Printed Money

Whatever is meant by the term “money printing”, it seems to play an important role in our language.

But what *is* “printed money” and *why* is it important?

We are unlikely to find satisfactory answers by microscopic examination of physical banknotes.

As Wittgenstein said, “…let’s not forget that a word hasn’t got a meaning given to it, as it were, by a power independent of us, so that there could be a kind of scientific investigation into what the word *really* means. A word has the meaning someone has given it….The thing to do in such cases is always to look how the words in question are actually used in our language.”[1]

So let us examine how “money printing” is used in English.

Although paper and polymer central bank notes *are* literally manufactured and printed, the primary source of what is being spoken about in recent years is the increase in electronic or “accounting ledger” money on the “books” of the central bank. One might say that e-money is “issued” just as one might say a newspaper has both a print and a digital edition.

Between 9 September 2008 and 31 December 2008, the quantity of US Federal Reserve Notes in circulation—literally paper money—rose by 7 percent, while the quantity of accounting ledger money held by financial institutions at the 12 Federal Reserve Banks grew by 2,582 percent. Since then, the quantity of FR Notes in circulation has risen by 45 percent (7 percent at an annual rate) and the quantity of accounting money held at FR Banks has risen by 220 percent (23.5 percent at an annual rate). Before the crisis, 96 percent of the US “monetary base” consisted of physical banknotes. That proportion is now only 31 percent. So whatever accounts for the recent attention being paid to “printed money” it is not that it is printed; and that the interesting attribute of printed money is not related to whether it is paper, polymer or simply an accounting record.

What then is special about printed money if it is not that it is money that is printed? Judging from the way the phrase is used, it seems the key issue is that printed money is inflationary and it is inflationary as it is not “backed” by any promise to exchange it for a physical commodity at a fixed price[2]. That is, it is “fiat” money, or money that obtains its status merely by a proclamation of the government—money whose value can be altered at will by the same government. It is contrasted with money such as full-bodied gold or silver coins whose value is considered determined by the “law” of supply and demand.

Printed money is fiat money and the *government* defines fiat money. Yet many writers say that “central banks” print money, and since central banks appear under most national statistical taxonomies as “independent” from government and both components of printed money—physical and ledger money—are invariably recorded as being a liability of the central bank in official accounts this construction makes sense. But is does raise the question “who prints money”? One may solve this

[1] Wittgenstein, Ludwig (1958), *The Blue and Brown Books*, Harper Paperback edition (1965), pages 28-56.
[2] Irving Fisher coined the term “irredeemable paper money” in 1911 to refer to this concept.

linguistic and accounting puzzle by asserting that the central bank is part of the government, just as say the treasury is part of the government, and that central bank liabilities (and assets) are government liabilities (and assets).

Among the fossil evidence supporting the assertion that central banks and governments are financially one and the same is the legal requirement that all profits from the Bank of England Issue Department be transferred *directly* to HM Treasury (that is, are not legally available to the Bank to offset losses in the Banking Department). Close examination of the runes on US paper money reveal the curious fact that the two and only signatures on US Federal Reserve Notes belong to US Treasury officials, neither of whom are central bank officials. Although one might suppose those signatures are the monetary equivalent of the human appendix—for which no known function exists—the US Treasury website currently states that FR Notes are a *joint* liability of the Federal Reserve Banks and the Treasury.

With these ideas in mind we may be able to satisfactorily explain the following remark, fairly reflective of what seems consistent with the common usage of “printed money” today,

> “All the central banks in the world are simultaneously printing money to debase their currencies.”[3]

In other words, “governments are creating fiat money to cause inflation”.

Let us now consider in a bit more depth “printed money” by examining how these words were used by two of the key theorists of the 20th century, J.M. Keynes and Milton Friedman. Perhaps surprisingly, their thoughts, at least during certain periods of their lives, were quite similar on this subject.

Governments print Money and Money causes Inflation

John Maynard Keynes wrote exceedingly well, although readers familiar only with the “General Theory” would surely beg to differ. My favorite Keynes is *A Tract on Monetary Reform (1923)* and my favorite chapter therein (Chapter II) is titled “Public finance and changes in the value of money”. After stating of the quantity theory of money: “The truth of this, properly explained and qualified, it is foolish to deny[4]”, Keynes goes on to discuss printing money as a form of taxation through inflation.

