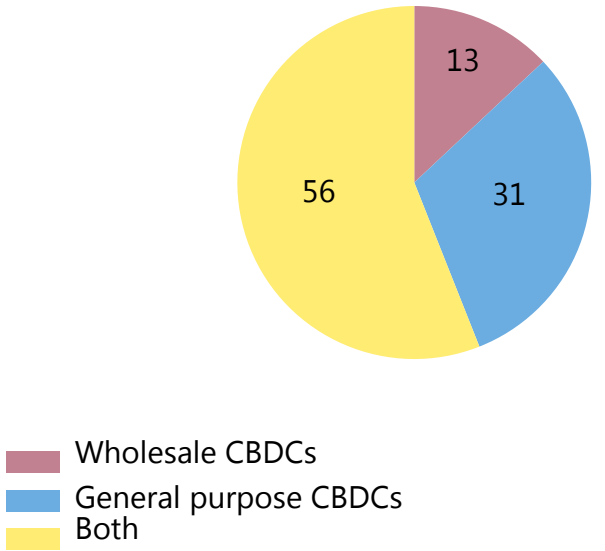
Central bank CBDC work

Share of respondents

Engagement in CBDC work



Focus of work[1]



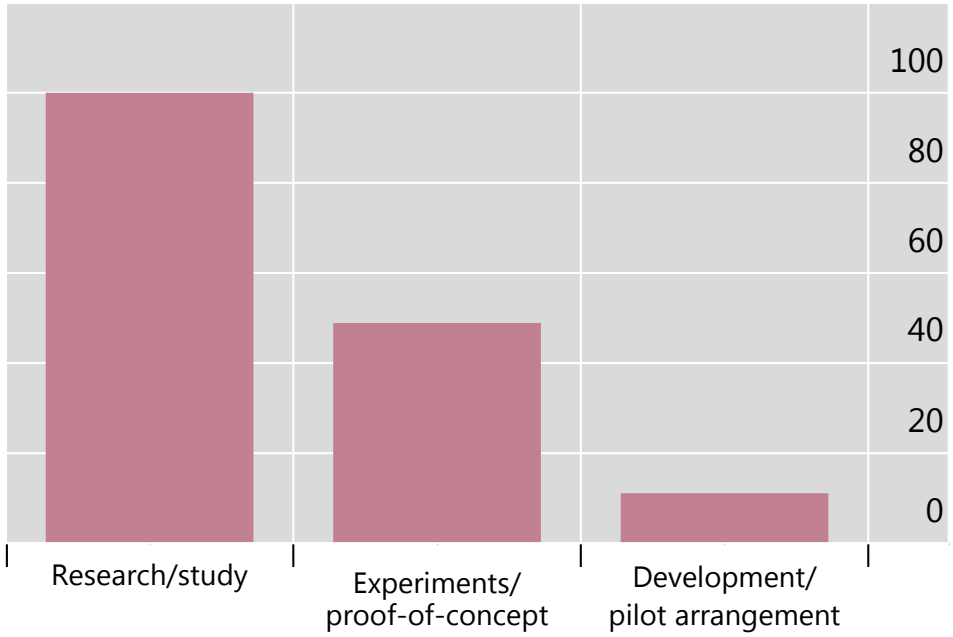
[1] Share of respondents conducting work on CBDCs, 2018 survey.

Source: Central bank survey on CBDCs.

