How do private digital currencies affect government policy?

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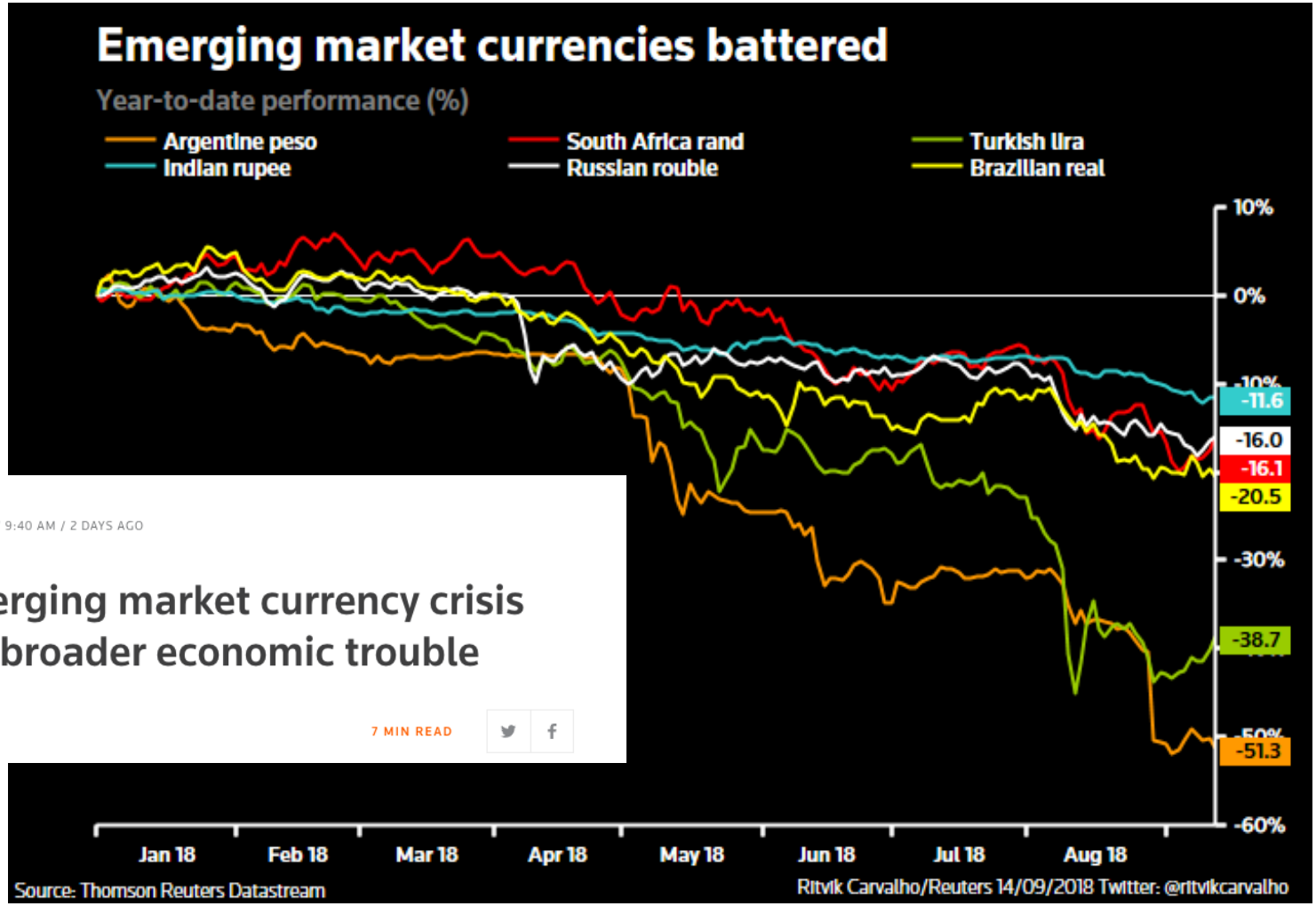
We have the first global currency crises since the invention of private digital currency



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Analysis: Emerging market currency crisis could lead to broader economic trouble

Karin Strohecker, Ritvik Carvalho

7 MIN READ

Digital currencies, most prominently Bitcoin, circulate alongside unstable fiat currencies

