

5 CREDIT, EXPENDITURE AND ASSET PRICES

The purpose of this study has been to demonstrate the importance of money, based on broad definitions, to asset prices and economic activity (and ultimately to the price level of goods and services). Historical experience – as reviewed in the last two chapters – has shown that the direction of causation is from money to asset prices and expenditure, not the other way round. The Kaldorian critique and the analysis of the narrow-money school do not stand up. Another critique of the monetary approach needs to be discussed, however. Numerous statements can be found – at both the popular level and in the publications of professional economists – to the effect that ‘credit’ is relevant to the determination of both asset prices and national expenditure. Indeed, some authors put credit ahead of money. This chapter will argue that the elevation of credit *by itself* to a prominent role in national income determination is a mistake. On the other hand, it very much endorses the proposition that a particular type of credit, namely bank credit, is important to the business cycle. The significance of bank credit arises not from its independent influence on economic variables, but from the part it plays in money creation.

Currency and banking schools

Some of the trouble in understanding this subject stems from imprecision in the use of words. Disputes about the meaning of words were a recurrent element in the protracted battle of ideas between the currency and banking schools in England in the early nineteenth century. Even in the late nineteenth and early twentieth centuries terminology had not settled down. A common practice was to describe bank deposits as 'credit', because they arose from the extension of credit by the banks.¹ Nowadays, by contrast, the accepted convention is that bank deposits are 'money'. The uncertainties about words were accompanied, however, by deeper and more substantive disagreements. One of the earliest enthusiasts for a credit-based explanation of prices was John Stuart Mill in Chapter XII of Book 3 of *Principles of Political Economy*. In his words, 'It is obvious ... that prices do not depend on money, but on purchases.' Further,

Credit which is used to purchase commodities, affects prices in the same manner as money. Money and credit are thus exactly on a par in their effect on prices; and whether we choose to class bank notes with the one or the other, is in this respect entirely immaterial.²

The difficulty with these remarks is that they are not placed in a convincing theoretical schema. Mill was acerbic in his references to 'the doctrine of the infancy of society and of political economy', stating that 'the quantity of money compared with that of commod-

¹ David Laidler, *The Golden Age of the Quantity Theory* (Hemel Hempstead: Philip Allan, 1991), pp. 14–15.

² V. W. Bladen and J. M. Robson (eds), *Principles of Political Economy*, vol. III of *Collected Works of John Stuart Mill* (London and Toronto: Routledge & Kegan Paul and University of Toronto Press, 1965, originally published 1848).

ities determines general prices'. But the truth is that this doctrine, far from being abandoned at the 'infancy of political economy', has been rigorously developed – at the level of individual agents and for all individuals in the aggregate, and in both partial and general equilibrium models – since Mill's day. As set out in Chapter 1 (for the markets in goods and services) and in Chapter 2 (for assets), one of the triumphs of monetary analysis is to reconcile the equilibrium of individual money-holding agents with equilibrium between the demand for and supply of money in the economy as a whole. No similar exercise has been carried out with credit-based theories.

Indeed, attempts to develop credit-based theories for the economy as a whole face a serious, perhaps insurmountable, conceptual problem. Mill is right that in any particular transaction prices 'do not depend on money, but on purchases', and that an isolated purchase can be financed by credit. But the question has to be asked, 'Where does the credit come from?' Assuming that expenditure is not financed from money or asset holdings, any one agent can spend above income because it has received credit, but the agent extending credit has to offset this by spending beneath income. A person or a company can receive credit from or extend credit to another person or company, but a society cannot – in net terms – receive credit from or extend credit to itself. If international complications are ignored, the sum of net credit in any economy in any period is zero. No economist has developed a theory in which credit *by itself* determines the aggregate price level, because any such theory would be logically impossible. A purchase financed by credit can influence prices in an isolated transaction; purchases financed by credit cannot determine the overall price level because all agents taken together cannot be net recipients of credit.

