In What Respects Will the Information Age Make Central Banks Obsolete?

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Like a post office, a central bank does useful things. That fact that it does useful things does not make either institution efficient, at least not in its present-day form as a government agency. By "efficient" here I mean "better than the alternative." Just as private firms can better deliver packages and letters, private institutions can better provide the services that central banks currently provide. If the analogy between the central bank and the post office seems farfetched, consider that government central banks owe their custom to legal restrictions against private currency-issuers, just as government post offices owe their custom to legal restrictions against private letter carriers.

Advances in information technology and financial markets will not be responsible for making today's government-sponsored central banks obsolete (*no longer* efficient), because government central banks *never have been* efficient. Information-age technologies are, however, probably increasing the advantages of private monetary institutions in several respects.

Central banks today play five major roles: monopoly issuer of currency, bankers' bank, regulator of commercial banks, lender of last resort, and conductor of monetary policy. We can best evaluate the (in)efficiency of the status quo and the impact of new technology by considering each role in turn.

Private Banks Can Issue Better Currency

Central banks issue currency today not because they have ever outcompeted private banks at attracting loyal customers but because their sponsoring governments have outlawed private competition.

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This is especially obvious in countries where the public has every reason not to believe the central bank's promise to redeem its currency for dollars at a fixed rate. As information-age expert Nicholas Negroponte once noted in his column in *Wired*, "Most of us would trust GM, IBM, or AT&T currency more readily than that of many developing nations because the 'currency' represented by these companies is more likely to remain convertible. After all, a guarantee is only as good as the guarantor" (Negroponte 1996: 286). It has not been industrial firms like those Negroponte listed that have historically produced the most trustworthy currency, however; it has been commercial banks. Legislation from the 18th through 20th centuries increasingly restricted private banks of issue and finally gave central banks a monopoly of note-issue.

New technology is now bringing us non-paper substitutes for central bank currency: electronic purses for holding and transferring digital currency balances, housed on microchips in plastic cards, mobile phones, or personal computers. Dollar balances on a Mondex™-equipped card are redeemable bearer claims on a private commercial bank (or banks) that can circulate indefinitely from card to card, and thus are the functional equivalent of private banknotes. A currency card is easier to carry than a wad of notes and coins (especially when the chip resides on a credit or debit card already in one's wallet), and eliminates the need to have correct change or to make change. Though early trials of Mondex™ (owned by Mastercard) and its rival Visa Cash™ have not been resounding successes, somewhat greater progress has been made by the GeldKarte system in Germany. Mobile phone companies are currently developing plans for equipping their handsets with electronic purses. Once the kinks are worked out consumers may prefer digital currency to analog central bank currency for many uses.

Currency cards and mobile phone systems must also compete with debit cards, which can be linked to interest-bearing accounts and seem to be just as convenient in most uses (except perhaps for vending machines and similarly small transactions). So it remains to be seen how soon digital currency will catch on in a big way.[1] We won't know whether electronic purses really are a better way to pay unless we let them—and old-fashioned private banknotes, which might be more efficient yet—compete unimpeded with the status quo payment methods of central bank notes, checks, and debit cards.

[1]On the market obstacles to profitable e-money systems, see Godschalk and Krueger (2000).

A common objection to private e-currency is that hackers and fly-by-night issuers will be able to defraud the public, just as counterfeiters and "wildcat banks" supposedly did in the 19th century. In fact, counterfeiting of private notes and "wildcat banking" were historically quite rare. Modern information technology will make these problems even rarer. A seller offered a digital currency payment can electronically determine before accepting it whether the payment and the issuer are good.

Private Clearinghouses Can Better Serve as Bankers' Banks

Besides currency notes, central banks issue account balances that commercial banks hold as reserves and use for paying one another. Central banks in many nations also process checks and run the daily clearing sessions where commercial banks compute the net amounts that they owe one another. The typical central bank thus acts as a "bankers' bank". As in note-issue, central banks have taken on the role of bankers' bank not because they are efficient at it, but because private providers have been nationalized or legally restricted. The Victorian Era banking authority Walter Bagehot (1873: 100) summarized the legislative process that transformed the Bank of England into the bankers' bank this way: "Thus our *one*-reserve system was not deliberately founded upon definite reasons; it was the gradual consequence of many singular events, and of an accumulation of legal privileges on a single bank which has not been altered, and which no one would now defend."

