2 MONEY AND ASSET PRICES IN THE TRANSMISSION MECHANISM

Before relating money to asset prices, some remarks on the structure of wealth and ownership patterns are necessary. The focus here will be on the UK, since the UK had particularly severe asset price and macroeconomic instability in the late twentieth century, and receives most attention in this paper. Ample official data on the UK's wealth are available. The main constituents of the capital stock throughout the 40 years were residential houses, land and infrastructure, commercial property, and plant and equipment (including ships, planes and cars). Roughly speaking, the value of the assets was five times that of national income. In the final analysis all these assets were owned by people. But often they were registered in the names of companies and financial institutions, and people owned claims on the companies in the form of directly held equities or bonds, and they owned claims on the financial institutions by such means as insurance policies or unit trusts. For a variety of motives – for example, to achieve diversity in their asset portfolios, to enjoy the advantages of specialised investment management and to exploit favourable tax treatment – many households built up their assets through long-term savings products marketed by financial institutions.

Because of these patterns, the twentieth century saw a rise in the proportion of corporate equity quoted on the stock exchange in tandem with the institutionalisation of saving. As shown by

Table 1 **Beneficial ownership of UK shares, 1963–89**

	1963	*1975*	*1989*
Insurance companies	10.0	15.9	18.6
Pension funds	6.4	16.8	30.6
Unit trusts	1.3	4.1	5.9
Investment trusts and other OFIs	11.3	10.5	2.7
Total institutional	29.0	47.3	57.8

Source: *Economic Trends*, January 1991 issue, article on 'The 1989 Share Register Survey'

Table 1, financial institutions became the principal holders of UK quoted equities in the closing decades of the century.[1] They also held substantial portfolios of commercial property and other assets, such as government and corporate bonds.

Indeed, over most of the 40 years to the end of the century the institutions were so large that their activities were crucial in the determination of asset prices and particularly of share prices. In the USA and Japan financial institutions also played a major role in asset price setting in the twentieth century, although a higher proportion of equities were registered in the hands of persons (so-called 'retail investors') than in the UK. A key question arises from the institutions' heavyweight role in asset markets. What was the significance of money in their portfolio decisions? Is it sensible to view their attitudes towards their holdings of equities, and other assets, as being powerfully influenced by their money balances or not?

1 Ted Doggett, 'The 1989 Share Register Survey', *Economic Trends* (London: HMSO for the Central Statistical Office), January 1991, pp. 116–21.

The monetary behaviour of the different sectors of the UK economy

Fortunately, abundant information has been published on the money supply holdings of the different sectors of the UK economy. Following the Radcliffe Committee's recommendation that more money supply statistics be compiled, the Bank of England and the Office for National Statistics (formerly the Central Statistical Office) have since 1963 collected information on the bank deposits held by various categories of UK agent. The three types of private sector agent tracked in the data are the personal (or 'household') sector, the corporate sector (known more technically as 'industrial and commercial companies' or 'non-financial companies') and the financial sector (also called 'non-bank [or other] financial institutions'). Separately National Statistics has collected and published data on the asset holdings of the main types of financial institution in the UK, including their short-term assets, such as bank deposits, also from 1963. Together the sectoral money supply numbers and the information on institutions' portfolios represent a rich body of statistical material relevant to the process of asset price determination in the UK.

Sterling money balances can be held by either the public or private sectors, and by either UK resident agents or non-residents. In practice little money was held by the UK's public sector for most of the 40 years from 1963. It follows that sterling money balances had to be in the hands of UK private sector agents or in those of non-residents (mainly foreigners). If foreigners did not want to keep their money in sterling form (at the prevailing exchange rate and interest rates), they would try to offload their excess money on to UK private sector agents. As it happens, the relationship between domestic monetary policy and the exchange rate was a

live and important topic for much of the 40-year period, which saw numerous currency crises. The central concern of this study, however, is the analysis of the macroeconomic consequences of excess or deficient money in the UK private sector. The households, companies and financial institutions comprising the UK private sector were, in fact, the exclusive holders of the 'money' which was officially recognised and measured in 'the monetary aggregates'.

A few words need to be said here about these aggregates. According to standard textbooks, money consists of assets with a fixed nominal value which can be used in payment to settle debts. In primitive economies precious metals were often the dominant type of money, but today hardly any currencies have an explicit metallic base. Instead notes and coin have value because they are 'legal tender' (i.e. their nominal value is enforced by law). One aggregate – M0 – consists of notes and coin ('cash'), plus banks' cash reserves which are readily converted into notes. The larger part of the money supply, however, is represented by bank deposits. A deposit is money, because a depositor can give an instruction to his bank to transfer cash to a creditor and settlement in this form is just as good as the use of cash. In fact, to pay by means of such instructions is often more convenient than to pay by cash. In the UK at the start of the 21st century the quantity of bank deposits was almost twenty times that of notes and coin. Deposits can themselves be categorised, with a common breakdown being between sight and time deposits. (Sight deposits are those that can be drawn without a notice period; time deposits can – in principle – only be drawn after a customer has given the banks some notice.) In the 1970s data were estimated for an aggregate (known as M1) which included notes, coin and sight

deposits. But nowadays such data are no longer officially prepared and most attention is instead given to a so-called 'broad money measure' (M4), which includes notes, coin and all bank deposits, including time deposits. Unless otherwise specified, references to 'the quantity of money' or 'the money supply' in a UK context are to be understood as references to the M4 aggregate.

