

## Money, Finance and the Role of the State

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The purpose of this chapter is to reflect on issues of monetary, financial, economic and social stability and the role of the state. The discussion is informed by the experience of the recent crisis and ensuing debates over how to make the system more robust. In particular we consider the role of the state in supporting banking, and proposals for a central bank monopoly of money, including proposals for central bank digital currencies. We then consider issues surrounding the form and function of monetary policy; the independence of central banks; the role of regulation in promoting financial stability against a background of financial innovation; and finally the role of central banks in promoting social stability, including addressing climate change.

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## Money, finance and the state: potential routes for further development of research

### Introduction

The financial crisis and its fallout have had a dramatic impact on thinking about money, banks and monetary policy, i.e. about the relationship between money, finance and the state. Before then, during the ‘great moderation’ period, there had been remarkable complacency over mainstream macroeconomic theory which disregarded money and finance and supported the ‘new consensus’ approach to monetary policy. But the crisis changed all that. There is now debate about the nature and role of money and proposals for new forms of money. Some mainstream macroeconomic theory now incorporates the behaviour of banks, something which had previously been absent. Further there has been a major rethinking of the role of central banks, with attention shifting from inflation targeting to financial stability and further to economic stability and social stability.

Non-mainstream theory was better equipped to address the crisis, having a theory – Minsky’s (1986) financial instability hypothesis - which explained it, with a central role for banks. In addition there is a substantial non-mainstream, or political economy, literature on the social nature of money and on its real economic role, which contrasts with the traditional mainstream view of money as a veil (Ingham 2004). Long before the crisis, non-mainstream theory was advocating a much broader role for monetary policy than inflation targeting, not only emphasising the central bank’s duty to promote financial stability, but also the scope for central banks to provide the kind of fiscal finance generally ruled out by central bank independence (Dow 2017).

But the subject matter does not stand still. Not only have new ideas been emerging but the financial sector itself has been evolving in ways which raise new challenges. The purpose here is to focus on issues which pose particular challenges for future research on money, finance and the state. While reference will be made, as appropriate, to mainstream thinking, the emphasis will be on the political economy literature and where it might go from here.

We start with the big issue raised by the banking crisis of whether the state should provide less support for banks, enforcing market discipline, or more to promote trust in bank deposits as the main form of money. We pursue further, in the following section, the nature and role of money and the role of the state with respect to money and banking. The emergence of private cryptocurrencies has encouraged central banks to consider issuing their own digital currencies. We explore the issues this raises, especially both for the future of banking and for financial inclusion. At the same time the rise of shadow banking has made it harder for the state to promote financial stability; we consider the issues raised in the fourth section.

Then, given the return by central banks, *de facto* if not *de jure*, to concern with economic stability as well as monetary stability, we consider issues posed by the potential for complementarity between fiscal and monetary policy. Particular attention is paid to the contribution from ideas associated with what has been called Modern Monetary Theory, and to the implications for central bank independence. Finally, along with the recognition of the real economic impact of central banking has emerged a growing awareness of its social and environmental role. In this final set of topics we consider how money and finance and the state might cooperate to promote social and environmental goals.

## **Lender-of-last-resort facility and ‘too big to fail’**

Within an economy, money is whichever asset is generally accepted in final settlement of contracts (Davidson 1972). In modern economies, money has taken the form primarily of bank deposits denominated in the national currency; contracts are normally settled by the payee’s claim on the bank, which is settled through the payment-clearing mechanism. The system thus relies on confidence that banks can honour their liabilities. But the crisis seriously punctured that confidence. There were runs on banks (like Northern Rock in the UK) by customers concerned about loss of deposits, while nervousness among banks themselves about lending to each other caused the interbank market to freeze for a time. Yet the reliability of money is crucial to the functioning of a commercial society built on contracts. Central banks thus intervened to inject liquidity into financial markets. But the asset price falls caused by the banking crisis meant that an illiquidity problem was turning into an insolvency problem. Governments therefore intervened by injecting capital into failing banks, at huge fiscal cost.

