David Andolfatto on

Money and Banking

Introduction

David Andolfatto has constructed a model to attempt to determine whether the ability of banks to 'create money' when they issue loans gives bank lending a greater impact on aggregate demand than other forms of leverage.[1] His conclusion is that in general it does not. I believe his model is wrongly specified to determine this question – it essentially pre-decides the question by its structure.

David makes money 'special' by claiming that banks have 'trust' that individual agents do not have, but he makes this such an insubstantial property that he can subsequently deny the 'specialness' on the basis of the real-world existence of non-bank finance. But the nature of money, and thus of banks that create it, relies on much more than trust, and this makes it so important in a modern economy that money movements must be modelled in all significant transactions, not just some of them.

David uses an overlapping generations (OLG) model in which there are two cohorts, 'young' and 'old', in each generation. Consumption only contributes to utility when old. Within each cohort are 'workers' (savers) and 'investors' (borrowers). Initial assumptions are that 'young investors' borrow 'young labour' with which to construct capital goods which produce a future output to be divided between investor and creditor (when both are 'old'). Young labour is paid by young investors with private IOUs representing direct claims against future production. Savers and borrowers are matched in a market for 'loanable funds'.

An additional assumption is the existence of a fixed supply of nominal interest-bearing government debt whose interest is financed through taxation. This debt is held on the asset side of banks' balance sheets and banks issue matching liabilities that David identifies as 'money'. This money is distributed to the initial old in the form of a social security payment. Young

[1] David's paper is in pdf form at http://www.sfu.ca/~dandolfa/Tobin.pdf

workers now have a choice of providing labour to the old within the same generation in exchange for money which they can spend on goods in the next period, or as before, in exchange for private debt which they can exchange for real goods they themselves are 'old'. Nominal interest on government debt is determined by a Taylor rule.

A credit friction is now imposed on the market for loanable funds, such that there is a limit on how much funding 'investors' can obtain. If banks can hold assets other than government debt, and bank liabilities (bank 'money') are more credible than private liabilities, then at the right price investors will be willing to exchange their own liabilities for bank liabilities. In the presence of this friction the existence of bank money has the capacity to stimulate economic activity (in the form of investors' output) by increasing the willingness of workers to provide their labour to investors. The extent to which banks are willing to exchange liabilities now determines the level of activity. When this willingness increases David claims that there is a decline in the demand for real money balances through a portfolio substitution effect. This leads to a fall in the price level. If it seems counter-intuitive that an increase in the quantity of bank money always leads to a fall in the price level, we will show later where the error lies.

'Special' Money, Banking and Capitalism

In various aspects the model fails to describe an actually-existing monetary economy. First, David fails to include relevant empirical regularities by, for example, centralising the banking process, allowing taxes to be paid out of the total income of 'savers' (rather than only that part of their income that is received in the form of money), and allowing important transactions to be essentially carried out by barter. He thus fails to characterise the most important features that make money 'special'. Secondly, the model leaves out capitalism. In the model the 'investors' do not, as capitalists do, acquire labour to make a monetary profit from their production, but instead simply consume the residual of their own output. The importance of this is that when expectations of output do not match realised output the penalty falls on the real consumption of investors, not on their financial flows. As a consequence, with a centralised banking system and with the 'old' having no outlet for their money holdings (whether in the form of 'government money' or 'bank money') other than the purchase of investors' output, there is no possibility of bubble formation or of bank loan default. The macroeconomic role of money and banking is in fact ruled out *a priori*. Thirdly, he does not account for true uncertainty and how the existence

of money allows this to be countered by liquidity preference.

