How Would "Helicopter Money" Impact the Central Bank Balance Sheet—Some Surprising Arithmetic

One might suppose that were a central bank to issue "helicopter money", (HM), its balance sheet would expand correspondingly. That is not, in fact, correct. Indeed, I show below that it is precisely the issuance of liabilities without the acquisition of any future value that makes HM what it is and differentiates it from conventional debt monetization. This exposition of simple balance sheet arithmetic will hopefully bring clarity to certain topical monetary and fiscal policy debates.

Simply stated, HM is a permanent fiscal expansion financed permanently with monetary liabilities.

In other notes originally written just prior to the 2016 Jackson Hole Fed conference, I discussed HM; what I called "helicopter bonds"; and HM "without money". The primary purpose of those notes was to argue that under current conditions it would be more efficient to finance a permanent fiscal expansion with bonds—rolled over forever—than with "money". I do not wish to go over that ground here.

In this note let us assume the permanent fiscal expansion is akin to Friedman's original thought experiment—the sovereign (treasury or central bank) gives away "money" to citizens without asking for anything in return, ever. HM is equivalent to an increase in government expenditure[1] coupled with a credible commitment never to raise "taxes". In the fiscal year encompassing those actions—compared with the a priori baseline—government spending would rise by the amount of HM, say "X", revenue would be unchanged, and both the budget deficit and monetary financing would increase by X. Monetary financing would comprise an increase in sovereign banknotes (currency) outstanding and/or an increase in private sector depository claims on the sovereign (presumably at the central bank).

With those preliminaries out of the way, let us begin by considering the stylized layout of a central bank.

Image 1: Central Bank Balance Sheet Micro Foundations #1

Assets		Liabilities	
Payments System Infrastructure	P	Equity	P
Total Assets	P	Total Liabilities	P

Let us assume that the government, the equity owner, endows a newly established central bank with a payments system infrastructure—buildings, an IT system, etc. with value P. This is shown in Image 1.

In Image 2 we add to the balance sheet "bank reserves"—the means of settling payments transactions—of value R. These reserves are loaned to the banks against collateral, designated "Repo Lending to

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[1] More precisely the expenditure subcategory "transfer payments", i.e. those expenditures that are not payments in exchange for goods or services rendered.

Banks", of equal value. We will assume for the moment that the rate of interest charged on repo lending is equivalent to the rate of interest paid on reserves.

Image 2: Central Bank Balance Sheet Micro Foundations #2

Assets		Liabilities	
Repo Lending to Banks	R	Bank Reserves	R
Payments System Infrastructure	P	Equity	P
Total Assets	R + P	Total Liabilities	R + P

In image 3 we add banknotes of value B to the balance sheet. These are provided to the public and banks on demand in exchange for payments of reserves to the central bank. We assume the central bank recycles those reserves into the financial system by using them to buy "Treasury Securities" of equal value. The central bank could, of course, simply increase its Repo Lending by an amount B and not buy securities at all. Our set up is a more accurate reflection of actual central bank practice. Demand for currency is highly predictable compared with the demand for reserves so central banks are comfortable holding longer duration asset investments backing currency than they are for reserves. We assume banknotes are provided free of charge by the treasury to the central bank.

Image 3: Central Bank Balance Sheet Micro Foundations #3

Assets		Liabilities	
Treasury Securities	B	CB Notes Outstanding	B
Repo Lending to Banks	R	Bank Reserves	R
Payments System Infrastructure	P	Equity	P
Total Assets	R + P + B	Total Liabilities	R + P + B

Image 3 is almost all we need to proceed with the analysis. Prior to the expansion of central bank balance sheets starting in 2008, "B" represented perhaps 90 percent, "R" 8 percent and "P" 2 percent of the total balance sheet. As an illustration, I show below the balance sheet of the Bank of Canada at end-2007. (Those items shown as "0" round to zero in C$ billions).

Bank of Canada

December 31, 2007

(in C$ billions)

Assets		Liabilities	
Canadian Government Securities	50	Bank notes in circulation	51
Liquidity Providing Repos	4	Financial Institution Deposits	1
Loans to CPA members	0	Government Operational Deposits	2
		Other liabilities net	1
		Equity	0
Total Assets	54	Total Liabilities	54

Source: Bank of Canada Financial Statements Annual Report 2007 and Author's calculations

In image 4 we introduce the central bank profit and loss statement labeled the "Operating Result" (OR). It is the "snapshot" of the accumulated net income result of central bank operations. We have simplified the OR by assuming all revenue comes from interest on Treasury securities[2]. Expenses are represented as "dP", where d is the rate of depreciation on the payments system infrastructure and W, employee wages. We have further assumed that the government has provided the central bank with an additional amount of treasury securities, "A", such that the OR is zero. Note that A may be a negative number. Central Bank equity is thus "P + A" where A is set to enable the central bank to run a "balanced budget".