The predominant reaction, supported by mainstream theory, was that banks had taken on undue risk because of their confidence that the state would not allow them to fail: moral hazard. The solution therefore had to include a clear signal that in future banks should not expect such support. The emphasis was then on setting up procedures for dealing with bank failure in the expectation that market discipline would limit excessive risk-taking. The central bank’s lender-of-last-resort facility, if preserved at all, was to be limited to ring-fenced retail banking.<sup>1</sup>

But the political economy reaction was very different. There is common ground in arguing that the lender-of-last-resort facility should apply only to retail banking as the locus of money. But the facility itself is regarded in a much more positive light, as part of a system of central bank support for retail banking which should prevent failures. This system includes regulation to restrict exposure of retail banking to systemic risk, enforced through monitoring and supervision. It represents a social contract between central banks and retail banks, built up in many cases over centuries, whereby banks accept portfolio restrictions in exchange for access to the lender-of-last-resort facility and the benefits of the high redeposit ratio which accompanies deposits being used as money.

This alternative approach to the role of the state is built on a different theory of money and finance based on the prevalence of fundamental uncertainty. If uncertainty prevents any identification of ‘true’ risk then market pricing is inevitably conventional. Therefore market ‘discipline’ cannot prevent undue risk-taking and, ultimately, crises. While there may well have been an element of moral hazard, this would have meant that banks had actually recognised the unsustainability of their portfolios. In fact banks had undue confidence in their own pricing of risk, to the extent that some bank CEOs themselves were over-extended with their personal investments when the crisis struck. Given the systemic nature of the crisis, with the extent of interdependent portfolios greatly enhanced by the prevalence of new opaque structured products, any preventative (or mitigative) action required a macro view being taken. We explore this crucial role for the state further below when we consider financial stability more generally. But first we consider the issues raised by the emergence of cryptocurrencies.

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<sup>1</sup> The deregulation of banks since the 1970s had encouraged the consolidation of retail banking with much riskier investment banking.

## **Financial innovation and central bank digital currencies**

The development of cryptographic techniques, combined with blockchain technology, has underpinned the emergence of new assets and asset-transfer mechanisms. The aim has been to rival state-issued money and conventional payments mechanisms. Indeed the first mover, Bitcoin, was explicitly pitched in Hayekian libertarian terms (Nakamoto 2008). Since then however the sector has consolidated, dominated by large operations; it is the tech giants such as Facebook which are now leading the way in seeking to provide an alternative, private-sector money. The earlier cryptocurrencies did not in fact meet the requirements for money: stable value relative to other assets and ease of exchange. Speculation meant that values were particularly unstable, and exchange was generally cumbersome. But proposals now are for cryptocurrencies in the form of stablecoins which are fully backed by state currency (as in a currency board system) and which operate on a global scale which would make payments relatively easy.

There had already been consideration within central banks about issuing their own digital currencies because of the loss of seignorage due to reduced cash usage. Doubts about the usefulness to central banks of blockchain technology had held the process back, although digital currencies need not use blockchains. However the proposals for private sector stablecoins have pushed the issue up the agenda, with or without blockchain. Central banks are concerned that there is scope for a large-scale private money to compete with national currencies, subvert national monetary policies and risk facilitating fraud and causing financial instability.

Replacing cash with digital currency is not just a technical matter. It would profoundly affect retail banking in a way which finds support particularly in some mainstream analyses of the banking crisis. Currently banks have the ability to create credit as much as they do because their liabilities form the major part of society's money. If the crisis was due to excessive bank credit creation, then the solution would appear to be to curtail banks' ability to create credit. This could be achieved by providing digital accounts at the central bank for transactions balances and payments.<sup>2</sup> Then banks would become pure financial intermediaries rather than credit creators. Rather than trust in money relying on banks' prudence, it would be assured by a state monopoly (see e.g. Clarke 2018).