Main Finding 1:

Digital currencies enhance citizen welfare

- **Risk Reduction**
  Non-positive correlation with local economic risks provides investors with a diversification opportunity

- **Restrained Monetary Policy**
  The difficulty of excluding digital currencies from the market reduces gains from seigniorage, thereby inducing lower inflation

Main Finding 2:

Digital currencies encourage local investment

- **Diversification**
  Digital currencies serve as a hedge asset, thereby facilitating investment in high-risk economies

- **Credible Commitment**
  Digital currenciess facilitate a credible commitment to disciplined monetary policy, thereby enhancing expected returns from local investment

Main Finding 3:

Digital currencies may be desirable for corrupt sovereigns

- **Local Investment**
  Increased local investment yields higher tax revenue (holding tax rates constant)

- **Welfare Gains**
  Governments may extract some of the welfare gains via increased tax rates

Typology

Private Decentralized Digital Currency 	**Private Centralized Digital Currency** 
Public Decentralized Digital Currency 	**Public Centralized Digital Currency** 

Centralized digital currencies

- **Public**
  - Many investigating, few implementing
    - E.g. Sweden, Ecuador, Venezuela
  - Narrowing of banking system,
    - Similar to Chicago Plan of 1933
  - Central bank retains monopoly power
  - Can alter ledger or rules to defeat private choice

- **Private**
  - Easier to regulate companies than individuals
  - History of numerous shutdowns
    - E.g., Liberty Reserve
  - Stablecoins, such as Tether, interact with traditional banking system

Decentralized digital currencies

- Often politically motivated
  - E.g., Nakamoto and Bitcoin
- Rules-based monetary policy, implemented by decentralized consensus
- Can only be suppressed by closing extraterritorial nodes
  - Compare Bit Torrent
- Capital control resistant
  - Bearer instruments, with no recognition needed from legal system
  - Similar to gold, cigarettes, shells, etc.
  - Requires user to control private key


THE TIMES

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Israel prepares to send tanks and troops into Gaza

Chancellor on brink of second bailout for banks

99p

Related literature

- **Central banks and digital currency**
  Raskin and Yermack (2016), Bordo and Levin (2017), Fung and Halaburda (2017)

- **Digital currency return properties**
  Yermack (2015), Dyhrberg (2016a, 2016b), Liu and Tsyvinski (2018), Hinzen (2018)

- **Digital currency economic design**
  Routledge and Zetlin-Jones (2018), Saleh (2018)

Model

- Two agents
  - Government
  - Citizen

- Three assets
  - Local productive capital
  - Unproductive capital
  - Private digital currency (if permitted)

- Two dates (i.e., agents are short-lived)

Model: Assets

- **Local productive capital**
  - Taxable
  - Proxy for local investment

- **Private digital currency**
  - Untaxable (reflects enforcement difficulty)
  - Non-positively correlated with local economy

- **Unproductive capital**
  - Zero real return

Model: Government

max (E[Tax revenue] + E[Seigniorage])

- ***t* = 0**
  - Government decides whether to permit private digital currency
  - Government sets tax rate for local investment

- ***t* = 1**
  - Government sets inflation rate
  - Government consumes

Model: Citizen

max ($E[R_p] - .5\ Var[R_p]$)

- ***t* = 0**
  - Citizen invests among available assets
    - Local productive capital
    - Unproductive capital
    - Private digital currency (if permitted)

- ***t* = 1**
  - Payoffs realized
  - Citizen pays taxes; faces inflation
  - Citizen consumes

Model: Monetary policy ($t = 1$)

Seigniorage = Money Growth x Real Money Demand

- Higher inflation directly increases seigniorage
- Higher inflation indirectly lowers seigniorage revenue by lowering real money demand
- Interior optimal inflation rate (Cagan, 1956)

Model: Monetary policy ($t = 1$)

- Private digital currency strengthens the negative effect of inflation on local fiat money demand by creating an outside option
- Outside fiat cannot fill identical role, because traditional fiats are easier for governments to restrict
- Private digital currency enables credible commitment by the sovereign to (more) restrained monetary policy