For a central banker, David's explanations of why in his model banks are 'trusted' relative to individual coupon issuers is strangely attenuated. He has nothing to say about accounting rules for bad loans, government regulatory supervision or central bank oversight and support. There is simply a footnote to the effect that 'in reality bank money is redeemable for reserves', with no further reference to the wide-ranging implications of this admission. In a modern monetary economy in which government taxes must be paid with government money, and with multiple competing banks who use government money to settle payments made with their own deposits, bank money is effectively indistinguishable from government money for most purchasers of real goods. The ubiquity of demand for this 'combined' money in order to pay taxes and to repay bank loans, along with its backing from the state through Lender of Last Resort (LLR) facilities and bank deposit insurance, makes it the unrivalled medium of exchange. No other liability can match it as a means of access to the market of real goods. As a consequence, virtually all *other* liabilities issued are purely financial liabilities – they do not promise real goods in the future, but a sum of bank money. That sum of money can only have originated from government issue or a bank loan. Thus, the issue of non-bank liabilities is dependent, piggy-backed even, on the pre-existence of bank lending. As a consequence only bank lending can add directly to aggregate demand.

To illustrate this, let us consider the issue of mortgage securitisation. Bank 1 makes a loan to A, who purchases a property from seller B, incurring a debt and an interest obligation. Bank 1 wishes to bring forward its profit from the loan, thus accessing one way among several of acquiring additional liquidity, or perhaps to pass on the risk of the debt, and so exchanges title to the debt and its future interest flow to one or more investors, in exchange for bank money. (Alternatively, the purchaser is another bank.) These investors have two options as to how they purchase mortgage securities: either they have money they have saved (not spent on consumption); or they acquire a bank loan. Clearly the first option does not have any impact on the total supply of purchasing power, and so has no direct impact on aggregate demand. But what about the second option. Don't bank loans create money? The answer is that they can do, but not in this case.[2] Since the securities are being purchased from a bank with bank money,

[2] Banks can create money despite the constraints placed on them by the need to settle deposit transfers with

Bank 1 and Bank 2 must settle the transaction directly in government money. Along with the deposit transfer from Bank 3 to the purchasing agent there is a transfer of pre-existing government money reserves from Bank 2 to Bank 1, with no net increase in purchasing power, and so no direct impact on aggregate demand. Note that this holds even if a non-bank purchaser of these securities then sells them on to another agent who in turn uses bank leverage to purchase them. The first agent's loan becomes due, and the repayment must involve a transfer of reserves back to Bank 2. 'Shadow banking' operations such as the creation and sale of mortgage securities cannot therefore create money, cannot increase purchasing power, and so cannot directly increase aggregate demand; they only add to exchange activity in the financial sector as loans are transferred more frequently from agent to agent each of whom anticipates a slice of the loan's profit, or wishes to adjust their liquidity. Purely financial claims (i.e. claims to a flow of money) do not *directly* have any real economy implications, since they have no impact on the quantity of purchasing power applicable to the real economy, which depends almost entirely on the availability of government money and the bank money tied to it. The purpose of financial claims is to redistribute money flows in quantity and time. When increased financial activity *does* have real impact, it is only because financial sector balance sheets are entwined with real sector balance sheets within institutions.

The collapse of the US sub-prime mortgage market had real economy implications (beyond the fact that purchasing power was transferred from consumers (high velocity money users) to savers (low velocity money users), as the sub-prime debt overhang hit relatively low-income home-purchasers) because:

1. Banks had dubious and opaque financial claims (such as securities containing slices of NINJA or LIAR mortgages, which had very little chance of being repaid) on their balance sheets (or on balance sheets at one remove that they were nevertheless obliged to maintain) – as these were devalued this impacted on the ability of their equity to buffer against bad loans, reducing their ongoing capacity to lend and even threatening their solvency.

reserves. They can do this either because their bilateral deposit inflows and outflows become more equalised – thus reducing the reserves required for interbank net settlement; or by acquiring fresh reserves from the central bank (usually by 'repo' operations involving government bonds as collateral).

2. Banks borrowed reserves on a routine basis to balance mismatches in settlement reserve flows. As lenders became uncertain of banks' solvency, this lending dried up, impairing banks' liquidity and making even routine deposit transfers and cash provision problematic.

