photo credit: http://www.piramindwelt.com/nachrichten/london-croupier-beim-diebstahl-von-chips-ertappt/

an introduction to fiat money

silicon valley ethereum meetup

march 10, 2016

by Steve Randy Waldman

http://www.interfluidity.com/

@interfluidity

…disclaimer

- Everything in this talk is speculative
- Nothing in this talk is authoritative
- Money remains the most mysterious topic in economics, usually asserted with its basis ignored when it is present at all in conventional economic models. To talk about what money is and means, and how money works, is to invite controversy.
- Even from my own, small, idiosyncratic perspective, the topic is too large. I will omit important details. In particular, I will treat governments and central banks as a single consolidated entity and omit discussion of reserve dynamics. These are important institutional facts, crucial for understanding financial markets in particular. But they could occupy a whole talk, and are not essential to this tale.

…tl; dr

- Fiat money is a ***social and institutional technology***
- Fiat money is not "mere paper". It is not "unbacked". On the contrary, ***it is backed by the most valuable of all possible things: human beings' capacity to labor, to create, or to surrender value***
- In its modern form, it has evolved, via a mix of centralized and decentralized innovations, from inferior antecedents, such as commodity monies and various forms of endorsed IOU. ***Fiat money was not created by fiat. It emerged.***
- Money is not (only) microeconomic. It organizes your purchase of an apple, sure, but it also ***organizes whole economies, wealth, prosperity, and power.***

…tl; dr

- Fiat money systems, which include the states and central banks that issue base money, the banking systems that multiply it, and other creditors and lenders, constitute an absolutely unrivaled technology for motivating an organizing economic behavior in ***ways that appear decentralized locally but can be centrally directed in pursuit of large scale goals*** ranging from economic development and prosperity to the prosecution of total war.

- It is common—but almost ***ridiculous***—to argue that fiat monies are “weak” or “fragile” or “inevitably debauched”.

- A more serious critique is that fiat monies may be ***unethical***, precisely because they are so powerful, such effective and ***resilient*** drivers of human affairs, that are ***hierarchically and potentially corruptly managed.***

…tl; dr

- If you want to replace fiat money systems with something better, don't look to inferior, obsolete monies like gold for your inspiration. Fiat money systems are the cutting edge of the technology of money (and prosperity and power). Understand how they work and iterate, ***ideally by improving or replacing the ethically questionable part***: unchecked discretion in management by corruptible governments and financial institutions.

- Fiat money systems do not exist in isolation or as abstractions. Fiat money is not a commodity but an activity. Fiat money systems must be ***managed in constant feedback with the state of the real economies they serve***, in consideration of the goals and values of the political communities they help to define. Replacing corrupt institutions with blind, simple rules is ethically appealing but functionally inadequate. ***Be more clever than that.***

…what is money?

The conventional schtick:

- Medium of exchange
- Store of value
- Unit of account

…what is money?

The conventional schtick:

- ~~Medium of exchange~~ Means of final settlement
- Store of value
- Unit of account

…what is money?

The conventional schtick:

- ~~Medium of exchange~~ Means of final settlement
- Store of value
- Unit of account

Economists have no real definition of money. In programming language lingo, money is “duck typed”. Whatever quacks like a duck, whatever serves all these roles, counts as money.

The unit of account role is essential, but very tricky. It’s common, but misleading and dangerous, to argue that money can serve as a *unit of value.* Value is not an objective thing that can be measured in the world, and money-unit measures engender intuitions about value that are indefensible on serious reflection.

…what does money buy?

Money buys just one thing.

- It doesn't buy apples.
- It doesn't buy cars.

Money purchases human behavior!

…which, of course, can include the surrender of apples or cars

…which can also include human labor, physical or mental

Nothing else is responsive to money. Only humans.

(Vending machines and smart contracts may change this, but that is just humans building things in their image.)

Money is an instrument of persuasion!

…persuasion is the nice word

- Persuasion and coercion lie together on a continuum defined by the quality of options created.

