4 THE SOCIAL COSTS AND BENEFITS OF CENTRAL BANKING

The usual context of the phrase 'social cost–benefit analysis' is the appraisal of major public sector investment projects, with the aim of the analysis being to see how the value of a project's output to society compares with its resource cost. To adopt the phrase in a discussion of the structure of banking systems may seem odd. Central banks are, however, found almost universally in present-day market economies. Why? What are the benefits to the economy at large that justify their staff costs and rents (and indeed, in the case of the Bank of England, quite a lot of flummery and tinsel)?

Two types of benefit are particularly important. The first is a reduction in the cost of bank finance, the explanation for which arises from the material in the last two chapters; the second is an increase in the flexibility of bank finance, which requires a new line of analysis to be developed in this chapter.

Lower costs of bank finance

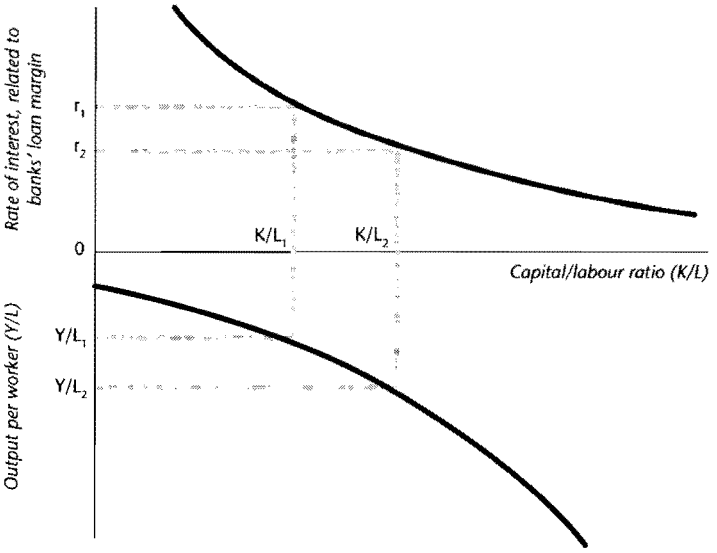
Chapter 3 demonstrated that banks had lowered their cash/asset ratios and capital/asset ratios drastically since they first evolved from primitive moneylending, and that these long-run patterns owed much to the innovation of central banking. The driver was profit maximisation. The algebraic argument at the end of

Chapter 2 showed that, for any particular loan margin, the rate of return on banks' capital increases as the cash/asset and capital/asset ratios decline. Privately owned banks valued the services provided to them by central banks, since these services enabled them – with unchanged risk – to raise the ratio of earning assets to total assets and to increase their leverage. With a given level of equity, the result of increased earning assets and more leverage was higher profits.

But how do higher profits for bankers translate into benefits for society? It must be remembered that unusually high profitability in banking ought to induce the entry of new capital and the intensification of competition. As Alfred Marshall elaborated in Book VI of his 1890 classic, *Principles of Economics*, in the long run the rate of return on capital ought to be the same in all industries. The supply price of banking services – which here means 'the loan margin' – ought to come down until banks' revenues exceed costs only by enough to deliver a 'normal' rate of return. The various innovations considered in Chapter 3 – such as the setting-up of clearing houses and the establishment of central banks – initially cut banks' cash and capital ratios, and helped their profits. But over time they caused banks to offer loan facilities at a lower interest rate to non-banks. Central banking therefore lowered the cost of bank finance throughout the economy.

The discussion can now be readily linked to the formal concepts of theoretical welfare economics. Given a society's production possibilities, a function relating the marginal return on capital to the size of the capital stock can be proposed (see Figure 3). In the absence of a central bank, banks' loan margins have to compensate for the risk of bank runs and the associated potential illiquidity, and so the effective rate of interest in investment

Figure 3 **Banks' loan margins and output per worker (i.e. living standards)**



As banks' loan margins fall, the rate of interest in investment decisions drops from r_1 to r_2, the capital/labour ratio rises from K/L_1 to K/L_2 and output per worker increases from Y/L_1 to Y/L_2.

decisions is r_1. Once central banks have emerged, banks have lower cash/asset ratios and lower margins, and the rate of interest falls to r_2 and the equilibrium capital stock increases. Assuming that the society has a conventional production function, the rise in the capital stock ought to be associated with rises in the capital/labour ratio and the marginal productivity of labour. Again, assuming the usual relationships of neoclassical economics, a rise in the marginal productivity of labour ought to be accompanied by higher wages and living standards.

The effects of reductions in banks' cash/asset and capital/

asset ratios on loan margins can, for any given rate of return on capital, be calculated using the formula given in Chapter 2. Whereas Table 3 at the end of the last chapter included a target rate of return on capital of 14 per cent, since that would be a challenge in the long run, Table 4 below uses a target rate of return of 7 per cent. The experience of market capitalism seems to be that the long-run rate of return on equity investment is around the level of about 6 to 7 per cent a year, according to most studies that have considered the subject.[1]

Table 4 **How banks' loan margins vary with their cash ratios**

The table shows how, with a given target rate of return on capital and capital/assets ratio, a reduction in banks' average return on their earning assets (i.e. their loan margin, more or less) becomes possible as the cash ratio falls. All figures expressed as a percentage.