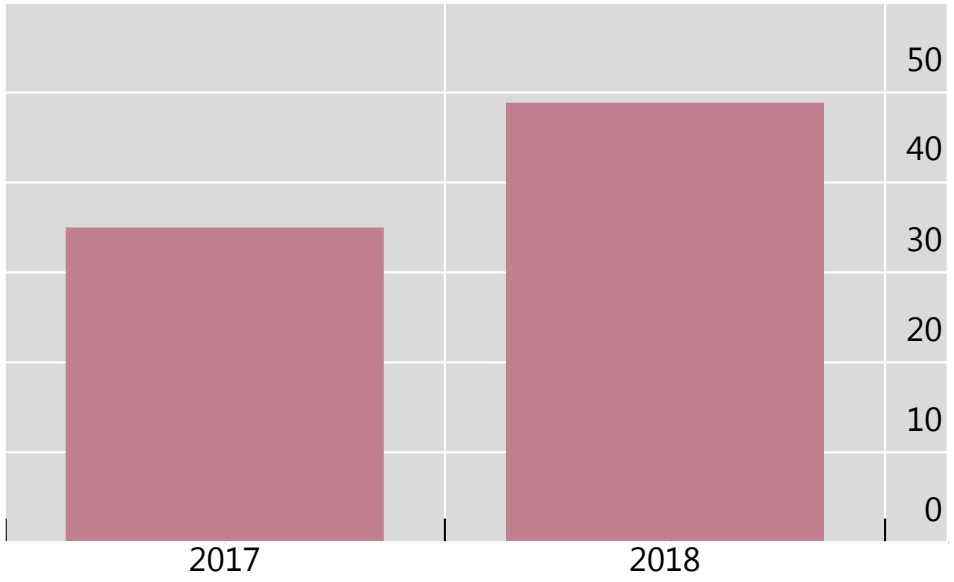
Type of CBDC work

Share of respondents conducting work on CBDCs

2018 survey



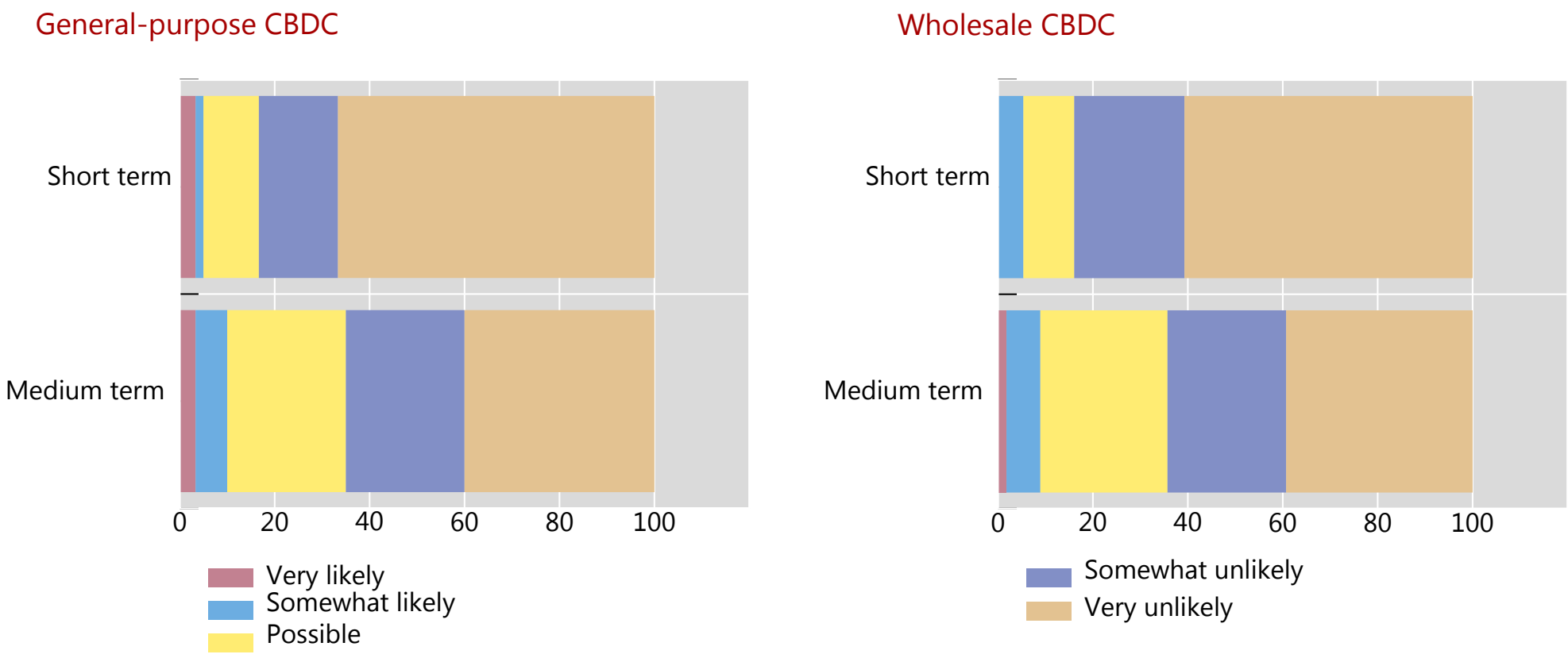
Over time experiments/proof-of-concept



Source: Central bank survey on CBDCs.