- If I tell you I won’t give you a candy bar unless you cut my hair, that’s persuasion.

- If I tell you I’ll shoot you unless you cut my hair, that’s coercion.

- All that differs is the quality of the options. There is a whole continuum of persuasive? coercive? potential options between withholding candy and murder.

…persuasion is the nice word

- When a negative incentive is very strong we switch words, persuasion becomes coercion.
- Interestingly, we have no word for when a positive incentive becomes so strong the situation becomes qualitatively distinct from ordinary choice.
- We have no word for that, but we do understand that it exists
- Consider Winston Churchill's mean offer, "now we're just haggling over the price." We have sympathy for the victim of Churchill's barbed wit, even though we can't say she was "coerced" because the initial positive incentive was very strong.
- (The possibility of very strong, so very persuasive positive incentives, would be an interesting source of value for a money.)

…persuasion is the nice word

Persuasion ⟷ **Coercion**

Voluntary ⟷ **Compulsory**

…persuasion is the nice word

- ***The source of money's value is its capacity to persuade.***
- Characteristics like scarcity or use value or exchange value or anticipated acceptability for further trade may contribute to the capacity of a thing to be persuasive. But the fundamental requirement is to be persuasive.
- Most accounts of money's value emphasize persuasion via providing a positive incentive, "voluntary exchange makes both parties better off"
- But there is a symmetry here. Both positive and negative incentives can shape human choices. If both can persuade, then maybe both can serve as the basis of money.
- (If there is an asymmetry, it may well be that negative incentives are more powerful persuaders than positive.)

…what would good money look like?

- A capacity to persuade is a necessary, but not sufficient.

  — (there are lots of ways to be persuasive that aren't remotely moneylike)

- To serve as money, a thing has to ***be persuasive in a very particular way***. In behavioral terms, it must be a thing that is

  — "reinforcing" (pleasurable, desirable) to acquire; and

  — "aversive" (unpleasant) to give up or do without.

- A good money should be ***quantifiable***

- Money, or enforceable claims on money, should be ***arbitrarily divisible*** (or else discrete atoms should have very small values)

- Money, or enforceable claims on money, should be ***fungible and easy to transfer***

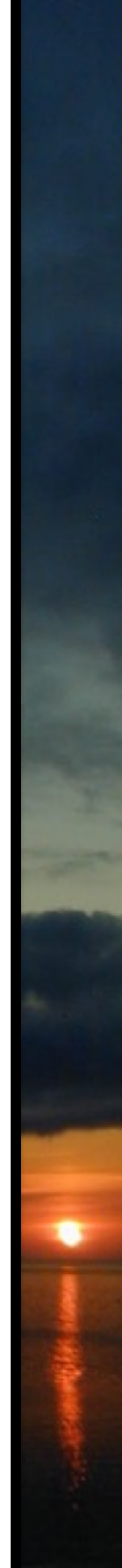
…what would good money look like?

- Money, or enforceable claims on money, should be ***"current"*** (a prerequisite to fungibility)
- Money, or enforceable claims on money, should have a ***durable and reasonably stable*** capacity to persuade

What is this "enforceable claims" stuff?

- Currently and historically, monies frequently are not used as media of exchange directly, especially for large transactions
  - One obvious reason for this is security
  - Convenience is a factor for commodity monies
  - One interesting aspect of cryptocurrencies is that final money is more amenable to direct use in exchange than with traditional currencies
- Claims on final money are often used in exchange
  - e.g. bank deposits
- Sometimes claims on claims on final money are used
  - e.g. credit cards
- Monetary systems fall naturally into hierarchies, with a "base money", and claims on that money varying degrees removed built upon them
- Often claims further removed trade at a discount to base money
- An quite recent innovation of modern banking system regulation is to enforce widespread *parity* between base money and bank deposits, which are claims one level removed

…bootstrap money



U.S. Economy Grinds To Halt As Nation Realizes Money Just A Symbolic, Mutually Shared Illusion

NEWS
February 16, 2010
VOL 46 ISSUE 07
Treasure

WASHINGTON—The U.S. economy ceased to function this week after unexpected existential remarks by Federal Reserve chairman Ben Bernanke shocked Americans into realizing that money is, in fact, just a meaningless and intangible social construct.