But it can be argued that the capacity of banks to create credit has been a beneficial institutional development which has helped to spur economic development. The key distinction is between bank credit creation which finances investment ahead of the generation of the savings to fund it, on the one hand, and financial intermediation which requires prior savings, on the other. Operated effectively, the traditional provision by central banks of liquidity support, regulation, monitoring and supervision should ensure trust in bank deposits as money, and thus the capacity to create credit. Even though financial transactions are increasingly being conducted in digital form, settlement still occurs predominantly through bank deposits, interbank settlements and ultimately digital bank reserves with the central bank.

If final settlement occurred instead directly between accounts with the central bank, then banks would lose the capacity to create credit. According to some proposals, new credit would instead

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<sup>2</sup> Some suggest that these accounts could be administered by private sector banks.

be directed by the central bank through the banking system, while others see it intermediated on the basis of new money creation. Indeed many proposals see it as an advantage of a central bank digital currency that its supply can be controlled. Yet again this presumes a mainstream view of money as being held for transactions purposes only. Once we allow for changes in liquidity preference, which tend to be discrete and unpredictable in response to a jump in uncertainty, demand for money cannot confidently be forecast, removing the rationale for control of its supply. In any case, the argument presumes that the state can actually monopolise money.

This discussion has presumed a sharp divide between banking and non-banking, but this too is an area of significant change which poses challenges for future research. Money is the most liquid asset, but when risk perception is low in rising markets other assets can become more liquid, along with confidence that their value will be upheld (i.e. that they will continue to be liquid). This has been the case for the liabilities of financial institutions outside the regulated banking sector such that non-bank financial intermediaries have been acting as if they were banks: major suppliers of credit and transformers of maturity. If nothing else these institutions are adept at supplying liquidity as required, as long as markets are favourable, subverting any attempts by central banks to control the supply of credit and thus money. Such a response can be expected to be fuelled if retail bank deposits are replaced by central bank digital currencies, subverting any thought of the state enforcing a monopoly over money (see further Dow 2019).

In developing countries informal finance has been particularly important for meeting financial needs unmet by the formal banking system, most notably in the form of microcredit, but also microdeposits and microinsurance. Digital payments systems, often using mobile phone networks, have also been helping those without bank accounts to function more effectively in commercial society. There is considerable attention to promoting financial inclusion as a development strategy, with central bank digital currencies potentially playing a significant part. But Gabor and Brooks (2017) argue that financial inclusion, and thus financialisation, at the same time serves to extend the profit potential of the formal banking system. Further Settle (2020) argues that financial inclusion can pose risks, particularly in developing countries, for those who become reliant on formal banks and thus national interest rates and volatile national currencies. She documents how the unbanked (in Pakistan) have developed their own, more effective, means of mitigating risk.

### **Promoting financial stability**

The proliferation of money assets and finance outside the formal banking system poses huge problems for the state in its efforts to promote financial stability. These developments were spurred on by financial liberalisation and attendant financialisation which in turn had been validated by the pro-market stance of mainstream finance theory. There had been confidence that competitive markets would produce socially-optimal outcomes; sophisticated, high-tech arbitrage activity would ensure that deviations from equilibrium would be corrected. New Keynesian theory suggested that the crisis was due to impediments to these market forces, whose removal would restore financial stability. But Minsky's (1986) financial instability hypothesis rather showed financial instability to be systemic, with stability actually creating the conditions for instability. Stability creates overconfidence in risk assessment (in spite of uncertainty), encouraging increasingly leveraged borrowing fuelling rising asset prices. The

fragility so created means that any small reversal in expectations which prompts asset sales sets off a reversal of the whole process.

