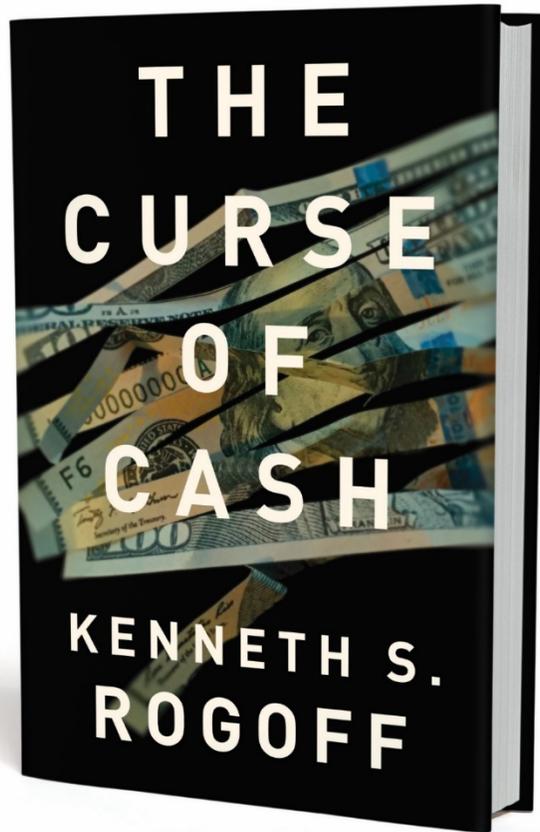


From the Curse of Cash to the Burden of Digitization

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Based on book the *Curse of Cash*, Princeton University Press, 2016



Book has four distinct parts (perhaps more accurate title: *The Past, Present and Future of Currency*)

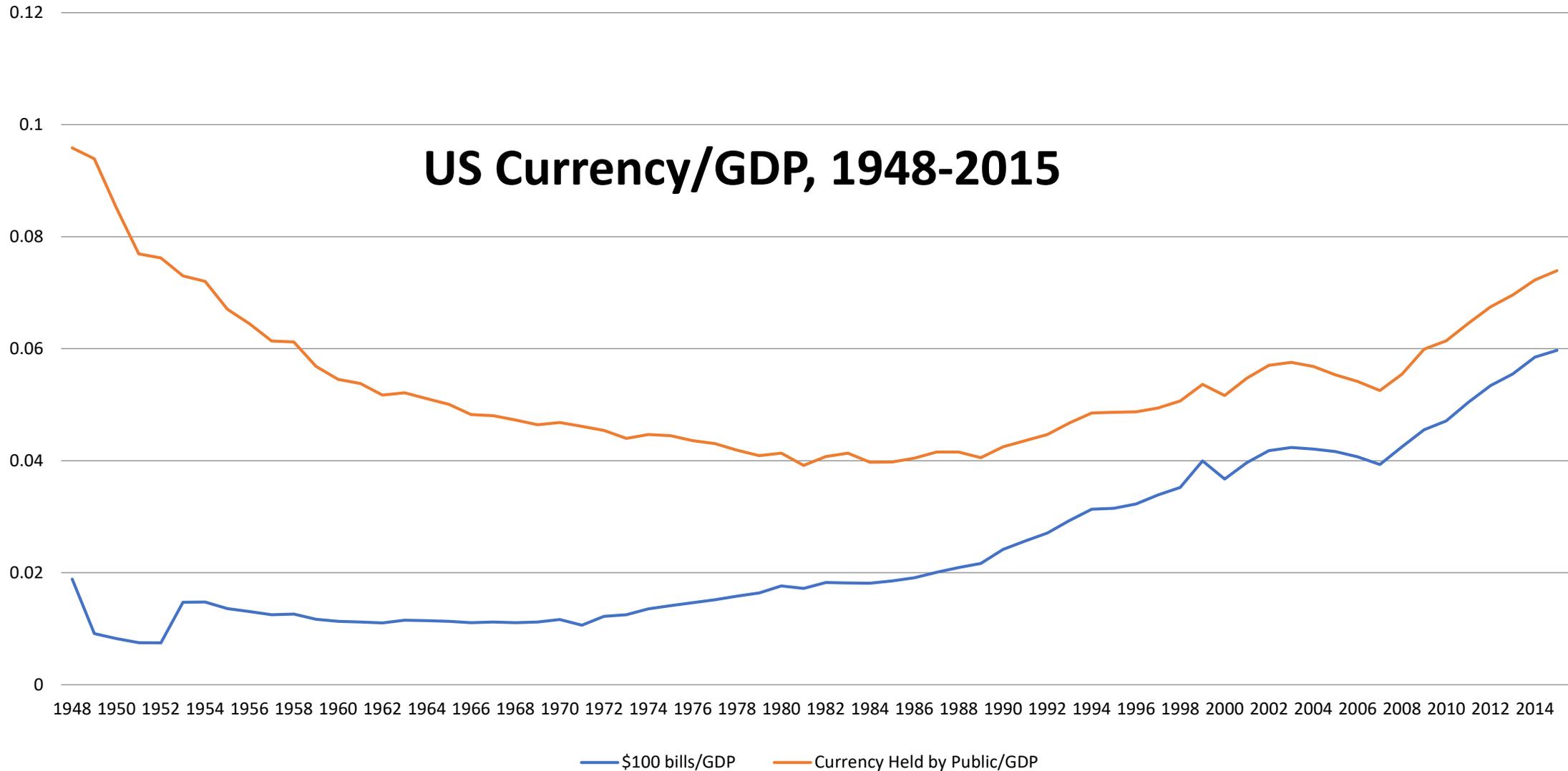
- Chapter 1 is a history of currency
 - Electrum coins of 7th Century Lydia (Western Turkey)
 - The tree bark currency of Kublai Khan (grandson Genghis, made famous by chapter in Marco Polo)
 - Ben Franklin's book *A modest inquiry into the nature and necessity of paper currency*
 - The gold standard era
 - The modern fiat currency era
- A key point for today's digital currency debate: The history of currency tells us that the private sector innovates, but governments invariably regulate and appropriate.
- Section I looks the public finance case for rethinking the issuance of large-denomination notes, and for possibly restricting large-scale cash purchases.
 - It follows closely Rogoff (1998); the vast bulk of cash holdings in advanced economies are due to tax evasion and crime. Employs a broad range of cross-country data, including surveys
 - Make the case for a "less cash" society but NOT a cashless society, Sweden not Orwell.