It follows – to resume the thread of the earlier discussion – that the households, companies and financial institutions comprising the UK private sector were the exclusive holders of the M4 quantity of money. It follows, further, that, for any given quantity of money, the more that was held by one sector, the less had to be held by the other two sectors. If the growth of aggregate M4 was low and one sector acquired all the extra money, the money holdings of the other two sectors could not change; if, on the other hand, the growth of aggregate M4 was extremely high and one sector did not increase its holdings at all, the money holdings of the other two sectors had to expand rapidly. All economic agents try at all times to keep their money holdings in equilibrium with their incomes and wealth – they may not succeed at every single moment, but they try – and they keep on changing their expenditure and portfolios until equilibrium is attained. The advantage of analysing the three sectors' monetary behaviour is that it produces insights into these processes of adjustment.

Table 2 on page 36 demonstrates, in a particularly striking way, clear and important differences between the sectors in the 40-year period. The growth rate of financial sector money was almost double that of the personal and corporate sectors. This reflected both the long-run institutionalisation of saving already mentioned and radical financial liberalisation. Particularly from the early 1970s, the effect of liberalisation was to enhance the

competitiveness of non-bank financial institutions relative to banks and other types of business organisation. They were able profitably to expand both sides of their balance sheets, and hence their monetary assets, much faster than the quantity of money as a whole. The growth rate of financial sector money was also characterised by more pronounced volatility than that of other sectors' money. The standard deviation of the growth rates of financial sector money was four times that of personal sector money and markedly higher than that of corporate sector money.

The contrast between the different sectors' monetary behaviour is vital in understanding the transmission mechanism from money to the economy. Econometric work on the personal sector's demand-for-money functions in the UK during this period routinely found it to be stable, in the sense that standard tests on the significance of the relationship between personal sector money and a small number of other variables (including nominal incomes) were successful.[2] Similar work on the demand to hold money balances by companies and financial institutions generally failed.[3] It would be a serious mistake, however, to believe that companies' and financial institutions' monetary behaviour was so erratic as to be entirely unpredictable.

In fact, the ratio of short-term or 'liquid' assets to total assets of life assurance companies and pension funds combined was

2 Ryland Thomas, 'The demand for M4: a sectoral analysis, part I – the personal sector' (London: Bank of England, Working Paper Series no. 61, 1997); K. Alec Chrystal and L. Drake, 'Personal sector money demand in the UK', *Oxford Economic Papers* (Oxford: Clarendon Press, 1997).

3 Ryland Thomas, 'The demand for M4: a sectoral analysis, part II – the company sector' (London: Bank of England, Working Paper Series no. 62, 1997); K. Alec Chrystal, 'Company sector money demand: new evidence on the existence of a stable long-run relationship for the UK', *Journal of Money, Credit and Banking* (1994), vol. 26, pp. 479–94.

Table 2 **Key facts about different sectors' money holdings in the UK economy, 1964–2003**

	Mean increase, %	*Standard deviation of growth rates*
Personal sector	10.9	4.1
Corporate sector (or 'ICCs')	11.0	10.6
Financial sector (or 'OFIs')	18.3	15.7

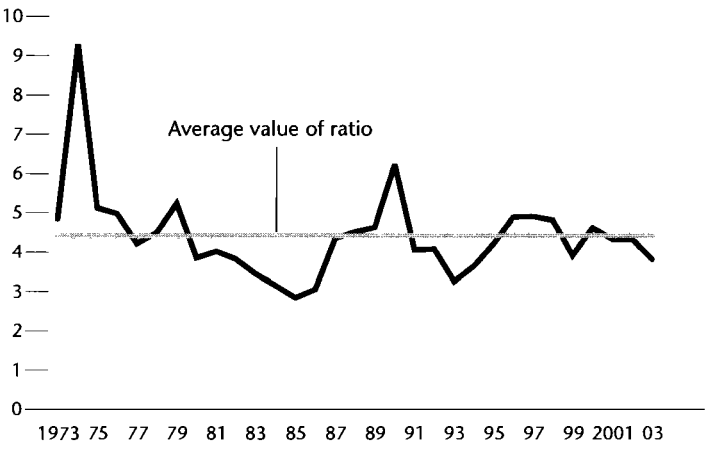
Note: Table relates to annual changes, quarterly data, with the first rate of change calculated in Q2 1964 (note that the differences in the 'level' series are often very different from the 'changes' series published by National Statistics, because of changes in population and definition)
Source: National Statistics database, updated to 22 February 2004

much the same at the start of the 21st century as it had been in the mid-1970s, even though their assets had climbed more than 50 times[4] (see Figure 1).

