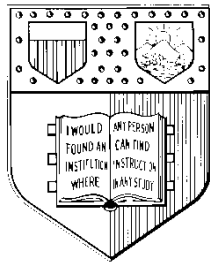


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Central Bank Money: Liability, Asset, or Equity of the Nation?

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Abstract

Based on legal arguments, we advocate a conceptual and normative shift in our understanding of the economic character of central bank money (**CBM**). The widespread treatment of CBM as a central bank liability goes back to the gold standard, and uses analogies with commercial bank balance sheets. However, CBM is *sui generis* and legally not comparable to commercial bank money. Furthermore, in modern economies, CBM holders cannot demand repayment of CBM in anything other than CBM. CBM is not an asset of central banks either, and it is not central bank shareholder equity because it does not confer the same ownership rights as regular shareholder equity. Based on comparisons across a number of legal characteristics of financial instruments, we suggest that an appropriate characterization of CBM is as ‘social equity’ that confers rights of participation in the economy’s payment system and thereby its economy. This interpretation is important for macroeconomic policy in light of quantitative easing and potential future issuance of central bank digital currency (**CBDC**). It suggests that in robust economies with credible monetary institutions, and where demand for CBM is sufficiently and sustainably high, large-scale issuance such as under CBDC is not inflationary, and it does not weaken public sector finances.

Keywords: Central bank money, currency, central bank reserves, central bank digital currency, quantitative easing, central bank balance sheet, liabilities, assets, equity, government debt

JEL classification: E41, E42, E44, E51, E52, E58, G21, H61, H63, K0, K11, K12

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1. Introduction

The topic of central bank money (**CBM**) is becoming increasingly important for modern policy debates, from the perspective of both monetary and financial stability. The balance sheets of the world’s main central banks have expanded dramatically in the wake of the 2008 Global Financial Crisis, and have continued to expand in response to COVID-19. There are reasons to think that this may not be a temporary phenomenon. First, a full reversal of quantitative easing (**QE**) seems to still be some way away. Second, the issuance of central bank money to a wider set of agents than commercial banks is now being actively debated among many of the world’s central banks, under the topic of retail central bank digital currencies (**CBDC**).¹ While policymakers have debated CBDC for a number of years in light of the emergence of private ‘cryptocurrencies’ like Bitcoin, much greater urgency has appeared following the launch of Facebook’s Libra project in mid-2019.²

It is general practice for CBM to be classified as a liability on central bank and consolidated public sector balance sheets. That approach is premised on a direct analogy between the accounts of central banks and commercial banks. However, this is strongly contestable, because central banks have unique characteristics, and because CBM is a very unusual financial instrument. Thus, viewing CBM through the lens of commercial bank accounting practices raises a series of difficult questions that are currently, in light of QE and CBDC, of great importance for macroeconomic policy. Is central bank money to be accounted for as debt, so that a large issuance creates balance sheet fragility and requires policy interventions to restore central bank resilience? Alternatively, is central bank money more akin to corporate equity, or perhaps even to an asset owned by the central bank, so that a large issuance in fact strengthens the central bank’s balance sheet and is itself a beneficial policy intervention? These questions primarily rest not on economic foundations but on *legal predicates* that, as we will demonstrate, are not consistent with the typical accounting treatment of CBM. Also, the way in which central bank balance sheets are used in practice, in the conduct of monetary policy and the provision of liquidity insurance, is not inconsistent with the legal arguments that we present.

¹ See in particular Barontini, C. and Holden, H. (2019), “Proceeding with Caution – A Survey on Central Bank Digital Currency”, BIS Papers, No 101; Boar, C., Holden, H. and Wadsworth, A. (2020), “Impending Arrival – A Sequel to the Survey on Central Bank Digital Currency”, BIS Papers, No 107. Over 80% of respondent central banks are engaged in some kind of work related to assessing CBDC.

² See <https://libra.org>.

In this paper, we focus on the interaction of legal, accounting and economic norms to argue that a conceptual and normative shift is needed in our understanding of the economic character of CBM.³ CBM does not represent financial *liabilities* owed by the central bank to the private sector, and cannot be characterised as shareholder *equity* in the central bank in exact analogy with corporate equity. While CBM satisfies some of the legal indicia of *assets* of the central bank, the fit is not perfect and its accounting treatment as such would raise difficult new issues from an economic perspective. We conclude that no existing legal, accounting or economic category is entirely satisfactory, and that the best way forward may be to recognise the *sui generis* nature of CBM as part of the financial infrastructure and a public good provided by central banks in their role as public agencies. The consequences of that argument are not trivial, because changes to the legal and economic characterisation of CBM can affect assessments of consolidated government debt burdens and therefore of a government’s creditworthiness and need for fiscal adjustment.

Our argument is made in five parts. First, we briefly recount the history and systemic function of CBM, emphasising in the case of central bank reserves the similarities and differences between reserve accounts held at central banks and deposit accounts held at commercial banks. Second, we summarize the key analyses of CBM in the economics literature. Third, we engage in a close legal analysis of the legal predicates underpinning the core accounting concepts of central bank balance sheets—*liability*, *equity*, and *asset*—and their application to CBM. In doing so, we offer a definitive (negative) answer to the question “whether a central bank deposit is in fact a claim [on the central bank] at all, since in principle a person seeking to withdraw money from such an account would be exchanging a claim on the central bank for another claim on the same central bank”.⁴ Fourth, stepping-back from strict legal and economic concepts, we suggest that CBM should be treated as a *sui generis* hybrid financial instrument, which could be described as a form of ‘social equity’. Fifth, the paper concludes by reflecting on the potential practical implications of those conclusions.

³ Much of what we say applies equally to bank notes and central bank reserves. However, some complexities stemming from legal tender and asset-backing laws attach to currency which do not attach to reserves: *Federal Reserve Act* (US) s 16; *Currency and Bank Notes Act 1928* (18 & 19 Geo V, c 13) s 3; *Currency Act 1983* (UK) s 2).

⁴ Gleeson, S. (2018), *The Legal Aspect of Money*, Oxford University Press, p. 78. For attempts to answer that question from other perspectives, see Buiter, W. (2003), “Helicopter Money: Irredeemable Fiat Money and the Liquidity Trap”, NBER Working Papers, No. 10163, and Olivecrona, K. (1957), *The Problem of the Monetary Unit*, Macmillan, p. 63.

2. The History and Functions of Central Bank Money

2.1 The Gold Standard

The world's first central banks (the Swedish Riksbank and the Bank of England) were created in the 17th century and their model proliferated throughout the 19th century.⁵ For most of those two centuries,⁶ the orthodox monetary unit was a metallic commodity (gold or silver), and physical notes issued by central banks represented promises to pay the note's face value *of that commodity*. The *Bank Charter Act 1844* specified that the Bank of England was required to redeem its banknotes in gold at the rate of £3. 17s. 9d. per ounce, and that the Bank was ordinarily required to maintain a particular level of gold backing for its obligations. In monetary systems with similar commodity-backing laws, monetary units issued by a central bank were obviously liabilities: issuing bank notes amounted to a promise to pay a metallic commodity; and paying the metallic commodity reduced the central bank's gross asset value.⁷

This approach spread to other central banks, who by the early 20th century were required by gold-backing laws to maintain particular ratios of gold to their deposit liabilities. A clear example was the law applying to the Banque de France under the inter-War Gold-Standard:

The Banque de France shall be bound to keep a cash balance in gold bullion and coin equal to not less than thirty-five per cent (35%) of the total sum of the bearer notes in circulation *and the current credit accounts*.⁸

Another was the law applying to the US Federal Reserve System:

Every Federal Reserve Bank shall maintain reserves in gold certificates or lawful money of not less than 35 per centum *against its deposits* and reserves in gold certificates of not less than 40 per centum against its Federal Reserve notes in actual circulation.⁹

Under those statutory regimes, legal commodity-backing rules applied to banknotes and to book-entries in central bank accounts (i.e., reserve balances), with the consequence that expanding the balance sheets of commercial banks via crediting central bank reserve accounts

⁵ For a concise history, see Capie, F., Goodhart, C. and Schnadt, N. (1994), "The Development of Central Banking", in: Capie, F., Fischer, S., Goodhart, C. and Schnadt, N. (eds), *The Future of Central Banking: The Tercentenary Symposium of the Bank of England*, Cambridge University Press. See also Lastra, R. (2015), *International Financial and Monetary Law*, Oxford University Press, chapter 2.

⁶ See generally Capie, F. and Wood, G. (2012), *Money over Two Centuries: Selected Topics in British Monetary History*, Oxford University Press.

⁷ It is likely that the 1826 Country Bankers Act, which prohibited any bank (including the Bank of England) from issuing a bank note for less than £5 (roughly £500 today), ensured that the development of alternative payment mechanisms in the form of cheques drawn on joint stock banks occurred outside the central bank system. However, by ensuring that monetary growth could occur outside the central bank, it enabled the central bank to adhere to the gold standard in respect of its own notes.

⁸ Republic of France, *Monetary Law 1928*, Article 4. Emphasis added.

⁹ *Gold Reserve Act 1934* (US) s 2, amending the *Federal Reserve Act 1913* s 16. Emphasis added.

imposed legal obligations on a central bank to maintain sufficient stores of gold to meet gold-backing rules.

The result of these legal frameworks was that the domestic money supply was limited by the quantity of precious metal available to the relevant national economy.¹⁰ Developments over the 19th and early 20th century, often in response to crises, made this link to gold more and more problematic. In the United States, for example, the *Emergency Banking Act 1933* created an implicit government guarantee of commercial bank deposits, accommodating private credit money into the public money system.¹¹ From 1944, the link to Gold was filtered through an international monetary system of fixed exchange rates, which pegged national currencies to gold via the US Dollar and was overseen by the International Monetary Fund.¹² The Bretton Woods Agreement collapsed in the early 1970s with the United States' unilateral renunciation of the obligation to redeem US Dollars in gold; thereafter, most global currencies were unbacked by any kind of asset at all and CBM became complete 'fiat' money.¹³ With that final collapse of the gold-peg (a.k.a., the gold-dollar standard), banknotes and deposit balances in central bank accounts no longer carried hard legal obligations to maintain any particular ratio of assets to monetary units and the current status quo was fixed.¹⁴ The only remaining exception to this are currency board arrangements, which do carry hard legal obligations to maintain a ratio of foreign exchange (rather than gold) assets to monetary units.

2.2 Financial Functions of CBM

Despite these shifts in monetary law,¹⁵ the basic financial function of CBM remained the same: providing the ultimate settlement asset for the financial system. Bank notes and coins fulfil that

¹⁰ This interplay of law, economics, and commerce has been the subject of extensive scholarly investigation: see in particular Eichengreen, B. (1996), *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*, Oxford University Press; Schenk, C. (1992), *The Decline of Sterling: Managing the Retreat of an International Currency 1945-1992*, Cambridge University Press. See also Eichengreen, B., Mehl, A. and Chitu, L. (2018), *How Global Currencies Work: Past, Present, and Future*, Princeton University Press.

¹¹ United States Public Law 73-1, 48 Stat. 1. See Silber, W.L. (2009), "Why did FDR's Bank Holiday Succeed?", *FRBNY Economic Policy Review*, 15(1).

¹² On the operation of the Bretton Woods system, see Kugler, P. (2016), "The Bretton Woods System: Design and Operation" in Fox, D. and Ernst, W. (eds.), *Money in the Western Legal Tradition: Middle Ages to Bretton Woods*, Oxford University Press, Ch 28. See also Bordo, M. and Redish, A. (2016), "Putting the 'System' in the International Monetary System", at pp. 602-603 in the same volume.

¹³ See Siekmann, H. (2016), "Deposit Banking and the Use of Monetary Instruments", in: Fox, D. and Ernst, W. (eds.), *Money in the Western Legal Tradition: Middle Ages to Bretton Woods*, Oxford University Press, 523.

¹⁴ As we note in fn 3 above, some central banks are under formal legal requirements to maintain asset coverage for bank notes (eg, s 16(2) of the *Federal Reserve Act 1913* (US)), but the unregulated capacity of central banks to create reserves to purchase assets can deprive those requirements of much institutional force.

¹⁵ This general statement conceals the complex institutional roles of central banks in the financial sector and the broader economy. For the details across centuries and jurisdictions see, Hotson, A. (2017), *Respectable Banking: The Search for Stability in London's Money and Credit Markets since 1695*, Cambridge University Press;

function for all economic agents (via legal tender rules)¹⁶, and central bank reserves provide commercial banks with a monetary unit to settle their respective debts from payment obligations incurred on their customers', and their own, accounts. It must be emphasised that few real economy payments are directly settled in CBM, but rather in commercial bank money, i.e. in commercial bank deposit balances. Because commercial banks have central bank accounts (other commercial actors do not), they are able to effect settlement between themselves in the form of CBM and on behalf of their customers, including after netting bi-directional gross flows of commercial bank money.