Likelihood of issuing a CBDC in the short and medium term[1]

Share of respondents



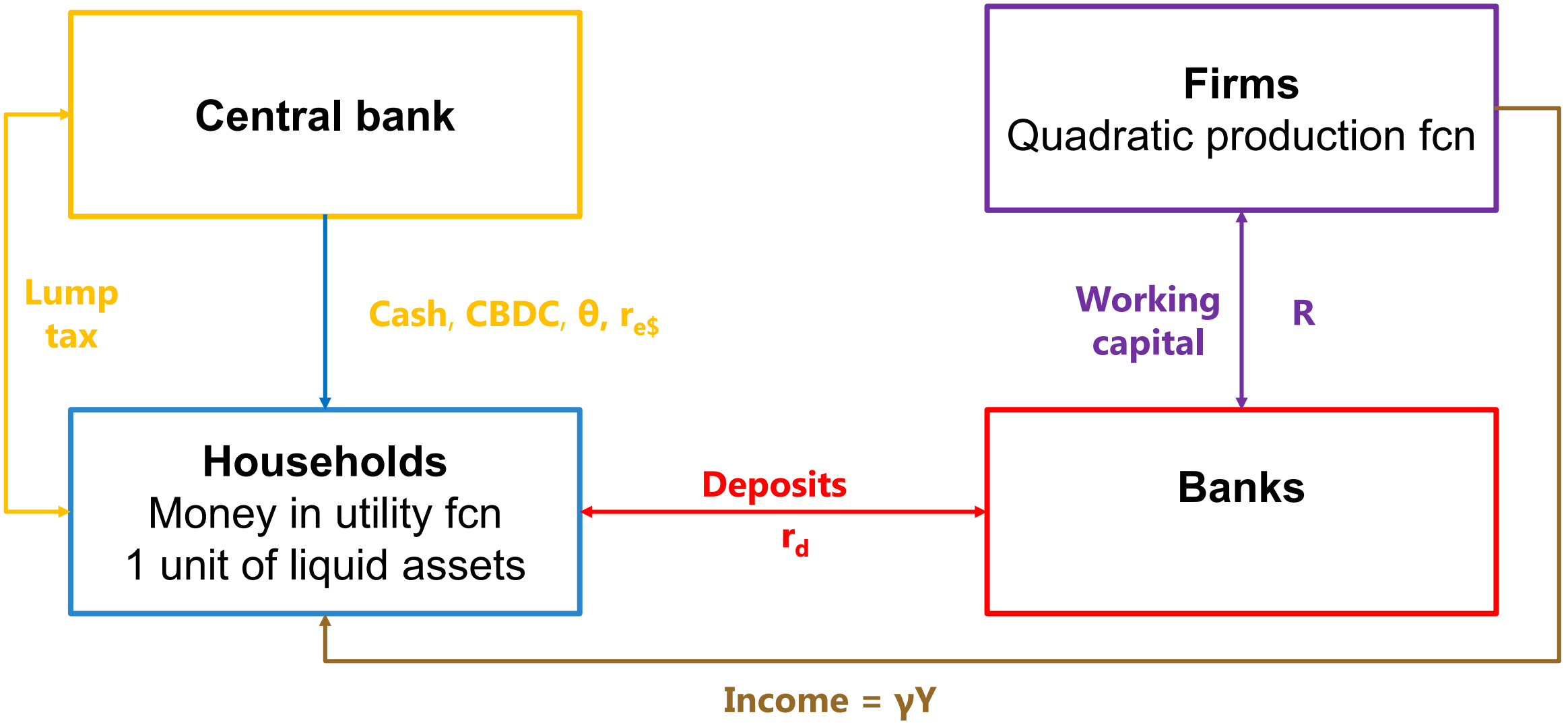
[1] Short term: 1-3 years and medium term: 1-6 years.

Source: Central bank survey on CBDCs.