Life assurance companies and pension funds were the two principal types of long-term savings institution in the UK in this period. Assets are 'liquid' if they can be quickly and cheaply converted into other assets. Bank deposits are an example of a liquid asset, but the institutions might, from time to time, also hold liquidity in assets such as short-dated Treasury or commercial bills which are not money. Indeed, the long-run stability of the ratios of money and liquidity to the total assets held by the UK institutions in the final three decades of the twentieth century was remarkable, given the wider economic turmoil and institutional upheaval of those years. It is reasonable to propose that the stability of the institutions' desired ratio of money to assets may serve the same purpose in a discussion of asset markets as Fisher's

4 See the author's 'Money and asset prices in the UK's boom–bust cycles', research papers in the May 2000 and June 2000 issues of Lombard Street Research's *Monthly Economic Review*. (The papers are available from the author at tim.congdon@lombardstreetresearch.com.)

Figure 1 **The institutional 'liquidity ratio' in the UK, 1973–2003**
Ratio of liquid assets to total assets for life assurance companies and pension funds combined, %



Sources: *Financial Statistics* (London: Office for National Statistics), various issues, and author's calculations
Note: Figure shows ratio of liquid assets to total assets at life assurance companies and pension funds combined

stability of persons' desired ratio of money to expenditure in a discussion of goods markets.

The monetary behaviour of the financial institutions and asset prices: an analytical sketch

Given the long-run stability of the money/asset ratios in the UK's leading financial institutions, it is easy to sketch – in a simplified way – a link between financial sector money and asset prices. As already noted, a crucial feature of Fisher's and Friedman's

descriptions of the transmission mechanism was that payments were being made within a closed circuit. As a result, if agents had excess money, individuals' attempts to unload their excess balances by increased expenditure would not change the quantity of money. Spending and national income adjusted to the quantity of money, not the quantity of money to spending and national income. An analogous argument is readily presented in the case of financial institutions in asset markets.

To help in understanding the processes at work, a highly stylised 'asset market' may be assumed. It could be regarded as a naive characterisation of Keynes's 'financial circulation'. Suppose that the UK's financial institutions are the only holders of and traders in UK equities (i.e. they operate within a closed circuit), that equities constitute all of their assets and that the stock of equities (i.e. the number of shares in issue) never changes. Suppose that – for whatever reason – the financial institutions' money balances jump sharply and that they have excess money. Whereas in the long run they try to keep their ratio of money to total assets at, say, 4 per cent, their money/assets ratio (or 'cash ratio') now stands at 6 per cent. In terms of figures, they might have £60 billion of money and £1,000 billion of equities, whereas recently they had £40 billion of money and £1,000 billion of equities. Each individual institution tries to get rid of its excess money by buying equities. *But the purchase of equities by one institution is the sale by another. For all the institutions taken together, the assumptions ensure that the flow of purchases and sales cannot change the £60 billion of money in the system.* No matter how frenetic the trading activity and no matter the keenness of particular fund managers to run down their cash, the aggregate £60 billion cannot rise or fall. The value of trading in equities in

a year may be an enormous multiple of this £60 billion, but still the £60 billion cannot change.

How, then, is the 4 per cent cash ratio restored? In one round of transactions the excess supply of money causes buyers to be more eager than the sellers and the price of equities edges up, perhaps by 10 per cent, so that the value of the stock of equities is £1,100 billion. The cash ratio falls to (£60 billion divided by £1,100 billion), or just under 5.5 per cent. This is a movement towards the equilibrium 4 per cent ratio, but it is not enough. The institutions still hold 'too much money'. In the next round of transactions the excess supply of money again causes buyers to be more eager than sellers and the price of equities moves upwards again, perhaps by 15 per cent. The value of equities rises to £1,265 billion and the cash ratio drops to about 4.75 per cent. And so on. In every round the value of the money balances stays at £60 billion. *It does not change because – within the closed circuit assumed in the exercise – it cannot change.* The return of the institutions' cash ratio to the equilibrium 4 per cent is achieved, after so many rounds of transactions, by a rise in the value of equities to £1,500 billion. The institutions' asset values have adjusted to the amount of money they hold. It is a striking, but entirely realistic, feature of the example discussed that a rise in their money balances from £40 billion to £60 billion (i.e. of only £20 billion) is associated with (or 'causes') a rise in equity prices of £500 billion. The argument can be generalised freely. In the advanced economies of today, specialised financial institutions are the characteristic holders of assets. It follows that, when they hold excess money, there is likely to be upward pressure on asset prices; conversely, when they have deficient money balances, asset prices tend to fall.

Asset prices and economic activity

The realism of the analytical sketch above is very much open to question, but its value for heuristic purposes will become clear as the discussion evolves. By contrast, the claim that asset prices are relevant to spending behaviour should not need an elaborate defence. It should be sufficient to emphasise the ubiquity of arbitrage in asset markets and to note two kinds of linkage between asset markets and the rest of the economy. These linkages ensure that asset prices affect spending.