Calling it "basically no more than five rectangular strips of paper," Fed chairman Ben Bernanke illustrates how much "$200" is actually worth.

What began as a routine report before the Senate Finance Committee Tuesday ended with Bernanke passionately disavowing the entire concept of currency, and negating in an instant the very foundation of the world's largest economy.

"Though raising interest rates is unlikely at the moment, the Fed will of course act appropriately if we...if we..." said Bernanke, who then paused for a moment, looked down at his prepared statement, and shook his head in utter disbelief. "You know what? It doesn't matter. None of this—this so-called 'money'—really matters at all."

MOST POPULAR
SEE ALL
1 Mom Wants To Know If You'll Be Free If She Visits 14 Months From Now
2 Parents Less Inhibited Than Children On Social Media
3 Clinton Throws Flash Grenade To Divert Attention From Question About Senate Voting Record
4 Jeff Bezos Unveils Rocket Project
5 Teary-Eyed Robert Griffin III Slips On Draft Day Suit Again

…bootstrap money

(except US Dollars are not in fact bootstrap money.)

…bootstrap money

- We value our own capacity to persuade and dislike being unable to persuade others to do what we would like them to do (like give us food)

- Therefore a thing, whatever it is, with the capacity to persuade others in the way of money becomes persuasive to most selves in the way of money

…bootstrap money

- We value our own capacity to persuade and dislike being unable to persuade others to do what we would like them to do (like give us food)
- Therefore a thing, whatever it is, with the capacity to persuade others in the way of money becomes persuasive to most selves in the way of money

…bootstrap money

- We value our own capacity to persuade and dislike being unable to persuade others to do what we would like them to do (like give us food)

- Therefore a thing, whatever it is, with the capacity to persuade others in the way of money becomes persuasive to most selves in the way of money

- Call it a self-fulfilling prophecy, an Ouroborous, or, in economics-speak a ***coordination equilibrium***

- The identity of the thing is wholly arbitrary (although to ever become used as money, it probably has many of the characteristics we identified for "good money")

- The prototypical example of bootstrap money is the use of cigarettes as currency in prisons

…bootstrap money

- Bootstrap is the most common “folk theory” for how money comes to be
- All monies benefit from the bootstrap effect — once a thing is treated as money, it is valuable because it is treated as money
- However, “pure” bootstrap monies are in fact rare. Usually something tilts the playing field re the choice of what gets called money. Once a money is established, people who hold or have preferential access to it actively work to maintain that “tilt” so that no Bernanke disillusionment / demonetization moment ever results
  - — Prominent historical gold standards were not pure, spontaneous bootstrap monies. (Sorry!)

…bootstrap money

- Bitcoin is a prominent contemporary, pretty pure bootstrap money

- Ether is arguably becoming monetized right now

- The old currency of defunct regimes in now failed states represents an interesting form of bootstrap money
  - See Somali Shillings
    http://jpkoning.blogspot.ca/2013/03/orphaned-currency-odd-case-of-somali.html
  - See also Iraq's "Swiss Dinar"
    (which circulated in parallel to the currency of a then-still-functioning regime)
    http://jpkoning.blogspot.com/2013/05/disowned-currency-odd-case-of-iraqi.html

…bootstrap money

- When a thing starts to be used as money, its value rises well above the value that would be supportable based on the use value of the thing

- Monetization is ***a form of bubble, but it is arguably an unusually stable sort of bubble***, since once many potential transactors have settled on an arbitrary token, switching to a different arbitrary token becomes a difficult coordination problem
    - The (now infamous) Mencius Moldbug used to describe gold as “the bubble that never bursts”.