Modern proponents of credit

But this difficulty – so compelling at the aggregate level – has not deterred economists from assembling sentences and paragraphs ('quasi-theories') in which credit is given a starring role. In a chapter on 'A general theory of reform' in his 1973 book on *Economics and the Public Purpose*, Galbraith wanted 'to reduce ... for all time the use of monetary policy'. He saw monetary policy as equivalent to 'reducing or increasing ... the amount of money available for borrowing', and claimed it suffered from intrinsic uncertainty about its effects. In his words, 'No one knows what the response to a greater or less availability of funds for borrowing will be or when that response will occur, for the reason that the factors that govern such response are never the same from one time to the next.' He also opposed – apparently at any time and in any economy – interest rates increases to limit credit 'and therewith the volume of spending from borrowed funds and therewith, also, for that matter the supply of money'.³

Much has gone wrong here. To repeat, at the aggregate level, the concept of 'the amount of money available for borrowing' is vacuous. In net terms the amount of credit is, always and everywhere, precisely nil. Of course, a sum can be borrowed and lent, recorded in a written IOU and registered in a balance sheet. Further, it may survive from period to period, adding to the gross totals of credit and debt outstanding. Galbraith is simply wrong, however, to equate 'the volume of spending from borrowed funds' with 'the money supply', unless he defines the phrase 'the money supply' in an idiosyncratic way. True enough, when a bank extends new credit, it normally increases its assets and its deposit

³ John Kenneth Galbraith, *Economics and the Public Purpose* (Boston, MA: Houghton Mifflin, 1973), pp. 308–9.

liabilities, and the deposit liabilities are money. But borrowing and lending are also performed between non-bank agents, and in such cases no new money is created. When a company extends credit to a customer (helping it 'to spend from borrowed funds'), the level of trade credit expands, but trade credit is not money. Similarly, when a financial institution purchases a bond newly issued by a company (also helping it 'to spend from borrowed funds'), the level of credit in the bond market expands, but corporate bonds are not money. Vast amounts of lending and borrowing, of credit extension and registration, can take place, without affecting the quantity of money.

Despite the conceptual insecurity of credit-based theories of the price level, Galbraith has had several successors. One of the most influential has been Benjamin Friedman, professor of economics at Harvard University, who in the 1980s published a number of papers examining the facts of the relationships between money, credit and national income in the USA in the twentieth century. He did not propose an elaborate large-scale econometric model, but confined the analysis to bi-variate annual relationships between nominal money and nominal GDP, real money and nominal GDP, credit and real GDP, and so on. 'Credit' was measured by domestic non-financial credit (i.e. the stock of credit extended to the non-financial sectors of the US economy, including the public sector and the non-financial private sector). He corroborated the findings of, for example, Milton Friedman and Schwartz that '[m]oney growth consistently helps explain both nominal and real economic growth'. But there was a sting in the tail. In addition to money helping in the explanation of incomes and output, 'nominal and real income growth typically helps explain money growth' and – according to certain rigorous

statistical techniques – that makes the pattern of causation ambiguous. By contrast, ‘credit growth helps to explain nominal income, but not *vice versa*, in the second half of the post-war period’ and ‘[f]or the post-war period as a whole, credit growth again helps to explain nominal income growth, while the reverse effect is only marginally significant’.⁴ (The quotations are from a paper published in 1986. Benjamin Friedman’s post-war period was from 1947 to 1982, and it was split into two sub-periods, 1947–65 and 1966–82.)

Benjamin Friedman’s work appears unsettling for the supporters of the monetary theory of national income determination. Its point is not that the monetary approach is wrong, but that it may not be the only or even the most persuasive way of describing the real world. Benjamin Friedman’s results are unsatisfactory in a crucial respect, however: they are measurement without theory. To be more specific, they are highly aggregative, and do not acknowledge the wide variety of agents and motives involved in the financial transactions that lead to the growth of ‘domestic non-financial credit’. When an attempt is made to link the agents and motives in particular credit transactions to such variables as nominal GDP, the implausibility of a credit-based theory becomes clear. Two types of credit were particularly important in the post-war period, credit to the government (i.e. the budget deficits that led to the growth of the public debt) and mortgage credit to individuals, predominantly to purchase houses. Careful reflection shows that there is unlikely to be a robust

4 Benjamin M. Friedman, ‘Money, credit and interest rates in the business cycle’, in Robert J. Gordon (ed.), *The American Business Cycle: Continuity and Change* (Chicago and London: University of Chicago Press, 1986), pp. 395–458. The quotations are from pp. 421–2.

relationship between such credit and the expenditure components of GDP, unless the monetisation of debt via the banking system is the heart of the story.