- Part II of the book looks at a related, but different, topic: How should central banks deal with the zero bound in future systemic financial crises or deep recessions
 - Look at all the options that central banks have tried (quantitative easing, forward guidance, etc.) also options that have not (raising inflation targets, helicopter money)
 - The myriad of counterintuitive suggestions that fill the leading journals
 - *It is as if the economics literature has insisted on positing “assume we don’t have a can opener” (Rogoff JEP 2017)*
- Part III of the book looks at international aspects, cryptocurrencies, gold and the future of currencies.
 - Argues that governments can and will ultimately restrict options for conducting anonymous transactions.
 - Refers back to historical experience in evaluating likely future.

Appendices and Afterward

- Appendix addressing the “Wallace conjecture” (which might seem to imply that if all currency becomes electronic, central banks will no longer be able to stabilize prices and the world will be forced to commodity-backed currency as under the gold standard.)
- Afterward to paperback covering Indian demonetization

US Currency Supply is over \$4200 per capita, 80% in \$100 bills



US is not so Different: Currency to GDP Selected Countries

| | Currency to GDP (% end 2015) |
|----------------------|------------------------------|
| Norway | 1.45% |
| Nigeria | 1.53% |
| Sweden | 1.80% |
| Argentina | 2.09% |
| Canada | 3.74% |
| United States | 7.38% |
| Eurozone | 10.09% |
| India | 12.51% |
| Japan | 18.61% |