Central banks' power to issue central bank reserves is systemically critical to commercial bank payments for two reasons. First, the issue of reserves provides a type of state-controlled 'liquidity insurance' against settlement defaults in the banking system.¹⁷ The volatility of daily credits and debits in the payments system (representing underlying real economic transactions) exposes commercial banks to liquidity risk in the settlement of payment obligations between themselves, and central banks ensure the smooth settlement of inter-bank liabilities by issuing monetary units (reserves) on demand via short-term credit operations.¹⁸

Second, reserves are the financial instrument through which central banks have traditionally executed monetary policy because (most)¹⁹ monetary policy operations are executed by the issue and retirement of reserves by the central bank.²⁰ Conventional monetary policies, like interest-rate targeting, were mainly carried out by fully-collateralised credit transactions which were legally structured as either sale and repurchase transactions ('repos') of debt securities or as collateralised credit facilities.²¹ Reserves were issued by central banks in both operations as (i) the purchase proceeds for repos and (ii) the funds loaned through credit facilities.

Needham, D. (2014), *UK Monetary Policy from Devaluation to Thatcher, 1967-1982*, Palgrave; Eichengreen, B. (2008), *Globalising Capital: A History of the International Monetary System*, Princeton University Press.

¹⁶ The value of payments settled in hard currency (bank notes and coins) is small, although such transactions still account for 28% of total transactions by number – see UK Finance Payments Market Report 2019 <https://www.ukfinance.org.uk/sites/default/files/uploads/pdf/UK-Finance-UK-Payment-Markets-Report-2019-SUMMARY.pdf>.

¹⁷ Bank of England (2013), "Liquidity Insurance and the Bank of England: Developments in the Sterling Monetary Framework".

¹⁸ More complex considerations obtain when a monetary system is viewed as an international system, as is made clear by the swap-line agreements between the US Federal Reserve System and other central banks: see McCauley, R. and Schenk, C. (2020), "Central Bank Swaps then and now: Swaps and Dollar Liquidity in the 1960s", BIS Working Papers, No. 851.

¹⁹ Less interventionist programs, like 'forward guidance', do not directly involve the issue of new central bank reserves. See Bank of International Settlements (2019), "Unconventional Monetary Policy Tools: A Cross-country Analysis", Committee on the Global Financial System Papers, No. 63, p. 32.

²⁰ For a detailed coverage of monetary policy operations, see Bindseil, U. (2014), *Monetary Policy Operations and the Financial System*, Cambridge University Press.

²¹ See Kroeger, A., McGowan, J., and Sarkar, A. (2018), "The Pre-Crisis Monetary Policy Implementation Framework", *Federal Reserve Bank of New York Economic Policy Review*, 38.

Unconventional monetary policies involved the large-scale outright purchases of assets under QE programs,²² and, thus, central banks' powers to create reserves were critical to QE, as reserves represented the proceeds of assets purchased through those programs.²³

2.3 The Difference between CBM and Commercial Bank Deposits

Despite functioning as settlement assets and tools to execute monetary policy, central bank reserves continue to be accounted for as 'deposits' of central banks,²⁴ thereby creating a deceptive appearance of similarity to commercial bank deposit accounts.

Depositing funds at a commercial bank creates a legal relationship of creditor (customer) and debtor (banker): the banker's core obligation is to deliver the unit of currency in which the deposit is denominated.²⁵ If the customer demands settlement of the debt (payment of the deposit balance), the banker has a limited number of choices. The banker can settle its debt to the customer by transferring deposit balances held in its central bank reserve account to another bank that holds another account of this customer, or by delivering currency (bank notes) to the customer which the customer must accept pursuant to legal tender law.²⁶ If reserves or bank notes cannot be obtained from the commercial bank's own vault, the central bank or the private market, the customer can take steps to liquidate the bank.²⁷ In that way, a commercial banker's incapacity to create new bank notes and central bank reserve balances imposes liquidity constraints which are legally enforceable, and the monetary units in commercial bank deposit accounts represent 'liabilities' for commercial banks.

²² See, McLeay, M., Radia, A. and Thomas, R. (2014), "Money Creation in the Modern Economy", *Bank of England Quarterly Bulletin*, 21-25.

²³ The status of reserves as the 'purchase proceeds' of QE purchases is complicated by the fact that not all central bank counterparties will be reserve account holders. When central banks transact with those non-account holding counterparties, reserves remain the purchase proceeds of an asset purchase, but are deposited into the reserve account of the relevant counterparty's commercial bank, which then assumes deposit liabilities to the counterparty.

²⁴ Examples include: 'Other deposits held by depository institutions' in the Federal Reserve's consolidated balance sheet (Board of Governors of the Federal Reserve System, "Quarterly Report on Federal Reserve Balance Sheet Developments, May 2019", p. 4); 'deposits' in the Bank of England's combined balance sheet (Bank of England, "Annual Report and Accounts", 2017-2018, p. 32); 'current accounts' and 'deposit facility' in the ECB's consolidated balance sheet (European Central Bank, "Consolidated Balance Sheet of the Eurosystem as at 31 December 2018", C 2).

²⁵ This is a simplification of the complex law of banker and customer. See Cranston, R., Avgouleas, E., van Zwieten, K., Hare C., and van Sante, T. (2018), *Principles of Banking Law*, 3rd ed, Part II, Oxford University Press.). Importantly, the banker is *not a trustee* for the funds that have been deposited: *Foley v Hill* (1848) 2 HLC 28 [9 ER 1002]

²⁶ For the common law regarding the 'legal tender' of bank notes see Gleeson, S. (2018), *The Legal Concept of Money*, chapter 7.6.

²⁷ In reality, this step would be subject to the special statutory regimes applying to bank resolution: see the description of the UK's *Banking Act 2009* (UK) resolution regime in Bank of England (2017), "The Bank of England's Approach to Resolution".

As a matter of legal and institutional reality, central banks are in an entirely different position. The holder of CBM can never ask for repayment of that CBM in anything but CBM, making the ‘liability’ a self-referential loop with no terminus, and furthermore, central banks are (quantitatively) unlimited by law in the amount of reserves they can create.²⁸ Together, this means that crediting a commercial bank’s reserve account or issuing a banknote does not create a ‘liability’ of the central bank in the way that a commercial bank deposit creates a liability for the bank. However, the exact scope and nature of the difference has not been adequately explored in either the legal or the accounting literatures to date.

3. Central Bank Money in Economics and Accounting

Ricardo Reis perhaps best summarizes the current state of knowledge in macroeconomics regarding CBM²⁹ in his recent survey.³⁰ He concludes that central bank “reserves are just another form of government liability.” When the issuance of central bank reserves funds the purchase of public debt, he argues that there is a “Modigliani-Miller neutrality whereby exchanging one form of public liability for another makes no difference to the overall fiscal burden”. If one accepts the conventional wisdom that central bank reserves are liabilities analogous to commercial bank deposits, then that view is doubtless correct, at least concerning adding-up of *asset-side* and *liability-side* balance sheet positions of the central bank. If one does not accept that conventional wisdom, the correctness of the Modigliani-Miller neutrality of central bank reserves and public debt is open to doubt; with first-order implications for the analysis of resource flows and fiscal burdens that occupies Reis. The reason is that, through two potential mechanisms, CBM issuance can reduce the cost of government funding.

First, if CBM is not a liability of the central bank, but a type of ‘social equity’ that derives its utility as a public good from the payment services it provides, some types of CBM can have potentially sizeable non-pecuniary convenience yields.³¹ This means that their financial return

²⁸ Again, more complex (but not fatal) issues can arise in relation to the legal powers to issue currency.

²⁹ The ‘law and economics’ literature on money has spent most of its efforts subjecting law to the methodology and rationality of economics, with little effort to explore the contributions of legal doctrine to the economics of money. See in particular Goodhart, C.A.E. (1997), “Economics and the Law: Too Much One-Way Traffic?”, *Modern Law Review*, **60(1)**; Goodhart, C.A.E. (1998), “Two Concepts of Money: Implications for the Analysis of Optimal Currency Areas”, *European Journal of Political Economy*, **14**, 407.

³⁰ Reis, R. (2019), “Can the Central Bank Alleviate Fiscal Burdens?”, in: D. Mayes, P. Siklos, J.-E. Sturm (eds.), *The Oxford Handbook of the Economics of Central Banking*.

³¹ The convenience yield of a monetary instrument is the difference between a benchmark market interest rate paid on non-monetary IOUs of the same maturity and the interest rate on the monetary instrument. It arises

can be well below the return on public debt, so that CBM issuance would reduce the public sector's overall interest burden. This applies to banknotes and to unremunerated or negative-interest reserves, as well as to retail CBDC, where the latter would likely have a large convenience yield similar to that of its main competitor, bank deposits.³² A sizeable portion of central bank reserves does of course pay close to the market rate of return under current central bank floor systems for setting interest rates, and therefore does not have a significant convenience yield. Second, because CBM is not defaultable in the same way as public debt, an issuance of CBM to pay for the acquisition of public debt instruments reduces the overall stock of defaultable public debt outstanding. This can reduce the real interest burden on public debt in the absence of actual default. In support of this mechanism, both the theoretical and empirical literatures have found that the incentive to default, and therefore the default risk interest rate premium, depends among other things on the stock of defaultable debt. For example, Huixin Bi³³ presents two key findings. First, there is a nonlinear relationship between sovereign interest rate risk premia and government debt, with small (not non-zero) premia at low levels of debt, but a sharp increase beyond some critical level of debt. This is in line with empirical evidence that once risk premia begin to rise, they do so rapidly. Second, the critical level of debt is much higher for countries with sound fiscal fundamentals (in practice this includes confidence in their institutional framework), meaning that their risk premia remain low for longer. This is in line with empirical evidence that fiscally stronger economies are downgraded by rating agencies at much higher levels of debt.

The debt of many large developed economies is denominated in their national currency, and can therefore suffer a loss in real value through inflation as well as default. If this meant that inflation alone was used during episodes of fiscal distress, and default ceased to be a relevant consideration, then there would be no differential effect on interest cost as in the second mechanism above, because inflation affects debt and CBM equally. However, both in theory and in the data, the possibility of inflation merely implies that there is some combination of default risk and inflation risk. One implication of the additional escape valve of inflation is therefore that, in Bi's analysis, compared to countries that can only resort to default, countries

because the holders of the monetary instrument value not only its financial return but also its convenience as a medium of exchange, so that they are willing to live with a lower interest rate.

³² In the analysis of Reis banknotes, unlike reserves, "are not a liability of the government or the central bank". We argue here that, from a legal point of view, reserves should be treated in the same way as banknotes, irrespective of the interest rate paid on reserves.

³³ Bi (2012), "Sovereign Default Risk Premia, Fiscal Limits, and Fiscal Policy", *European Economic Review*, 56(3), 389-410.

with debt denominated in their national currency are likely to have a critical level of debt (beyond which default risk premia rise more sharply) that is higher, but not infinite.

The literature offers support for this view. We only cite a few papers here, and draw out the general lessons in the following paragraph. Returning to Huixin Bi's paper, in her model all debt is real so that default is the only channel and the inflation channel is absent. But her paper also presents empirical evidence that default risk has indeed been non-zero in several important economies that had debt denominated in their national currencies, including Canada, Japan, New Zealand, Italy (pre-euro) and Sweden. Specifically, she shows that strong increases in government debt levels have preceded and coincided with sovereign debt ratings downgrades. As discussed by Charles Goodhart³⁴, sovereign debt ratings are exclusively determined by the risk of default (however small), and are unaffected by the risk of inflation. And as shown by Malliaropulos and Migiakis³⁵ and many other papers in the empirical finance literature, sovereign debt ratings affect credit spreads relative to AAA benchmarks. Relatedly, for the US several authors have found effects of public debt levels on real interest rates that, while small, are not economically insignificant.³⁶ Turning to the highly influential paper of Stephanie Schmitt-Grohe and Martin Uribe³⁷, in their model all debt is nominal with no possibility of default, so that inflation is the only channel and the default channel is absent. Their key finding is that for a miniscule degree of price stickiness (many times below available empirical estimates) the optimal volatility of inflation is near zero, due to the cost of large price adjustments under sticky goods prices. Finally, Reis³⁸ presents a stylized model where both the default and inflation channels are present. In his model, QE reserves are affected by inflation but not by default, while government bonds are affected by both inflation and default. The particular combination that should be optimally chosen depends on the strength of the different frictions that are present in his model.³⁹

³⁴ Goodhart, C. (2012), "Sovereign Ratings when Default Can Come explicitly or via Inflation", VoxEU, available at <https://voxeu.org/article/sovereign-ratings-when-default-can-come-explicitly-or-inflation>.

³⁵ Malliaropulos, D. And Migiakis, P. (2018), "The Re-Pricing of Sovereign Risks following the Global Financial Crisis", *Journal of Empirical Finance*, **49**, 39-56.