Public debt may be taken first. Why should there be a relationship between it and either public or private expenditure? The Galbraithian quasi-theory might be invoked, on the grounds that a budget deficit enables the government 'to spend from borrowed funds'. But in most societies the bulk of government expenditure is financed from taxation and the ratio of tax to national income varies substantially over time. Inspection of the data shows that government expenditure is *not* clearly related to either the level or the rate of change of public debt. Moreover, the same net-credit-is-always-nil objection applies as before. To the extent that the government can spend more because it is borrowing, other agents (i.e. in the private sector) have to spend less because they are lending. To escape from this box, public debt has to alter the behaviour of private agents through portfolio effects. If Benjamin Friedman's analysis were on the right lines, private-sector expenditure ought somehow to be a positive function of public debt. But – unless the public debt is monetised – there is neither a convincing theory nor a substantial body of evidence to argue for this proposition. Indeed, a salient feature of historical experience is that the ratios of public debt to GDP can vary enormously over time, taking values between nil and over 200 per cent.

What about mortgage credit? The difficulty here is even more basic. An obtrusive fact about housing markets all over the world is that the purpose of most mortgages is to acquire an existing house (this is certainly the case in the USA). In other words, when it extends a mortgage, a bank is likely to be lending to an individual to buy a house that has already been built (i.e. that formed

part of *past* output). But how then can the loan contribute to extra expenditure on goods and services or – in other words – to the expenditure that figures in the textbook circular flow of *current* output and expenditure? The mortgage money is absorbed by the purchase price of the house; the borrower cannot ‘spend from borrowed money’ (to use Galbraith’s phrase again), in the sense of spending on consumption and thereby adding to national expenditure.⁵ Indeed, to the extent that credit is extended in order to purchase assets, there is no immediate effect on national expenditure, output and income whatsoever. Instead credit of this kind facilitates transactions in assets. Such transactions may figure in Keynes’s financial circulation, and – as we saw in Chapter 2 – the financial and industrial circulations are interrelated. But loans to purchase *existing* assets do not have any initial impact on the circular flow of income and expenditure where, according to the elementary textbooks, national income is determined.⁶

In fact, because most lenders require collateral to give them comfort that a loan will be repaid, the great bulk of credit to

5 It is true that once the vendor has received the proceeds of the mortgage loan he or she may decide to consume part of them. Another response, however, is to reinvest in another asset, including possibly a financial asset. The central point in the text – that mortgage lending has no direct or certain effect on the circular flow of income and expenditure – is correct, despite the wide variety of eventual destinations of mortgage funds. (For further discussion, see Congdon and Turnbull, ‘Introducing the concept of “mortgage equity withdrawal”’, in Tim Congdon, *Reflections on Monetarism*, pp. 274–87, as well as several recent papers by Bank staff in the Bank of England’s *Quarterly Bulletin*.)

6 This point may cause puzzlement. In macroeconomic jargon, national expenditure consists of consumption and investment, where investment represents the acquisition of *newly created* capital assets, i.e. extra capital goods that form part of the current period’s output and require resources of labour, capital and so on to be produced. Turnover in *existing* capital assets can be enormous relative to investment in this sense, but because the assets have already been made purchases are not a contribution to current output and sales are not a deduction from it.

the private sector is to purchase existing assets of some kind. While this feature of real-world credit is particularly obvious with mortgage lending to individuals, it is also true of lending to companies and financial institutions. Companies borrow from banks typically to make an investment in an existing asset (the purchase of another company, the acquisition of a building or piece of land, additions to inventories of raw materials or finished goods) and, in almost every case, the bank checks that it has adequate collateral. Occasionally companies borrow from capital markets with a vague explanation on the lines of 'for general corporate purposes', but stock market analysts distrust companies that do this too often. It may be a sign that they are borrowing in order to cover negative cash flow, but such Galbraithian 'spending from borrowed funds' cannot be recurrent because the company will eventually go bust.