- Unfortunately, there are other possible monies besides purely arbitrary tokens or arbitrarily chosen commodities. The demonetization coordination problem can be solved.

- It’d be nice to have ***a form of money whose persuasiveness is not a “sunspot”***

…obligation as a source of persuasion

- Humans, individually and socially, have deeply engrained notions of ***reciprocal and hierarchical obligation***

- *Reciprocal obligation* — if you do a favor for me, I bind myself, formally or informally, to return the favor in some fashion

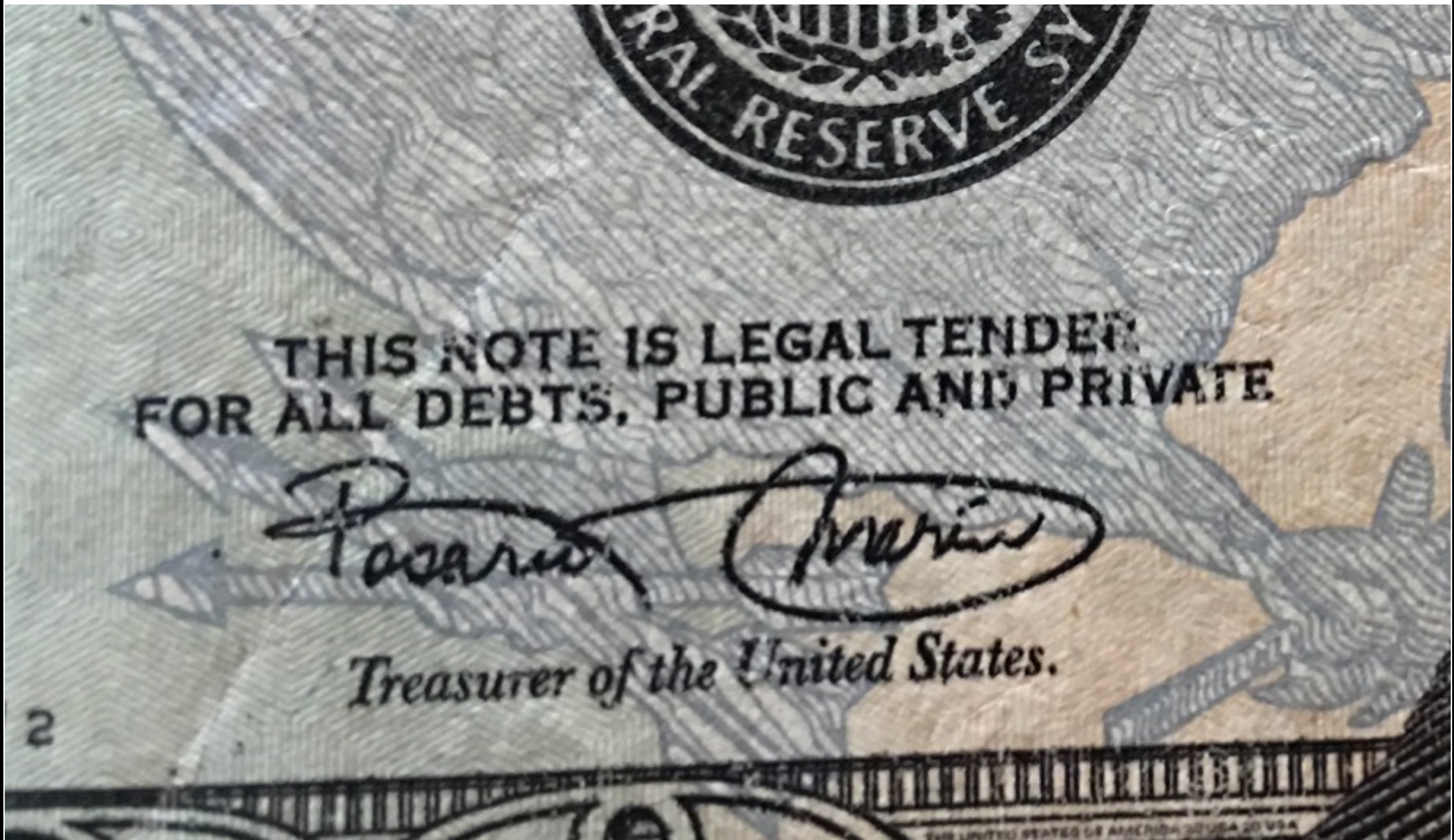
- *Hierarchical obligation* — Whether "voluntarily" in respect of the "legitimacy" of a hierarchy, or enforced via persuasive/ coercive powers that reinforce the hierarchy, individuals or institutions towards the top of social hierarchies can compel behavior of those beneath.