Arbitrage is important, because it links the price of equities with the price of the tangible assets and goodwill to which they relate and, at a further remove, to the price of all financial securities and all tangible assets. An excess supply of money may in the first instance boost the price of existing equities traded on the stock exchange. But that induces new issuance by listed companies and the formation of new companies with a view to seeking a quotation. Commercial real estate illustrates the processes at work. In an asset price boom, real-estate companies may be traded on the stock exchange at a premium to the value of the buildings they own, where value is assessed by chartered surveyors calculating the discounted present value of future rents. Owners of commercial property therefore package their buildings in a corporate vehicle and try to sell these vehicles to financial institutions. The market price of all property is boosted by the ambitious stock market valuations. In a modern economy similar processes are at work for all assets. Further, arbitrage operates between different assets as well as between different forms of the same asset. If equities rise sharply in price, they may appear overvalued relative to commercial or residential property. The wide variety of wealth-holders found in a modern economy – including rich indi-

viduals and companies, as well as the large financial institutions – may then sell equities and use the proceeds to buy property. The excess supply of money – the condition of 'too much money chasing too few assets' – has pervasive effects.

Of course, the power of arbitrage to remove asset price anomalies relies on the ability to switch payments between different types of asset market. A key assumption in the analysis – that of a specialised asset market, which constitutes a closed circuit where certain asset prices are set – has to be relaxed. Instead agents compare prices in all asset markets, and sell overvalued assets in one market and buy undervalued assets in another. (Not only do they sell overvalued stocks to buy undervalued stocks and sell small-capitalisation stocks to buy big-capitalisation stocks and so on, but they also sell houses to buy shares and sell shares to buy houses.) Does that destroy the concept of a closed circuit of payments in which the ability of excess or deficient money to alter asset prices depends on the quantity of money being a given? The short answer, in an economy without international transactions, is 'not at all'.[5]

It is true, for example, that – if quoted equities become expensive relative to unquoted companies of the same type – the owners of unquoted companies will float them, which withdraws money from the pool of institutional funds. Conversely, when quoted companies become cheap relative to 'asset value',

5 Of course, every economy has international transactions. Such transactions represent another escape valve for an excess supply or demand for money balances, in accordance with the monetary approach to the balance of payments. But to discuss the possibilities would take the paper too far. In any case, the incorporation of 'an overseas sector' in data-sets on transactions in particular assets is conceptually straightforward (see Table 3 in the main text). The overseas sector's transactions become entries in the capital account of the balance of payments.

Table 3 **Asset markets in the UK in 1994**

1 The market in quoted ordinary shares (equities)

Net sellers of equities	*Amount sold, £m*	*Net buyers of equities*	*Amount bought, £m*
Banks	393	Life assurance and pension funds	8,531
Personal sector	679	Remaining financial institutions	1,097
Industrial and commercial companies	9,261	Overseas sector	4,351
Public sector	3,646		
Sum of sales by net sellers	13,979	Sum of purchases by net buyers	13,979

Note: Each of the identified types of equity market participant had substantial purchases *and* sales. The gross value of their transactions was a very high multiple of their net purchases and sales. Stock exchange turnover in UK and Irish listed equities was £577,526 million in 1994. (In 1994 the UK's gross domestic product at market prices was about £670,000 million.)
Source: *Financial Statistics* (London: Office for National Statistics), June 1998 issue, Tables 8.2A and 6.3A

2 The market in unquoted ordinary shares

Net sellers of unquoted ordinary shares	*Amount sold, £m*	*Net buyers of unquoted ordinary shares*	*Amount bought, £m*
Remaining financial institutions	3,430	Banks and building societies	1,929
Public sector	726	Life assurance and pension funds	106
Personal sector	1,890	Industrial and commercial companies	694
		Overseas sector	3,317
Sum of sales by net sellers	6,046	Sum of purchases by net buyers	6,046

Note: Again, each of the different types of market participant would have had substantial purchases *and* sales, although gross turnover would have been much smaller than with quoted equities. Transactions would have included successful business people selling out to corporate entities.
Source: *Financial Statistics*, June 1998, Table 8.2B

3 The market in UK company bonds and preference shares

Net sellers of bonds and prefs	*Amount sold, £m*	*Net buyers of bonds and prefs*	*Amount bought, £m*
Remaining financial institutions	10,378	Banks and building societies	2,312
Industrial and commercial companies	7,215	Overseas sector	16,039
Central government	2,276	Life assurance and pension funds	1,449
		Personal sector	69
Sum of sales by net sellers	19,869	Sum of purchases by net buyers	19,869