The model

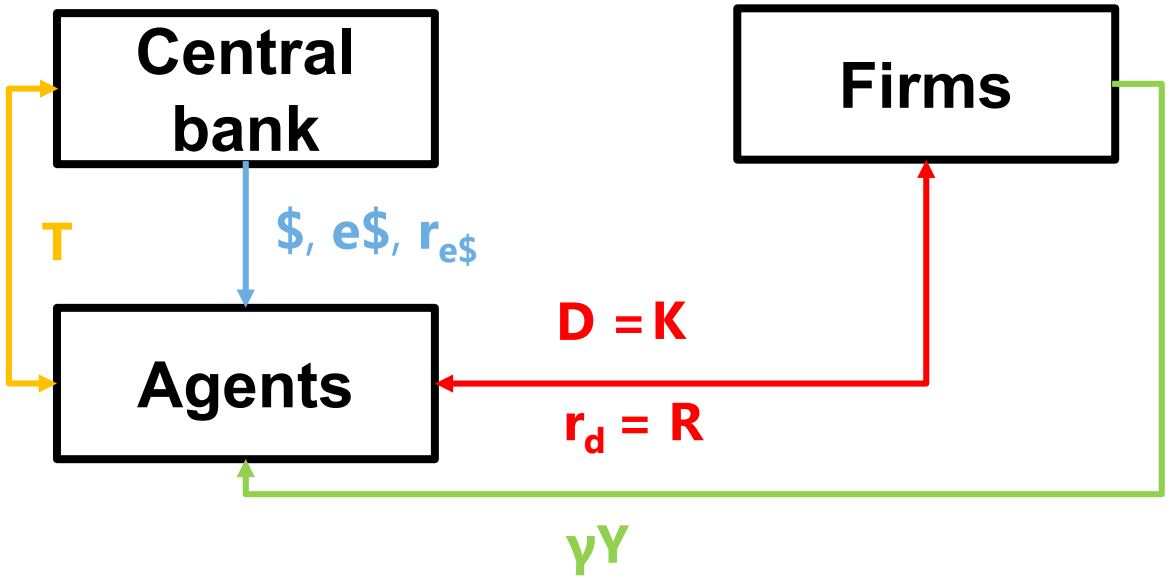
All models are wrong – some are useful!

A picture is worth a 1000 words



Nice model

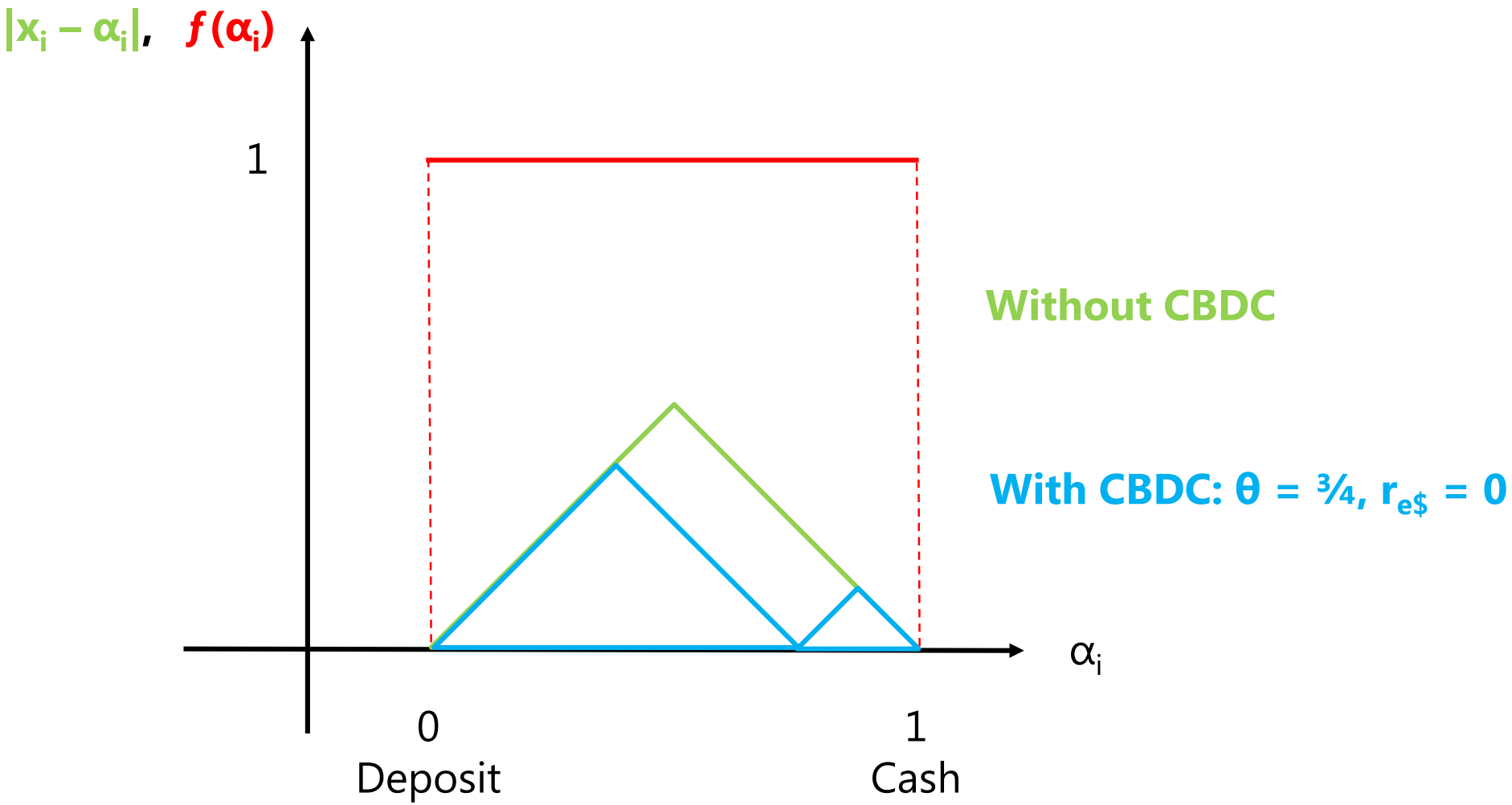
- CB is not the bank of banks
  - CBDC?
- What happens to (1-γ)Y?
- In Perfect Comp banks could be dropped
- Help the reader
  - $s_{e\$} = 1 - s_{\$} - s_{dep}$
  - s_{dep} depends on the spread
  - Partial derivatives in a table