71 years later, Milton Friedman, in his rather lighthearted 1994 book *Money Mischief: Episodes of Monetary History*, takes a very similar stance in “The Cause and Cure of Inflation” (Chapter 8). Of the quantity theory of money he states “There is probably no other proposition in economics that is as well established as this one”[5]. He then proceeds to explain that governments’ desire to spend without political consequences leads them to finance themselves through money printing—effectively taxation without representation.

Interestingly, the epigraph to Friedman’s Chapter 8 is a quotation from Keynes’ 1920 monograph *Economic Consequences of the Peace,* referring to monetary manipulation:

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[3] Jim Rogers, famed commodity investor, http://jimroger.blogspot.com/2013_07_01_archive.html.
[4] Keynes, John Maynard (1923), *A Tract on Monetary Reform*, p. 42, Prometheus Books Edition, Amherst NY, 2000.
[5] Friedman, Ibid, page 193. A subsection of this Chapter is entitled “Government revenue from Inflation”.

"There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose"[6].

Friedman's view that inflation is a government phenomenon is crystal clear:

"Whatever may have been true for money linked to silver or gold, with today's paper money it is *governments* and *governments alone* that can produce excessive monetary growth, and hence inflation[7].

In the 33 pages written by Keynes, the prime force behind money printing and the motivation for imposing the inflation tax is referred to as the "Government" or "Treasury" *36 times*. For example, in just one paragraph Keynes wrote (my italics):

"Suppose the *Government* prints a further 3,000,000 notes….notes newly printed by the *Government*…Thus by the process of printing additional notes the *Government*…"

Central banks make only two cameo appearances in Keynes' theater. The first is a reference to the Soviet Union's "State Bank" having undertaken to convert chervonitz at par with sterling and the second a mention in a footnote chastising the German Chancellor Wilhem Cuno for allowing "incompetence" at the Treasury and Reichsbank for, inter alia, not monopolizing—for the state—the profits from note-printing[8]. In both cases where central banks do appear, Keynes saw them as operating under the effective control of the government. Indeed he praises "Soviet financiers" for their honest admission that inflation is a tax. "The Soviet Government have always regarded monetary inflation quite frankly as an instrument of taxation…"[9].

Nor is there any shade of doubt in Friedman's mind that troublesome money is "printed":

"In the modern world, inflation is a printing-press phenomenon."[10]

Although clearly this is not meant to be conceived only as literal paper printing:

"The modern forms of money—paper and bookkeeping entries—are subject to no such physical limits"[11]

A close examination of Friedman's text reveals one apparent difference from Keynes circa 1923. He refers to the *central bank* as printing money, e.g., "The newly printed Federal Reserve notes…" and "To take a simple example, the government builds a road, paying for it in newly printed Federal Reserve Notes." [12] Resolving this apparent contradiction is the following assertion: "The Board of Governors of

[6] Ibid, page 189.
[7] Friedman, Milton (1994), *Money Mischief: Episodes in Monetary History* (page 205). Italics added.
[8] The Reichbank allowed banks to share in the "inflation tax" by lending to them without sufficient compensation for inflation, i.e. rediscounting at a nominal rate well below the rate of inflation. (P.60 footnote 1).
[9] Keynes, Ibid, footnote 1, page 57.
[10] Ibid. page 193.
[11] Ibid, page 194.
[12] Ibid, page 210.

the Federal Reserve System is composed of seven members, all appointed by the president with aid and advice of the Senate. It clearly is a branch of the government."[13]

This view that the US Treasury and Federal Reserve are one-and-the-same from the monetary and financial point of view was reinforced by Federal Reserve Chairman Alan Greenspan in 1997:

"Central banks can issue currency, a non-interest-bearing *claim on the government*, effectively without limit. They can discount loans and other assets of banks or other private depository institutions, thereby converting potentially illiquid private assets into riskless *claims on the government* in the form of deposits at the central bank….That all of these *claims on government* are readily accepted reflects the fact that a *government* cannot become insolvent with respect to obligations in its own currency. A fiat money system, like the ones we have today, can produce such claims without limit. To be sure, if a central bank produces too many, inflation will inexorably rise as will interest rates, and economic activity will inevitably be constrained by the misallocation of resources induced by inflation."[14]