The sum of net sales and purchases was zero.
Note: Again, each of the different types of market participant would have had substantial purchases and sales.
Source: *Financial Statistics*, June 1998, Table 8.2C

entrepreneurs organise takeovers, which inject money back into the institutional pool. To the extent that one type of participant has been a net buyer and it has satisfied its purchases by drawing on its bank balances, its bank deposits (i.e. its money holdings) must fall. But the money balances of another type of agent must rise. In fact, it is possible to identify particular types of participant in asset markets, and to collect data on their purchases and sales. Table 3 gives data on the markets in UK quoted ordinary shares, UK unquoted ordinary shares, and UK bonds and preference shares in 1994.[6] These markets might be thought of as belonging, archetypically, to Keynes's 'financial circulation'. The net value of purchases and sales in a particular market, and indeed of all asset purchases and sales in the economy as a whole, is zero. But the

6 The reader may ask, 'Why 1994?' The answer is that the data in Table 3 are no longer prepared – or, at any rate, they are no longer published – by the UK's official statistical agency.

logically necessary equivalence of the value of purchases and sales does not mean that the prices of the assets bought and sold cannot change. In particular, prices change when all the agents participating in the numerous asset markets have excess or deficient money holdings. The arena of payments – the closed circuit within which the transactions take place – becomes the entire economy.[7]

What about the two kinds of influence of asset prices on spending on goods and services? First, investment in new capital items occurs when the market value of assets is above their replacement cost. If the value of an office building was £10 million and it cost only £5 million to purchase the land and build it, it would obviously be profitable for an entrepreneur to organise the construction of the new office building. On the other hand, if

7 It is conceptually straightforward – although empirically very demanding – to expand the arena of payments, the closed circuit for transactions, so that it becomes the world economy. For small- and medium-sized economies the effect of differences in money growth rates on the exchange rate is an important element in the transmission mechanism from money to economic activity and the price level. In the UK policy debate in the 1970s and 1980s the relationship between money and the exchange rate was much noticed, and some economists even thought that the exchange rate was the key asset price influenced by money supply trends. The work of David Laidler and Michael Parkin at the Manchester Inflation Workshop was influential in spreading so-called 'international monetarism'. (See, for example, the papers in Michael Parkin and George Zis [eds], *Inflation in Open Economies* [Manchester: University of Manchester Press, 1976].) The ideas were developed at the London Business School, with well-known papers from James Ball, Alan Budd and Terence Burns. (See, again, for example, James Ball and Terence Burns, 'The inflationary mechanism in the UK economy', *American Economic Review* [Nashville, TN: American Economic Association, 1976], vol. 66, pp. 467–84.) One purpose of this study is to show that excess money growth in the UK affects not only the equilibrium sterling price of *foreign* assets (and foreign-produced goods and services), but also the equilibrium sterling price of *domestic* assets. The view that exchange rate adjustment was the heart of the transmission mechanism was given too much prominence in the UK policy debate in the 1970s and 1980s. Exchange rate adjustment is a significant part of the transmission mechanism, but only a part.

the value of a building was lower than the replacement cost, no investment would take place. Assets will continue to be bought and sold, and investments will be undertaken or suspended, until the market value of assets is brought into equivalence with their replacement value.[8] Second, consumption is affected by changing levels of wealth. When asset price gains increase people's wealth, they are inclined to spend more out of income.[9]

Another way of stating the wider theme is to emphasise that, in the real world, markets in goods and services and markets in assets interact constantly. Keynes's two circulations – the 'industrial circulation' and the 'financial circulation' – are not separate.[10]

8 The idea that investment adjusts until the market value of a capital asset equals the replacement cost is associated with James Tobin and 'the Q ratio', i.e. the ratio of market value of a firm's capital to its replacement cost. See his article, 'A general equilibrium approach to monetary theory', *Journal of Money, Credit and Banking* (1969), vol. 1, pp. 15–29. But similar remarks have been made by many economists, including Friedman. See his 'The lag in effect of monetary policy', in Friedman, *The Optimum Quantity of Money* (London and Basingstoke: Macmillan, 1969), pp. 237–60, reprinted from a paper in 1961 in *The Journal of Political Economy*, and, in particular, pp. 255–6. When an excess supply of money affects asset markets, the result is 'to raise the prices of houses relative to the rents of dwelling units, or the cost of purchasing a car relative to the cost of renting one', and so on. In Friedman's view, 'the process operates through the balance sheet, and it is plausible that balance-sheet adjustments are sluggish in the sense that individuals spread adjustments over a considerable period of time' (p. 256).

9 Numerous studies identify a relationship between wealth and consumption. See, for example, J. Byrne and E. P. Davis, 'Disaggregate wealth and aggregate consumption: an investigation of empirical relationships in the G7', *National Institute of Economic and Social Research Discussion Paper*, no. 180 (London: National Institute, 2001).

10 Keynes dropped the notions of separate industrial and financial 'circulations' in *The General Theory*, preferring instead to analyse the demand for money in terms of different motives for a particular holder rather than in terms of different holders. 'Money held for each of three purposes forms, nevertheless, a single pool, which the holder is under no necessity to segregate into ... water-tight compartments.' (Keynes, *The General Theory of Employment, Interest and Money* [London: Macmillan & Co., Papermac reprint 1964, originally published 1936], p. 195.)