³⁶ See Laubach, T. (2009), "New Evidence on the Interest Rate Effects of Budget Deficits and Debt", *Journal of the European Economic Association*, **7(4)**, 858-885; Gale, W. and Orszag, P. (2004), "Budget Deficits, National Saving, and Interest Rates", *Brookings Papers on Economic Activity*, **2**, 101-187; Engen, E.M. and Hubbard, R.G. (2004), "Federal Government Debt and Interest Rates", *NBER Macroeconomics Annual*, **19**, 83-138. These papers find that a one percentage point increase in the government debt to GDP ratio increases interest rates on government debt by between 1 and 6 basis points.

³⁷ Schmitt-Grohé, S. and Uribe, M. (2004), "Optimal Fiscal and Monetary Policy under Sticky Prices", *Journal of Economic Theory*, **114(2)**, 198-230.

³⁸ Reis, R. (2017), "QE in the Future: The Central Bank's Balance Sheet in a Fiscal Crisis", *IMF Economic Review*, **65(1)**, 71-112.

³⁹ He leaves a detailed quantitative evaluation to future work.

This is a more general point. Whether the government, following an adverse fiscal shock that requires adjustments that include a reduction in the real value of debt, chooses default or inflation, depends on the relative frictions, costs and benefits of default versus inflation. The literature has identified a number of such frictions, costs and benefits, only some of which are present in the above cited papers. For inflation, they include sticky goods prices, inefficient price dispersion, sticky information, loss of monetary policy credibility, and loss of efficiency of the price mechanism. For default, costs of default include a temporary or permanent exclusion from financial markets, adverse effects on banks that result in a credit crunch, direct output costs, utility costs/loss of reputation. But in addition, the benefits of default are increasing in the level of defaultable debt. Because an increase in CBM issuance against government debt reduces these benefits, it tends to reduce the default risk premium. The strength of this effect is an empirical question, but even real interest rate effects at the very lowest end of the US estimates reported above would have significant effects for CBM issuances of 10 or more percentage points of GDP.

There have been several contributions from both economics and accounting that question the conventional wisdom that central bank money must be a liability on the central bank's balance sheet. In economics, a key contribution is Archer and Moser-Boehm.⁴⁰ These authors stress the unique, social or national welfare purposes of central banks, and the fact that their accounting profits and their equity position (which treats reserves and cash as liabilities rather than equity) are poor measures of their success. In their view, several features distinguish central banks from all other 'institutions' for which accountants produce financial statements: they have power to create money to pay their bills; this power contributes to their long-run profitability; they are often owned and guaranteed by governments; they do not normally face minimum capital requirements like commercial banks; and are not exposed to insolvency risk in the same way as commercial banks.⁴¹

The key problem, as stressed by Archer and Moser-Boehm, is that financial markets may misunderstand apparently weak central bank finances in a way that may "affect their behaviour in self-fulfilling, harmful ways".⁴² Most importantly, the differences between central bank accounting equity and central bank money are far smaller than the differences between accounting equity and liabilities in the case of private institutions, but financial markets may,

⁴⁰ Archer, D. And Moser-Boehm, P. (2013), "Central Bank Finances", BIS Working Papers, No. 71.

⁴¹ We do, however, note that the law governing the Federal Reserve System explicitly recognises the potential for Federal Reserve Banks to be declared insolvent: *Federal Reserve Act*, s 6.

⁴² Archer, D. And Moser-Boehm, P. (2013), "Central Bank Finances", BIS Working Papers, No. 71, p. 58.

based on prevailing orthodoxy, not take this into account. According to Archer and Moser-Boehm, in addition to accounting equity, “... also to be considered are banknotes on permanent issue, and the permanent component of commercial bank deposits at the central bank”, because these “act more like equity capital than debt obligations”, because “they ... are perpetual in character”.⁴³ Similarly, Buiter argues: “Base money ... does not have to be redeemed by the government – ever. It is the final means of settlement of government obligations vis-à-vis the private sector. It does not represent a claim on the issuer other than the same amount of itself.”⁴⁴ For that reason, Buiter states that “Leverage is therefore not an issue for this highly unusual inherently liquid domestic-currency borrower.”⁴⁵

At the same time, Archer and Moser-Boehm concede that a central bank’s financial state, as measured by conventional accounting net worth and profitability, is not *by nature* irrelevant to its ability to discharge its policy obligations. To make that case they cite both empirical evidence and theoretical reasons. Empirical evidence includes examples of (mostly emerging economy) central banks operating with negative profits (often due to sterilisation costs and exchange rate losses) and poor inflation outcomes. Theoretical reasons, at least for central banks with perceived balance sheet difficulties, include clashes between the two conflicting objectives of profitability and price stability in the presence of a seigniorage Laffer curve.

These empirical and theoretical results would suggest that accounting equity can matter independently of broader measures of central bank equity that include CBM. However, this needs to be qualified. First, even if accounting equity and CBM are imperfect substitutes, this does not imply that CBM has predominantly debt-like characteristics. We will argue that it may be best thought of as a hybrid instrument that shares many, but not all, features with traditional accounting equity. Second, the empirical results cited in Archer and Moser-Boehm are not unequivocal, and, if at all, hold only for emerging economies.⁴⁶ In more stable economic environments, a central bank’s comprehensive net worth, which includes the franchise value of the monopoly right to issue base money and the value of banknotes outstanding, is much greater

⁴³ Archer, D. And Moser-Boehm, P. (2013), “Central Bank Finances”, BIS Working Papers, No. 71, p. 66 and 33.

⁴⁴ Buiter (2008), „Can Central Banks Go Broke?“, *CEPR Policy Insight No. 24, May 2008*

⁴⁵ Buiter (2008), “Can Central Banks Go Broke?“, *CEPR Policy Insight No. 24, May 2008*.

⁴⁶ Klüh U. and Stella, P. (2008), “Central Bank Financial Strength and Policy Performance: An Econometric Evaluation”, IMF Working Papers, WP/08/176; Benecká, A., Holub, T., Kadlčáková, N. and Kubicová, I. (2012), “Does Central Bank Strength Matter for Inflation? An Empirical Analysis”, Czech National Bank Working Papers; Adler, G., Castro, P. and Tovar, C. (2012), “Does Central Bank Capital Matter for Monetary Policy?”, IMF Working Papers, WP/12/60.

than the accounting net worth.⁴⁷ As a result, the latter does not impose a binding constraint on the central bank. Third, the theoretical arguments about a seigniorage Laffer curve and fiscal dominance⁴⁸ are premised on central bank over-issuance of zero interest cash to households and firms to generate sufficient revenue, leading to inflation as more retail money chases a given quantity of goods. This is not obviously relevant in a world of interest-bearing reserves post-QE, and would not be relevant either in a world of interest-bearing retail CBDC. Under QE and a floor system for interest rates, reserves pay the policy rate and serve not as retail money that is used to pay for goods, but as a medium of exchange among banks that is not used to pay for goods. Unlike in the case of cash, there is therefore no direct impact of additional reserve issuance on retail money and thereby goods price inflation, and any indirect impacts depend on a variety of factors whose effect is not a priori obvious.⁴⁹ Under a hypothetical interest-bearing retail CBDC, the notion of over-issuance at the discretion of the central bank presupposes that the central bank determines the quantity of CBDC while holding its interest rate fixed. This could indeed be inflationary in the same way as over-issuance of cash. However, as argued by John Barrdear and Michael Kumhof, this can be prevented by allowing the interest rate on retail CBDC to be variable and market-determined.⁵⁰ Especially in a normalized interest rate environment with a significantly positive policy rate, that interest rate could remain significantly below the policy rate due to CBDC's high convenience yield in retail transactions, similar to interest on banks' interest-paying checking accounts. In such a world, additional CBDC issuance would result in a higher interest rate on CBDC rather than in higher CBDC-driven inflation.

⁴⁷ Fry, M. (1992), "Can a Central Bank Go Bust?", *The Manchester School*, **60**; Stella, P. (1997), "Do Central Banks Need Capital?", IMF Working Papers, WP/97/83; Bindseil, U., Manzanares, A. and Weller, B. (2004), "The Role of Central Bank Capital Revisited", ECB Working Papers, No. 392; Buiter, W. (2008), "Can Central Banks Go Broke?", CEPR Discussion Paper Series, No. 6827.

⁴⁸ Cagan, P. (1956), "The Monetary Dynamics of Hyperinflation", in *Studies in the Quantity Theory of Money*, University of Chicago Press; Sargent, T. and Wallace, N. (1981), "Some Unpleasant Monetarist Arithmetic", *Federal Reserve Bank of Minneapolis Quarterly Review*; Anand, R. and van Wijnbergen, S. (1989), "Inflation and the Financing of Government Expenditure: An Introductory Analysis with an Application to Turkey", *World Bank Economic Review*, **3**(1), 17-38; Easterly, W., Mauro, P. and Schmidt-Hebbel, K. (1995), "Money Demand and Seigniorage Maximizing Inflation", *Journal of Money, Credit and Banking*, **27**(2), 583-603; Buiter, W. (1986), "Fiscal Prerequisite for a Viable Managed Exchange Rate Regime", CEPR Discussion Papers, No. 129.

⁴⁹ See the arguments against the "money multiplier" theory of the relationship between CBM and commercial bank deposits in McLeay, M., Radia, A. and Thomas, R., (2014), "Money Creation in the Modern Economy", *Bank of England Quarterly Bulletin*, **21**, 24, 25; Benes, J and Kumhof, M (2012), "The Chicago Plan Revisited", IMF Working Papers, WP/12/202, 10-11.

⁵⁰ Barrdear, J. and Kumhof, M. (2016), "The Macroeconomics of Central Bank Issued Digital Currencies", Bank of England Staff Working Papers, No. 605. The authors also discuss the alternative of CBDC issuance at a policy-determined interest rate with market-determined quantities.

Bossone *et al* have developed a similar line of argument in the accounting literature.⁵¹ They stress, as we do above, that the historical basis of the conventional accounting treatment originates in a time when money liabilities were straightforward debts arising from the relationship between a financial institution and a depositor of precious metals.⁵² Based on characteristic features of 'debt' such as redeemability and other creditor rights, central bank money is a hybrid that is closer to equity than to debt. They argue that "... issuing legal tender generates income to the issuer..", but that this "...income is (incorrectly) unreported in the income statement of the central bank and is, instead, (incorrectly) set aside under the central bank's 'liabilities'. In fact, when money is issued by a public sector entity, the associated income should accrue to the entity's owners: the citizens."

Bossone *et al* argue, like Archer and Moser-Boehm, that banknotes should be accounted for as equity, and that the same logic extends to reserves. Bossone *et al* show that this argument can also be made effectively using the literature on hybrid financial instruments, meaning instruments that are partly debt instruments and partly equity capital.⁵³ Bossone *et al* state that "although the law says that money is 'debt',... a correct application of the accounting principles raises serious doubts about such [a] conception of money." Ultimately, this paper shows that the problem is not the law per se, but rather the continued assumption, by economists and accountants, as well as many lawyers, that accounting principles inherited from the gold standard still apply today.

The important point is that law must play a special role in the characterisation of CBM because a *legal entity* is logically prior to any *accounting identity*. In other words, the accounting concept of 'liability' presupposes and requires a *legal* obligation owed by the liability-issuer to the liability-holder. Whether such a 'legal obligation' exists and how that obligation ought to be characterised are questions that will turn on distinctly legal indicia. This paper's next part sets out and explores those indicia, and concludes that CBM is by no means debt-like.

⁵¹ Bossone, B., Costa, M., Cuccia, A. and Valenza, G. (2018), "Accounting Meets Economics: Towards an 'Accounting View' of Money", Working Paper, Università degli Studi di Palermo.

⁵² Beatty, A. and Liao, S. (2014), "Financial Accounting in the Banking Industry: A Review of the Empirical Literature", *Journal of Accounting and Economics*, **58**, 339-383.

⁵³ Pro-Active Accounting in Europe (2008), "Distinguishing between Liabilities and Equity", Discussion Paper; Schmidt, M. (2013), "Equity and Liabilities. A Discussion of IAS 32 and a Critique of the Classification", *Accounting in Europe*, **10**, 201-222; PWC (2017), "Distinguishing Liabilities from Equity", PriceWaterhouseCooper.

4. Legal Dimensions of Central Bank Money

The idea that reserve account balances and banknotes are ‘liabilities’ of the central bank is conventional in the economic and accounting treatment. The IMF, the OECD, Eurostat, and the UK Office for National Statistics (ONS) have produced key manuals on the computation of government debt statistics that follow this convention⁵⁴, and central bank accounting practice reflects this.⁵⁵ Public sector economic models assume the correctness of that accounting treatment, marking CBM as debt on the public sector’s consolidated balance sheet.⁵⁶ Underpinning those accounting and economic treatments of CBM are assumptions about the *legal framework* within which CBM is issued. Our task in this section is to analyse those assumptions to provide a legally embedded critique of the accounting treatments of CBM. We will conclude that it is questionable whether the legal indicia of a claim are satisfied at all.