P/K *Rate of return on capital*	*C* *Cash ratio*	*K/A* *Capital/assets ratio*	r_b *'Loan margin'*
7	80	5	1.7
7	60	5	0.8
7	40	5	0.5
7	20	5	0.4
7	5	5	0.3
7	1	5	0.3

One point suggested by the table is that the big gains in banking efficiency came before central banking. The historical record suggests banks had cut their cash/asset ratios to the 20–30 per cent area before a distinct central bank was split from the rest

1 See, for example, Elroy Dimpson, *The Triumph of the Optimists*, University Presses of California, Columbia and Princeton, 2002.

of the banking industry. The table shows that – on the assumptions (i.e. a 7 per cent rate of return on capital and a capital/assets ratio of 5 per cent) – a fall in the cash/asset ratio from 20 per cent to 1 per cent leads to a narrowing of loan margins only from 44 basis points to 35 basis points. Nevertheless, this is a gain worth having.

Table 5 **How banks' loan margins vary with their capital/asset ratios**

The table shows how, with a given target rate of return on capital and cash ratios, a reduction in banks' average return on their earning assets becomes possible as the capital/assets ratio falls. All figures are expressed as a percentage.

P/K *Rate of return on capital*	*C* *Cash ratio*	*K/A* *Capital/assets ratio*	r_b *'Loan margin'*
7	1	45	3.18
7	1	20	1.41
7	1	15	1.06
7	1	8	0.57
7	1	5	0.35
7	1	3	0.21

The position is rather different with the capital/assets ratio. The introduction of central banking, and the associated improvements in banking regulation and supervision, ought to allow a reduction in capital/assets ratios. Table 5 shows that reductions in capital/asset ratios have a major effect on acceptable loan margins, even when the capital/assets ratio is already quite modest. A return on assets of just 60 basis points results in a reasonable return on capital when the capital/assets ratio is 8 per cent, but a return on assets as meagre as 20 basis points has the same outcome when the capital/assets ratio is 3 per cent. Spreads

as low as this have been found only in international wholesale banking, notably in the so-called 'euro-markets' centred in London. The relevance of the capital requirement to the conduct of business, and the battle for market share, is obvious. No wonder that American and European banks resented the competition from Japanese rivals in these markets in the 1980s given that the Japanese operated with markedly lower capital/asset ratios.

More flexible lending facilities

The historical record shows that credit preceded banking. Inscriptions on clay tablets show that loans were being made between merchants in the ancient Near East (modern Iraq and Syria) over four thousand years ago, well before the start of banking. In the pre-banking era a loan by one merchant to another required that the lender reduce his stock of the loan material, often a precious metal, in order to acquire a claim on the borrower. A loan could not be made before the creditor's prior holding of the asset that he or she was to lend. This is a far from silly way of looking at credit arrangements in the modern world. Some people may believe that, when they are granted a bank loan, the loan comes out of a big pot of banknotes which has had a prior existence over an extended period. Isn't it common sense to think that the bank – like the merchant in ancient history – cannot lend unless it already holds the requisite number of banknotes? After all, money doesn't grow on trees, does it?

In fact, banking practice is epitomised when both loan proceeds and bank deposits are created out of thin air. Unlike the merchant in ancient history, a bank does not need to hold in advance the physical substance – the legal-tender notes – that

constitute the material which makes up its loans. The ability to conjure up new money from nothing may seem to be magic, and this characteristic of banking undoubtedly baffles and surprises many people. But there is no magic involved. When a bank extends a new loan, it adds by 'a stroke of the pen' identical sums to its assets (its loan portfolio) and its liabilities (its deposits). The extra assets and liabilities cancel out. Its own net worth – its equity capital – is unchanged. If borrowers were all immediately to ask for loan proceeds to be converted into cash, the bank's cash holding could be threatened and might even run out. (The bank would still have assets in the form of loans.) But in practice borrowers are no more likely to want to convert a new deposit (i.e. a deposit created by a loan) into cash than are depositors in general. Typically a borrower intends to use the proceeds to purchase an asset and the purchase is made by a payment instruction from one bank to another. Bank loans lead to payments between banks, with debits and credits largely cancelled in the clearing process. In the normal course of events little or no cash leaves the banking system.

Banks' ability to add identical amounts to loan assets and deposit liabilities, and so to create new money from scratch, facilitates a particularly useful type of product, the overdraft. A standard overdraft facility specifies a maximum borrowing figure, but no minimum, giving the borrower discretion about the size of his loan. Loan principals can be borrowed and repaid several times in a year, if that suits the bank's customers. Some types of business – with dealers in financial securities and commodities being the best examples – have large and unpredictable balance sheets. When trading opportunities arise, the drawing-down of the overdraft allows them to own 'books' of securities and

commodities (and make a trading turn on them) which are many times their own capital. On the other hand, when business is quiet and their own 'books' are the same or lower than their capital, they can repay the overdraft and they have no interest charges to cover.