If excess money in the financial sector causes asset price gains, agents of all kinds will be inclined to sell a portion of their assets and buy more goods and services (i.e. to spend a higher proportion of their incomes). On the other hand, if deficient money in the financial sector causes asset price falls, agents will spend a lower proportion of their incomes on goods and services. The adequacy of money balances relative to a desired level, the direction of pressures on asset prices and wealth-influenced changes in the propensity to spend out of income should be seen as an indissoluble whole.[11]

Before reviewing the realism of our account of money's role in asset markets, a polemical note can be injected into the discussion. In none of the above has a reference been made to 'interest rates'. Agents have been adjusting their spending on goods and

11 An implication is that the circular flow of income and expenditure – such a familiar part of undergraduate macroeconomic courses – is misleading and unrealistic when it is taken to imply that national income stays in line with national expenditure unless autonomous injections of demand come from the government or overseas. Any agent can sell any asset, obtain a money balance and use the proceeds to buy a good or service that constitutes part of national output, and the purchase leads to increased national income and expenditure. Similarly, any agent can run down a money balance and buy a good or service, with the same effects. Assets differ from money in that the nominal value of money is given, whereas the nominal value of assets can vary without limit. The transactions involved in 'mortgage equity withdrawal' from the housing market – at present a topic of much interest – illustrate the merging of asset markets and markets in current goods and services. Much research on this topic has been conducted at the Bank of England. See, for example, M. Davey, 'Mortgage equity withdrawal and consumption', *Bank of England Quarterly Bulletin* (London: Bank of England, 2001), spring 2001 issue, pp. 100–103. The author introduced the concept of mortgage equity withdrawal to the analysis of personal sector spending in a paper written jointly with Paul Turnbull in 1982. (Tim Congdon and Paul Turnbull, 'The coming boom in housing credit', L. Messel & Co. research paper, June 1982, reprinted in Tim Congdon, *Reflections on Monetarism* [Aldershot: Edward Elgar for the Institute of Economic Affairs, 1992], pp. 274–87.)

services, and their asset portfolios, in response to excess or deficient money, and the prices of goods, services and assets have been changing in order to bring agents back into 'monetary equilibrium' (i.e. a condition where the demand to hold money balances equals the supply of such balances). The Bank of England's version of the transmission mechanism in its 1999 note to the Treasury Committee – like the innumerable other accounts in which interest rates do all the work – is far from being the only way of approaching the subject or a definitive statement of the matter.

What about 'the rate of interest'?

A further point needs to be recognised. The lack of an explicit reference to 'interest rates' does not mean they are absent from the discussion. Indeed, they are present implicitly whenever the price of an asset is mentioned. If the expected income stream from an asset is given, its yield varies inversely with the price. If the yield – denoting the income return – is taken to be a similar expression to 'the rate of interest', the determination of the level of an asset price becomes equivalent to the determination of 'the rate of interest'. This is most clear if the discussion is confined – as in some accounts of Keynes's *General Theory* – to an economy with non-interest-bearing money and fixed-interest bonds. In equilibrium the expected return from holding the bond just compensates the saver for the loss of the convenience associated with holding money. It follows that, if an existing equilibrium is disturbed by an increase in the quantity of money, the equilibrium bond price ought to rise and 'the rate of interest' to fall. *The General Theory*, macroeconomics textbooks and academic journals devote a huge amount of attention to a particular case where this normal

reaction is not found; they identify a possible perverse outcome – the celebrated 'liquidity trap' – in which 'the rate of interest' does not fall any further when the quantity of money increases. (The explanation is that investors fear a future capital loss from holding bonds at high prices and so are not prepared to drive them up further.) In a liquidity trap monetary policy appears to be ineffective. In *The General Theory* Keynes magnified the trap's importance, arguing that it might become a fatal flaw of market capitalism and a powerful justification for 'a somewhat comprehensive socialisation of investment'.[12] He did concede, however, that – when he was writing in the mid-1930s – he knew of no example of a liquidity trap in the real world. Professor Paul Krugman of Princeton University has claimed more recently that Japan suffered from a liquidity trap in the late 1990s, because its economy failed to achieve a convincing recovery when the Bank of Japan reduced its discount rate to zero.[13]

But Keynes's presentation of the liquidity trap in *The General Theory* was a special argument about an economy with only two assets (i.e. money and bonds). A more realistic economy is replete with a highly diverse range of assets, many of which have quite different price dynamics from fixed-interest bonds. Nowadays equities and real estate, both residential and commercial, are more important in most portfolios than bonds. It remains true that

12 In a footnote to p. 309 of *The General Theory* Keynes quoted from Bagehot, 'John Bull can stand many things, but he cannot stand 2 per cent.' In the final chapter he claimed that, since 'it seems unlikely that the influence of banking policy on the rate of interest will be sufficient by itself to determine an optimum rate of investment', the state should undertake 'a somewhat comprehensive socialisation of investment' (Keynes, *The General Theory*, p. 378).