In short, most loans to the private sector are to finance the acquisition of *existing* assets; they have no first-round effect on national expenditure and income. The Galbraithian quasi-theory of 'extra spending from borrowed funds', and Benjamin Friedman's attempts to promote a credit-based theory of national income determination from long runs of empirical data, break down when confronted with well-known facts of real-world economies. Although the Benjamin Friedman findings are thought-provoking, they need to be backed up by an explicit theory of the relationship between credit and national income. Without such a theory, his critique of the monetary approach is not persuasive.⁷

7 In fact, the empirical regularity behind Benjamin Friedman's findings – that in the USA non-financial debt and nominal GDP had grown at similar annual rates between 1947 and 1982 – broke down in the 1980s. From 1982 to 1987 non-financial debt increased at an annual compound rate of 13.4 per cent, whereas nominal GDP increased at an annual compound rate of 7.8 per cent.

Clearly, the observation that in the real world credit is directed, overwhelmingly, to the purchase of assets is awkward for those credit-based theories in which credit is supposed to affect purchases of goods and services (and so national income). The prominence of credit in asset acquisition, however, has generated another quasi-theory, that the amount of 'borrowing' has a bearing on the level of asset prices. Numerous loosely theoretical remarks on these lines are found in the financial press and popular business books, but sometimes they migrate to more serious works. One example is a recent volume on *Bubbles and How to Survive Them* by the financial economist John Calverley. In it he proposes – if in a fairly casual way – a theory in which the quantity and terms of mortgage lending affect the level of house prices.

After pointing out the contrasting behaviour of household debt in leading industrial nations in the five years to 2003 (with debt soaring in the USA, the UK and Australia, where house prices were increasing, but debt static in Japan and Germany, where house prices were flat), he suggested that 'the bulk of the increase in debt can only be explained in relation to home prices'.⁸ His view is that well-capitalised banks may be tempted to relax their lending standards and to increase the multiple of income they lend to mortgagors. As a result, the level of house prices varies according to the lending practices of the banks. '[W]hen mortgages are agreed based on the appraised value of a house, while the value of housing is pushed higher by the easy availability of mortgages, there is a serious risk that house prices can reach extreme levels.' More generally, asset price 'bubbles normally do

8 John P. Calverley, *Bubbles and How to Survive Them* (London and Boston, MA: Nicholas Brealey Publishing, 2004), p. 107.

not develop without significant lending being involved, usually by banks'.⁹

Once again, the trouble with this hypothesis is that it is not grounded in a rigorous theory. Of course, if a particular home-buyer is able to borrow five times income rather than three times, he or she can pay more for a house. Certain individuals may be so financially inept that once the mortgage is available they pay up for the house, regardless of the wider economic picture. But most people are not like this. They make a judgement also about the appropriateness of the price of a particular house relative to the prices of numerous other similar houses, while wealth-holders in general are constantly comparing the price level of houses with that of other assets. Is Calverley claiming that mortgage borrowing affects both house prices and all asset prices, or only house prices? And what is the mechanism at work? Does the change in mortgage lending determine the level or the change in the value of the housing stock? Or is it the stock of mortgage lending which determines these variables? What are the testable hypotheses of the theory (or quasi-theory) under consideration?