U.S. commercial banks hold account balances at the Fed largely for the purpose of meeting statutory reserve requirements against their deposits. Compelling a bank to hold reserves that it cannot use (it must hold onto them, after all) and that pay subcompetitive interest rates (the Fed pays zero) acts as an expensive tax on the bank. Modern information technology is making it increasingly easy for banks to avoid the tax by "sweeping" taxed deposit balances into untaxed accounts (like money market deposit accounts) or completely off the balance sheet at the end of the day (and back in the morning). In the last decade, U.S. commercial banks have been able to reduce their reserves per dollar of deposits by a remarkable 60 percent (down to 1 from 2.6 cents). Recognizing that reserve requirements have become an increasingly wasteful tax, the Canadian government abolished its statutory reserve requirements in 1994.

Private clearinghouses were never completely suppressed in the United States. They continue to process some checks, automated

payments, ATM transfers, and large-volume transactions. The clearing volume on the private CHIPS system of the New York Clearing House Association continues to rival the volume on the Federal Reserve's Fedwire system. If commercial banks are freed from the constraint of holding account balances at the central bank, more of the clearing business may return to the private sector. This is particularly likely if central banks continue their current fixation with imposing real-time gross settlement in place of the more efficient netting and delayed-settlement systems that banks naturally prefer. Central bankers conjure up doomsday scenarios and fret about "systemic risk" in private delayed-settlement systems, but not for any reason that withstands serious scrutiny. Private clearinghouses are fully capable of assessing and internalizing settlement risks and have an excellent track record.

The abolition of reserve requirements and the return of clearing to the private sector do not imply that banks will reduce their demand for reserves all the way to zero. After all, banks held positive reserves before reserve requirements and the nationalization of clearing. Banks will continue to prudentially hold reserves for customer redemptions and interbank settlements, that is, for paying off their claims to depositors and to one another. The preferred reserve asset will continue to be whatever is the definitive form of money, because only such an asset is perfectly liquid and free of credit risk. Having taken the world off the gold standard, central banks have made their own fiat liabilities the definitive domestic monies. (Central bank notes and account balances continue to be called "liabilities" even though they are no longer debts that the central bank must repay.) The demand for central bank liabilities will therefore not go to zero without a change in the monetary standard such as a return to gold. I return to the question of the monetary standard below.

Clearinghouses Can Better Regulate Commercial Banks

Central banks currently enforce a variety of legal restrictions on commercial banks. Advances in information and communications technology are bringing financial innovations that are undermining, or may soon undermine, many of these restrictions. Two decades ago, the development of money market mutual funds made it impossible to keep anti-competitive ceilings on deposit interest rates in the United States. As already noted, sweep accounts are rapidly rendering the reserve requirement tax uncollectable. Banking by phone, fax, and

internet is making geographic limits on banks less effective every day. (In the last decade the United States has joined other major countries in abolishing nationwide branching restrictions, but international restrictions remain.)

Perhaps most fundamentally, as the price of remote access to offshore banking services is falling toward zero, depositors are finding it increasingly easy to avoid any and all inefficient restrictions on domestic banks. To prevent shrinkage of the domestic banking industry, regulators are finding it necessary to abandon interest rate ceilings, geographic limits, reserve requirements, portfolio restrictions (e.g. the Glass-Steagall Act), binding capital requirements, and mispriced deposit insurance.

An end to legal restrictions on banks does not mean an end to all regulations, only an end to inefficient regulations. The regulations that will survive will be those that are advantageous both to banks and to their customers. In particular, clearinghouse associations have always found it useful to develop and to enforce solvency and liquidity standards for their members, to assure all members that their clearing partners won't default at the next clearing session. Clearinghouse membership has then provided a credible "seal of approval" for depositors seeking a safe bank.

Private Markets Can Better Provide Banks with Borrowed Reserves

A common argument for retaining a central bank is that, without a central bank to play the safety-net role known as the "lender of last resort," commercial banks would be subject to periodic liquidity crisis and even collapse. The source of the weakness that a lender of last resort is supposed to cure cannot be that a banker typically can't calculate how many reserves to hold: bankers specialize in just that sort of practical risk-return assessment. As economist Harry Johnson (1973: 97) noted three decades ago: "At least in the presence of a well-developed capital market, and on the assumption of intelligent and responsible monetary management by the central bank, the commercial banks should be able to manage their reserve positions without the need for the central bank to function as 'lender of last resort.' " A bank that finds itself unexpectedly short on reserves can turn to a market for short-term interbank loans that is thick and getting thicker every year. A bank can access this market even from a less-developed country if it is a branch of, or has a correspondent relationship with, an international bank.