- Almost everywhere, both sorts of obligation are socially and institutionally enforced, under sanctions that range from informal shunning, to coercive loss of liberty or property, to death

…obligation as a source of persuasion

- *Accepting* an obligation to reciprocate is perhaps the most common and effective form of persuasion we have.
  - — owing a friend for doing a favor
  - — “paying” for a meal with a credit card
- Enabling a person to *fulfill or escape* an obligation is also a common and effective means of persuasion, particularly if the obligation carries risks of serious sanction for failure to perform
- In rough but only qualitative terms, obligation, whether reciprocal or hierarchical, constitutes something like ***negative money***.
  - — we can be *persuaded* in exchange for escaping an obligation or if others grant an obligation to us

…the money shot



Arguably the most important innovation ever in economic history is the insight that "negative obligation" — maybe "absolution" or "freedom" — can be ~~weaponized~~ tokenized, made fungible and quantifiable.

Obligation is the core source of value of all monies that are successful in the modern sense of supporting prosperity at a large scale.

Fiat money, fundamentally, is valuable because it confers the capacity to fulfill and therefore free oneself of obligations, ranging from formal taxes and debts to less formal but still compelling obligations to feed oneself and ones family.

…sources of obligation, sources of value

- Public, hierarchical sources of value:
  - — Kings or states can create obligations and endow value to a scrip by declaring a tax payable in that scrip
  - — Subjects then find the scrip that permits them to fulfill those obligations very persuasive, particularly if the penalty for nonpayment is severe
  - — Almost by definition, states have a special capacity to be, um, persuasive

- Private, reciprocal sources of value:
  - — Private parties can perform favors repayment for which will be surrender of a quantity of some scrip, with rough consequences of some sort if the debt is not repaid
  - — Debtors are then amenable to persuasion in exchange for tokens that will undo their obligation

…sources of obligation, sources of value

- Convergence
  - — If private creditors owe taxes to kings and states, then they have reason to ask that repayment of obligations be made in the king's coin
  - — Self-reinforcing bootstrap dynamics hold as strongly for a king's token as it would for any other thing, but much more stably so, since the king can reinforce and assure the stability of his token so long as he retains the political capacity to coerce or persuade payment of tax

…sources of obligation, sources of value

- In summary, tokens are given value by
  - — the capacity of the societies in which they trade to impose (tax) and cajole (loans) members to accept scrip-denominated obligations
  - — the willingness of the society to impose serious consequences for nonperformance of these obligations, whether those be formal consequences (eviction from ones home, debtors' prison) or informal and social (shame, shunning, loss of status, mockery by peers)
  - — bootstrap dynamics that render the scrip desirable because everybody desires it.
    - — but not randomly. predictably, because a significant subset of the population is obliged to acquire it.
    - — and stably, because the state can prevent demonetization / devaluation via taxation

…sources of obligation, sources of value

An ethical aside:

- It is tempting, given libertarian sensibilities and the connotations of the words “hierarchical” and “reciprocal”, to think of “hierarchical obligations” as “coercive” and normatively bad, but “reciprocal obligations” as “voluntary” and normatively good.
- I think that is a misplaced intuition one should resist.
- Hierarchical obligations can sometimes be legitimate and not unreasonably burdensome. Reciprocal obligations can sometimes be accrued under conditions that are in substance coercive.
  - Suppose the only way you can feed your kid today is to accept a title loan against your car at 140% APR?
- When we want to draw ethical judgments about the ecology of obligations in our society (and we should), I think we should look to the degree of burden and the legitimacy of its accrual in a case-by-case way.
- Note that state coercion is implicated in all formal obligations to repay scrip, whether the obligations are public or private.
  - Regardless of whether an obligation is publicly accrued as a tax or privately accrued as a loan, it is the state’s coercive powers that create the consequences of nonperformance that ultimately motivate the pursuit of scrip by the obliged.

…from head taxes to income taxes,
the role of the banking system

“The problem was that if the subsistence base was capable of supporting the population entirely, colonial subjects would not be compelled to offer their labor-power for sale. Colonial governments thus required alternative means for compelling the population to work for wages. The historical record is clear that one very important method for accomplishing this was to impose a tax and require that the tax obligation be settled in colonial currency. This method had the benefit of not only forcing people to work for wages, but also of creating a value for the colonial currency and monetizing the colony. In addition, this method could be used to force the population to produce cash crops for sale. What the population had to do to obtain the currency was entirely at the discretion of the colonial government, since it was the sole source of the colonial currency.”

—Matthew Forstater
on monetizing colonial Africa
from Taxation and Political Accumulation

available at:
http://cas.umkc.edu/econ/economics/faculty/Forstater/papers/Forstater2005/RiPE%20Forstater.pdf

…from head taxes to income taxes, the role of the banking system

- The theory that token-money is given value by states imposing taxes and thus compelling subjects to work for their scrip is known as ***chartalism***

- However in its simplest forms, such as monetizing a subsistence-based premodern economy, something like a head tax ought to be required
  - — Income, payroll, and consumption taxes, the staples of modern government, only become due if one earns or spends monetary income
  - — They don't directly compel the acquisition of monetary income, so they don't directly render fiat tokens persuasive
  - — Modern taxes undoubtedly provide *some* support to the currency, via what economists call "income effects" and income-independent taxes like property taxes or auto registration fees
  - — But in "civilized societies" (as opposed to brutally run colonies), states manage to support the value of their currencies mostly via less burdensome taxes, that somewhat hedge citizen's risk of lacking scrip

…from head taxes to income taxes, the role of the banking system

- In modern, liberal economies, much of the work of both producing fiat money and ensuring a sufficiency of obligations to back them is delegated to banking systems, reducing the need for onerous direct taxation

- Modern banking systems exist to lend and encourage borrowing, creating debtors whose obligations, and therefore whose assets and capabilities, back the currency

- The "funds" lent by modern banks are claims on state money, often guaranteed by the state so they trade at parity with state money and function directly as money

- When banks make loans, they issue new claims and effectively produce new money. They also create new debtors, who contribute to the value to money by virtue of their requirement to service or repay the loans.

…from head taxes to income taxes, the role of the banking system

- The state regulates banking systems to manage the scale and scope of this private money creation, and (ideally) to assure a general hygiene in loan quality
  - Periods of mass default potentially threaten the value of money, if mass default leads to mass forgiveness
  - As we have recently seen, in actual debt crises, elites may be absolved, but pounds of flesh are demanded of ordinary debtors who fail to repay, which helps protect the value of the money

- The delegation by states to profit-motivated banks of both sides of fiat money creation — the issuance of tokens, and the creation of aversive obligations to back them — has arguably been the "secret sauce" that hypercharged modern capitalism.

…from head taxes to income taxes, the role of the banking system

- Banks' incentives are to subsume all spheres of human activity into income-generating enterprises to which funds can be profitably advanced.
  - It’s an overstatement and a bit conspiratorial to say that banks are “responsible” for the increasing colonization of all aspects of life by market management and control. But their incentives are certainly consistent with these developments
  - (Consider how higher education has changed in the course of a generation from a good that was supposed to be insulated from market forces to a certain degree to a debt-financed enterprise rationally undertaken only if it will yield a financial return. The need of educated graduates to service or repay student loans helps support the currency!)