These questions may seem pedantic, but they suggest a way of confronting the lending-determines-asset-prices quasi-theory with an overwhelming counter-argument. Suppose that banks had no loan assets (i.e. there was no bank credit and, indeed, no mortgage credit), but that the money supply took a positive value because banks held government bonds and cash. Would the value

9 Ibid. The quotations are from pp. 110 and 161. The lending-determines-asset-prices quasi-theory is also found in Derek Scott's study of macroeconomic policy in the 1990s, *Off Whitehall* (London: I. B. Tauris, 2004). See p. 88, where it is said that 'excessive optimism will lead to unwise borrowing', which 'will lead to an asset price boom (particularly equities and housing)'. Such statements have become legion.

of the housing stock collapse to nothing because of the absence of mortgage credit? Merely to put the question is to identify a decisive flaw in the lending-determines-asset-prices theory. Of course houses would have value in an economy without mortgage credit. The correct theory must start from a proposition in which money is a key operative term. More precisely, agents are in equilibrium only when they are satisfied with the valuations of all assets (houses, equities, land, antiques) and the relative amounts of money and non-money assets in their portfolios.

It is obvious that a society can be entirely without mortgage credit and housing finance, and yet houses will have a positive value. By extension, a society can have a stock of mortgage credit *and a freeze on all new mortgage credit*, and yet still experience rapid house price increases because the quantity of money is rising too quickly. The monetary expansion may be due to heavy government borrowing from the banking system and so have nothing whatever to do with mortgage credit. But – because every agent has a finite demand for real money balances, because goods can be sold for assets and assets for goods, and because of the pervasiveness of arbitrage between assets (as explained in Chapter 2) – high money supply growth is associated with high house price inflation. It is money, not credit, which is relevant to determining the general level of asset prices.¹⁰

Another way of seeing this point is to recall one message of Chapter 3. It was shown there that the portfolio behaviour of large financial institutions, such as pension funds and life assurance

¹⁰ When Calverley comes to consider asset busts and the risk that the economy may fall into a 'liquidity trap', his discussion is about the adequacy of money balances, not about bank borrowing or credit. See Calverley, *Bubbles*, pp. 177–9. Why are asset prices explained by money in a bust, but by credit in a boom?

companies, had a powerful bearing on asset price movements in the UK in the closing decades of the twentieth century. But most of these institutions either never borrowed or did so only for temporary and special reasons (such as to cover a very short-term timing mismatch in security transactions or to support an investment in commercial property). By contrast, over the medium term the growth rate of these institutions' money holdings had a clear relationship with the growth rate of their total assets. Money, not borrowing or credit, was what mattered in large institutions' portfolio decisions.

The common belief in the macroeconomic importance of credit stems from a confusion. In recent decades a characteristic feature of most banking systems is that the growth of liabilities (dominated by deposits, i.e. by money) has been highly correlated with the growth of bank credit, where 'bank credit' is to be understood as bank lending to the private sector. As national income and asset prices are correlated with money, it has been tempting to say also that national income and asset prices are correlated with bank credit. Some economists go farther. Since it is undoubtedly true that new bank loans usually create new bank deposits, they accord credit the primary role in the process. Their mistake is twofold.

First, they need to check whether non-bank credit has the same power to alter macroeconomic outcomes as bank credit. As it happens, abundant data on various types of non-bank credit (such as trade credit and new bond issues) are compiled by official statistical agencies in most countries. Tests need to be carried out to see whether such non-bank credit variables have a clear relationship with other macroeconomic numbers. As far as the author is aware, no economist has proposed that nominal national income

is a function of trade credit or new bond issuance, and no worthwhile econometric results hint at the validity of such propositions. It follows that credit matters to macroeconomic outcomes only when it is extended by banks and is accompanied by the creation of money.

Second, banks can expand in two ways: by making new loans or by buying existing securities.¹¹ When they buy existing securities, they are not extending new credit. Nevertheless, their liabilities – usually their deposit liabilities (i.e. money) – increase because they must give IOUs to the sellers of the securities. Conversely, banks can shrink their balance sheets by selling securities. It follows that money can expand or contract even when bank credit is unchanged. In some periods the influence of the banks' securities transactions on changes in the quantity of money has been greater than the influence of their credit activities. If credit were the key macroeconomic variable, these periods ought to have seen a breakdown in the standard relationships between money and the economy. Is that what has been observed in practice?