We undertake that analysis by reference to three foundational accounting concepts: *liabilities*, *equity*, and *assets*. Underlying each of these concepts is a substratum of legal rules establishing the proprietary rights and responsibilities that facilitate exchanges and create economic value. The accounting concepts of ‘liabilities’ and ‘assets’ exist *only because* of the system of contract and property law, which creates intangible rights and obligations enforceable via the judicial process.⁵⁷ The same basic legal processes also underpin the accounting concept of ‘equity’; residual claims on corporate property and the right to participate in the management of a

⁵⁴ (1) International Monetary Fund (2011), *Public Sector Debt Statistics – Guide for Compilers and Users*, Washington, DC (a collaboration between BIS, Paris Club, Commonwealth Secretariat, OECD, ECB, UNCTAD, Eurostat, IMF and World Bank), brief guidelines are available from the OECD website at https://www.oecd.org/statistics/data-collection/Public%20sector%20Debt_guidelines.pdf; (2) International Monetary Fund (2014), *Government Finance Statistics Manual*, Washington, DC; (3) Eurostat (2013), *European System of Accounts – ESA 2010*, Luxembourg; (4) Eurostat (2019), *Manual on Government Deficit and Debt – Implementation of ESA 2010, 2019 Edition*, Luxembourg; (5) Office for National Statistics (2016), Autumn Statement – Supplementary Fiscal Aggregates 2016, available at <https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/publicsectorfinance/articles/autumnstatement-supplementaryfiscalaggregates/2016>.

⁵⁵ See Archer and Moser-Boehm (2013), Annex I: Central Bank Accounting Policies, and Schwarz, C., Karakitsos, P., Merriman N. and Studener W. (2014), “Why Accounting Matters: A Central Bank Perspective”, European Central Bank Occasional Paper Series, No. 153. Section 6.1 contains a much more exhaustive survey of the accounting guidelines produced by multilateral institutions.

⁵⁶ Hemming, R. (2013), “The Macroeconomic Framework for Managing Public Finances”, in: Allen, R., Hemming, R. and Potter, B., (eds), *The International Handbook of Public Financial Management*, Palgrave Macmillan, chapter 21; Buiter, W. (1993), “Measurement of the Public Sector Deficit and its Implications for Policy Evaluation and Design”, in: Blejer, M. and Cheasty, A. (eds), *How to Measure the Fiscal Deficit*, p. 325; Reis, R. (2019), “Can the Central Bank Alleviate Fiscal Burdens”, in: Mayes, D., Sikos, P. and Strum, J.-E. (eds), *The Oxford Handbook of the Economics of Central Banking*, Oxford University Press; Alves, M., De Clerck, S. and Gamboa-Arbelaiz, J. (2020), “Public Sector Balance Sheet Database: Overview and Guide for Compilers and Users”, IMF Working Papers, WP/20/130.

⁵⁷ So much is assumed by basic accounting concepts: IFRS Conceptual Framework, 4.7, 4.31, 4.64.

corporation are facilitated by contracts between shareholders, and the statutory law which permits corporations to be recognised as legally separate to their human equity-holders.

This being the case, it is necessary to approach CBM on its own terms—i.e. on the basis of its legal nature and function in economic and monetary policy—rather than by reference to conventional balance sheet accounting practices whose application to CBM is distorting. An analysis of the legal structure of central banking in ‘fiat’ money systems reveals the (near) impossibility of characterising CBM as ‘liabilities’, ‘shareholder equity’, or ‘assets’ of the issuing central bank.

4.1 CBM as Liabilities

Although the accounting treatment of a ‘liability’ varies, the definition adopted by the International Financial Reporting Standards (IFRS) provides an uncontroversial starting-point: ‘A liability is a present obligation of the entity to transfer an economic resource as a result of past events.’⁵⁸ That definition is built on several legal predicates that determine the existence and value of a financial liability: (i) a legal obligation; (ii) a legally recognised form of property; and (iii) a judicial system that will enforce the obligation to deliver the property. For our purposes, the most important legal predicate of a ‘liability’ is that a liability-issuer is under an ‘obligation’ to the liability-holder. The legal nature of that obligation will determine the accounting treatment and economic value of many types of debt securities: contractual terms and statutory rules for interest rates, maturity, security rights and transferability are critical integers in the valuation of (government or corporate) bonds. In that sense, identifying a legal ‘obligation’ owed by the issuer of a financial instrument to the holder is central to the accounting treatment of any financial liability.

When we approach CBM from a legal perspective, however, identifying an ‘obligation’ imposed on the issuing central bank is extremely difficult. So much has been recognised in

⁵⁸ The IFRS is used in the accounting standards of the Bank of England and materially identical definitions are used by the ECB and the US Federal Reserve System: see e.g. Bank of England Annual Report and Accounts 2018–19, 83; the ECB Guidelines define a liability as ‘a present obligation of an undertaking arising from past events, the settlement of which is expected to result in an outflow from the undertaking of resources embodying economic benefits.’ See Guideline (EU) 2016/2249 of the European Central Bank of 3 November 2016 on the legal framework for accounting and financial reporting in the European System of Central Banks (ECB/2016/34). The *Federal Reserve Accounting Manual* (January 2020) contains specialised accounting rules for the Federal Reserve Banks as entities with ‘unique powers and responsibilities’, but these do not contain a divergent definition of ‘liabilities’; the Financial Accounting Standards Board Concept Note 6 defines ‘liabilities’ as ‘probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events.’

general terms by the various scholarly treatments of monetary law:⁵⁹ The core problem is that no alternative medium exists in which a central bank must ‘pay’ its liability; one cannot ask for repayment of CBM *in anything other than CBM*, making the moniker of ‘liability’ highly artificial.

Central banks create CBM pursuant to legal powers to engage in three types of transactions, the *issue of bank notes*, the *purchase of an asset*, and the *extension of credit*.⁶⁰ These transactions impose no continuing obligations on the central bank, neither *vis-à-vis* the seller of the asset nor *vis-à-vis* the eventual holder of the CBM. The following comments refer specifically to reserves, but the same logic applies to hard currency.

Vis-à-vis the seller of the asset, the central bank is under no obligation with respect to the reserves that represent the seller’s purchase proceeds: once the asset is purchased, the transaction is concluded and the central bank owes the counterparty of the asset purchase nothing further.⁶¹ Nor do obligations subsist in a central bank that creates reserves via a loan to a commercial bank: to the contrary, the commercial bank becomes a debtor of the central bank with an obligation to repay the reserves. Nor are obligations identifiable when central bank reserves are used as settlement assets in the inter-bank market. Legally, the inter-bank market is a set of countervailing contractual rights (to payment) and obligations (to pay) of commercial banks.⁶² In that context, commercial bank counterparties transfer reserve balances between themselves to discharge settlement obligations arising from underlying payments by their customers’ (or their own) accounts. Other than processing payment instructions as a settlement agent, central banks have no direct role in those bilateral settlements of contractual obligations.

Vis-à-vis the eventual holder of the reserves, the existence of a positive reserve balance does not reflect a legal obligation to deliver any other asset to the commercial bank account holder.

⁵⁹Proctor, C. (2012), *Mann on the Legal Aspect of Money*, 6th Edition, Oxford University Press, p. 25; McKendrick, E. (2009), *Goode on Commercial Law*, 4th Edition, LexisNexis, p. 487; Gleeson, S. (2019), *The Legal Concept of Money*, Oxford University Press, paragraph [4.4.6].

⁶⁰ Examples include: *Federal Reserve Act* s 14; *ECB Statute* Art 18; *Bank of England Act 1694* s 27, *Bank of England Charter 1694*; *Bundesbank Act* Art 18; *Bank of Japan Act 1942*, Art 33. Monetary finance in the UK is provided by uncollateralised lending and the remittance of sovereign bond interest paid to the Bank of England’s QE portfolio: see, Bateman, W., (2020), *Public Finance and Parliamentary Constitutionalism*, Cambridge University Press, chapter 7. Some jurisdictions, particularly the EU, have a hostile attitude to monetary financing (see Article 123 of the *Treaty on the Functioning of the European Union*), while other jurisdictions, such as Japan and the UK, are far more permissive (see *Bank of Japan Act 1942*, Art 34; *National Loans Act 1968* (UK), s 12(7)). Despite some popular calls for direct monetary stimulus via ‘helicopter money’ programs, it is not clear how such programs could be operationalised without central bank asset purchases or lending to increase commercial banks’ or the government’s reserve accounts.

⁶¹ We have noted in footnote 23 above the technical complexities of characterising reserves as the ‘purchase proceeds’ of an asset purchase. Nothing about those complexities changes the fact that the use of reserves to purchase an asset imposes no further obligation on the central bank in respect of those reserves.

⁶² See Gleeson, S., (2018), *The Legal Concept of Money*, Oxford University Press, para [6.60].

Furthermore, in many important jurisdictions, a reserve balance does not even represent a clear legal obligation to deliver physical currency. In the US, for example, commercial banks must ‘order’ the delivery of Federal Reserve Notes from their local Federal Reserve Bank, and the delivery of notes results in a ‘debit’ of the commercial bank’s account, pursuant to standard form contracts issued by the Federal Reserve Banks.⁶³ In the UK, only a select set of private sector entities may obtain bank notes from the Bank of England, thereby excluding many reserve account holders from directly obtaining bank notes; as in the US, note-issue counterparties appear to purchase banknotes from the Bank of England, rather than receiving them in settlement of debts represented by reserves.⁶⁴ In neither jurisdiction does the existence of a credit balance in a reserve account signify a clear legal obligation to deliver bank notes equalling the face value of the reserve balance. Moreover, even if a positive reserve balance did represent an obligation to deliver banknotes, it would not confer a right on a holder of CBM (which equals the sum of reserves and banknotes) to be repaid in anything other than CBM.

Each of those matters of law exposes the deeply problematic nature of accounting for CBM as ‘liabilities’ of the central bank, which some central banks already acknowledge. For example, the Swiss National Bank disappplies the relevant accounting principles regarding financial liabilities on the following grounds:

The majority of the liabilities presented directly reflect the implementation of the SNB’s monetary policy, i.e. the provision of liquidity to or the absorption of liquidity from the money market. By virtue of its exclusive right to issue banknotes, the SNB runs no liquidity or refinancing risks from liabilities in Swiss francs. Because the SNB can create the necessary liquidity and determine the level and structure of its financing itself, it is always in a position to meet its obligations.⁶⁵

In short, we think that it is clear that the legal predicates of a liability are absent in the case of CBM. The essence of a legal liability is that the debtor should be obliged by law to do something that it has not already done. An obligation incumbent on a central bank to do no more than accept that its CBM are indeed its CBM is not, *per se*, a legal liability. CBM is therefore not properly described as debt owed by central banks, nor should it be discussed as if it was a liability in policy debates.

⁶³ Federal Reserve Banks, “Operating Circular No 2: Cash Services” (effective from 4 January 2016), particularly cl 5.

⁶⁴ NCS Payments Annex to the RTGS Account Mandate Terms and Conditions (effective from February 2019); the history and policy of the Bank of England’s note issue is covered by Allen, H. and Dent, A. (2010), “Managing the Circulation of Banknotes”, *Bank of England Quarterly Bulletin*, Q4, p. 302.

⁶⁵ Swiss National Bank (2018), Annual Report 2018, p. 168. The Bank of Japan discloses a similar attitude: see Bank of Japan (2020), “Why Are the Banknotes on the Liability Side of the Bank’s Balance Sheet”, available at <https://www.boj.or.jp/en/announcements/education/oshiete/outline/a23.htm/>.

4.2 Other Arguments for CBM as Liabilities

a. CBM is a Liability because the Treasury Guarantees Some Central Bank Obligations

It is sometimes argued that CBM should be understood as a type of ‘liability’ because, under a full ‘fiat’ money regime, central banks are best understood as part of the consolidated public sector, and because national treasuries ultimately guarantee some central banks’ obligations including, for example, payment of interest on excess reserves (**IOER**).

However, from a legal perspective, central banks are distinct legal entities from national treasuries,⁶⁶ and the two entities often transact in ways which lead to net transfers out of the consolidated public sector: for example when a national treasury pays interest on a sovereign bond in a QE portfolio prior to the payment of a dividend by a central bank to a non-government shareholder (for example, in the case of the Bank of Japan or the Federal Reserve System). In such a case, it is simply not clear how the liabilities of the national government and the central bank can be wholly shared.