More recently, then Federal Reserve Governor Ben Bernanke explained the *fiscal* nature of "helicopter" money, a phrase he attributed to Milton Friedman:

"A broad-based tax cut, for example, accommodated by a program of open-market purchases to alleviate any tendency for interest rates to increase, would almost certainly be an effective stimulant to consumption and hence to prices…. A money-financed tax cut is essentially equivalent to Milton Friedman's famous "helicopter drop" of money.18"[15]

We need not check the roof of the Federal Reserve for helicopters to understand what this means. Bernanke is clearly describing the role of the Federal Reserve as merely exchanging money for Treasury securities, i.e. fiat money now for promises to receive fiat money in the future. It is the Treasury or government who provides the money freely to the population—engages in the fiscal act of expenditure. Thus the practitioners—Greenspan and Bernanke—and the theoreticians, Keynes and Friedman, all see the "government" as the driving force behind money printing; that the motivation for printing excessive money is to finance government deficits in a duplicitous fashion; and that excessive money printing leads to inflation through the mechanism known as the "quantity theory of money".

Let us end this section with a last quote from Keynes discussing money creation as a means to finance deficits, from the opening sentences of the opening paragraph of Chapter II:

"A Government can live for a long time, even the German Government or the Russian Government, by printing paper money. That is to say, it can by this means secure the command over real resources,--

[13] Ibid, footnote page 206.

[14] "Central Banking and Global Finance", Remarks by Chairman Alan Greenspan at the Catholic University of Leuven, Leuven, Belgium, January 14, 1997. Italics added.

[15] Remarks by Governor Ben S. Bernanke before the National Economists Club, Washington, D.C. November 21, 2002 *Deflation: Making Sure "It" Doesn't Happen Here* .

resources just as real as those obtained by taxation. The method is condemned, but its efficacy, up to a point, must be admitted. A Government can live by this means when it can live by no other."[16]

Printed Money and Printed Bonds

Having established the common usage for "printed money"—government defined and issued fiat money used to finance government expenditure through inflation—it is natural to contemplate the difference between printed money and "printed bonds". Now here we are in uncharted territory since "printed bonds" is not a term generally used. But why are not bonds "printed"? Certainly it has nothing to do with whether or not the bonds are printed on paper or "dematerialized". Since bonds are issued by governments to finance deficits and amount to government promises to pay fiat money in the future they do not differ significantly from printed money on those scores.

Perhaps we do not talk about bonds being "printed" because the fiat money they pay is not inflationary—although it is observationally equivalent to printed fiat money. Or perhaps promises to pay fiat money in the future, even if that future is only one day away, are not inflationary. Both of these assertions are implausible, at least in the absence of an additional promise attached to bonds. Such a promise might be issued by a legislature to the effect that "we promise to extinguish the fiat money with which we will redeem the bond through an offsetting tax increase". Now, that is not generally the case, or at least one might say it is not credibly the case in modern times, although it should be admitted that the concept of "funded" bonds—bonds whose debt service is set aside in a trust fund—or "revenue anticipation notes" where bonds are backed by assigned revenue streams—are commonly in practice today, at least at levels of government who cannot issue printed money. But I do believe it is fair to say that the common understanding in a fiat money world is that national government bonds are no more "backed" than printed money. Yet the fact that they seem to be observationally equivalent does not make it impossible to use the terms "printed money" and "bonds" differently in our language.

If we speak of printed money as financing a *permanent* increase in government spending, or a *permanent* decrease in tax revenue, and we speak of bonds as financing a *credibly temporary* increase in spending or *credibly temporary* decrease in tax revenue—changes in fiscal policy whose consequences will be reversed in the future—we would seem to have explained the difference between printed money and bonds. But it is essential here to note that the difference is not one in *names*, or a difference in fiat money now and fiat money tomorrow, it is that the two phrases always describe different associated *fiscal* policies. In other words, perhaps in our language whenever we write or utter the words "newly printed money" we also silently think the words "lower present discounted value of primary surpluses—so inflationary" and whenever we write or utter the words "newly issued bonds" we also silently think the words "no change in the present discounted value of primary surpluses—so not inflationary".