The specialness of money and banks is why their balance sheets on which deposits, loans and reserves are held need to be completely separated from any dealing and speculation in financial assets other than government securities and perhaps other very low-risk assets. (?Ref) Moreover, the decentralisation of banks means that their individual attempts to maximise their profits may have undesirable consequences in aggregate. As successive loans are issued to make purchases in markets for real assets, such as property markets, the consequent rise in valuations becomes the justification for further, larger loans. In this way bubbles are blown up, which give rise to misallocated economic activity, and which often result in value collapses that trigger loan defaults. If these loan defaults exceed a bank's equity, the bank may fail, threatening its customers' deposits and the balance sheets of creditor banks, and putting the payment system at risk. For this reason banks require monitoring and regulation to ensure that their aggregate actions do not lead to macroeconomic disturbances.

Non-bank Financing in the Model

David Andolfatto's conclusion is that his model does not support 'the heterodox view' that bank lending has 'considerable latitude to influence the money supply and hence, aggregate demand'. This would only be the case, he argues 'if banks are better than financial markets in the business of relaxing debt constraints'. And '[g]iven the co-existence of bank and non-bank financing, it is not likely that banks have a universal comparative advantage (*sic*) in this regard.' The analysis given above should make it clear that despite the 'co-existence of bank and non-bank financing' only banks have the power to overcome aggregate debt and liquidity constraints, and so they and their lending *are* the most critical factor in influencing aggregate demand and macro-economic stability. Non-bank leverage ought to be much less critical, and major macroeconomic effects could be avoided by appropriately ring-fencing bank balance sheets.

In David's model, non-bank 'borrowing' is used by 'young investors' in the form of voucher issue for future real goods. In the government money equilibrium he sets up, workers are as willing to offer up their services for these vouchers as for money, since the real return is the same. But this is clearly not a realistic picture of a monetary economy. Given the nature of money as I have described it above, the vast majority of wage-earners insist on being paid in money. Some, higher earners and those with a cushion of money wealth, will be willing to purchase financial assets in exchange for a particular future return, but even these will not generally purchase assets that promise a return in real goods rather than a monetary flow.[3] It is not helpful then to keep the market for 'loanable funds' separate from monetary flows in the way that occurs in the model.

We might then ask why non-bank finance takes place at all? Firms, owing to uncertainty over future demand for their output, and individuals, owing to consumption limits and uncertainty over future expenditure needs, may have bank deposits with which they do not currently wish to purchase real goods. They may, however, be willing to take on *some* risk in the prospect of a higher return. The unsecured nature of large deposits may also be a factor in wishing to acquire non-money assets. They may be willing to take on more risk on a loan than a bank will, or willing to offer interest rates lower than the cost a bank must incur to acquire the reserves required to enlarge its loan book.

But as described previously the liquidity given up for non-money financial liabilities must come from pre-existing loans (with the exception of Central Bank private liability repos). There are therefore few grounds for David Andolfatto's assertion in his conclusion that the existence of non-bank funding is evidence for doubting the unique importance of bank lending and bank money for aggregate demand.

Detailed Analysis of the Model

How should David's model be adjusted to reflect the criticisms I have made?

[3] The key to understanding why money is almost universally preferred as a means of exchange *and* as a store of value lies in the Keynesian concept of 'liquidity preference' in the face of radical uncertainty.

- All money, whether state or bank originated, is uniform in its relation to the real economy.
- Money movement should follow loanable funds – an aggregate increase in funding requires an aggregate increase in money, or at least in its flow.
- Expectations and their realisation or otherwise need to be more clearly modelled.
- Workers and Investors do not always exhaust their purchasing power – with the consequence that bank loans may not be repaid, reducing banks' capacity to issue new loans.

For investors 'born' in period t their expected return for period t+1 from capital k_t acquired in the 'loanable funds' market is given in David's model as $x_{t+1}f(k_t) - r_t k_t$ which clearly cannot be less than zero, but since David allows for 'the actual realisation to differ from what is expected', depending on x_t, this need not hold for the realised return.[4] The notation here is inconsistent however since it appears that x_{t+1} is the expected productivity of capital spending, whereas x_t is to be interpreted as a realised variable. To avoid this confusion we can re-write the investors' expected t+1 return as $E_t[x_{t+1}]f(k_t) - r_t k_t$, where $E_t[]$ is the expectation operator at time t, and the realised t+1 return as simply $x_{t+1}f(k_t) - r_t k_t$. Clearly if $x_{t+1} < E_t[x_{t+1}]$ by a great enough margin then we may have the outcome that $x_{t+1}f(k_t) - r_t k_t < 0$. Decisions affecting the next period depend on $E_t[x_{t+2}]$, in particular the condition that $E_t[x_{t+2}]f(k_t) > r_t k_t$, where $r_t = R_t(p_t/p_{t+1})$ with R_t being the exogenously determined return on government liabilities. Importantly, since as in David's model there is no assumption that expectations need be rational, there is no link between output in one period and that in the subsequent period.