The payment of IOER introduces additional complexities into the relationship between central banks and national treasuries, as many treasuries guarantee (explicitly or implicitly) the obligations of central banks that include the paying of IOER. The decision to pay IOER is a policy decision by a central bank to remunerate reserve account balances as a transmission mechanism for monetary policy, with the rate of IOER standing at the targeted interest rate. The liability of national treasuries to ‘guarantee’ those interest payments is triggered by several policy decisions of the central bank: (i) to lower (persistently) the rate of IOER below the rate of earnings on its portfolio of assets which, since the inception of QE, is substantial; (ii) not to fund IOER payments through reserve creation; while (iii) continuing to incentivise commercial banks to hold large reserve balances. Even in the (unlikely) world where each of those decisions were taken, the execution of a guarantee by the national treasury to pay IOER with fiscal receipts would not change the fact that reserve account holders would be paid in a form of CBM which could not legally be exchanged for anything other than CBM. In that sense, the existence of explicit or implicit treasury guarantees does not change our analysis that CBM cannot be understood as a liability of the central bank.

⁶⁶ Lastra, R (2006), *International Financial and Monetary Law*, Oxford University Press, ch 2.

b. CBM is a Liability because the Government Accepts CBM in Payment of Taxes

This is essentially the position of Modern Monetary Theory (MMT), which for our purposes has two main aspects. The first is the MMT assertion that ‘all money is debt’, and the second is the idea that acceptance of CBM in payment of taxes makes CBM a government liability. Both ideas are both logically and legally flawed.

As for the idea that ‘all money is debt’, money is that which is generally accepted in payment, and being a debt is not a necessary condition for being accepted in payment. There are in fact many instances of debt-free tokens performing this function, ranging from cowrie shells in ancient China, to essentially worthless base metal money in early Rome, to the "truck" systems which existed in mill towns in Northern England in the early stages of the industrial revolution, to cigarettes in WWII prisoner-of-war camps.

It would also be incorrect to claim that all government debt is money-like, so that there would be little or no difference between government-issued money and government bonds. At a minimum this is false as a matter of observed social interaction: government bonds and government-issued money are not equally usable payment media in financial or real economies. Furthermore, because money is a social and legal construct, it is false full-stop: the widespread social use of government-issued money as the default medium of exchange is backed by legal rules (concerning legal tender and settlement finality) which have no application to government bonds. Ultimately, the question of whether something is money or not is socially and legally determined – anything which is generally accepted in payment is money. In general, anything which is accepted in payment by the largest participant in an economy is likely to be treated as money by other participants in that economy. Hence it is almost inevitable that any instrument which is accepted by government in payment will be treated as money by society. But that fact does not contain any information about whether that instrument is a liability of government.

The idea that government acceptance of CBM in payment of taxes makes CBM a government liability has three additional, and major, flaws.

First, CBM is generally not used to pay taxes, instead commercial bank money is used. Payments using bank deposits will almost certainly be settled through a CB settlement system using reserve balances, but that is not particularly important from the position of the tax payer: the capacity to ‘pay’ taxes depends on a taxpayer’s access to deposit balances in a commercial bank account, rather than a net credit balance in a commercial bank’s reserve account. The idea underlying the MMT point is a conflation of several meaningfully different

legal concepts and relationships: CBM, national unit of currency, central bank reserves, payment by a legal person/economic agent, settlement via a central bank account.

Second, taxes are not a necessary condition for CBM to be used and valued as money.

Consider a government that finances itself entirely without taxes (e.g. through sales of public land). This would not mean, contrary to the MMT account, that CBM does not exist, or has no value. CBM is valued because of a network externality in exchange, and not only exchange between private agents and the government, but also exchange between private agents alone. If there is private commerce and exchange, CBM has value even if there are no taxes at all, and in that world the liability argument does not apply. Therefore, if tax payments are not a necessary condition for the presence and value of CBM, they cannot logically justify why CBM should be treated as a government liability.

Third, if CBM was a liability of the government, then it could not serve as money. The argument that money is a liability of the government seems to spring from the notion that it is created by the government as an IOU in satisfaction of a debt – in particular, from the idea that when the government buys something, it pays by creating an IOU which is then redeemed when it is delivered back to government in exchange for an obligation owed to it. In that case, what gives the IOU value is the credit behind it. However, money is not valued by reference to a claim which it embeds, but by reference to the expectation that it will be accepted in payment generally. This is as true of governments as of anyone else: governments tax in order to spend, with the consequence that taxes must be collected in payment media that governments can use to purchase the things that they wish to acquire. Monetary status is what determines tax acceptability, and not vice versa. It follows that the value of the monetary unit is not dependant on an underlying credit claim on a government, but is dependent on the value which society as a whole will attribute to it. Consider the situation where a government created 'monetary' units, but the only person who accepted those units in payment was the government itself. Such units would simply not be money, since they would not satisfy the basic criterion of being generally accepted in payment. Such units would however conform to the MMT model of a government IOU. The MMT argument about government liabilities therefore applies only to the extent that the instrument concerned is not treated by society as a whole as money (government bonds, for example).

4.3 CBM as Equity

Problems also arise in characterising central bank reserves as ‘equity’ of a central bank. Again, taking the IFRS as a guide, ‘equity’ can be defined as ‘claims on the residual interest in the assets of the entity after deducting all its liabilities’.⁶⁷ The critical distinction between equity and liability is that an equity claim is premised on an underlying legal ‘ownership’ right in the equity-issuing entity’s net worth, which in turn equals the difference between the entity’s assets and liabilities.

This accounting standard builds on two ideas. The first we might call a ‘balance-sheet conception’, in which ‘equity’ means nothing more than the accumulated difference between what has been received to the entity and what is due to be delivered by the entity.⁶⁸ The second is an ‘ownership conception’, in which the ‘residual’ nature of an equity claim is equated with a type of ownership (‘shareholder’) interest in a joint undertaking.⁶⁹ *Pro rata* capital distributions vindicate that ownership right during the life of the company (dividends) and after the company ceases to trade (insolvency or winding up), as do procedural rights to attend meetings and appoint directors. Emphasising the balance sheet conception alone, central bank reserves appear as a residual balance sheet item, and are hence functionally similar to traditional shareholder equity.

However, in the sense of the ownership conception it is impossible to account for reserves as ‘shareholder equity’ in a central bank, because central banks have constitutive statutes that provide detailed legal rules concerning their ownership, including (i) the issue of shares or stock in the central bank, (ii) payment of dividends to shareholders, and (iii) rights of shareholders to control the central bank’s governance. Accounting for central bank reserves as ‘equity’ in the same class as shares or stock would create a conflict between different ownership groups: governments (and occasionally firms and individuals) holding statutory equity, banks holding reserves, and the public at large holding banknotes (and in the future, possibly, CBDC).

⁶⁷ IFRS Conceptual Framework, 4.64.

⁶⁸ Although this conception predates modern balance sheet accounting practices; the idea goes back to the Roman institution of the *societas*. At its simplest, the idea is that the participants in a venture are entitled to share in the profits of that venture, equally amongst themselves in proportion to their contribution; in other words, they are collectively entitled to the net gain, after discharging obligations. Thus, the ‘balance sheet’ notion of equity ultimately rests on something like the ‘ownership’ conception of equity; equity itself presupposes some body of assets in which a group of joint adventurers have some shared interest.

⁶⁹ It is worth noting here that the ‘ownership’ conception of corporate equity has been criticized for failing to recognize the full consequences of corporate legal personhood, which renders corporate stockholders incapable of ‘owning’ the corporation itself, much in the same way as citizens cannot be said to ‘own’ the state they comprise. See, e.g., Ciepley, D. (2013), “Beyond Public and Private: Toward a Political Theory of the Corporation”, *American Political Science Review*, **107**, p. 139. We do not seek to weigh in on this debate at the present time.

A prominent example of that problem arises in the US Federal Reserve System, wherein the various Federal Reserve Banks are owned (and managed) by commercial banks in their districts, which each hold shares issued under the *Federal Reserve Act 1913*, receive dividends on those shares, have rights to property upon the insolvency of a Federal Reserve Bank and exercise powers to nominate and elect directors as a result of that shareholding.⁷⁰

Looking at the Federal Reserve model, it is reasonably clear that to characterise CBM as ‘equity’ would clash with the ‘equity’ claims of the existing shareholders. Accounting for CBM as equity would create a rival set of owners depending on the distribution of CBM balances among member banks of the Federal Reserve System and the public. The same difficulty would be present in the Eurozone, where a significant portion of the ECB’s capital is indirectly owned by private shareholders of the Banca d’Italia, National Bank of Belgium and the Bank of Greece.⁷¹ *A fortiori* the Bank of Japan’s shares which are traded on the Tokyo Stock Exchange.⁷² If central banks created their own shareholder equity by issuing CBM, then the statutory equity of those stockholders would be diluted, raising the possibility of lawsuits for expropriation of the property via dilution of statutory equity.⁷³

An even more fundamental problem arises in accounting for CBM as shareholder equity in the context of central banks which are wholly owned by governments. For example, the Bank of England was nationalised by the UK Treasury’s compulsory acquisition of the shares of around 17,000 shareholders in 1946 for £46 million (1946 prices: £6.1billion in 2019 prices), and ownership was transferred to the UK Treasury and the Bank’s Court of Directors.⁷⁴ The idea that CBM issued by the Bank of England represent shareholder equity would reverse the logic of that statutory ownership structure, and dilute the UK government’s ownership. The conflict between CBM and statutory ownership is even stronger in relation to central banks in strong statist traditions, like the Bundesbank which is governed by public law and wholly owned by

⁷⁰ *Federal Reserve Act*, s 2, 4, 5, 6 and 7. See generally Conti-Brown, P. (2018), *The Power and Independence of the Federal Reserve*, Princeton University Press.

⁷¹ *Statute of the Bank of Italy*, Arts 3, 4, 6, 7, 9, 15; *Organic Law of the National Bank of Belgium*, Arts 2, 4, 31, 32, 36; *Bank of Greece Statute*, Arts 8, 11-19, 71, 74. In the case of the Swiss National Bank, around half the SNB’s share capital is held by the cantons, the cantonal banks and other public authorities and institutions, with the remainder in the hands of private individuals. Shares of the SNB have been listed at the SIX Swiss Exchange since 1907. The rights of its shareholders are limited given that monetary policy is a public function. The SNB’s net profit—minus a dividend limited by legal provisions—accrues to the public sector, namely the Confederation and the cantons: https://www.snb.ch/en/ifor/public/qas/id/qas_unternehmen#t5.

⁷² *Bank of Japan Act*, Arts 8-10.

⁷³ That is not a purely hypothetical matter as the ECB explained in its 2019 opinion on the Italian proposal to compulsorily acquire the Banca d’Italia’s shares held by the private banks, insurance companies and investment funds: ‘Opinion on the ownership structure of Banca d’Italia and the ownership of gold reserves’ (CON/2019/23) 24 June 2019, [2.16].

⁷⁴ *Bank of England Act 1946*, ss 1 and 3.

the Federal Republic of Germany.⁷⁵ Indeed, many central banks in the 20th century were created as public agencies.

These problems exclude any direct analogy between CBM and corporate shareholder equity. We shall return to the concept of ‘equity’ in a broader sense below, however, when we ask whether the concept might serve as a useful point of analogy in devising *sui generis* accounting rules for CBM. By analogy to the financial functions of corporate equity, we suggest a concept of ‘social equity’ as a useful way to understand the true position and function of CBM.

4.4 CBM as Assets

The final major accounting concept is ‘asset’. Currently, commercial banks account for their CBM holdings as liquid *financial assets*, in which the central bank is the counterparty which holds a corresponding *financial liability*. For the reasons we have given above, the latter and therefore also the former have very weak support in the presently-existing legal frameworks governing CBM.

As for the treatment of CBM as commercial banks’ financial assets, legal systems recognise a wide class of assets that are not straightforward claims,⁷⁶ and payments architectures recognise that debts can be settled using a variety of settlement assets beyond debt claims. Thus, even though a positive balance of CBM cannot be described as a ‘claim’ on the central bank, the entity holding that balance can use it to discharge an obligation it owes to another entity. Thus, even if an entity with a positive CBM balance does not have a *claim* on the central bank, it has a deployable *asset*. From the legal perspective, then, commercial banks could continue to book their CBM holdings as assets, even if this may appear counter-intuitive.

An interesting and, for an economist, even more counter-intuitive question is whether central banks could account for CBM as their *own* ‘assets’. Surprisingly, if we adopt the core definitions from the IFRS, the answer appears to be a qualified yes: ‘An asset is a present economic resource controlled by the entity as a result of past events’; ‘An economic resource is a right that has the potential to produce economic benefits’; ‘Rights that have the potential to produce economic benefits [include] rights that do not correspond to an obligation of another party’.⁷⁷

⁷⁵ *Bundesbank Act*, s 2.

⁷⁶ For example, powers which, if exercised, confer a benefit on a person are recognized as a discrete class of assets in certain legal systems, including textile quotas, emissions certificates, or the right to revoke a trust.

⁷⁷ IFRS Conceptual Framework, 4.3, 4.4 and 4.6.