Given that this instability is systemic, it is up to the state to intervene to moderate it. The first step is to ensure the safety of the core of the system: retail banks and their liabilities. Moves have been made in this direction, with macroprudential policies governing portfolio composition, ring-fencing retail banking from investment banking, etc. Regulated banks continue to be core in that payments are still predominantly routed through them and non-banks hold reserves with them. But two particular factors cause concern. First, the source of instability is increasingly outside this core, with more credit being created by lightly-regulated financial institutions – shadow banks. While non-bank financial intermediaries used not to engage in maturity transformation, the thirst for both credit and liquidity has allowed a greater degree of maturity transformation which exposes these institutions to particular risk. Second, the financial sector, regulated and unregulated, is now so interconnected, often in very opaque ways which conceal risks, that the scope for instability is greatly enhanced. In particular, both types of bank operate in the unregulated market for repos (short-term borrowing, usually against sovereign debt), where the same collateral effectively backs borrowing many times over (Gabor and Vestergaard 2016).

The appropriate policy response seems to be two-fold. First, bring as many institutions as possible inside the regulatory net in order to limit scope for excesses. Since such efforts encourage further financial innovation to avoid regulatory restrictions, regulation needs to be updated continually to address new threats to stability. Second, central banks need to trade directly in key markets as dealer-of-last-resort in order to prevent these markets from collapsing (Mehrling 2011).

### **Economic stability and monetary stability**

While monetary stability has been the primary goal of central banks in recent decades, often expressed in the form of an inflation target pursued by an independent central bank, this has been an aberration in the history of central banking (see e.g. Goodhart 2011). Traditionally central banks have also been concerned with financial stability and economic stability. The crisis meant that these two goals took priority. Monetary stability (stable and low inflation) requires that the dominant money assets (bank deposits) are safe, i.e. meet the requirement of money. It also requires that the economy does not tip into recession due to collapsing asset values. So central banks injected liquidity into the financial system and, initially, governments injected more expenditure into the economy. While lip-service had to be paid to monetary stability (because of formal mandates), it was not the primary concern. Indeed, while some were concerned that quantitative easing programmes addressed to liquidity shortage would be inflationary, this has not transpired. It is evident that, even over several years, a massive injection of liquidity into the banking system has not caused inflation with respect to consumer prices. Rather it has caused inflation in asset prices as the extra liquidity found its way more into financial asset purchases than into business and household credit. This in turn has contributed to the increased skewing of income and wealth distribution towards the owners of financial assets.

The prior question is whether targeting inflation was ever actually within the power of the central bank, particularly operating independently of government as is now the normal formal requirement. The monetarist argument that central banks can orchestrate aggregate expenditure relative to the economy's productive capacity by (directly or indirectly) controlling the money supply has been challenged theoretically - as well as empirically in light of the experience of quantitative easing. It is now widely accepted that the central bank cannot control the money supply, i.e. it is endogenous to some degree (even if only in a limited sense, as the outcome of interest-rate policy, or through the money multiplier). It is a key feature of a political economy approach that the money supply is more fundamentally endogenous, as the outcome of bank credit creation.<sup>3</sup> Indeed the emergence of money itself is endogenous to the evolution of society.<sup>4</sup>

Second, the connection between the money supply, or even interest rates, and expenditure is loosened by changes in the expectations which govern expenditure and borrowing decisions and by fluctuations in liquidity preference as confidence in those expectations fluctuates. Both factors are profoundly affected by financial instability and by economic instability. In terms of causal priority therefore, the logical priority for pursuing monetary stability is to ensure financial stability and economic stability.

Whatever the formal arrangements, it has been evident in the wake of the crisis that central banks need to cooperate and coordinate with governments in order for each to be more effective. Monetarist theory had promoted the primacy of monetary policy over fiscal policy to the extent that the latter was severely limited in terms of ceilings on fiscal deficit/GDP ratios and debt/GDP ratios (as in the Eurozone for example). Now that active fiscal policy is back on the agenda, issues arise as to how the relationship between fiscal and monetary policy should be handled. Particular thought is being put into establishing fiscal rules which give much more latitude to fiscal policy than the type of strictures imposed on the Eurozone by the Maastricht Treaty. Just as monetary policy could be more effectively attuned to the business cycle, e.g. by pro-cyclical capital requirements, so any rules for fiscal policy could promote more expenditure during economic contractions than expansions.