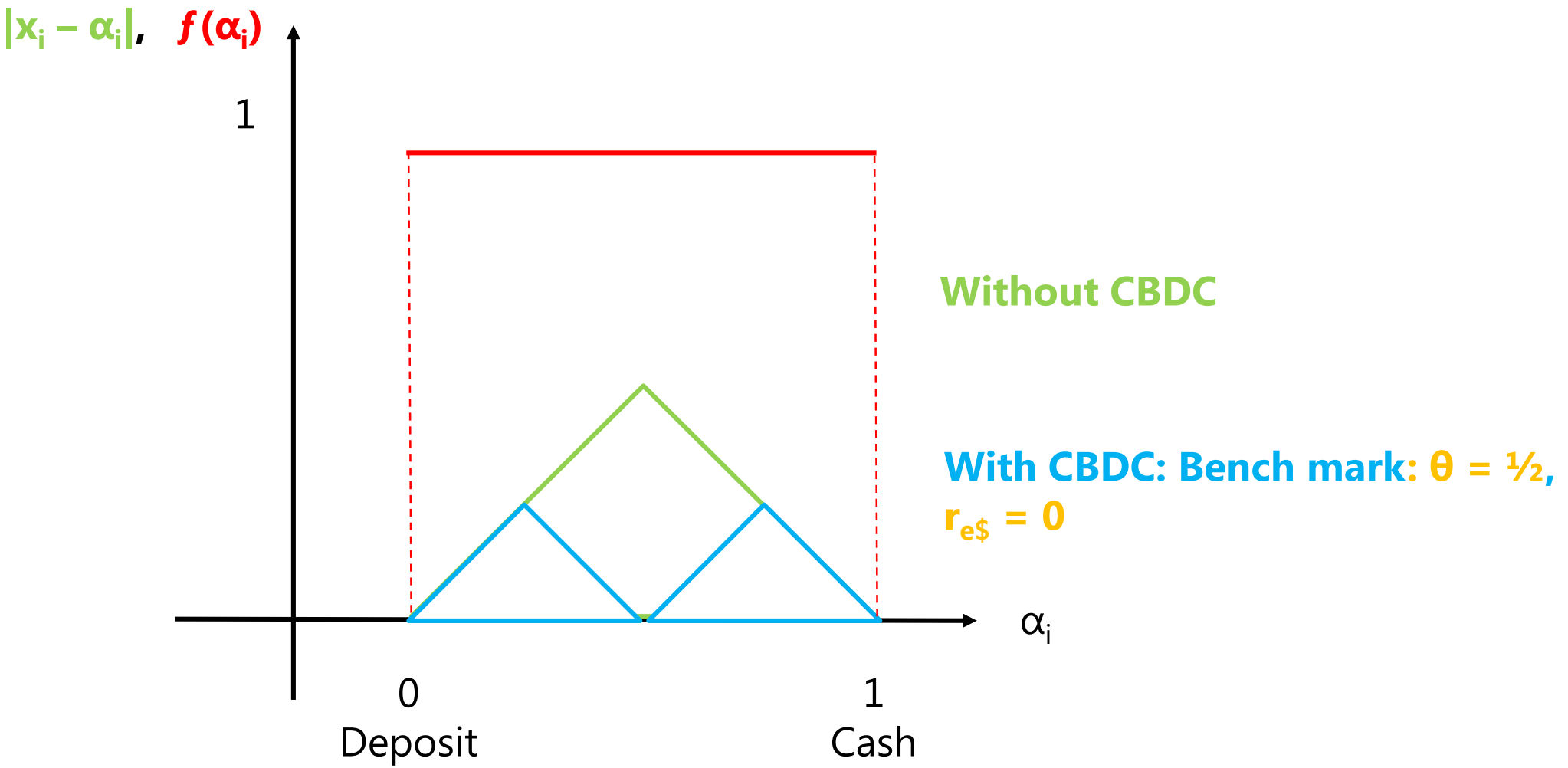
	$\partial\theta$	$\partial r_{e\$}$	∂r_{dep}
$\partial s_{\$}$	-½	-½	0
∂s_{dep}	½	-½	½
$\partial s_{e\$}$	0	1	-½
Σ	0	0	0