CBM are created by the exercise of statutory powers with the aim of controlling the total amount of liquidity in the financial system, and determining whether reserves should be brought into existence in any particular transaction. CBM is thus ‘controlled by’ the central bank. CBM created by central banks permits them to obtain economically valuable assets, such as securities acquired on the open market, which produce economic benefits because they generally pay a higher interest rate than the CBM itself. From the legal perspective, it would therefore appear to be possible, if highly forced, to characterise CBM as ‘assets’. However, from the economic perspective, this characterisation causes serious problems. The reason is that, in any transaction that involves issuance of additional CBM, the economic resource on the balance sheet is not the CBM but the principal value of the asset that is acquired. If fair value accounting was used, the assets of the central bank should also include the present discounted value of the seigniorage generated by the interest difference between the assets acquired and the CBM issued. These have their counterpart in additional net worth, which is referred to as “comprehensive net worth” by Archer and Moser-Boehm and others. But again, this does not make the reserves themselves an asset, and furthermore the focus of our analysis is not the fair value balance sheet, which suffers from well-known difficulties,⁷⁸ but the conventional accounting balance sheet.

An attempt to characterise CBM as an ‘asset’ owned by the central bank is therefore far from perfect from an economic, or legal, point of view. If one insists on an asset and ownership based approach, then the most that can be said is that CBM are assets controlled by both the central bank and private counterparties, according to the rules of a highly specific and essentially closed system provided by the former as public infrastructure and ultimately controlled by it for the public benefit.

3.5 CBM as Financial Infrastructure and a Public Good

We have seen that CBM does not fit within any of the three categories of legal predicate supporting the relevant accounting rules—liabilities, equity, or assets. This is because all of the most commonly applied legal and accounting categorizations of financial instruments have their origins in the conventions for private (corporate or individual) financial instruments, which are issued by entities that are exclusively designed to maximize private profit or advantage. This does not translate well to public instruments, which are issued by a public agency to pursue collective, social, or macro-level objectives that go well beyond private profit or advantage.

⁷⁸ McDonough, R., Panaretou, A. and Shakespeare, C. (2020), “Fair Value Accounting: Current Practice and Perspectives for Future Research”, *Journal of Business Finance and Accounting*, 47(3-4), 303-332.

Our legal analysis leads to the conclusion that CBM is neither a liability, nor shareholder equity, nor an asset of the central bank, as those concepts are applied by mainstream accounting and economic practice. CBM is therefore best understood as a *sui generis* hybrid financial instrument that plays an infrastructural role in the monetary system: facilitating financial and real-economy transactions; and facilitating economic (*qua* monetary) policy. Those deployments of CBM occur in the interest of the public welfare in a capitalist economy and, in that sense, should be treated as a public good.

5. CBM as 'Social Equity'

The final substantive task of this paper is to offer a positive interpretation of CBM as a *sui generis* hybrid financial instrument. Given our conclusions regarding the inapplicability of existing technical legal and economic categories to the monetary units issued by central banks, we take a broader view of CBM's legal and financial characteristics by comparison with other major classes of financial instruments: corporate equity, commercial bank money, corporate debt and sovereign debt.

We have argued that CBM, when correctly designed as part of a mixed public-private financial system, becomes a highly effective public good that can help achieve macroeconomic financial stability objectives. However, to the extent that the concepts of liability, equity, and asset remain a reference point, a modified concept of equity may hold some relevant insights. Characteristics of equity in the corporate context, such as control, dividends, and rights in bankruptcy proceedings, have no direct analogues in the case of CBM. However, when the analogy of CBM to a public good is taken into account, similarities emerge between CBM and equity, such that CBM could be described as 'social equity' in the nation and its economy.

5.1 Financial Classification Table

Filling in the gaps that result from the imperfect translation between concepts of private equity/debt and public equity/debt is a core purpose of this paper. The **Financial Classification Table** works towards that objective by breaking the classification down into categories that are well understood for other financial instruments.

The Financial Classification Table compares central bank money to other financial instruments using a number of different legal and economic criteria. Each column represents a different type of financial instrument. Classifications of corporate debt and corporate equity are shaded in green and red, and classifications of CBM are shaded in those colours where the classification matches or approximates that of corporate debt or corporate equity. Each row represents a different criterion for distinguishing between different financial instruments.

5.2 Columns: Different Financial Instruments vis-à-vis CBM

We first note that the columns have been arranged with the two private instruments, corporate equity and corporate debt, at either end of the spectrum, and with all instruments between these representing either purely public or substantially-public instruments. Government debt, in both domestic and foreign currency, is a key public financial instrument that exhibits many similarities with private debt. CBM is a public financial instrument. Commercial bank money, meaning monetary instruments issued by commercial banks, has many features of CBM, despite its issuance by private firms. The reason is its key role in the payment system, which ensures a high level of explicit and implicit public support, including through lender of last resort facilities, deposit insurance, and multiple regulatory agencies. Furthermore, its use as retail money places it alongside CBM, especially potentially new forms of CBM like CBDC.

5.3 Rows: Classification Criteria of CBM

We discuss our eight classification criteria in the same order as in the Financial Classification Table. Moving down the rows of the table, there is of course necessarily some overlap between the different criteria. Moving along the columns, for each criterion we adopt either a binary or ternary classification scheme, but in some cases the classification is really along a continuum and we had to make choices, which we attempt to justify where necessary.

Power to Influence/Control the Issuer: The first criterion is whether the financial instrument gives its holder power to influence or control the issuer. For the two private instruments, corporate equity is a private claim that (generally) gives its holder power to influence the decision making of the issuing corporation in proportion to his or her holding, while corporate debt does not legally confer any such power to influence the issuer. Government debt and commercial bank money are similar to corporate debt, in that they do not confer any direct powers of control or influence.

On this measure, CBM emerges as a hybrid instrument, but in our view one that is closer to corporate equity than to corporate debt, government debt or commercial bank money. While holders of CBM do not have rights to vote at monetary policy meetings or to appoint the senior officers of central banks, this is not unlike the position of a minor shareholder in a corporation. Furthermore, this does not entirely deprive the holders of CBM of any power to influence a central bank.

This power derives from a combination of the ultimate democratic accountability of the central bank to the nation's citizens (in aggregate) through voting at the ballot box, with the power of the nation's citizens (again in aggregate) to hold the central bank more directly accountable through their decision to hold or to refuse to hold CBM, in other words through voting with their wallets.

Voting with their wallets: If citizens stop holding cash and domestic currency bank deposits and switch to, e.g., foreign currency, central banks lose the capacity to execute monetary policy. If that power is lost, the state loses a critical macroeconomic lever to influence employment, production and its own fiscal fortunes; in extreme cases, a refusal of citizens to hold CBM can threaten a state's sovereignty. In that sense, there is a basic connection between holding CBM and membership of the body politic which the issuing central bank exists to serve. Severance of that connection (by aggregate decisions not to use CBM by members of the body politic) can have significant impacts on central bank policies. In that sense, 'social' or 'collective' use of CBM does carry power to influence the issuing central bank, which represents the democratically accountable agent of the public in providing a public good: a universally acceptable medium of exchange, the infrastructure for the nation's payment system, and the conduit for economic (*qua* monetary) policy.

Voting at the ballot box: As a government actor the issuing central bank is also subject to political levers of control that, in complex and indirect ways, transmit the voting public's preferences into central bank policies. The efficacy of these levers and the degree of democratic participation necessary for meaningful exercise of social control, of course, vary considerably depending on specific institutional contexts.

On the criterion of power to influence the issuer, CBM is therefore close to corporate equity, and far from corporate debt.

Nature of the Claim: This criterion asks whether the financial instrument gives its holder a residual or a fixed claim on the assets of the issuer. For the two private instruments, corporate equity gives its holder a residual claim to assets, after repayment of interest and principal on any debt, while corporate debt represents a fixed claim, meaning a claim to repayment of principal and to payment of interest charges specified in the debt contract, but no claim to a share of assets. Government debt and commercial bank money, like corporate debt, represent fixed claims.

As we have concluded above, CBM is not comparable to a private residual claim that would give the holder rights to a share in central bank profits along with ownership rights. However, it clearly does not represent a fixed claim either, because (like corporate equity) the central bank is under no obligation to repay CBM in anything other than CBM.

As with the last criterion, understanding the ‘claim’ that CBM confers on its holders is aided by taking a broader view of the social and economic functions of CBM. If holding CBM is a necessary part of social and economic statehood, then CBM carries a claim to participation in a particular type of body politic: viz, one which has the capacity to execute economic and social policy under contemporary monetary conditions. In that sense, CBM carries something akin to a ‘social residual claim’: a claim that the issuing central bank will execute monetary policy in the interests of the broader body politic. Furthermore, in purely balance sheet terms, the public retains collective ownership in the assets of the central bank after all of its net liabilities have been settled and any non-government shareholders have been compensated. Taking this broader perspective, on the criterion of the nature of the underlying claim, CBM is therefore close to corporate equity, and far from corporate debt.

Defaultability: This criterion asks whether the issuer of the instrument can default on it, or whether default is impossible because the real value of the instrument can only change with either the market valuation or the rate of inflation or both.

Because of the important role of the so-called ‘inflation tax’ in economic debates, we emphasize that in legal terms default means failure to provide payment and is an entirely different concept from loss of value, including through inflation. The inflation tax is therefore not legally a tax because it has no coercive characteristics, and it is not legally a form of default because no new juridical right/liability crystallises upon that loss of value. A close analogy to the inflation tax due to over-issuance of CBM is therefore a company issuing more equity shares without receiving sufficient new value in exchange. On the loss of value criterion, there is therefore an

analogy between CBM and equity. We will now explain that the same is true on the default criterion. To do so we return to our comparison with other financial instruments.

For the two private instruments, corporate equity is not defaultable because the equity contract lacks a hard contractual obligation to repay a specific amount, while corporate debt is defaultable because such a contractual obligation is present in the debt contract.⁷⁹ Government debt and commercial bank money, like corporate debt, are defaultable, and the Financial Classification Table therefore has corresponding entries for these two instruments. However, this is an instance where the criterion represents a continuum. Governments can default, but in general, this is far less likely than for corporations, especially for domestic currency government debt, which can always be repaid through additional money creation. Defaults on commercial bank money are also rare. This is not only because commercial banks typically have diversified asset portfolios, but more importantly because commercial bank money represents the backbone of any modern payment system, and is therefore supported by government through a central bank as lender of last resort, deposit insurance, regulatory agencies, and if necessary through the fiscal authority backing up the lender of last resort. Therefore, while default is possible in principle, it is not as likely as for corporate debt.

CBM on the other hand is not defaultable. The reason is that the holder of CBM cannot ask for repayment of CBM in anything other than CBM, and therefore cannot force a default by requiring the central bank to deliver something which it is unable to deliver. On the criterion of defaultability, CBM is therefore very close to corporate equity, and far from corporate debt.

Settlement Term: This criterion asks whether there is a definite date, or set of dates, when the instrument must be 'settled'. For the two private instruments, corporate equity does not have a settlement date, while corporate debt will generally specify either a fixed set of dates for settlement, or payment, of principal and interest, or a fixed set of events that trigger a demand for repayment. Government debt and commercial bank money, like corporate debt, have fixed settlement terms, with commercial bank current accounts having the shortest possible term, as they are instantly callable by their holder. Any withdrawal of commercial bank money, and its deposit in another commercial bank, is settled in CBM. CBM however does not have a settlement date, because its holders cannot demand repayment of CBM in something other than CBM. There is no higher form of money in which CBM must be settled. On the criterion of settlement term, CBM is therefore close to corporate equity, and far from corporate debt.

⁷⁹ Corporate equity can, of course, 'default' in the sense of 'lose all value upon bankruptcy'.

Settlement Item: This is closely related to the settlement term. The question here is the mode of payment upon settlement. For corporate equity, there is no settlement, so the settlement item is “none”. The same is true for CBM, as discussed in the previous paragraph. For both commercial bank money and government debt, settlement is ultimately made in the form of CBM, as both commercial banks and the government use their reserve accounts at the central bank for payment. Corporate debts are typically settled in commercial bank money, as non-bank corporations do not have access to reserve accounts at the central bank, although, some (investment-grade) corporate debt may be sufficiently high-value to settle through central banks’ payment systems, and thus in CBM. On the criterion of settlement item, CBM is therefore close to corporate equity, and far from corporate debt.

Valuation: Under this criterion, we distinguish between three categories of nominal valuation, market, fixed and semi-fixed. Semi-fixed describes instruments with a fixed nominal principal but with the possibility of default and of interest rate risk for longer-dated instruments, but excluding losses in value due to inflation, on the basis that such losses affect all instruments equally. For the two private instruments, the valuation of corporate equity is of course determined by the market, with no (meaningfully⁸⁰) fixed face value, while that of corporate debt is semi-fixed, with fixed face value, the possibility of default, and potentially with interest rate risk. The valuation of government debt and commercial bank money is also semi-fixed, not only because of interest rate risk on longer-dated instruments, but also because governments and banks can default on these obligations.