13 Paul Krugman, *The Return of Depression Economics* (London: Allen Lane for the Penguin Press, 1999), pp. 70–77.

wealth-holders have to balance at the margin the relative attractions of money and these assets. As argued in earlier sections, the effect of an increase in the quantity of money is to cause several rounds of portfolio rebalancing, and to raise the equilibrium price of equities and real estate.[14] With the dividend stream given, an increase in the price of equities is equivalent to a reduction in the dividend yield that they pay (or 'the rate of interest' on equities, if the reader prefers to put it like that); with the rental stream given, an increase in the price of real estate is equivalent to a reduction in the rental yield ('the rate of interest') on real estate; and so on. We can make similar statements about 'the rate of interest' on almost any asset we care to consider. To confine the discussion to 'bonds', and to 'the rate of interest' on bonds, is a gross misrepresentation. Many textbooks, influenced by *The General Theory*, suffer from this habit. They should have been rewritten decades ago.[15]

14 Note that this is only a *partial and temporary* equilibrium. After a jump in the quantity of money a rise in the price of equities may restore equilibrium between the quantity of money and the value of the equity market and real estate, but it may disturb a pre-existing equilibrium between, on the one hand, the market value of equities and real estate, and, on the other, the replacement cost of capital assets. Further decisions, and more rounds of adjustment, are then motivated, as agents try to restore equilibrium between the market value of assets and their replacement cost. Of course, in a *general and complete* equilibrium all the equilibrium conditions must be satisfied.

15 A standard text – *Macroeconomics* by Dornbusch and Fischer – says, in a discussion of the demand for money, 'The wealth budget constraint in the assets markets states that the demand for real balances ... plus the demand for real bond holdings ... must add up to the real financial wealth of the individual.' So, 'the decision to hold real money balances is also a decision to hold less real wealth in the form of bonds' (Rudiger Dornbusch and Stanley Fischer, *Macroeconomics* [New York: McGraw-Hill, 6th edn, 1994], p. 103). Surprisingly, this restriction of wealth to the sum of money and bonds follows shortly after an account of real-world assets, which refers at some length to equities and housing. Keynes himself – although not apparently succeeding generations of textbook writers – understood the dangerously specific way in which he talked of 'the rate of interest' in

Further, the shift of focus towards equities as the dominant alternative asset to money generates an argument that makes the liquidity trap highly implausible. In our analytical sketch of the monetary determination of asset prices, it was clear that increases in financial sector money raised the equilibrium level of equity prices. The impact on investment depended largely on the relationship between the market price of equities and the replacement cost of buildings, plant and equipment. In a world where the only two assets are money and equities, injections of extra money boost the market price of equities and reduce their equilibrium dividend yield. It is possible – as in an economy with only money and bonds – that the dividend yield falls to an unusually low level and that additional money injections cannot persuade investors to drive the dividend yield down further. Monetary policy would seem to be as ineffective as in a bond-dominated economy.

But would that make sense? Notice what is being said here. It is being claimed that monetary policy cannot work because – although the dividend yield is low and equity prices are high – extra money will not push equity prices to even more ambitious levels. Another equilibrium condition has to be remembered, the need for the market price of equities to be equal to the replacement cost of buildings, plant and equipment. In almost any conceivable real-world situation, a low dividend yield on equities ('a bull

The General Theory. In a footnote on p. 151 he remarked, 'In my *Treatise on Money* ... I pointed out that when a company's shares are quoted very high so that it can raise capital by issuing more shares on favourable terms, this has the same effect as if it could borrow at a low rate of interest' (the quotation is from the 1964 Macmillan Papermac edition of *The General Theory*). Whether one talks in terms of interest rates and asset yields, or in terms of the market value of assets in comparison with their economic value and replacement cost, is to some extent a matter of taste.

market', in more familiar parlance) implies that their market price is above replacement cost. This encourages people to order new capital goods and sell them for a profit, and buoyant economic activity is indeed the characteristic accompaniment of equity bull markets. Keynes was wise to concede in *The General Theory* that he knew of no real-world example of a liquidity trap. Its plausibility depended on the rarefied assumption of an economy where the only two assets were money and bonds. A more realistic and sensible framework for the analysis of the relationship between money and asset prices is long overdue.[16]

The realism of the analytical sketch: what is the direction of causation?

A central motif of the argument has been that spending and asset prices change in response to the quantity of money, not that the quantity of money responds to spending and asset prices. Many economists, however, dispute this view of the direction of causation. In an early critique of Friedman's work, Kaldor claimed that the quantity of money was determined by national income rather than national income by the quantity of money.[17]

16 A good example of the contemporary neglect of the role of money in asset price determination is Schiller's well-regarded *Irrational Exuberance*. The book analyses the stock market excesses of the late 1990s without a single reference to a monetary aggregate. A few pages are devoted to the possible role of monetary policy in preventing bubbles, but monetary policy is reduced to 'interest rate policies' (see p. 225 of Robert J. Schiller, *Irrational Exuberance* [Princeton, NJ: Princeton University Press, 2000]).