Model: Fiscal policy ($t = 0$)

Tax Revenue =

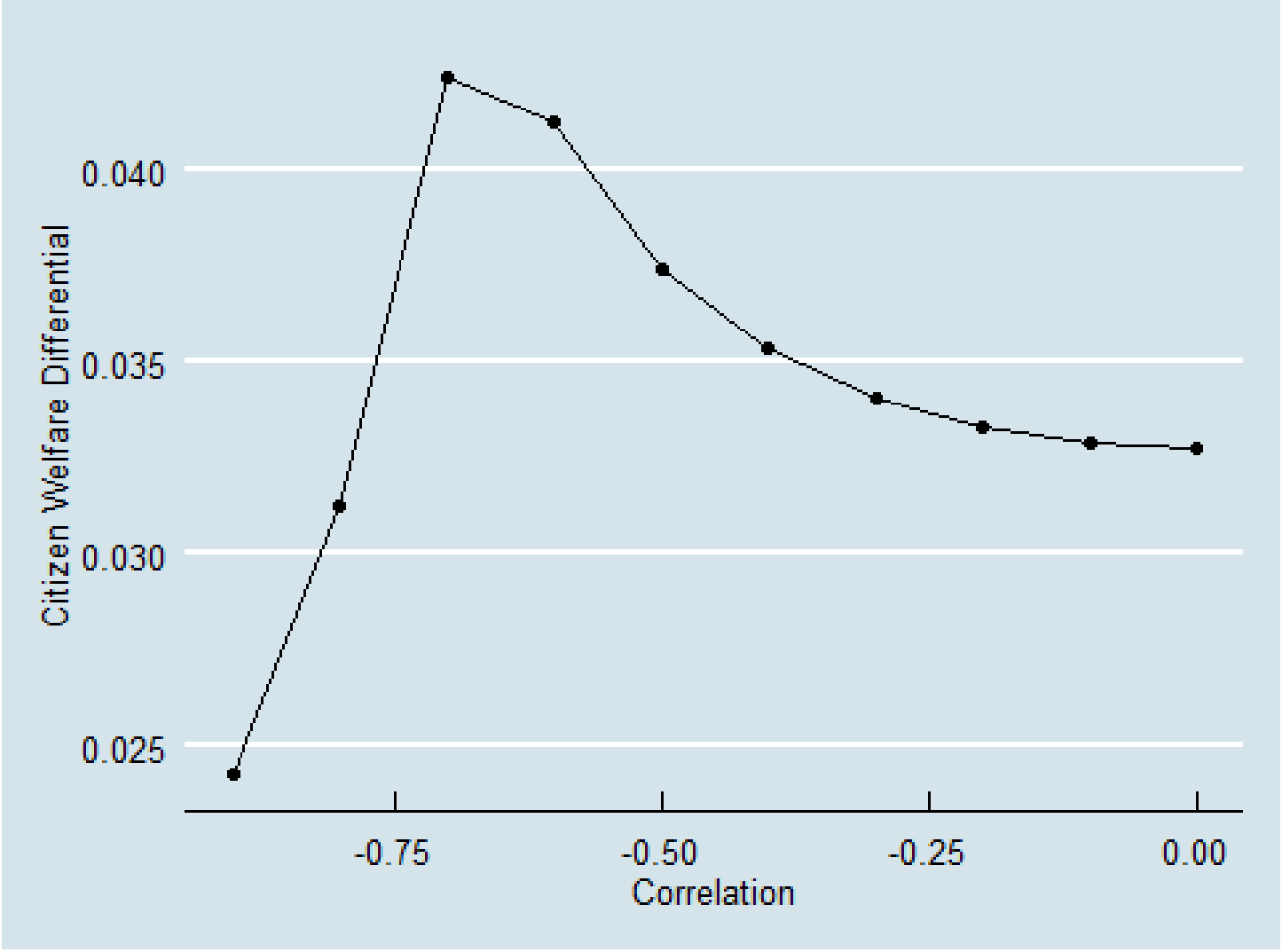
Tax Rate x Local Investment Return

- Higher tax rate directly increases tax revenue
- Higher tax rate indirectly lowers tax revenue by discouraging local investment
- Private digital currency serves as alternative asset and therefore restrains fiscal policy