Proportion large notes by value, selected countries

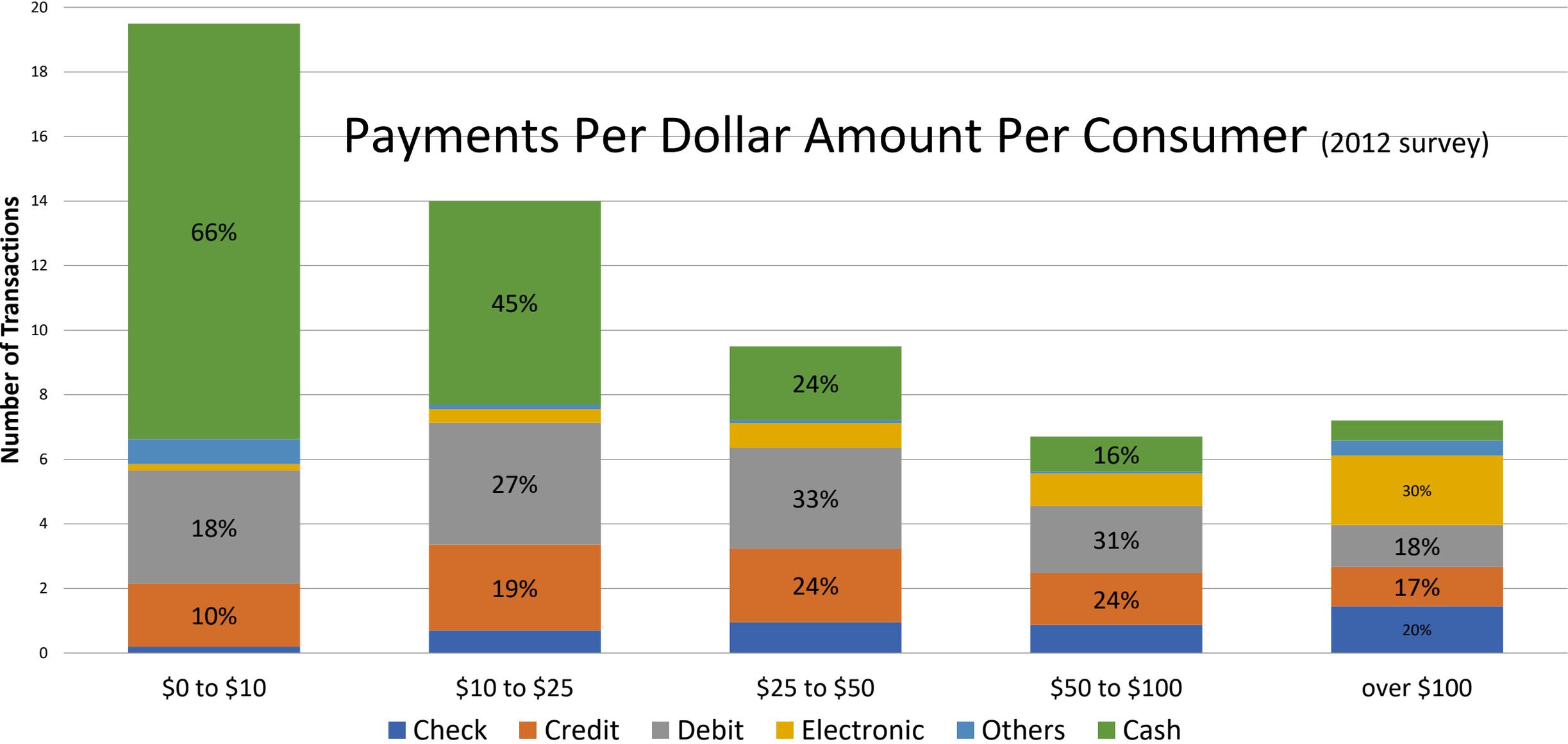
| | Proportion of Large Notes (by Value) | Local Currency Threshold used to define large note |
|--------------------|---|---|
| Australia | 92.2% | 50 Australian dollar |
| Japan | 91.1% | 5000 yen |
| Eurozone | 90.7% | 50 Euro |
| India (Nov 7 2016) | 86.0% | 500 Rupee |
| United States | 84.2% | 50 dollars |
| Hong Kong | 84.2% | 500 Hong Kong Dollars |
| Sweden | 79.2% | 500 Kroner |
| New Zealand | 70.7% | 50 NZ dollar |

Not much in wallets, or (reported) on property

Table 4.1 Average cash balances in wallet (converted to US dollars by PPP adjusted exchange rates)

| | Australia | Austria | Canada | France | Germany | Netherlands | US |
|---------------|-----------|---------|--------|--------|---------|-------------|----|
| mean | 59 | 148 | 64 | 70 | 123 | 51 | 74 |
| median | 32 | 114 | 38 | 30 | 94 | 28 | 37 |