David states in Section 2, which discusses the model with a functioning loanable funds market and government money that '[i]n the aggregate the quantity of consumer goods delivered to old workers must equal q_t.' Since the quantity of money issued to the initial old is M, and the old have a marginal propensity to consume equal to one, then the price level $p_{t+1} = M/q_{t+1}$. But

[4]Capital k_t, is the proportion of workers' output y_t obtained by investors in time period t. Return on that capital, transferred to the workers providing it, is r_t.

this seems to be incorrect – the young workers who sell their labour to investors deliver investment goods $y_t - q_t = k_t$ in exchange for private coupons worth $r_t k_t$ which can only be exchanged for investors' output in the following period, when they themselves are 'old'. But the purpose of these investment goods is to create consumer goods – the old have no use for investment goods. The total amount of consumer goods available in period $t+1$and created from this labour is $x_{t+1}f(k_t)$ of which only $r_t k_t$ is exchanged for coupons. The amount of consumer goods in this economy in period $t+1$ which are not pre-allocated by coupons is therefore $x_{t+1}f(k_t) - r_t k_t + q_{t+1}$. Investors clearly have the option of selling their produced consumer goods for money and exchanging that money for services (all within the single period in which they are old), so that if we maintain the implicit assumption of a monetary velocity of one, then David's characterisation of the price level is incorrect. If a fraction v_{t+1} of the investors' share of goods output is exchanged for money so as to purchase other goods, then the total real quantity of goods transactions involving money in period $t+1$ will be $q_{t+1} + 2v_{t+1}(x_{t+1}f(k_t) - r_t k_t)$ and so via the quantity equation the price level for consumer goods (which is what we should be interested in) will be given by

$$p_{t+1} = \mathrm{M}/\{q_{t+1} + 2v_{t+1}(x_{t+1}f(k_t) - r_t k_t)\}. \qquad (1)$$

In the economy without bank money, the worst that can happen is that realised investors' output falls short of expectations such that $x_{t+1}f(k_t) - r_t k_t < 0$. Both investors and their workers will see their real consumption fall short of their expectations, the degree for each depending on their relative bargaining strengths in any renegotiation of their original contract. If ρ_{t+1} $(\rho \geq 0)$ is the renegotiated share of realised output allocated to period t investors then the total amount of non pre-allocated consumer goods in this economy in period $t+1$ is therefore $\rho_{t+1}x_{t+1}f(k_t) + q_{t+1}$. Again assuming a monetary velocity of one, and that a fraction v_{t+1} of the investors' renegotiated share of goods output is exchanged initially for money then the total real quantity of goods transactions involving money in period $t+1$ will be $q_{t+1} + 2v_{t+1}\rho_{t+1}x_{t+1}f(k_t)$ and so now the price level is given by

$$p_{t+1} = \mathrm{M}/(q_{t+1} + 2v_{t+1}\rho_{t+1}x_{t+1}f(k_t)). \qquad (2)$$

Friction in the loanable funds market creates a space for banks to issue their own liabilities.