LET US
DRAW

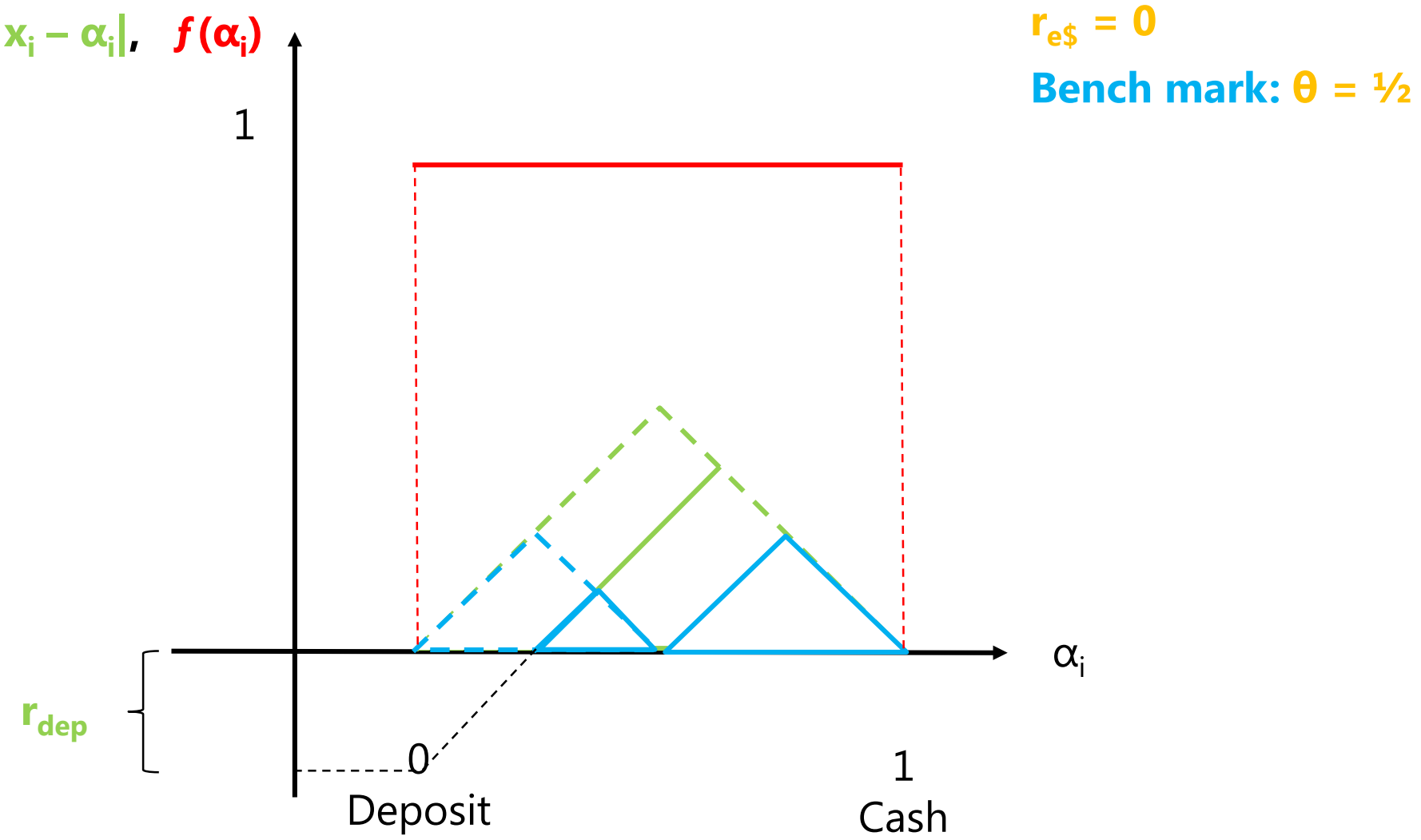
Dis-utility of money



Dis-utility of money



Dis-utility of money with interest rate

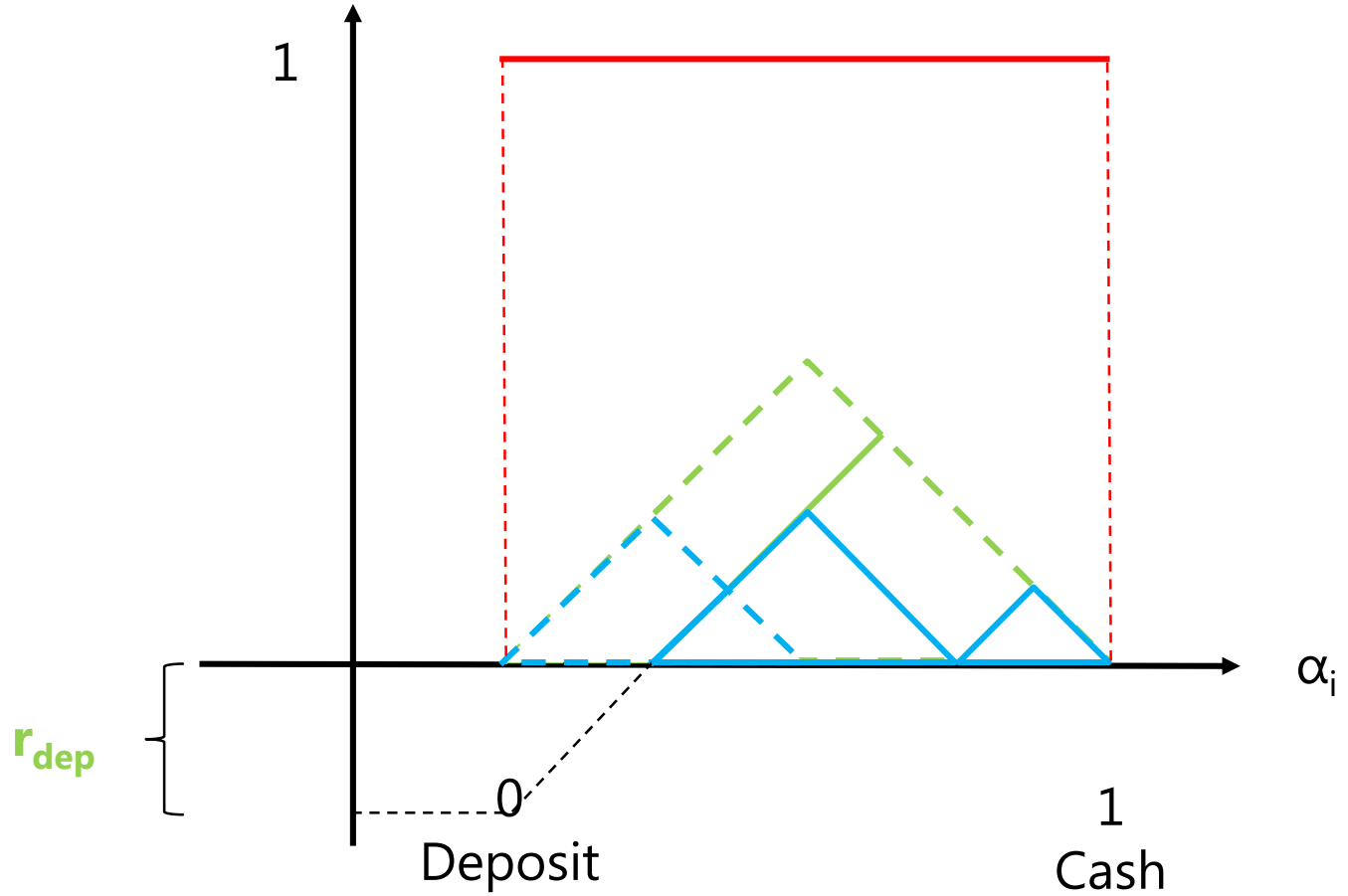


Dis-utility of money with interest rate

$r_i - |x_i - \alpha_i|$, $f(\alpha_i)$

$r_{e\$} = 0$

$\theta = 3/4$

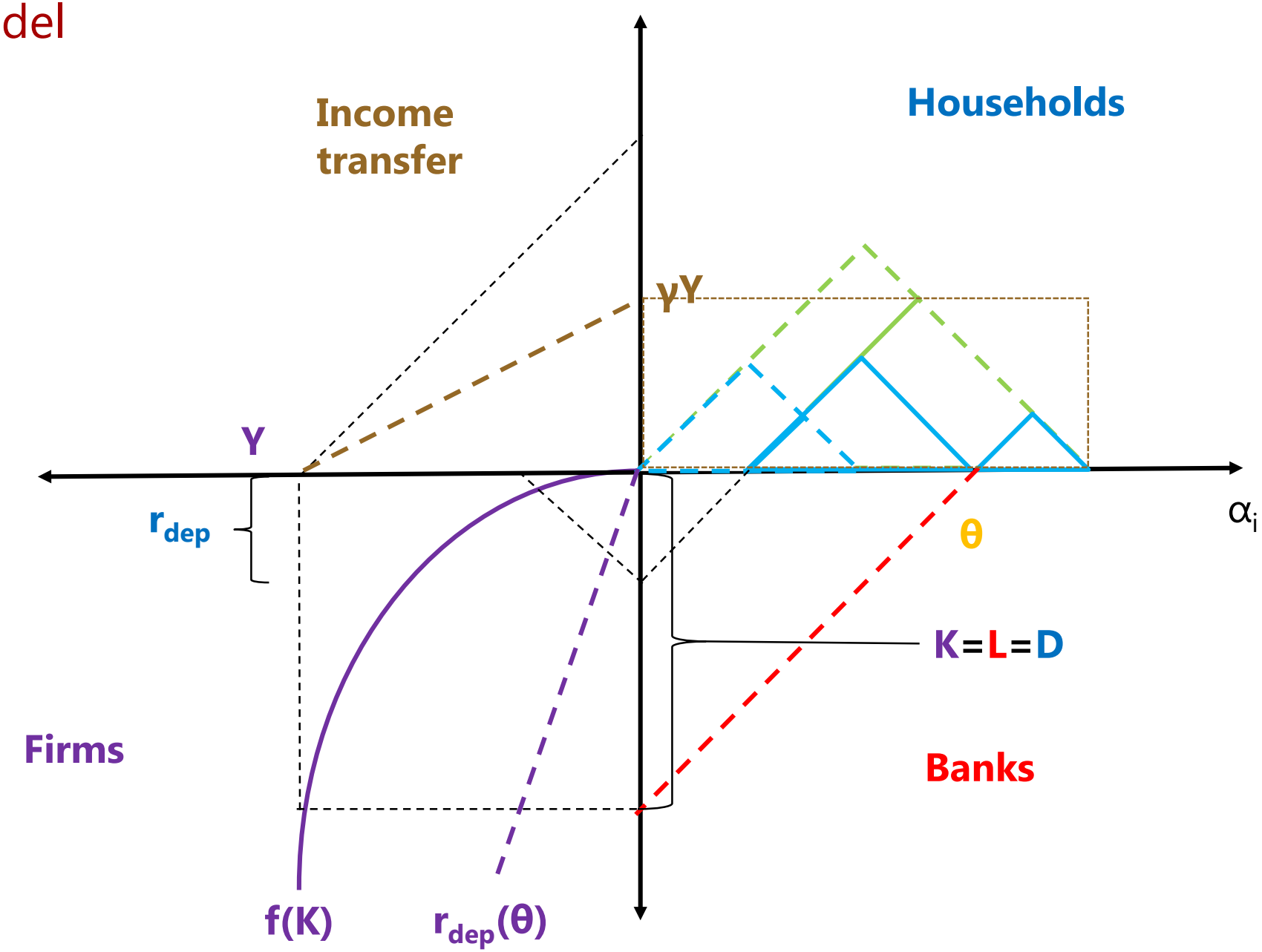


Basic model

$\beta = 0$

$r_{e\$} = 0$

$\eta = 0$



Sum up

CPMI-related resources

- Proceeding with caution - a survey on central bank digital currency (2019): www.bis.org/publ/bppdf/bispap101.htm
- Central bank digital currencies (2018): www.bis.org/cpmi/publ/d174.pdf
- Central bank cryptocurrencies (2017): www.bis.org/publ/qtrpdf/r_qt1709f.htm
- Digital currencies (2015): www.bis.org/cpmi/publ/d137.pdf
- Distributed ledger technology in payment, clearing and settlement (2017): www.bis.org/cpmi/publ/d157.pdf
- The role of central bank money in payment systems (2003): www.bis.org/cpmi/publ/d55.pdf

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