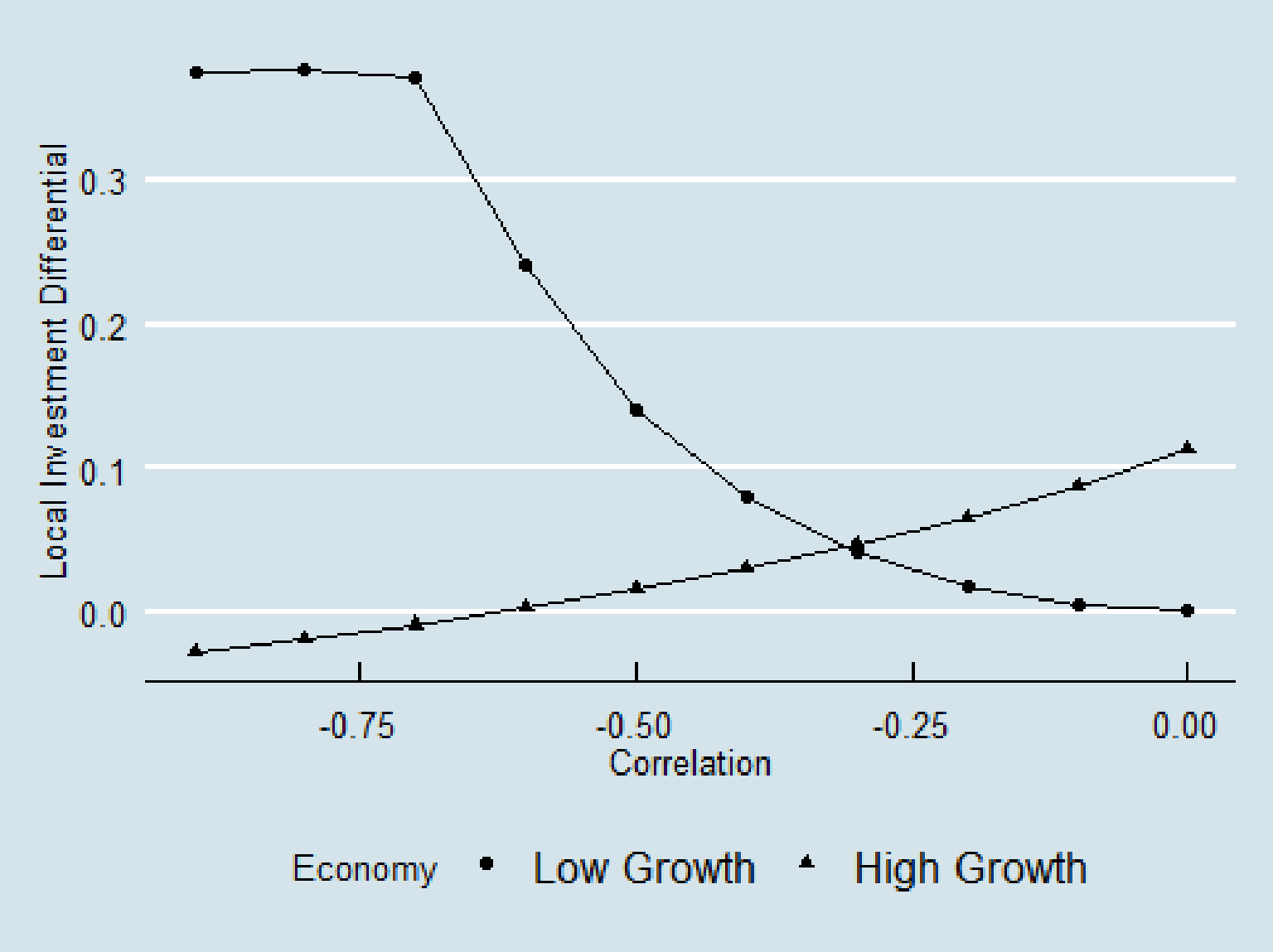
Model: Regulatory policy ($t = 0$)