The linkage described earlier between central bank money and commercial bank liabilities means that David's distinction between government-issued money and that issued by banks is not valid when we consider impacts in the real economy. As a consequence we need to carefully establish the relevant total quantity of money for the economy with bank money, which following David we label $M1_t$. In David's model, investors lodge tokens (or more simply borrow from a banks) and obtain $p_t k_t$, with which they pay workers. The real return that previously went to workers in the form of r_t is now transferred to banks in the form of a nominal return R_t which is the policy rate set by the government for its own liabilities. It's not clear that this is entirely plausible. Firstly, young workers cannot spend the money they receive until the following period, so that to the extent that a price level is relevant to the nominal price for their labour, it will surely be that (expected) of the following period. Secondly, it is not clear why these workers are now willing to forgo their return when the no-arbitrage condition $r_t = R_t(p_t/p_{t+1})$ still evidently applies. Since the primary impact of the credit constraint falls on investors who have no alternative use for their 'capital projects' it seems more reasonable to simply assume that the interest they owe to banks falls mostly or entirely upon them as an additional cost. In the light of these two considerations it seems more plausible simply to assume that investors borrow $E_t[p_{t+1}]r_t k_t$, where $E_t[p_{t+1}]$ is the expected price level of consumer goods in the next period, and pays this to her workers for their expenditure in the following period.[5] Investors' repayment obligation is therefore $R_t E_t[p_{t+1}]r_t k_t$

The relevant quantity of money for calculating the price level in period t is therefore not M, but $M1_t$ – the total quantity of money incorporating that issued by the government and that issued by banks, such that $M1_{t+1} = M + E_t[p_{t+1}]r_t k_t$. (One of the implications of a monetary economy is that there is no scope for investors to renegotiate the employment 'contract'. The token system theoretically allows the investor to fail to supply the promised goods in period 2, but the acceptability of money issued in period 1 is guaranteed by the banking system.)

The most the investor can actually pay back is $p_{t+1}u_{t+1}x_{t+1}f(k_t)$, where u_{t+1} is the proportion of real output sold for money (government or bank money) in period t+1. In David's model

[5] $E_t[p_{t+1}]$ is not assumed to be based on rational or any other specific model of expectations, so like $E_t[x_{t+1}]$ should be treated as an exogenous variable.

consumption must be exhausted by all the old in t+1, so u_{t+1} is always 1. With expenditure exhausted, p_{t+1} will adjust such that (again assuming monetary velocity maintained at 1) $p_{t+1}(u_{t+1}x_{t+1}f(k_t) + q_{t+1}) = \mathrm{E}_t[p_{t+1}]r_tk_t + M$ so that the price level is now given by

$$p_{t+1} = (\mathrm{E}_t[p_{t+1}]r_tk_t + M)/(x_{t+1}f(k_t) + q_{t+1}). \quad (3)$$

The price level therefore depends on previous period expectations of the price level, and the productivity parameter that determines realised output. An unexpectedly low value of x_{t+1} will result in a loss of real output available to investors and/or a loss of real return to old workers and a higher price level, but has no implication for banks since only M will be held into the next period, and thus all loans will be repaid. An expansion in bank lending, *ceteris paribus*, implies an increase in k_t which from (3) implies both an increase in bank money and an increase in output. Impact on the price level is indeterminate, and depends on the remuneration for the labour involved in creating capital goods, and the total return from creating those goods. This is contrary to David's model, where the increase in bank lending *lowers* the price level through a portfolio adjustment effect from government to bank liabilities.

We now move on to the situation where an investor is unable to repay his bank loan. As a consequence banks may be at risk of insolvency, depending on their equity buffers. Figure 1 shows the balance sheet of our banks. Any contraction in the accounting value of loans must be matched by a contraction in the value of Equity. How can we adjust the model to account for this, given that as it stands the old only gain utility from their consumption the second period of their lives and there are no subsequent periods for them? As things stand, the old expend all of their money (government-issued and bank-issued) on whatever goods are available in the period in which they are old. We could introduce a somewhat *ad-hoc* solution where for some reason, such as uncertainty over their needs over the period or a desire to leave a bequest for descendants there is additional utility to be gained from ending their 'old' period without having exchanged all of their money for real goods. This might be rendered perhaps less *ad-hoc* by simply extending the number of generation each cohort lives to three – where consumption takes place across the latter two periods, ultimately exhausting all resources but not necessarily equally across the two periods. If bank loans are required to be

repaid at the end of the second period, then an unexpected shift in consumption from period 2 to period 3 by any particular cohort may result in bank insolvency. Essentially, what we are introducing is the concept of 'liquidity preference' - the 'old' choose to remain liquid in period 2 rather than exhaust their expenditure. This clearly implies a degree of true uncertainty (rather than simply calculable risk) about the options available in the two periods, otherwise contracts for period 3 consumption could be made in period 2. (?Ref)