17 Nicholas Kaldor, 'The new monetarism', *Lloyds Bank Review* (London: Lloyds Bank), July 1970 issue, pp. 1–17, reprinted on pp. 261–78 of Alan Walters (ed.), *Money and Banking: Selected Readings* (Harmondsworth: Penguin Education, 1973). See, in particular, p. 268 in the book of papers edited by Walters.

In discussing Friedman's demonstration of the historical stability of money's velocity of circulation, Kaldor said that stable velocity had been maintained 'only because ... the supply of money was unstable'. The explanation was that 'in one way or another, an increased demand for money evoked an increase in supply'. The amount of money 'accommodated' to 'the needs of trade', possibly because the official objective of 'financial stabilisation' kept interest rates constant at a particular level or possibly because the central bank and the government wished to ensure 'an orderly market for government debt'. Kaldor's remarks begged several new questions, as the description of money supply creation was rather unclear. A fair summary, however, is that he thought that – if agents had an excess supply of or demand for money – banks' customers would talk to their bank managers, and take the necessary action to reduce or increase the size of their money balances and so restore it to the desired, equilibrium figure. If the customers had excess money, they would reduce their bank borrowings and contract the quantity of money; if their money balances were deficient, they would increase their bank borrowings and so create more money. The quantity of money would therefore be 'endogenous'; it would react to 'the needs of trade' (i.e. national income), not the other way round.

Similar statements have also been made about the relationship between financial sector money and asset prices. It is said that if agents' money holdings are out of kilter with the rest of their portfolios they can easily change the quantity of money without any effect on asset prices or other macroeconomic variables. Some of the most forthright such statements have come from Minford. One example appeared in a 1996 paper from the Liverpool Research Group. In Minford's words,

> How much is held on deposit depends on investors; and whether they hold these deposits in banks, building societies or other close competitors will depend on their relative terms – interest rates and service. However much you change the definition of money it will be a volatile quantity, as depositors switch from markets to cash and between institutions inside and outside the definitions.[18]

In short, according to this thesis, if agents have excess money, they *as individuals* try to get rid of the surplus balances by switching to a close alternative asset, and the consequence of all these attempts is to reduce the quantity of money *in the aggregate* and thereby eliminate the excess money. Indeed, Minford has made statements about asset portfolios that imply they can be restructured or reorganised to any extent, and yet still make no difference to macroeconomic outcomes. In his words, 'There is literally an infinite number of asset-liability combinations in which the private sector can hold its savings; and each is as good as the other from its viewpoint.' In his book on *The Supply Side Revolution in Britain* he exemplified the argument by a reference to unit trusts. In his words, the formation of a new unit trust may have the result that

> ... there are more private sector assets and liabilities; but savings are the same and so are interest rates. As a result nothing has changed to make people want to spend more or do anything differently. All that has happened is a reshuffling of balance sheets.[19]

18 Patrick Minford, paper from Liverpool Research Group, summer 1996. The passage was discussed in Tim Congdon, 'An open letter to Professor Patrick Minford', *Monthly Economic Review* (London: Gerrard & National, July 1996), pp. 3–12.

19 Patrick Minford, *The Supply Side Revolution in Britain* (Aldershot: Edward Elgar for the Institute of Economic Affairs), p. 70.

By extension, if banks add to their balance sheets by making new loans or purchasing securities, the resulting increase in their deposit liabilities (i.e. in the quantity of money) does not cause people to want 'to spend more or do anything differently'. The extra assets and liabilities cancel out, and net wealth is unchanged. According to Minford, the increase in bank deposits therefore has no relevance to other macroeconomic variables.

To summarise, the Minford argument has two parts. The first part says that, as financial institutions' assets and liabilities must be equal, their net wealth is always nil and cannot at any time be relevant to expenditure. The second asserts the infinite plasticity of balance sheets, that any transaction – 'reshuffling' to use his term – may alter the composition of the balance sheet, but changes in composition are irrelevant to the wider economy. Any consequences are contained within the financial system, and so have no bearing on 'savings' and 'the interest rate', which – in the Minford scheme – evidently do matter.

The Minford argument is discussed in some detail in this study, because it has had considerable influence on UK policy-making. Minford has used it to challenge the macroeconomic significance of broadly defined money measures, and he is the leading exponent in the UK of the view that narrowly defined money measures (such as Mo) are crucial to the economy's behaviour. Sir Alan Walters, who was economic adviser to Mrs Thatcher when she was prime minister in the 1980s, also belongs to what might be termed 'the narrow money school'. In his *Britain's Economic Renaissance* he proposed a definition of money in which the use of money in retail transactions was highlighted. But his preference is for a somewhat wider

measure (i.e. M1, including what he terms 'checkable accounts') than Minford.[20]

A factual and statistical account of historical episodes characterised by large asset price movements may throw light on the validity of the arguments from Kaldor and the narrow-money school, and help to settle the debate about the direction of causation. That is the work of the next two chapters.

20 Alan Walters, *Britain's Economic Renaissance* (Oxford: Oxford University Press, 1986), pp. 116–17.