A different way to approach this issue is to ponder why we speak of "helicopter money" and not "helicopter bonds". In other words, if the government simply dropped bonds out of the sky, would it not have the same impact as dropping banknotes out of the sky? If not, why not? What is special about fiat money in the hands of the public financing a decrease in the present discounted value of primary

[16] Keynes, Ibid, page 41. Note Keynes compares money creation to *taxation*, not bond issuance.

surpluses compared with "promises to pay the public fiat money" that finance an equivalent deterioration in the fiscal position?

What Wittgenstein would ask then is whether, when one is asked to explain the difference between printed money and bonds, one explains the difference in the way I have done above. In answering this question we must admit of at least "two languages" in which the explanation of these terms differs. The discussion of printed bonds above is consistent with the "fiscal theory of the price level" but not the "quantity theory of money". In the language of the FTPL, the words "printed money" and "bonds" have different meanings (and implications for inflation) only to the extent that they identify *different associated fiscal policies*. Just as Shakespeare wrote "A rose by any other name would smell as sweet", the FTPL essentially says that "A permanent increase in the fiscal deficit financed by any means would be just as inflationary". In other words, the real value of the sum of all financial claims on government is the present discounted value of the stream of future primary surpluses. If that stream falls in real value, the real value of the claims on that stream falls by an equivalent amount. If the nominal value of the claims remains the same, the real value falls through an increase in the price level. Similarly, increasing the quantity of claims on an unchanged real present discounted value of future surpluses will lead to a corresponding fall in the real value of those claims through inflation. In the language of the FTPL, bonds can be "printed" (inflationary) or dropped from helicopters—they need not be "monetized", converted into money, for inflation to occur.

An Aside on the QTM Paradigm

Before discussing how these terms fit within the language of the quantity theory of money (QTM) it will be illustrative to consider a few post-war monetary facts. The first is that no market-based economy central bank outside a few cases in developing Africa has ever tried to control inflation by rationing banknotes. To the extent that conventional central banks did try to control the "monetary base", the sum of banknotes and bank deposits (reserves) at the central bank—i.e. the amount of money the government prints—they did so by rationing the quantity of bank reserves. In other words, the subset of printed money that consists of money that is literally printed has *always* been determined by the market. In logical/scientific terms, that means that if there has been observed a tight empirical relationship between prices and the nominal value of banknotes in circulation, there is a prima facie case for prices having a causal impact on the quantity of banknotes in circulation and not the other way around. So if there is a causal relationship that runs from printed money to prices it must arise from the subset of printed money that consists of bank deposits at the central bank. The story line goes: increase in bank reserves leads to an increase in prices which leads to an increase in demand for notes.

The idea that the money supply is controlled indirectly through changes in bank reserves (not banknotes) is consistent with the way in which the QTM is generally exposed. The conventional exposition of the QTM posits a "money multiplier" relating changes in bank reserves to changes in broader concepts of "money" that then "cause" inflation. Within the money multiplier framework, as mathematically derived, the preference of the public to hold banknotes (a leakage in the multiplicative power of bank deposits) is expressed as a parameter. In other words, the desire for banknotes is determined by the market, the central bank determines the quantity of bank reserves.

The extremely inconvenient fact for the QTM regarding the causal power of the bank reserves component of the monetary base is that—to take the US example—the nominal value of bank reserves held at Federal Reserve Banks between end-1958 and end-2007 **fell** by 19 percent while the Consumer Price Index **rose** by 612.5 percent. Therefore, the long-run relationship between US bank reserves and US inflation is actually negative[17].

Talking about Bonds in the QTM

Bonds and printed money are spoken about differently in QTM language. For example, in Bernanke's remark above, he cites *two* conditions for "helicopter money" to be created and have an expansionary impact. The first is a tax cut, the second is the exchange by the Federal Reserve of bonds for fiat money. This is one more step than is required by the FTPL whose language finds it neither sufficient nor necessary for printed bonds to be converted into printed money to cause inflation. So in FTPL language, the QTM focus only on "printed money" is misdirected, as in say, a game of three card monte.

I use the term "exchange" rather than "purchase" (used by Bernanke) in order to emphasize that the government issues both printed money and bonds in the Keynes-Freidman world. In the second step of Bernanke's chronology, the central bank merely provides an exchange service from the perspective of the consolidated sovereign balance sheet, which is in no way different from a government debt management operation—say redeeming a 5 year bond with 3 months residual maturity for 7 day bills.