Strictly speaking, a large-scale empirical exercise – dealing with many countries in many periods – is needed to answer this question. The discussion here has to be rather truncated and will concentrate on British experience. As it happens, the post-war decades have seen a marked trend for banks to shed securities and to build up loan portfolios. In the late 1940s UK banks' assets were dominated by holdings of government bonds; nowadays such holdings are a tiny proportion of total assets. Indeed, in the last

¹¹ This is a simplification, as liabilities also expand when banks take cash deposits from the public and when they book profits by charging interest. Note also that purchases of securities add to the quantity of money only when the purchases are from private-sector non-banks.

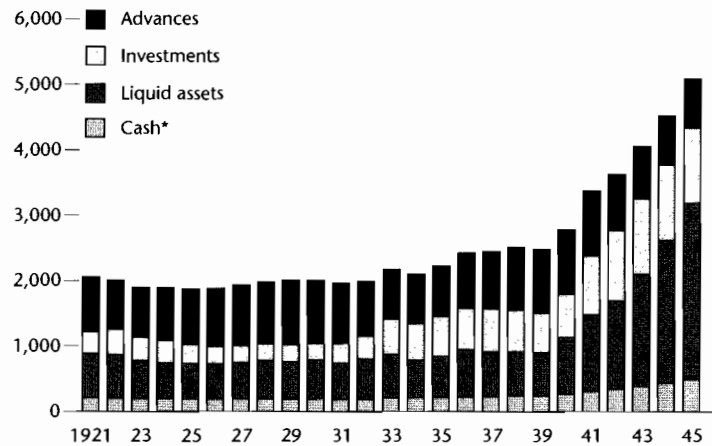
30 years the growth rates of bank credit to the private sector and the growth rates of deposits in the M4 money definition have been closely correlated. This period is therefore unsuitable for testing the theory that it is the quantity of money, not the type of assets that banks hold, which is relevant to macroeconomic outcomes.

A better candidate is provided by the period from 1921 to 1945, covering both the inter-war period and World War II. In the 1920s and 1930s UK banks tried to keep their assets balanced between 'advances' (i.e. bank loans to the private sector) and 'investments', which were predominantly short-dated and medium-dated government securities.¹² They also held significant amounts of Treasury bills and commercial bills (so-called 'liquid assets'), which could be easily bought and sold in an organised market, and were often purchased with cash by the Bank of England. Figures 11 and 12 show the changing composition of London clearing banks' assets between 1921 and 1945.¹³ The 1920s saw a rise in the share of advances in total assets, from 40.6 per cent in 1921 to 49.3 per cent in 1929, as the banks shed some of the government securities they had acquired in World War I. The figure fell sharply to 34.6 per cent in 1935, partly because the banks were keen to buy safe government securities in the deflationary circumstances of the time. During World War II the banks were prevented from expanding their advances to the private sector because military expenditure had priority. They were obliged instead to lend to the government at an artificially low interest rate. (The banks accumulated the resulting claims on the government as 'Treasury

¹² Short-dated securities were defined as those having a residual maturity of under five years and medium-dated securities as those having a residual maturity of between five and fifteen years.

¹³ At these dates the London clearing banks dominated the English banking scene and the English banking industry dominated that in the UK as a whole.

Figure 11 Composition of UK banks' assets, levels, 1921–45
£m



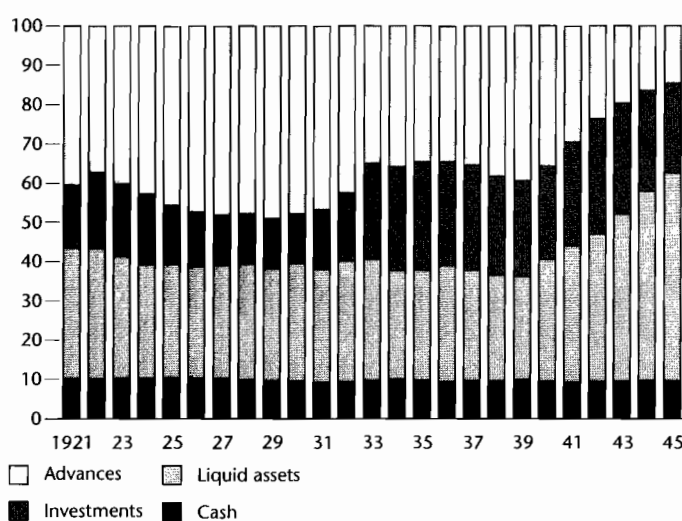
*Cash includes deposit at Bank of England.