The valuation of CBM on the other hand is fixed in nominal terms: while CBM can carry inflationary risk, it does not carry default risk. On this criterion, CBM is therefore distinct from corporate debt but also from corporate equity. This in turn is closely related to the already discussed differences between the equity natures of these two instruments. Corporate equity is held primarily because this equity confers the right to a financial return in a private entity, which can fluctuate widely, while CBM is held primarily because this equity confers the right to a social return in a public entity, which depends on a stable value as the basis for its usefulness as the economy’s medium of exchange and conduit of economic and monetary policy.

⁸⁰ Shares do have a face value that represents the limitation of shareholder liability. But it is often set very low.

Interest: Under this criterion, we distinguish between three categories of interest payments, no, yes and possibly. For the two private instruments, corporate equity pays time-varying dividends rather than interest, while corporate debt pays explicit or implicit (for zero-coupon instruments) interest.⁸¹ The latter is also true for government debt. Commercial bank money and CBM on the other hand could either be interest-bearing or interest-free instruments – for examples of the former, consider time deposits, interest-bearing checking accounts and interest on reserves⁸², and for examples of the latter, consider zero-interest checking accounts, cash and zero-interest CBDC. On this criterion, CBM is therefore distinct from both corporate debt and corporate equity. Note however that there are some overlaps. First, interest-paying CBM is being considered as a feature for a future CBDC. Second, if we think of CBM as ‘social equity’, some forms of CBM do receive a type of ‘dividend’. Namely, the holding of reserves allows commercial banks to participate in the clearing system, and thereby in the ‘finance franchise’⁸³ by which these banks are delegated a money-creation role and participate in a specific form of ‘dividend’, the seigniorage from money creation.⁸⁴

Transferability: Under this criterion, we again distinguish between three categories, easy, medium and hard. For the two private instruments, corporate equity is relatively straightforward, but not ‘easy’, to transfer through brokers, while corporate debt is generally harder to transfer except in cases where a liquid corporate debt market exists. Absent such a market, complex legal arrangements are necessary to transfer the rights of the creditor, and even in that case there are many different degrees of difficulty, starting with relatively easier securitization of debt portfolios to assignment of much less standardized debts such as trade receivables or accounts receivable. Government debt generally trades on liquid markets, and transferability is therefore similar to corporate equity. Commercial bank money and CBM on the other hand are designed with easy transferability as one of their main characteristics; although the ease of transferring central bank reserves differs from the ease of transferring central bank notes. On this criterion, CBM is therefore distinct from corporate debt and

⁸¹ The exception is economies that operate near the zero lower bound on policy interest rates. But in this case the zero interest rate is not an inherent design feature of the instrument, but rather one of many possible discrete choices along a continuum of positive and negative interest rates.

⁸² Note however that, because the central bank unilaterally chooses the interest rate it pays on CBM, interest on CBM plays a fundamentally different role to interest on corporate or government liabilities. Interest on CBM is much closer to a transfer that is motivated by public policy concerns, rather than an interest rate on a debt.

⁸³ See Hockett, B. Omarova, S. (2017), “The Finance Franchise”, *Cornell Law Review*, 102, p. 1043.

⁸⁴ Traditionally the term seigniorage was used to refer to the difference between the cost of physically producing cash and its purchasing power in the economy. But in a modern economy, where cash accounts for only around 3% of the broad money supply, the majority of seigniorage accrues on commercial bank IOUs, or deposit money. It equals the product of the quantity of their IOUs and the average convenience yield of those IOUs.

corporate equity, but again the main reason for this is to optimize its performance as a form of social equity: an effective and low-cost medium of exchange.

5.4 Summary

We conclude that CBM shares many legal and economic criteria with corporate equity, especially when we interpret some of the criteria broadly to encompass the role of CBM as a public good, while sharing essentially no criteria with corporate debt. However, the analogy with corporate equity is not perfect. To return to the title of this paper, CBM is therefore very far from a debt of the nation, and rather represents a special, or *sui generis*, type of equity in the nation. The interpretation of central bank balance sheets with a high ratio of CBM plus debt to traditional balance sheet equity should therefore be entirely different from that of private sector entities' balance sheets with a high ratio of debt to equity.

6. Implications

We conclude the paper by laying out in detail how CBM is treated in official government debt statistics, and then addressing some areas that are potentially affected by our analysis of the legal and accounting treatment of CBM, including calculations of government debt burdens, implications of QE, and implications of a retail CBDC. We conclude by comparing our comparatively narrow findings with the much broader recent debate on the optimal size of central bank balance sheets.

6.1 Treatment of CBM in Official Government Debt Statistics

Headline government debt-to-GDP figures play a major role in macroeconomic debates and policymaking. Their calculation is uniform around the world, due to the standards set by multilateral institutions (see the references at the beginning of Section 4). With few exceptions, the headline figures that are reported account for CBM as a liability of the central bank and of the consolidated government.

The two most commonly reported headline figures for government debt are general government debt and public sector debt.⁸⁵ General government consists of central, state and local government. The public sector consists of general government and public corporations, where

⁸⁵ Both are available in gross and net form, where the latter deducts certain financial assets vis-à-vis the non-government sector. However, this distinction is of less importance to us than the distinction between unconsolidated and consolidated government debt. We will therefore generally conduct our discussion in terms of gross debt. This follows the practice for most, but not all, reported headline debt figures.

the latter consist of public non-financial and public financial corporations. Public financial corporations in turn consist of the central bank, public deposit-taking corporations except the central bank, and other public financial corporations.

General government debt includes government debt held by the private sector and by public corporations, including by the central bank. The fact that the private sector does not hold this latter portion of the debt, but instead generally holds the CBM that was issued when the central bank purchased this debt, is not taken into account.

General government gross debt is a key metric in several important policy frameworks. For example, the European Union's Maastricht criteria and Excessive Debt Procedure apply to general government gross debt (sometimes referred to as Maastricht debt). Similarly, the US's debt ceiling applies to general government gross debt, specifically to public debt held by the public, which includes debt held by the Fed system.

Public sector debt consolidates general government and public corporations. Government debt held by the central bank is therefore not included in this measure, while any debts of the central bank vis-à-vis the private sector are included. The key question is therefore what the debts of the central bank are. The manuals are unanimous on this question. They define debts of any economic unit, including the general government and the central bank, as including currency and deposits. Currency consists of notes and coins, which are defined as constituting *liabilities* of the central bank. The central bank is defined as a public deposit-taking corporation, which in turn is defined as a financial corporation whose principal activity is financial intermediation, and which has *liabilities* in the form of deposits. As a result, every modern central bank financial statement shows both currency and reserve deposits as liabilities of the central bank.

Taking the UK as an example, public sector net debt represents the UK government's target measure for debt. The definition of the UK public sector comprises central government, local government, public corporations (excluding the Bank of England and public sector banks), the Bank of England, and public sector banks. PSND ex, the UK government's specific target measure, excludes public sector banks from this boundary. PSND ex therefore corresponds to general government gross debt (equal to Maastricht debt), plus the gross debt of public corporations that include both the Bank of England and its separately incorporated Asset Purchase Facility, but that exclude public sector banks, minus liquid financial assets, minus positions that are cancelled from PSND ex upon consolidation. The latter include both the Bank of England's and the Asset Purchase Facility's (APF) holdings of government debt.

The APF was created in the wake of the GFC in 2009, and has a separate balance sheet from the Bank of England. It is financed by loans of central bank reserves from the Bank of England (these loans are also cancelled from PSND ex upon consolidation), and uses these reserves to finance purchases of government debt securities (gilts), purchases of corporate bonds (since 2016), and loans under the Term Funding Scheme (since 2016).

Prior to the GFC the Bank of England generally made a negligible contribution to PSND ex, because (see UK Autumn Statement 2016⁸⁶) “the purchase of gilts from the private sector effectively extinguishes those liabilities (while they remain within the public sector), ... but replaces them with the liability relating to the creation of central bank reserves”. In other words, PSND ex treats CBM as a liability of the consolidated public sector. However, in recent years the APF has contributed to an increase in PSND ex, for three reasons (for details, see again UK Autumn Statement 2016). First, the CBM reserves issued to finance the purchase of gilts, and therefore the loan from the Bank of England to the APF, are recorded at the purchase price of the gilts, while the gilts themselves are recorded at their face value. Because many longer-dated gilts were originally issued at significantly higher interest rates than what prevailed at the time of their purchase, the purchase price exceeded the face value by a sizeable margin, leading to a net debt position on the APF balance sheet.⁸⁷ Second, the purchase of corporate bonds financed by the creation of central bank reserves leads to an increase in CBM that is classified as a liability, while they do not lead to an increase in liquid assets because the corporate bonds held by the APF are not considered liquid assets. Third, TFS lending financed by the creation of central bank reserves leads to an increase in CBM that is classified as a liability, while the loans are recorded as long-term loans and therefore not as liquid assets.

Alves, De Clerck and Gamboa-Arbelaez present and discuss the IMF’s new Public Sector Balance Sheet database (PSBS)⁸⁸, which like the UK’s PSND ex focuses on public sector net debt. The PSBS database is compiled using the conceptual framework of the IMF’s Government Finance Statistics Manual 2014. For all 38 countries where this is possible, it extends the perimeter of data coverage from the general government to the entire public sector.

⁸⁶ Office for National Statistics (2016), Autumn Statement – Supplementary Fiscal Aggregates 2016, available at <https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/publicsectorfinance/articles/autumnstatemnts supplementary fiscal aggregates/2016>.

⁸⁷ The net debt of the APF is reduced as a result of the interest it receives in relation to its holdings of gilts and corporate bonds. The impact of these interest payments is to accumulate cash in the APF which, as a liquid asset, reduces PSND ex. However, in recent years the Bank of England has been transferring the accumulated cash from the APF to HM Treasury which has helped reduce government financing, and so general government debt, but increased the APF debt.

⁸⁸ Alves, M., De Clerck, S. and Gamboa-Arbelaez, J. (2020), “Public Sector Balance Sheet Database: Overview and Guide for Compilers and Users”, IMF Working Papers, WP/20/130.

Due to their unique role in the economy, central banks are separately identified in the PSBS database, “recognizing the fact that their monetary liabilities ... are irredeemable ..., but are treated as liabilities by convention”. In other words, this new database continues the treatment of CBM as a debt of the consolidated public sector. This of course has implications for the analysis of public sector balance sheets in their paper, which emphasizes the evolution of public sector net worth in the wake of the GFC. Public sector net worth is affected by whether CBM is accounted for as a public sector liability.

6.2 Implications for Calculations of Government Debt Burdens

We have argued that from a legal perspective it would be more appropriate to account for CBM as a sui generis hybrid instrument that is closer in nature to equity. If policymakers wished to take this into account in the calculation of government debt burdens, the appropriate concept would be to use public sector debt (as in the UK PSND ex or the IMF’s PSBS) while treating CBM as a hybrid ‘social equity’ instrument, rather than using general government debt (as in the US debt ceiling or the EU Maastricht debt). Doing so would have important implications for headline national debt levels and national balance sheets. Specifically, at today’s debt levels, reported consolidated public sector debt burdens would be lower than under conventional treatments, while issuance of additional future CBM against purchases of government debt securities would reduce public sector net debt burdens. This would in turn affect the perception on the part of creditors of the creditworthiness of governments.

However, this needs to be qualified in two important ways, first by reference to the sustainability of CBM issuance, and second by reference to each economy’s specific macroeconomic circumstances.

Sustainability of CBM issuance: We return here to a key statement by Archer and Moser-Boehm, who argue that in addition to central bank accounting equity, “... also to be considered are banknotes on permanent issue, and the permanent component of commercial bank deposits at the central bank”, because these “act more like equity capital than debt obligations”, because “they ... are perpetual in character”.⁸⁹ These authors therefore arrive at a very similar conclusion to ours, on economic rather than legal grounds, but with the important proviso that, to be considered equity-like, CBM balances need to also have a permanent character. The reason is that any issuance of CBM that is explicitly temporary implies that sooner or later the issuance will be unwound, thereby returning the government debt securities to the market, and

⁸⁹ Archer, D. And Moser-Boehm, P. (2013), “Central Bank Finances”, BIS Working Papers, No. 71, p. 66 and 33.

thus reversing the effect of the original issuance on public sector debt. While this does not change our conclusions regarding the appropriate accounting for CBM, it does change the consequences of such accounting for fiscal sustainability analysis. Namely, if an incremental CBM issuance is likely to be temporary, the current methodology is not necessarily misleading for fiscal sustainability analysis, as long as it is applied to that temporary portion of CBM alone. In our view, this accounts for a key difference between QE and a retail CBDC, and we will return to this in the following two subsections.