Freidman, himself, is very clear that money is special, indeed, *only* money is inflationary—can be "printed money"—bonds cannot be printed. "Higher government spending will not lead to more rapid monetary growth and inflation *if* the additional spending is financed either by taxes or by borrowing from the public". That "if" (italics in the original) is central. Friedman is drawing a very clear line between higher spending financed with "borrowing from the public" and spending financed with "money". **Higher spending** does not *cause* inflation, **money financing** *causes* inflation.

So what is it in the name "printed money" that leads it to be special, different from "printed bonds"? Let us examine the word "borrowing" as used by Friedman. The word "borrowing", in common language, means to receive something with the expectation that it will be returned. Bonds must therefore represent borrowed "money" that will subsequently be returned. Indeed, in modern times, bonds are auctioned and winners at auction pay in money—in the form of balances at the central bank. That is, presuming the winner, "A", is not a bank, A's deposit at Bank B is reduced, Bank B pays for the bonds on behalf of A with an electronic funds transfer from its central bank account to the government's account at the central bank and provides the bonds to A. On the banking system balance sheet, deposits held at the central bank fall (bank assets) and amounts owed to customers fall (bank liabilities). In the future, if the government does not roll over the bond, but pays it back with money, the process is reversed.

That new bonds are redeemed in the future (not rolled over), is an assumption about *fiscal* policy. Namely, that the decline in the primary surplus which occasioned the need to issue bonds will be

[17] I took a closer look at this issue in the Japanese context in "Bank of Japan Theater: Is this Kabuki after Noh?" here: http://stellarconsultllc.com/blog/wp-content/uploads/2013/05/Bank-of-Japan-Theater.pdf

negated by an *increase* in the primary surplus in the future allowing the government to reduce the amount of bonds with money that is *not* printed (taxation). If that were *always* true, bonds would be nothing other than delayed taxation. But bonds are not generally thought of in this way in common language. Indeed, it is uncommon for sovereign nominal debt levels to fall over time. Consequently, from a macroeconomic view, most debt is rolled over, that is, new debt is exchanged for old debt rather than being paid[18]. In fact if new debt that finances new expenditure is never truly redeemed then it would seem very similar to money. Indeed I have argued elsewhere that modern debt is actually more liquid than base money and supports modern finance to a much greater extent than does the monetary "base". Furthermore, modern debt markets are very liquid and trading of debt is surely greater than trading of money in most advanced markets. So to make any progress here we need to take as given the idea that money finance and bond finance are contemplated within an identical fiscal policy.

The QTM, assuming that fiscal policy is identical, postulates a difference in the property of bonds and base money. In that respect, Friedman delves into the mechanics a bit by introducing the concept of high-powered money. High powered money is a liability of the government that forms a base upon which the financial sector expands broader measures of money. *Government Promises to pay fiat money* (bonds), regardless of their residual maturity, are not classified as part of the monetary base and hence are not "high powered" in the quantity theory of money. High powered money (aka the "monetary base" is special in that it is "multiplied" through the financial system to create more "money"—obligations of banks and money market funds (depending on the measure of money) and it is *this* money that causes inflation according to the QTM. Interestingly, *this* money is associated in a causal way with inflation even though it is *not* printed money. Bank money cannot be printed money as it is neither issued by governments nor fiat money.

As we have seen with the data on money and prices, the QTM would be in serious trouble were it claimed that government-issued money (base money) directly caused inflation. Not only is the relationship not close to a correlation of 1, it is actually negative. So the QTM *must* postulate a relationship between broader measures of money and inflation that does indeed exist. The problem with those correlations is that it is very difficult to believe the causality runs from money to inflation.

Although for hundreds of years it has been accepted wisdom that Earth rotates around an axis and orbits the sun we talk of "sunrise" and "sunset". It may be that for several hundred years we will talk about printed money as though it causes inflation. If we explain the meaning properly—that permanent increases in government spending financed with printed money or printed bonds leads to inflation, we can live with the terminology.

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[18] Bonds tend to pay interest. Banknotes usually do not pay interest but the government does provide the service of redeeming for free worn out or soiled notes and provides anti-counterfeiting protections—again at no explicit cost to the note holder. Central banks which operate and maintain electronic funds transfer systems also provide services—sometimes at no or subsidized cost—to holders of electronic or ledger money.