- **Digital currency as a complement to local investment**
  - Permitting digital currency facilitates diversification which encourages local investment
- **Digital currency as a substitute for local investment**
  - Permitting digital currency enables citizens to substitute away from local investment
- Digital currency is not taxable, so government optimizes based on revenue extracted from local investment

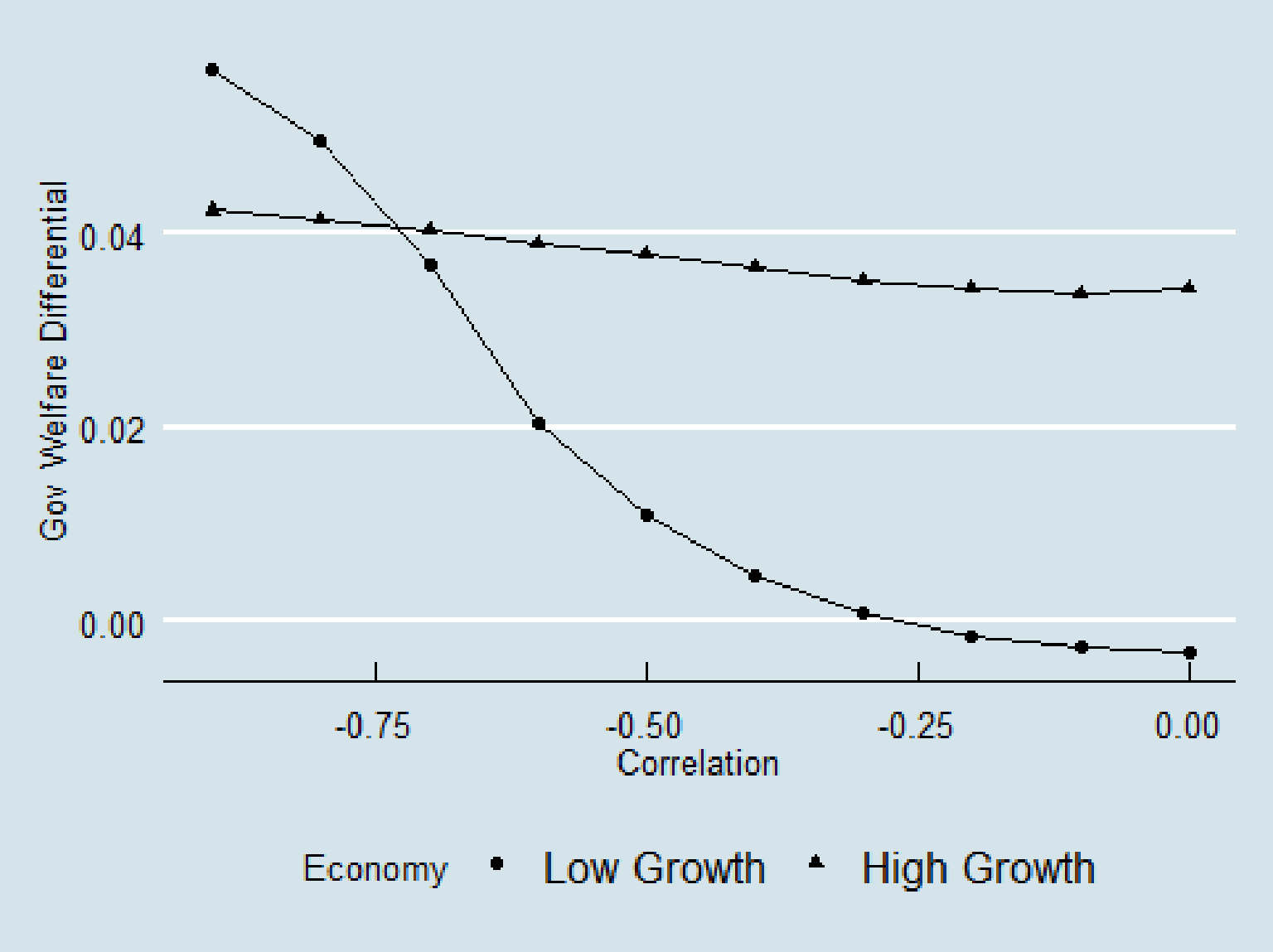
Results: Citizen welfare



Results: Local investment



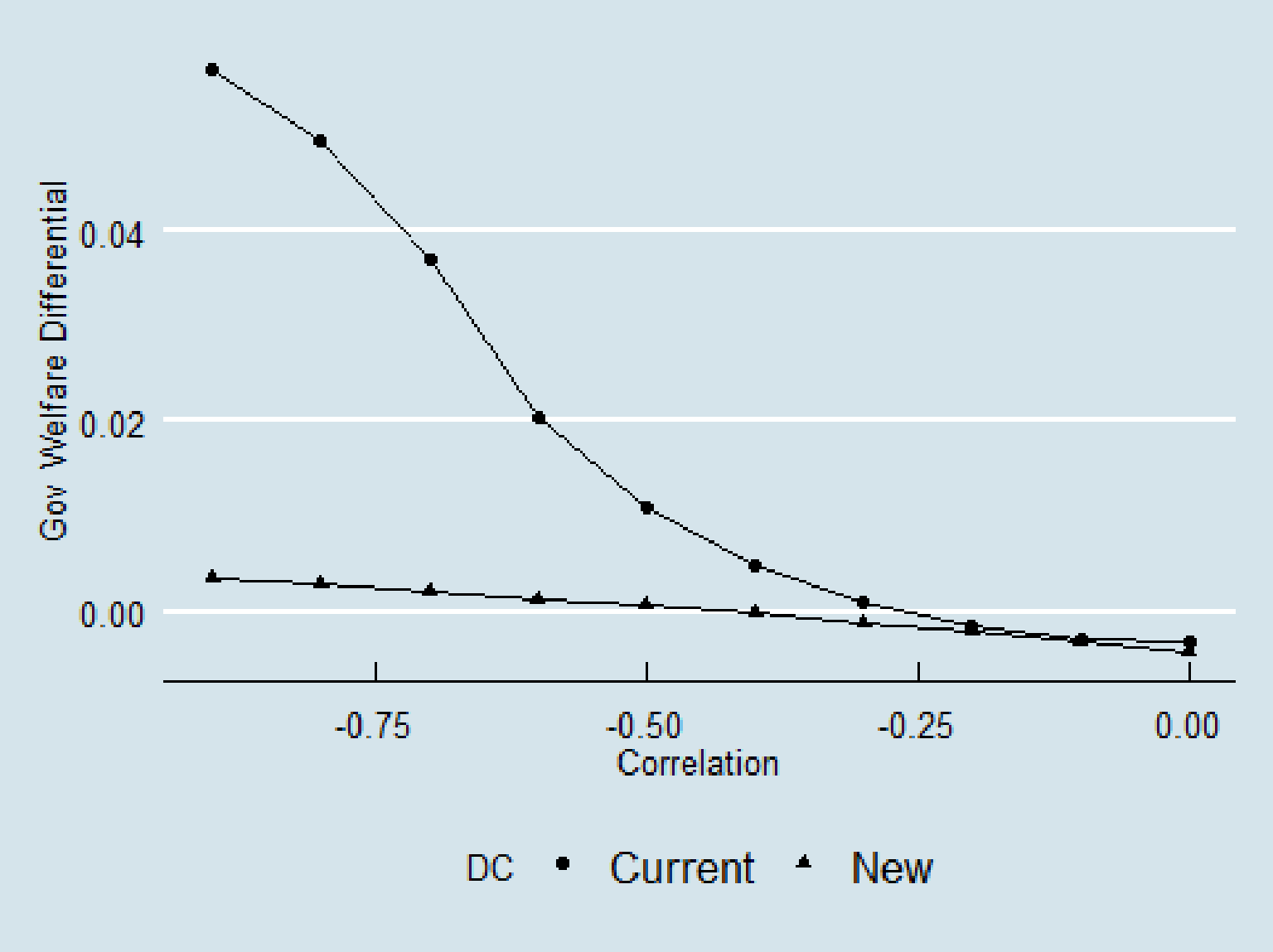
Results: Government welfare



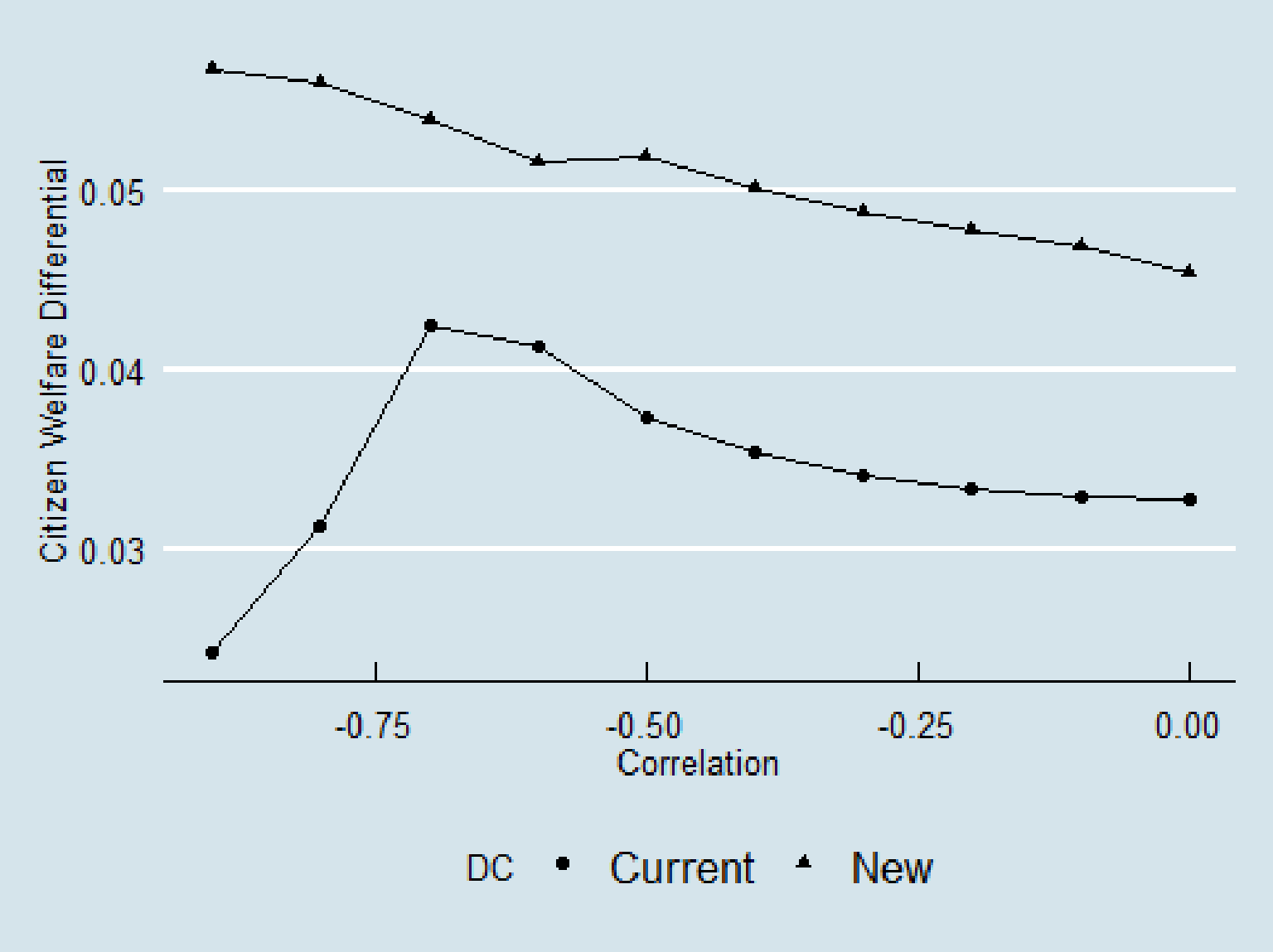
What if private digital currencies were better designed?

- Higher productivity (Cong, Li and Wang 2018)
- Lower volatility (Saleh 2018)

Results: Government welfare



Results: Citizen welfare



Conclusions

- Private digital currencies may improve welfare in some emerging market economies
- Selfish governments may wish to permit trading of private digital currencies
- Our results highlight the need for work on the economic design of private digital currencies