Macroeconomic circumstances: As a central bank’s money issuance against government debt increases, there are in general two countervailing macroeconomic effects. The first is that, from some point onwards, further money issuance can become inflationary. The second is that increases in the stock of CBM, which under the conventional view might become a balance sheet concern if they were treated as liabilities, would under the view proposed in this paper in fact contribute to strengthening the balance sheet. This is true especially if there is a permanent increase in the demand for CBM, and relatedly if there is no intention on the part of the authorities to eventually unwind the CBM issuance.

The central bank of an economically fragile developing country may hit the point at which additional issuance causes inflation earlier than the point where the additional CBM has material balance sheet effects, as illustrated by high-profile instances of hyperinflation caused or aggravated by money issuances by treasuries and central banks.⁹⁰ The reason is typically that a large share of CBM in such economies consists of zero-interest cash, and that demand for cash is limited relative to the issuance needs of the central bank and ultimately the government. When an increasing quantity of cash meets a static quantity of goods, goods price inflation increases.

However, in the context of CBM issuance inflation is much less of concern, and balance sheet effects much more important, for a major reserve currency, and also for an economically strong developed economy without reserve currency status. The reason is not only that the strong institutions, economic strength and robust financial sector of such an economy are much more likely to be able to accommodate an increase in CBM. More importantly, in this case the majority of CBM issuance would likely not take the form of cash but of commercial bank

⁹⁰ See Meltzer, A. (1993), “Inflation and Money in Brazil“, in: Liviatan, N. (ed), *Proceedings of a Conference on Currency Substitution and Currency Boards*, The World Bank, 77; Kolodko, G. (1991), “Polish Hyperinflation and Stabilization, 1989-1990“, *Economic Journal on Eastern Europe And The Soviet Union*, 9; Bomberger, W. and Makinen, G. (1983), “The Hungarian Hyperinflation and Stabilization of 1945-1946“, *Journal of Political Economy*, **91(5)**, 801.

reserves or perhaps, in the future, of CBDC. . As long as CBM is issued as interest-paying reserves or as interest-paying retail CBDC, the adjustment to additional CBM issuance is therefore not through inflation as in the case of cash, but through adjustments in balance sheets and spreads (in the case of reserves) or through adjustments in balance sheets and in the interest rate on retail CBDC (in the case of CBDC). The foregoing is of course closely related to the discussion of the relevance of the seigniorage Laffer curve in Section 3.

The likely balance between costly inflationary and beneficial balance sheet effects can only be decided on a case-by-case basis, and implies significantly different treatment for emerging market economies with distressed national currencies versus developed economies.

6.3 Implications of QE

The majority of QE around the world has consisted of the purchase of government debt financed by the creation of new CBM in the form of reserves. We have argued that from a *legal* point of view the new CBM, as well as pre-existing CBM, should be accounted for as a hybrid ‘social equity’ instrument. However, we have also argued, in the previous subsection, that from a *fiscal sustainability* point of view, it matters whether the new CBM balances have a permanent character. The reason is that if the issuance is eventually unwound, the effect of the original issuance on consolidated public sector debt will be reversed, with fiscal sustainability, as judged by the public sector debt burden, returning to its original level.

It is therefore critical to understand the intended future trajectory of QE. In the UK case, Bank of England governor Andrew Bailey⁹¹ has commented on this in the context of “monetary financing”, the idea that recent central bank money issuances (through bond purchases or credit facilities) might represent a permanent expansion of the central bank balance sheet with the aim of funding deficit spending. He argues that the intention of QE was not the provision of financial support for public expenditure, but the lowering of borrowing costs and therefore the support of spending during a temporary economic downturn. The Bank of England’s Monetary Policy Committee therefore intends to remain in full control of how and when this expansion in its balance sheet is ultimately unwound, even if this might take some time. In such a scenario, there will be no long-run effect of QE on the quantity of CBM and of government debt held by the private sector. The *additional* reserves created under QE should therefore not have a material long-run effect on fiscal sustainability analysis.

⁹¹ Bailey, A. (2020), “Bank of England Is Not Doing ‘Monetary Financing’”, Financial Times, 5 April, available at <https://www.ft.com/content/3a33c7fe-75a6-11ea-95fe-fcd274e920ca>.

6.4 Implications of a Retail CBDC

A successfully introduced retail CBDC, unlike QE, would be widely demanded by households and firms. Their holdings would be permanent in character (similar to the permanence of cash holdings and a portion of commercial bank reserve holdings stressed by Archer and Moser-Boehm), and there would be no intention of an eventual unwinding of the issuance, unlike in the case of QE. This would have several lasting effects on the government's fiscal situation.

In terms of the government debt burden, in this case our legal arguments and the economic arguments of Archer and Moser-Boehm lead to the same conclusion. Namely, it would be appropriate to account for the additional CBDC as a hybrid 'social equity' instrument rather than a liability, thereby significantly reducing the reported debt burden. The CBDC issuance could therefore have a material effect on fiscal sustainability analysis, as long as it is material in size.

In terms of the government's budgetary situation, there are two possible effects. First, the convenience yield of CBDC would likely be high, similar to that of bank deposits. This implies interest savings for the consolidated public sector, because it would issue low-interest CBDC to retail holders while retiring (from public circulation and on to the central bank's balance sheet) high-interest government debt. Second, the default risk premium on government debt could decline. The reason is that a successful retail CBDC would replace, in a lasting fashion, a portion of the defaultable government debt held by the private sector with non-defaultable monetary instruments held by the private sector – see our extensive discussion in Section 3. The overall stock of defaultable instruments in the hands of the private sector would therefore decrease. Because investors are concerned with the default incentives of the sovereign borrower, which is increasing with the amount of debt outstanding, this reduces the perceived default risk, and therefore the interest cost of government debt. The fiscal savings from this effect could be substantial, but as argued in Section 3, this effect is highly nonlinear and country-specific. Here, too, the CBDC issuance should therefore have a material effect on fiscal sustainability analysis.

To summarize, when a central bank buys back a significant share of its outstanding government debt by issuing CBDC, this would replace high-interest and defaultable debt with low-interest and non-defaultable monetary instruments, and it would do so without the intention of an eventual unwinding of the issuance. The combination of a lower defaultable government debt-to-GDP ratio and lower interest cost gives the government more fiscal space, which can be used to lower distortionary taxes, to increase infrastructure spending, or to reduce debt even further.

6.5 Relationship to the Debate on the Optimal Size of Central Bank Balance Sheets

A recent literature and debate among central banks has pointed to a number of benefits and costs of large central bank balance sheets.

One key benefit that is frequently mentioned is that a floor system with a large central bank balance sheet is likely to be more effective at controlling market interest rates, and can reduce volatility in face of sharp changes in both the demand for short-term liquid assets and the supply of such assets from autonomous factors. Furthermore, compared to a corridor system with a much smaller central bank balance sheet, such a system affords greater flexibility to support further asset purchases and liquidity operations if this should be deemed necessary. In a key contribution to this debate, Greenwood, Hanson and Stein⁹² have argued that a plentiful supply of central bank liabilities, such as interest-bearing reserves or overnight reverse repurchase agreements (RRP), can reduce the economic incentives for private-sector intermediaries to engage in excessive amounts of maturity transformation, without compromising the ability of conventional monetary policy to focus on its traditional price stability mandate. They also argue that a second advantage of much larger central bank issuance of short-term liabilities would be interest savings, due to a significant money premium (convenience yield) at the front end of the yield curve.

Our contribution is distinct from this debate. First, our argument concerning the appropriate treatment of CBM in central bank and consolidated government accounts concerns CBM balances in general, rather than the CBM issuance that might be deemed necessary to achieve a certain central bank balance sheet size in light of recent events. Our argument is therefore not necessarily associated with current debates around optimal balance sheet size. Second, even if it is applied to those debates, our arguments are narrower, and their policy implications focus less on financial stability issues and more on fiscal issues. In fact, the only partial overlap with the arguments listed above concerns interest savings due to the convenience yield of central bank monetary liabilities. However, in our argument this arises principally in the case of a future retail CBDC, while Greenwood, Hanson and Stein are principally concerned with issuance of interest-bearing reserves and RRP to financial institutions, where convenience yields, and therefore interest savings per unit of CBM, are likely to be significantly smaller.

⁹² Greenwood, R., Hanson, S. and Stein, J. (2016), “The Federal Reserve’s Balance Sheet as a Financial Stability Tool”, Federal Reserve Bank of Kansas City’s 2016 Economic Policy Symposium in Jackson Hole.

The key potential costs of a larger central bank balance sheet that are mentioned in the current debate include the concern that an increased footprint of the central bank in financial markets might impair price discovery and market functioning, and the concern that with very large asset purchases the availability of suitable assets might become constrained. Another concern is that large-scale central bank purchases of government debt could blur the boundary between fiscal and monetary policy, thereby compromising central bank independence. However, this debate is currently being revisited in the wake of COVID-19, with even radical proposals like monetary financing of government spending, or “helicopter money“, being debated by leading economists.⁹³ Furthermore CBDC, which is currently being very actively debated, also implies a partial blurring of this boundary, because of its inevitable fiscal implications. Finally, any debate of fiscal policy that focuses on consolidated public sector debt rather than general government debt automatically takes into account the effects of the central bank balance sheet on the consolidated public sector balance sheet. The proper legal and accounting treatment of CBM on that balance sheet is where our paper makes its contribution.

7. Conclusions

This paper’s major claims are threefold. First, CBM cannot be characterised as a liability of the central bank because the central bank, in fiat money systems, is under no legal obligation to do anything other than recognise that it has indeed issued the CBM, so that the holder of CBM cannot ask for repayment of CBM in anything other than CBM. Secondly, the legal and economic framework of modern central banking imposes heavy barriers to characterising CBM as shareholder equity in, or assets of, the issuing central bank. Thirdly, when comparing CBM to other major types of financial instruments, such as corporate equity, commercial bank money, government debt and corporate debt, it emerges as a form of *sui generis* hybrid financial instrument. We describe this as ‘social equity’, in recognition of the critical economic and social functions performed by CBM, via monetary policy, in providing the payments system and contributing to economic stability.

These three claims have critical consequences for the prevailing economic and accounting treatment of CBM. It is clear that removing the label liability from CBM requires a re-interpretation (downwards) of the consolidated public sector’s debt burden, although the

⁹³ Gali, J. (2020), “Helicopter Money: The Time Is Now“, Vox EU, available at <https://voxeu.org/article/helicopter-money-time-now>; Gürkaynak, R. and Lucas, D. (2020), “Funding Pandemic Relief: Monetise Now“, VoxEU, available at <https://voxeu.org/article/funding-pandemic-relief-monetise-now>.

removal of temporary CBM issuances from that debt burden is contestable. If, and of course this is a big if, investors were to incorporate this into their assessments, it would lower the projected cost of obtaining finance on sovereign debt markets. In a world where CBM includes CBDC, those fiscal impacts may be stronger, because CBDC as a retail payment medium would likely pay an especially low interest rate. Additionally, in a world where CBM is understood as ‘social equity’, the broader political legitimacy of central bank operations may be positively affected, as the critical role of CBM in facilitating commercial exchanges and securing stable economic conditions would be reflected in its formal institutional treatment.

Finally, there are some methodological implications for economic theory going forward. We have set out in some detail how important macroeconomic policy debates presuppose accounting concepts that, in turn, rest on legal predicates. We have demonstrated how conventional wisdom in both accounting and economics characterises CBM in a way that is not reconcilable with the legal foundations of CBM today. This calls for a more direct line of communication between law, accounting, and economics, and for a broadening of macroeconomists’ methodological horizons. In the 19th and early 20th centuries, lawyers rather than economists produced many of the major treatments of ‘money’. Through the 20th century, lawyers seem to have gradually ceded their competence in speaking about money to economists. The establishment of the neo-classical school have encouraged this direction of travel.⁹⁴ In our view, this direction would benefit from a significant modification. The proper characterisation of CBM, and indeed of all forms of money, always requires legal input, and it is only through balanced interdisciplinary efforts that a sensible position on the nature of central bank balance sheets will be reached.

⁹⁴ See Rahmatian, A. (2018), “Money as a Legally Enforceable Debt”, *European Business Law Review*, **29**(2), p. 205-236.

	Corporate Equity	Central Bank Money (CBM)	Commercial Bank Money (ComBM)	Government Debt	Corporate Debt
A. Rights of the Holder					
Power to Influence/Control the Issuer	Yes (privately)	Yes (financially and socially)	No	No	No
Nature of the Claim	Residual (privately)	Residual (financially and socially)	Fixed	Fixed	Fixed
Defaultability	No	No	Yes	Yes	Yes
B. Nature of Settlement					
Settlement Term	None	None	Finite	Finite	Finite
Settlement Item	None	None	CBM	CBM	CBM or ComBM
C. Financial Aspects					
Valuation	Market	Fixed	Semi-Fixed	Semi-Fixed	Semi-Fixed
Interest	No	Possibly	Possibly	Yes	Yes
D. Practical Issues					
Transferability	Medium	Easy	Easy	Medium	Hard

Financial Classification Table