Source: Edward Nevin and E. W. Davis, *The London Clearing Banks* (London: Elek Books, 1970), pp. 298–9

Deposit Receipts', which were deemed to be liquid assets.) By 1945 advances were under 15 per cent of the London clearing banks' total assets.

So the 1921–45 period saw large changes in the relative importance of different bank assets, with credit to the private sector often moving inversely with other bank assets and having no clear correlation with the growth of the money supply. Which of the two variables – the money supply or bank lending to the private sector – mattered to national income determination? The answer is provided by Figures 13 and 14. Figure 13 shows

Figure 12 Composition of UK banks' assets, 1921–45
% of assets



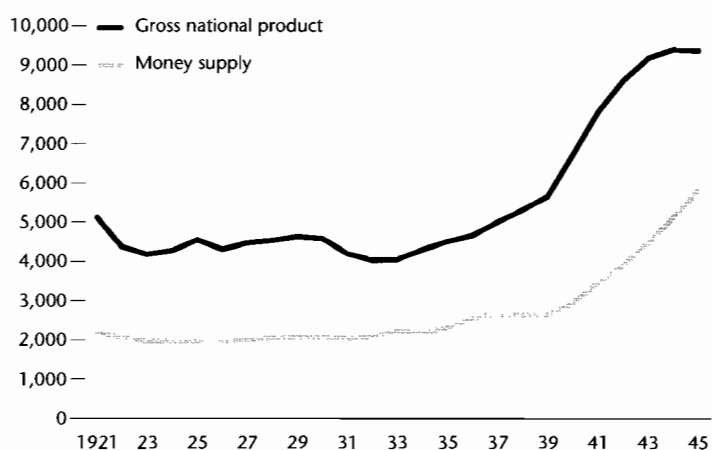
*'Cash' includes deposit at Bank of England.

Source: Edward Nevin and E. W. Davis, *The London Clearing Banks* (London: Elek Books, 1970), pp. 298–9

that national income and the money supply were correlated, in accordance with traditional monetary theory. It is particularly striking that national income rose strongly (by almost 66 per cent) during World War II, when credit restrictions stopped lending to the private sector. Figure 14 plots the London clearing banks' advances against national income. No correlation of any kind holds between the two series.¹⁴

¹⁴ The author carried out regressions of gross national product at factor cost on two variables – the money supply (i.e. notes and coin in circulation with the public, and the London clearing banks' deposits) and the London clearing banks' ad-

Figure 13 National income and money, 1921–45
£m



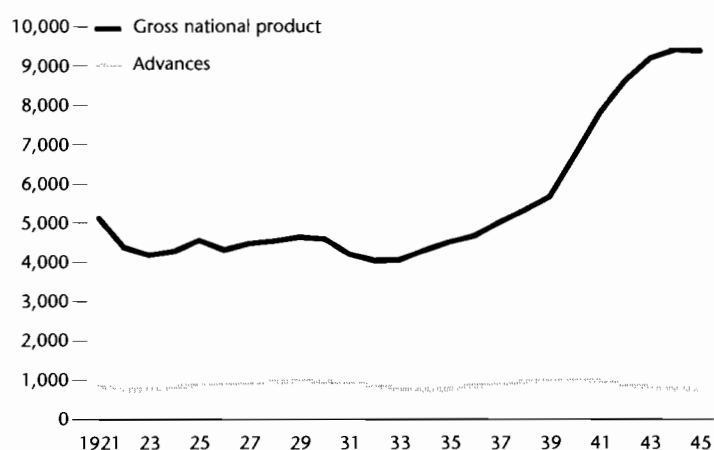
Source: Edward Nevin and E. W. Davis, *The London Clearing Banks* (London: Elek Books, 1970), pp. 290–2 and pp. 298–9

Economic theory is not immutable; it changes with fashion and in response to events. In the 1930s, 1940s and 1950s British monetary economists regarded ‘the money supply’ as the sum of notes and coin in circulation with the general public, and virtually all bank deposits held at UK banks.¹⁵ Moreover, because loans to the private sector were only a proportion of banks’

vances – in the 1921–45 period. The r-squared on the equation with the money supply was 0.91, whereas on the equation with advances it was 0.01.