If positive liquidity preference exists in period 2, then $p_{t+1}u_{t+1}x_{t+1}f(k_t) < \mathrm{E}_t[p_{t+1}]r_tk_t$ is a possibility, such that the investor cannot repay her loan, and her lender suffers damage to their equity buffer. The consequences of this are that banks are limited in their lending in the following period and so a constraint $L_{t+1} < \mathrm{E}_{t+1}[p_{t+2}]r_{t+1}k_{t+1}$ may need to be applied.[6] Without adjustment of $\mathrm{E}_{t+1}[p_{t+2}]$ (a fall in price level expectations) or r_{t+1} (a reduced return to 'borrowed' labour) this imposes a limit on k_{t+1} and, assuming no change in productivity, a reduced next period output.

Figure 1 - Bank Balance Sheet at end of Period t

Assets	**Liabilities**
Reserves M	Demand Deposits $\mathrm{E}_t[p_{t+1}]r_tk_t + M$
Loans $\mathrm{E}_t[p_t+1]r_tk_t$	
Fixed and other Transferable Assets	Equity Ω_t

Conclusion

Under our adjustments to David's model, banks and bank leverage are special, particularly because their role in the economy means that a failure of expectations can have an impact beyond the immediate period. This impact will only be manifest in a model however if we allow for liquidity preference, in that potential consumers opt to hold money rather than spend it. This requires a recognition that the future is truly uncertain and so there is an individual

[6] If loan non-repayment risk is γ then with equity Ω_t the maximum safe loan is $L_t = \Omega_t/\gamma$.

advantage in maintaining liquidity. The adjusted model also emphasises that bank money issue, as well as price expectations and output expectation failure may all increase the price level, although these depend on monetary velocity assumptions.

Appendix 1 – The Nature of Financial Liabilities: Why Money is Special

There is a hierarchy of financial liabilities, going from least liquid and credible to most liquid and credible:

1. **Specific Bilateral Liabilities**
   These are essentially private IOUs (what is owed being a specified quantity over time of bank deposit money) which may be more or less liquid depending on the characteristics of the issuer. A loss of credibility in the issuer may result in a severe loss of value and liquidity in these liabilities, which is only directly damaging to their holders.

2. **Bank Deposits**
   These are multilateral liabilities in that they can be used to pay off any bank loan – or indeed, via their institutional linkage with central bank money, any tax liability. These features are derived from:

   1. The convertibility of deposits to central bank money, which is supported by the state in the form of deposit guarantees and bank liquidity (and sometimes solvency) support.
   2. The settling in central bank money of net movements of bank deposits.
   3. Accounting penalties for bad loans held by banks.

   The liquidity and credibility of bank deposits are limited by the liquidity and perceived solvency of commercial banks, and by arrangements for the insurance of deposits, and the extent of support by the state for commercial banks.

3. **Central Bank Money**

   These are bilateral liabilities but with the state as issuer. Since the state has the power to place tax obligations on any individual or institution these liabilities are extremely liquid and maintain value as long as the state retains its power to tax.

Appendix 2 - Shadow Banking

Because only banks create money when they provide liquidity, 'Shadow Banking' would more appropriately be replaced by the term 'Displaced Banking' or 'Removed Banking'. The essence of banking is the issue of multilateral liabilities, such that while new issues are attached to the quantity of central bank liabilities, they are not rigidly so – in that a small (and variable) quantity of central bank reserves can support a large quantity of bank money, and in that the quantity of central bank money can itself (at a cost) be influenced by the actions of banks. No institution other than a bank has a settlement account with the central bank or access to the central bank's lending facility for its money. As a consequence, no non-state institution other than a bank can increase the quantity of bank money. Bank money's unique ubiquity and security makes it overwhelmingly the medium of exchange in the real economy – disturbances to the access and flow of bank money therefore risk severely disrupting the real economy. Since banks alone are responsible for both access and flow they are uniquely important macroeconomic institutions.