Before the ascendancy of monetarist theory and policy, it was uncontroversial for government deficits to be financed by borrowing directly from the central bank (money creation), as well as by borrowing on the bond market. Support for a return to this practice is growing, challenging central bank independence in the form of prohibition on government finance. It is agreed that net fiscal expansion should only be pursued according to the availability of unemployed resources or else it would be inflationary. The potential for borrowing is not limitless either, but is constrained by capacity to finance the debt-service burden itself and its implications in turn for the cost of new debt.

The case for money-financed expenditure has been made most prominently by supporters of Modern Monetary Theory (MMT), for whom tying expenditure to a job guarantee to ensure

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<sup>3</sup> While McLeay, Radia and Thomas (2014) support a focus on credit creation as the mechanism for money supply changes, they nevertheless conclude that the money supply can be controlled indirectly through interest-rate control.

<sup>4</sup> See Dow (forthcoming) for a more full discussion of endogenous money from a variety of perspectives.

full employment is central.<sup>5</sup> Fiscal expansion in times of economic recession, to ensure full employment, is a classic Keynesian policy. But the MMT case for money-financed expenditure is not uncontroversial because of the monetary theory which underpins it. MMT builds on a state theory of money whereby money is defined as whatever is acceptable for paying taxes. While (other) Post Keynesians share a focus on the role of the state in the development of monetary systems, it is the acceptability in the final settlement of *all* contracts which is taken to identify money (Davidson 1972). Further, there is a spectrum of assets whose liquidity changes with market conditions and financial innovation, and according to expectations of asset prices. As we have seen particularly with the growth of shadow banking, and the dramatic change during the crisis in what assets were regarded as liquid, the stock of what society regards as money is beyond state control. Changes in liquidity preference as confidence in expectations changes mean that demand for money itself is not tied to private sector expenditure plans. This does not invalidate the argument for money-financed fiscal expansion in time of recession, but rather means that the state cannot enforce a monopoly of what in practice is regarded as money, or use that to steer aggregate demand. Private-sector cryptocurrencies are a direct threat to state money, but, as we argued above, central bank digital currencies are not the answer either.

### **Social and environmental stability**

New challenges are posed for central banks by what is now seen by many to be a need for them to attend also to social and environmental stability.<sup>6</sup> Quite apart from the (significant) implications of instability in either sphere for the three more conventional goals, there is a growing sense that public institutions need to address issues of social justice and the survival of the planet. At the same time non-mainstream theorists make the case that, whether it is admitted or not, no economic theory is value free.<sup>7</sup> Far from providing positive, technical advice for politicians to add their normative judgements, economists inevitably incorporate their own, conventional, judgments, even if these are to exclude consideration of questions relating to income distribution and climate change. The recognition of the real social effects of monetary policy justifies an abandonment of the principle of central bank independence from government (see further Dow 2013 and 2017).

It has always been the case that money's nature is social and that monetary policy has social consequences, even while mainstream theory treated money as a veil. As far as social stability is concerned, the issues are multi-faceted and are connected with money, finance and the state in different ways. The most direct connection was made between monetary policy and worsening trends in income and wealth distribution, something directly discussed by Bank of England Governor Carney (2014). The top of the income and wealth distribution consists primarily of major asset-holders who have gained from the central bank policy of quantitative easing. Rather than filtering through to easier credit conditions for businesses and households,

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<sup>5</sup> See issue 89 of the *Real-World Economics Review*, 'Modern monetary theory and its critics', 3 October 2019, for a sample of different positions on MMT.

<sup>6</sup> Chick (2018) identified these as two of the challenges now facing economic theory more generally.