The source of the weakness must instead be systemic. With the interbank loan market reallocating reserves to banks that need them most, a problem arises only when there is a sudden shortage of reserves in the banking system as a whole. A sudden shortage implies either a spike in the demand for reserve money, which would occur if a panicky public were draining reserves from the banking system, or a sharp reduction in supply, which can only be due to a lapse in Johnson's "intelligent and responsible monetary management." The second possibility (sharply contractionary central bank monetary policy) hardly justifies having a central bank; quite the contrary. As economist Kurt Schuler noted in his 1996 monograph *Should Developing Countries Have Central Banks?*, the first possibility justifies having a central bank only if it can be shown that panics are more frequent and severe in countries without central banking than in countries with central banking. The evidence actually points the other way. Canada, for example, had no bank failures in the Great Depression, but did not establish a central bank until 1935. The near-laissez-faire offshore banking industries of Singapore in Hong Kong were free of panic in 1997 while the regulated onshore banking systems collapsed in Thailand, Malaysia, and the Phillipines. Central banking brings with it not only the problem of destabilizing monetary policy, but also the problem of bad banking encouraged by explicit or implicit central bank bailout guarantees.

Central banking advocates often cite the authority of Bagehot, who famously urged the Bank of England to act as a lender of last resort, as though he had argued the general necessity of having a lender of last resort. They fail to notice that Bagehot explicitly premised his advice on the Bank of England's unnaturally privileged position at the center of the English banking system. He noted that an unrestricted competitive banking system would generate sufficient incentives for commercial banks to avoid panics, and thereby to avoid needing a lender of last resort. According to Bagehot (1873: 106–7):

> Under a good system of banking, a great collapse, except from rebellion or invasion, would probably not happen. A large number of banks, each feeling that their credit was at stake in keeping a good reserve, probably would keep one; if any one did not, it would be criticized constantly, and would soon lose its standing, and in the end disappear. And such banks would meet an incipient panic freely and generously; they would advance out of their reserve boldly and largely, for each individual bank would fear suspicion, and know that at such periods it must "show strength," if at such times it wishes to be thought to have strength.

Historical evidence indicates that panics have been a problem al-

most exclusively in countries where legal restrictions have weakened banks. The United States in the late 19th to early 20th century is the prime example of a legislatively weakened and relatively panic-prone system. Even in that system, commercial banks limited the damage done by panics without having an *official* lender of last resort by organizing self-help arrangements through their clearinghouse associations.

Absent a Domestic Fiat Standard, the Market Will Control the Stock of Money

Central banks conduct domestic monetary policy, which means that they deliberately control some measure of the domestic money stock. For countries with domestic fiat standards today, appropriate domestic monetary policy is necessary in order to pin down the value of money.

There are at least two alternatives to a domestic fiat standard: a foreign fiat standard, or a commodity standard. Information-age advances are promoting the adoption of foreign currency standards. In much of Latin America, the public rightly perceives the U.S. dollar as distinctly more stable than the domestic currency. Savers want to move their funds into dollars (and back again when needed) to the extent that it pays, net of transactions and communication costs. Information-age advances that lower transactions costs and communication costs (e.g., the cost of a mobile phone call to find out the current exchange rate) thus lower the threshold level of domestic instability at which spontaneous dollarization occurs. By promoting unofficial dollarization, the information age is thankfully eroding the monetary powers of the central bank in developing countries.

No monetary policy is necessary to control the value of money, and hence no central bank is necessary for that purpose, in a country that has adopted an external fiat dollar standard. This is true whether the adoption is direct, through official dollarization (as long practiced in Panama and now in Ecuador), or indirect, through the adoption of a currency board or similar arrangement (e.g., Hong Kong, Argentina, and Lithuania). Just as under the international gold standard with its automatic "price-specie-flow mechanism," market forces appropriately regulate the domestic quantity of money. Arbitrage ensures that the purchasing power of the dollar is the same throughout the world.

For the United States, the situation is different. In principle there are superior alternative monetary standards, but none in practice has a preexisting critical mass of users. Despite the optimism of some visionaries and promoters (e.g., *www.e-gold.com*) that the Internet

could bring the spontaneous reemergence of a gold standard, or the emergence of some novel commodity standard, sellers in the fiat-dollar economy still want to be paid in the fiat-dollar-denominated balances that their trading partners still accept. Electronic funds transfer and digital currency represent changes in the way we spend and hold dollar-denominated balances, not moves toward a money denominated in something other than dollars. The definitive money remains the fiat central bank liability, and e-money is a redeemable claim to that fiat money.

The disappearance of Federal Reserve notes, discussed above, could make the unanchored nature of the fiat dollar more obvious, but a change to a new standard will not automatically follow. The information age, as such, will therefore not make the Federal Reserve's monetary policy role wither away. If we want to make Federal Reserve monetary policy a thing of the past—and we should, because Alan Greenspan won't be the Fed chairman forever—then a collective decision to adopt or readopt some kind of commodity standard will be necessary.

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