…from head taxes to income taxes, the role of the banking system

- As long as bank debt is mostly "good" (serviceable) and the purposes for which the loans are made genuinely productive of value (whatever that means), this combination of fiat money and powerfully incentivized private banks can be a remarkable engine for "economic development"
    - (tricky conditions, though!)

- Private-debt-laden economies (including nonbank as well as bank debt) enable states to switch from head taxes to “kinder, gentler” income taxes, since private obligations undergird the value of the currency

…fiat money is an activity, not a thing

- Fiat money is valuable only when the issuer of the token, somehow, manages to orchestrate
  1) High productive capacity of the community within which the token will be exchanged
  2) Widespread binding obligation to ensure that acquisition of tokens to pay taxes or repay debt remains a persuasive motivator for a significant subset of the community

- States try to orchestrate those conditions by tweaking their management of fiat money

  — Taxes and tax collections, bankruptcy laws, and bank regulation obviously affect both points above

> ***Note:***
>
> - The entire portfolio of government debt (from cash money to overnight debt to term bonds) should be thought of as fiat money, in the same way that both a checking account and a savings account in a bank represent money, even though one form is slightly more convenient to spend

…fiat money is an activity, not a thing

- States have tools that affect the value of their currencies very directly
  - When "money is tightened", the state and banking system award high interest to those who net-hold it, while the burden of being a debtor (and so the incentive to earn money to service or escape debt) becomes very high, putting upward pressure on the value of the token
  - When "money is loosened", the state and banking system make it less attractive to hold money, and less burdensome to be in debt, putting downward pressure on the value of the token
  - States offer to pay holders of money higher interest for a guarantee they do not spend tokens for some period of time, helping to support token values (states issue term bonds)
    - (This will probably matter less and less as it becomes easier to borrow against government bonds in overnight repo markets.)

…fiat money is an activity, not a thing

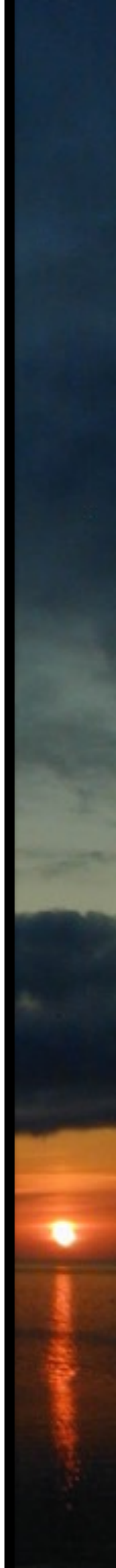
- Weakness can be strength
  - — There are tradeoffs between supporting the strength and value of obligations [Point (2) above] and maximizing the productice capacity of the economy [Point (1)]
    - — So even if your goal is simply to maximize token values (which it should not be) making money tighter doesn't always work
    - — No matter how deeply obliged and motivated, people without opportunities to work in a productive economy may have little real value to offer in exchange for fiat money
  - — For the most part, real economic value cannot be stored, it must be produced and reproduced every day
  - — Money as a store of value is a convenience, an easy, durable claim on future value. But it is only a claim. That future value will still need to be produced
  - — If holding money is very profitable, too many people may do just that rather than try to earn future value by investing to produce it

…fiat money is an activity, not a thing

- Weakness can be strength (cont'd)
  - — Reducing the value of holding money — impairing its function as a store of value — can paradoxically be essential to maintaining or expanding the real economic value that money is supposed to store, because an alternative to holding money or government paper is to investment in the real economy
  - — The net effect of weakening can be to encourage investment and so strengthen the currency in real terms over time!
  - — In a recession, when real economic activity is subdued, policymakers frequently "loosen", to encourage people to invest (or to consume, generating demand that inspires investment) by reducing the attractiveness of using money or claims on money as a stores of value
  - — This is smart policy, not "debasement"
- Every aspect of economic policy that affects the productivity of real resources in the economy can be affect the value of the fiat money