<sup>7</sup> See Peil and van Staveren (eds) (2009) for a range of views.

the liquidity has served primarily to fuel further expansion of the financial sector and increases on asset prices. So the policy has failed also with respect to economic stability and, given the resumption of growth in the financial sector fuelled by quantitative easing, financial stability.

In the meantime, not only had mainstream finance theory indicated that free competitive operation of financial markets would ensure optimal social-welfare outcomes, but that this would include financial flows equalising returns across space, in different types of economy. Yet, just as the crisis was a refutation of the first, so are persistent structural disparities across space a refutation of the second. Dymski and Kaltenbrunner (forthcoming) argue that analysis of the role of banking and finance in aggravating these disparities needs to highlight the role of disparities in socio-economic power between spatial areas, and their irreversible consequences. Again we conclude that market liberalisation cannot be expected to promote social stability.

In the interests of social stability (as well as improved national economic performance) central banks are well-placed to take the macro view of the financial structure within the relevant nation. The social nature of money and the granting of credit is particularly evident in the case of mutual, cooperative financial institutions, which in general proved to be particularly robust during the crisis. The state can promote and support such institutions to serve peripheral areas and populations which are not well-served by conventional commercial banking. It can set up development banks in order to intervene directly in particular areas and sectors. And it can direct retail banks to target credit at particular areas and sectors as part of the social contract between them. Turner (2012) argues that such measures should be integrated into macroprudential controls, attending to the composition as well as the volume of credit.

Further, nation states can cooperate in the international institutions such as the IMF and World Bank in order to reduce disparities in credit and liquidity conditions in peripheral countries (see e.g. Davidson 1992-93). In the meantime, policy has been designed to address the extent to which a population is unbanked, something which is particularly an issue for developing countries: the financial inclusion agenda. But we recall Settle's (2020) argument outlined above that the unbanked may well have protected their interests more effectively by pursuing alternative strategies to seeking banking services. There may be a role for the state here too, in supporting some forms of informal finance.

Finally social justice issues arise also from climate change, given that much of the cost of the climate crisis will fall on low-income communities which are ill-equipped to protect themselves, requiring an international response, not least in provision of adequate credit to finance mitigation efforts. But central banks have a particular responsibility in considering the way in which financial markets deal with climate change. Mainstream finance theory had posited full rationality, taking account of full available information, in financial markets. But, in the face of ample evidence, climate change has been absent until recently from valuations of projects, companies and governments' vulnerability to climate change costs. It has mainly been up to central banks to take the lead in pointing out the urgent need to price climate risk (see e.g. Carney 2019). This applies to current risks, but also to the long-term costs of a strategy to mitigate climate risks in the future, all in the face of short-termism on the part of markets and the state.

Both sets of issues have taken on general political significance as well as more direct pressures put on companies by shareholders and customers. There has thus been a response in the form

of some shifting in corporate culture. In particular there is a growing focus on Environmental, Social and Governance (ESG) criteria by which investors can judge corporate activity, and on efforts to promote ESG-compliant activity and products. Much of this is now mapped out regularly by the *Financial Times* Moral Money initiative.<sup>8</sup>

## Conclusion

We have touched here on some of the many issues regarding money, finance and the state which have been thrown up by the financial crisis and which require a theoretical response. At the same time the way in which financial institutions and markets have been evolving and growing in scale poses particular challenges for policy – as well as for developing theory attuned to the modern context. Given the complexity of the financial sector and its interaction with economic activity there is particular force in the political economy argument for a plurality of theoretical approaches. There is also force in the argument for policy plurality whereby no one strategy (such as a central bank monopoly on money, or regulation alone) can be effective; the open-system context rather requires a ‘belt-and-braces’ approach which, in a closed system, would be over-determined. Such an approach to theory and policy intrinsically invites controversy.