If shadow banking cannot create money, what is its role? One suggestion is that it is a *perversion* of the 'monetary circuit' in which money flows from its creation for the funding of wages of production (initial finance), to the purchase of that production and/or purchase of corporate shares (final finance) and thus the repayment of the loan responsible for the money creation.

This perversion arises because most bank lending no longer is made for production wages, but against real assets (particularly property) and for consumption. In a way which is somehow different from the standard circuit, this results in more individuals and institutions holding

'cash' surpluses which they need to convert into 'safer' (given limits on deposit insurance) or higher yielding assets. There are two major objections to this line of thinking. Firstly, it is not clear to us that mortgage lending and consumer lending are essentially of a different nature from production lending. The essence of money creation through bank lending is to provide a placeholder for future utility, while some asset is involved in the production of that utility. In the case of production lending the future utility derives from material goods, but in the case of mortgage lending and consumer lending the future utility derives from a flow of property services and consumption services respectively, brought forward from what would otherwise have been possible. To the extent that these flows are priced correctly (and this does turn out to be an important caveat when bubbles arise), there seems no qualitative difference between these forms of the circuit and the standard form.[7] Secondly, bank deposits cannot be 'converted' to other private liabilities – they can only be exchanged for them. When this exchange takes place, these deposits persist but in the names of different depositors. Bank deposits can only be 'converted', in the sense of ceasing to be bank deposits, by exchange for notes and coin, repayment of a bank loan, the payment of taxes, or the purchase of a government security. They certainly cannot be removed from circulation by the purchase of securitised mortgages.[8]

Why does 'securitisation' take place – where bank loans and their future interest flows are sold (often divided, and often opaquely combined) to other investors, who may take out bank loans to purchase them? What it does for the loan originator seeking additional liquidity is to bring the profit from the loan into the present, boosting the short run profit statement, and to remove any uncertainty from that profit, when that might appear to threaten the future growth or viability of the institution. In return for providing this service to the originator, the purchaser of the loan expects to receive a future return in the form of loan repayment and interest that exceeds the price they have paid the originator. A frequent incentive for financial institutions that purchased mortgage-backed securities (MBSs) prior to the financial crisis was

[7] What may be important is the length of time such loans are in existence. If production cycles are appreciably shorter than asset appreciation or consumption-income cycles a proportionate increase in loans for the latter purposes will create a greater quantity of money in existence at any particular time – which may in turn lead to a more intensive search for alternative liquidity within the financial markets.

[8] The exception to this is in the case of the unwinding of central bank purchases of such securities that have been purchased as an emergency measure to address serious liquidity issues or solvency uncertainty.

that these securities received very high ratings from the certification agencies, allowing them to reduce the equity buffer matching them on their balance sheets and for them to be easily used as collateral when liquidity expansion was desired.

Rather than looking for systemic economic changes to explain securitisation and the other purely financial transactions that make up 'shadow-banking', therefore, we need to look closely at the precise context of these various transactions. We may find that their real roots are often greed, stupidity and fraud.

If a bank has issued a loan, and priced it accurately according to its issuance cost, its risk of non-repayment, and desired return to equity-holders, why might it wish to receive an immediate lump-sum payment in exchange for the future flow of interest and the final repayment sum? There seem to be four possibilities: the purchaser is less risk-averse than the bank; the purchaser has a longer horizon than the bank; there is asymmetric information – almost certainly favouring the originator of the loan; or there is an agency problem. Are the first two explanations plausible, given the size and diversity of bank interests, and their ability to set the terms of the loan? The agency problem is in the form of the extent to which bank decision-makers' incentives line up with the long-run institutional interests of the bank, or the interests of the shareholders. And where the purchaser too is an institution, who takes the purchasing decision, and under what incentives?

In theory, better management of balance sheets, redistributing risk to those better able to absorb it, and redistributing purchasing power to those obtaining or producing greater utility from them adds to overall welfare. But there must be serious doubt that 'shadow-banking' in its various forms adds anything other than churn and opacity to financial markets, primarily adding to the income of agents within that market at the expense of actors in the real economy.