Image 4: Central Bank Balance Sheet Micro Foundations #4

Assets		Liabilities	
Treasury Securities	$B + A$	CB Notes Outstanding	B
Repo Lending to Banks	R	Bank Reserves	R
		Operating Result (Σ)	$i(B + A) - dP - W \equiv 0$
Payments System Infrastructure	P	Equity	$P + A$
Total Assets	$R + P + B + A$	Total Liabilities	$R + P + B + A$

We now consider the impact of helicopter money with a rather whimsical simplification. Assume each central bank employee receives an envelope with a significant amount of currency inside as a random one-time "bonus". The sum of bonuses is expressed as H in Image 5. Currency outstanding rises by H

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[2] Since we have assumed all reserves are borrowed through repo and the rate on repo lending is equal to the rate paid on reserves, the associated revenue and expense net to zero.

and the central bank operating result declines by an equivalent amount as H is added to wages paid. There is no change in the sum of liabilities and consequently no change in the sum of assets. Notice that this is true regardless of the "size" of H and its impact on aggregate spending. H could be arbitrarily large…say USD 10 trillion yet the size of the balance sheet would not change.

Image 5: Central Bank Balance Sheet with "Helicopter Money" aka Quasifiscal Spending

Assets		Liabilities	
Treasury Securities	B + A	CB Notes Outstanding	B + **H**
Repo Lending to Banks	R	Bank Reserves	R
		Operating Result (Σ)	$i(B + A) - dP - W - H = - H$
Payments System Infrastructure	P		
		Equity	P + A
Total Assets	R + P + B + A	Total Liabilities	R + P + B + A

This simple accounting arithmetic suggests we must look deeper into the reason HM is "powerful". It is not about increasing the size of the central bank balance sheet. In fact, as I discuss in other notes,

it is all about changing the *composition* of the balance sheet—size matters not at all. But now let us consider Image 6 where we have allowed the bonus policy to "settle down" in the financial system.

Image 6: Central Bank Balance Sheet with the legacy of "Helicopter Money"

Assets		Liabilities	
Treasury Securities	B + A	CB Notes Outstanding	B
Repo Lending to Banks	R	Bank Reserves	R + **H + iH**
		Operating Result (Σ)	$i(B + A) - dP - W - iH = -iH$
Payments System Infrastructure	P		
		Equity	P + A - **H**
Total Assets	R + P + B + A	Total Liabilities	R + P + B + A

Presumably central bank employees would not wish to walk about with huge bags of cash and thus would head to the nearest bank to make a deposit. Those banks, in turn, conceivably lacking vault space and not wishing to hold so much cash in any event, would return the cash to the central bank in exchange for reserves. In Image 6 we have moved the H liability from CB Notes Outstanding to Bank Reserves. We have also noted that the central bank would in subsequent periods be crediting banks with net interest earnings on reserves—indeed, almost surely banks would repay their repo borrowing if

they had high levels of excess reserves. This would make R = 0. The amount credited to banks is given in bold as iH. The operating result would correspondingly swing into deficit absent an infusion of equity in the form of interest earning treasuries. The previous period operating loss, H, is shown as having been absorbed into the equity account at the start of the current period, thus equity in subsequent periods would be P + A – H plus future cumulative operating profits and losses.

This "independence" of balance sheet size from the size of helicopter money is not a sleight of hand nor affected by the whimsical way in which it was illustrated. They same result holds if the government makes the original payment and if it is paid through the banking system rather than in currency. What is required is that the central bank end up with an increase in monetary liabilities with no increase in assets—the difference being compensated by a decline in equity.

The last sentence in the previous paragraph implies that if the government obtains the means to execute an HM operation from the central bank—say by issuing the central bank a debt instrument of equivalent value for the money it receives, it must subsequently negate that obligation or otherwise constrain its use[3]. Otherwise the central bank would have a means whereby to reverse the operation by selling the debt into the market in exchange for the monetary obligations created. The latter would invalidate the "permanent" element of monetary finance.

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References:

Turner, Adair; *Debt, Money, and Mephistopheles: How Do We Get Out of This Mess?* Group of Thirty Occasional Paper 87.

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[3] Adair Turner (2013) notes that "…it is possible to structure a permanent money finance operation, while still making the central bank's balance sheet balance, in accounting terms, by having the central bank 'buy' a government security that was explicitly noninterest bearing and never redeemable". He is correct on the necessity of such an arrangement for the effectiveness of HM but misses the boat on the implications for the central bank balance sheet. Any reputable set of accounting standards would value such a claim—noninterest bearing and nonredeemable—at zero hence such a security could contribute nothing to a "balancing" of the central bank accounts.