¹⁵ These years were the heyday of Keynes’s influence on UK economics. Keynes stated his view on the appropriate definition of money in a footnote to Chapter 13 of *The General Theory*, and specifically stated that it was often convenient to include time deposits in ‘the quantity of money’. See also footnote 4 on page 90.

Figure 14 National income and bank lending, 1921–45
£m



Source: Edward Nevin and E. W. Davis, *The London Clearing Banks* (London: Elek Books, 1970), pp. 290–2 and pp. 298–9

total assets, monetary policy was heavily involved with issues of debt management.¹⁶ The phrase ‘debt management’ described the efforts of ‘the authorities’ (i.e. the Treasury and the Bank of England) to market government debt in ways that would support their wider objectives. Sometimes (as in the 1930s) these objectives would be to promote output and employment, while at other times (from 1945) they would be to preserve the fixed exchange

¹⁶ For the prominence of debt management in monetary policy in the 1950s, see both the Radcliffe Report itself (*Report on the Committee on the Working of the Monetary System* [London: HMSO, 1959]) and, for example, the chapter on monetary policy by Charles Kennedy, in G. D. N. Worswick and P. H. Ady (eds), *The British Economy in the Nineteen-Fifties* (Oxford: Clarendon Press, 1962), pp. 301–25.

rate between the pound and the dollar, and to restrain inflation. It was uncontroversial that, if commercial banks bought government debt, this would increase the amount of money in the economy and boost equilibrium national income. In contrast to the fashions of the 1990s, monetary policy was not equated with bank lending to the private sector and it was regarded as something more than the adjustment of short-term interest rates to keep output in line with trend. It is clear from the basic monetary facts of the era – in which changes in banks' claims on government were so fundamental to money supply developments – that the emphases of contemporary monetary economists in the 1930s and 1940s were sensible. They were right to neglect bank credit to the private sector, because such credit did not have a significant role in monetary management.¹⁷

The larger message from the experience of the inter-war period and World War II is the same as that from our earlier review of the credit-based quasi-theories of national income. These quasi-theories do not stand up either when confronted with serious theoretical probing or when tested against the facts of the real world. Over the last 30 or 40 years bank credit to the private sector and the money supply have had a close relationship in most industrial nations, which has misled some economists into believing that the valid relationship is between bank credit and nominal

17 See Harry G. Johnson, 'Clearing bank holdings of public debt, 1930–50', *London & Cambridge Economic Service Bulletin* (Cambridge: University of Cambridge Department of Applied Economics), November 1951 issue, pp. 1–8, particularly the chart on p. 8. The emphasis of British monetary economists on debt management continued even into the 1950s, when bank credit to the private sector was resurgent. The discussion of monetary policy in, for example, F. W. Paish's 'Inflation in the United Kingdom, 1948–57', *Economica*, May 1958, pp. 94–105, is largely about the relationship between, on the one hand, fiscal policy and debt management and, on the other, the amount of money in the economy.

national income, rather than between the money supply and nominal national income. It is essential that the statistical testing be conducted in periods – such as the 25 years to 1945 – when bank credit and the money supply moved in divergent ways. In such periods national income is related to the money supply, but not to bank credit. Credit *by itself* does not determine either national income or asset prices. The argument of traditional monetary theory – that the national income is in equilibrium only when the demand to hold money is equal to the money supply, and that in this sense the money supply determines national income – is correct. Credit-based analyses have never been presented with the same level of care and sophistication as the monetary theory of national income, and they have not been incorporated in rigorous discussions of portfolio selection (i.e. in discussions of asset price determination). They must be rejected as inadequate and unsatisfactory.