CASH IS FADING IN LARGER TRANSACTIONS



There are many different approaches to restricting use of cash

- Restricting size of cash payments (Italy, Spain, France)
- Taking cash out of banks and wiring cash registers to Treasury (Sweden)
- Restricting size of notes Henry (1976), (Rogoff, 1998, 2016), Summers and Sands (2016).
 - Rogoff plan takes large bills out gradually over several years
 - Has a financial inclusion piece
- **NOT MUTUALLY EXCLUSIVE**

November 8 2016: Prime Minister Modi announces “demonetization” of India’s two largest notes



India demonetization might yield long-run benefits but also shows things to avoid

- In *The Curse of Cash*, I essentially argue “If you are a developing economy, do not try this at home”. Cost of providing financial inclusion, small in advanced economies, is too great
- *TCOC* argues for taking five to seven years to phase out big bills. India did this almost overnight
- *TCOC* argues only for taking LARGE BILLS out of Circulation. But 500 rupees is only \$7
- Few people realize that it takes six months to one year to print a new currency supply due to technical difficulties in producing counterfeit resistant currency. India’s biggest problem was that it did not have nearly enough new notes on hand to exchange for the old ones.

No government can sit by and allow large anonymous payments to avoid taxes, regulations, and laws;

- Of course, this is exactly the role cash performs, but digital currencies potentially perform the same function on a massive scale.
- (Caveat: Eventually, there may be some countries where authorities have so much granular information on citizens' activities that they can tolerate crypto with out the same risks as today's democracies.)

Authorities have ability to make any difficult to trace (pseudonymous) currencies illiquid

- If (say) Bitcoin can never be spent at retail stores or traded in for fiat currencies at financial institutions, it becomes very illiquid and value collapses.
- However, international cooperation is important. If a large country (say Japan) makes it relatively easy to spend Bitcoin, it risks providing a way for the entire world to launder crypto.
- Regulators can also reduce value through treating coins as securities and through tax rules.

Ways Bitcoin might retain value (1)

- Even if most countries take measures to completely strip pseudonymity, a few countries might make it legal and provide a place to spend (launder) coins. Could be rogue states (e.g. North Korea) or countries that have been shut out of important financial markets by US financial sanctions (or threat thereof)
- US presently has sanctions on Belarus, Cuba, the Democratic Republic of the Congo, Iran, Libya, North Korea, Somalia, Sudan/Darfur, Syria, Russia, Ukraine, and Venezuela
- If Bitcoin can only be spent on ordinary goods and services in some subset of these states, its value would not go to zero but be far below today's value

Ways Bitcoin might retain value (2)

- Despite having no practical use, it retains value as a pure speculative bubble, valuable because enough people think it is valuable “digital gold”
- Economic theorists have extensively analyzed this kind of bubble, it is only a theoretical possibility in the case where the rate of return on wealth is less than the growth rate
 - Does not seem to be the case empirically on several levels
 - In this case, the economy would be replete with speculative bubbles

Ways Bitcoin might retain value (3)

- Bitcoin is useful because other functions build around it (“layers above and layers below”) solving all the various problems such as energy consumption.
 - Possible, but then there are so many superior approaches
 - Nevertheless, Bitcoin does have important advantages in having developed a large community, and having proven resilient, properties that other currencies would have to prove.
- Bitcoin is finite, but nearly perfect substitutes can be made “Bitcoin + epsilon”
- Some have argued that gold itself is a bubble, so why not Bitcoin? In fact, gold has a number of unique properties that made it a very natural monetary asset historically, and still give it value in making anonymous transactions after paper currency is gone.
 - Gold also has important uses, for example across many modern electronics.

It is folly to think that government regulation policy is going to be passive

- The long history of currency innovation teaches us that the private sector innovates, but in due time the government regulates and appropriates
- The same will eventually be true for innovations in digital currencies
- Indeed, governments will surely in due time have the capacity to issue secure digital currencies.
 - Trusted party “permissioned” system will almost surely dominate “permissionless systems”
- The main issue with central bank digital currencies is disintermediation, (similar to having only narrow banks)

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How Large-Denominated Bills Aid Crime and
Tax Evasion and Constrain Monetary Policy

THE CURSE OF CASH



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