…fiat money is an activity, not a thing

- ***Fiat money is an activity. Maintaining it requires ongoing management.***



…how fiat fails

- Fiat fails when the sovereign that manages it fails
- Obviously, there's a chicken / egg problem in that statement
- But…
  - — "Debasing" the currency is always an insufficient explanation for fiat failure
  - — A healthy sovereign can do a lot of borrowing / printing if it wants to, and support the value of its currency with high interest rates or taxation
  - — For "debasement" to be fatal, an issuer must have reached limits, in terms of the real productive capacity of the economy, its ability to incentivize or mobilize use of that capacity, or its political capacity to tax to support the value of the currency
  - — Fiat failure is never due to "printing" alone. It represents an imbalance between printing and capacity, which usually reflects the desperation of a state already trapped by obligations it has no capacity to meet. Fiat failure is a symptom of a sovereign that is already in crisis. (Ex: Weimar, Zimbabwe, confederacy)

…how fiat fails

- Contrary to the armchair musings of amateur political scientists, there is little evidence that democracies routinely vote to weaken fiat currencies as a form of redistribution.
- On the contrary, the clear preference among advanced Western democracies is for short-term strength even when that may do long-term damage to the economy!
  - — Wealthy creditors and older people prefer strong money to weak, and are usually more influential than the young or marginally employed in Western capitalist democracies
  - — For example, both the US and the EU have maintained much-too-strong currencies since the 2008 financial crisis, even though long-term growth trends have very likely been impaired by that policy
  - — Politics seems to favor hard money, not soft
  - — The US in the 1970s is an interesting counterexample. The young, huge, politically restive baby-boom generation punched above its age politically, and tolerating high unemployment in that generation would have meant social crisis.

…conclusion

- Fiat currency is an extremely resilient social technology that takes advantage of a very deep aspect of human behavior — our susceptibility to obligation — to define tokens of freedom that are extremely valuable and serve the functions of money splendidly.
- Fiat currencies exist as technologies embedded in institutions, particularly in sovereign states and banking systems
- Fiat currencies, when managed well, outperform all known competitors. Even when managed poorly (as they seem to be now), they seem to hold their own.
- The serious problems with fiat currency are *ethical*. Fiat currency management is an incredible lever for social control, and people at the center, in government or in the banking system, have many opportunities for corrupt self-dealing. Fiat value depends upon people falling into obligation, which carries with it an unpleasant whiff of bondage.
- Improving on fiat currencies, via cryptocurrencies or any other means, is a worthy project. But I hope you'll understand how fiat currencies work — and they do work — and focus on remedying their serious ethical deficiencies.

…acknowledgments

This talk presents a modification of the ***chartalist*** framework for understanding modern money. Chartalism was pioneered by Georg Friedrich Knapp in 1905, and has been a controversial and important perspective on money ever since. The most prominent contemporary chartalists, from whom I've learned a lot, are the "***Modern Monetary Theorists***", who include Randy Wray, Pavlina Tcherneva, Scott Fullwiler, Stefanie Kelton, Marsall Auerback, Warren Mosler, and many others I apologize for omitting. The MMT-ers have a very particular set of views, some of which I'm sympathetic to and some of which I am not. But I've learned a lot from them.

JP Koning has a great blog on money, called ***Moneyness***. I think the perspective presented here is quite different from any Koning would take, but his work came up a lot in my mind as I put this talk together. http://jpkoning.blogspot.com

Christine Desan has an interesting book called ***Making Money*** that describes in great detail monetary evolution in Great Britain along lines recognizably related to this talk. http://isbn.nu/9780198709589

Uncountable conversations with blog commenters and e-mail correspondences have shaped these ideas.

Probably none of these people would endorse my views!