We have explored a series of controversial issues calling out for further research: the proper relationship between a central bank and the banks; the emergence of cryptocurrencies and the implications of central banks’ interest in creating their own digital currencies; the responsibility of central banks with respect to financial stability and how that can be promoted in a modern financial system; the responsibility of central banks to use their influence on the real economy in cooperation with governments’ fiscal policy, and the implications for central bank independence; the responsibility of central banks to engage with efforts to promote social and environmental stability.

The change in context for theorising has been particularly dramatic in recent years, requiring careful consideration of how best to develop theory. But this is a reminder that economic systems always evolve and that theory needs to adapt accordingly.

## References

Carney, M. 2014. *Inclusive Capitalism: Creating a Sense of the Systemic*, paper presented at the Conference on Inclusive Capitalism, London, 27 May.

Carney, M (2019) ‘Remarks given during the UN Secretary General’s Climate Action Summit’, available at <https://www.bankofengland.co.uk/speech/2019/mark-carney-remarks-at-united-nations-climate-action-summit-2019>, accessed 20 November 2019.

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<sup>8</sup> <https://www.ft.com/moral-money>

Chick, V (2018) 'The relevance of *The General Theory* at 80: economic change and economic theory', in S Dow, J Jespersen and G Tily (eds), *The General Theory and Keynes for the 21st Century*. Cheltenham: Edward Elgar.

Clarke, D (2018) *The Future of Cash*. London: Positive Money.

Davidson, P (1972) *Money and the Real World*. London: Macmillan.

Davidson, P (1992-93) 'Reforming the world's money', *Journal of Post Keynesian Economics*, 15(2): 153-79.

Dow, S C (2013) 'The real (social?) experience of monetary policy', in J Pixley and G C Harcourt (eds.), *Financial Crises and the Nature of Capitalist Money: Mutual Developments from the Work of Geoffrey Ingham*. London, Palgrave Macmillan, pp. 178–95.

Dow, S C (2017) 'Central Banking in the 21<sup>st</sup> Century', *Cambridge Journal of Economics*, 41 (6): 1539-57.

Dow, S C (2019) 'Monetary Reform, Central Banks and Digital Currencies', *International Journal of Political Economy*, 48 (2): 153-73.

Dow, S C (forthcoming) 'Endogenous Money and Ideas for Monetary Reform', *European Journal of Economics and Economic Policies: Intervention*.

Dymski, G and A Kaltenbrunner (forthcoming) 'Space in Post-Keynesian monetary economics: An exploration of the literature', in B Bonizzi, A Kaltenbrunner and R Ramos (eds), *Emerging Economies and the Global Financial System: Post-Keynesian Analysis*. London: Routledge.

Gabor, D and J Vestergaard (2016) 'Towards a Theory of Shadow Money', UWE and DIIS mimeo,

[https://ineteconomics.org/uploads/papers/Towards\\_Theory\\_Shadow\\_Money\\_GV\\_INET.pdf](https://ineteconomics.org/uploads/papers/Towards_Theory_Shadow_Money_GV_INET.pdf)

Goodhart, C A E (2011) 'The changing role of central banks', *Financial History Review*, 18 (2): 135–54.

Ingham, G (2004) *The Nature of Money*. Cambridge: Polity Press.

McLeay, M, A Radia and R Thomas (2014) 'Money creation in the modern economy', *Bank of England Quarterly Bulletin*, Q1: 1–14.

Mehrling, P (2011) *The New Lombard Street, How the Fed became the Dealer of Last Resort*. Princeton, NJ: Princeton University Press

Minsky, H P (1986) *Stabilizing an unstable economy*. New Haven: Yale University Press.

Nakamoto, S (2008) 'Bitcoin: A Peer-to-Peer Electronic Cash System'. Mimeo.

Peil, J and I van Staveren (eds) (2009) *Handbook of Economics and Ethics*. Cheltenham: Edward Elgar.

Turner, A (2012) 'Credit creation and social optimality', *International Review of Financial Analysis*, 25: 142-53.