Two types of loan facility can be compared, the overdraft facility and a fixed-sum, fixed-period loan. If only the fixed-sum, fixed-period loan were available, dealers in financial securities and commodities would have either to limit their 'book' to their own capital or to guess in advance the maximum book that would be profitable and borrow an amount equal to the excess of that over their capital. The result would be an obvious loss of flexibility relative to the overdraft method of finance. With an overdraft the average size of a dealer's loan is equal to the average size of the book (minus capital), not the maximum size, in a particular period. Interest costs are clearly reduced, while the risk of misjudging the opportunities available (i.e. of taking out a costly fixed-sum and fixed-period loan ahead of a quiet trading period) does not arise. In the first instance the availability of overdrafts ought therefore to boost the profitability of trading in securities and commodities. The gains ought, however, eventually to spread more widely. Commodity dealers supply wholesalers and wholesalers supply retailers. If the provision of overdraft finance by banks is accompanied by competition, commodity dealers' lower interest costs should lead to a narrowing of the margins they charge to wholesalers and, eventually, to lower prices in the shops. More generally, banking and other forms of financial intermediation give business more choice about when to open and close financial exposures of various kinds, and – if the system is running well – this expansion of opportunities costs next to nothing in resource terms.

In view of the benefits of overdrafts to the economy, it must be socially advantageous if the banking industry is structured so that it can provide them. But let us now return to the discussion of banks' ability to create credit and money by a stroke of the pen. Crucial to that process is that, when a bank (say Bank Alpha) adds a sum to its borrowing customer's deposit, the customer does not immediately convert the loan proceeds into cash. Instead the customer buys an asset by making a payment to another individual, perhaps a customer of another bank (Bank Beta). If a large number of Bank Alpha's customers take up overdraft facilities at the same time and all make payments to Bank Beta, Bank Gamma and Bank Delta, then Bank Alpha may have to transfer cash to these other banks in excess of its own original cash holding, leading to a crisis. (The logic here is just the same as in the discussion of clearing in Chapter 3. Remember that non-banks settle their accounts at banks; banks settle in cash, i.e. notes or their balance at the central bank.) Fortunately, each bank is only part of the larger system. For most of the time the customers of Banks Beta, Gamma and Delta draw down their overdrafts at roughly the same rate, relative to their agreed maximum facilities, and also to the banks' total assets and capital, as those of Bank Alpha. The existence of overdraft arrangements should not lead to recurrent crises in the clearing system.

But banks must take precautions. Bank Alpha may be very well capitalised, and prudent and careful in the conduct of its business. Nevertheless, it may – for reasons that it could not have foreseen – experience very heavy drawing-down of overdrafts by its customers, relative to the rest of the banking industry. So its vault cash and central bank balance are depleted, and it may be in danger of being unable to repay deposits with notes. Of

course, it ought to have liquid securities that it can sell quickly to replenish its cash, but suppose – again for reasons that it could not have foreseen – that the market in such securities is closed. The only remaining potential supplier of legal-tender cash is the institution that issues the legal tender, namely the central bank. In summary, Bank Alpha is more willing to offer overdraft facilities to its non-bank customers, with all the wider benefits throughout the economy, if the central bank is prepared to lend to it in an emergency. More generally, the flexibility of the commercial banks' lending arrangements is enhanced by the central bank's acceptance of a lender-of-last-resort role. The banking system best serves the interests of non-banks throughout the economy when, in turn, the central bank serves the interests of the banking system by extending loans when its members are short of cash.

Central banking has large net social benefits

Chapter 2 concluded that 'bankers are likely to support any developments, in technology or institutions, including the institutional relationships within their own industry, which enable them to lower their cash/deposits ratio (i.e. their "liquidity") and their capital/assets ratio (i.e. their "solvency")'. Chapter 3 demonstrated that central banking – along with other innovations, particularly in the technology of payments settlement – had led to large falls in banks' cash/deposits ratio and capital/assets ratio over the centuries, but particularly in the 150 years or so since the 1860s, when the modern concept of a 'central bank' first became viable and Bagehot began to theorise about it. So there can be no surprise that commercial bankers favour the establishment

of central banks. But this chapter has established that, while the benefits of central banking may initially accrue to banks' managements and shareholders, in the long run the benefits are diffused throughout the economy. Falls in banks' cash/asset and capital/asset ratios lead to a decline in banks' loan margins, and narrower loan margins imply a reduction in financing costs throughout business, a larger capital stock and higher living standards. In addition, when commercial banks are able to bolster cash by ready sales of securities to the central bank or even by borrowing from it, they are more prepared to extend overdraft facilities to their customers. Initially the widespread availability of overdrafts helps the profits of dealers in securities and commodities, but ultimately competition narrows dealing spreads and reduces costs to the retail customer. So – to put the matter crudely and succinctly – central banking makes people better off.[2]

A rigorous demonstration that these benefits exceed the costs of central banking will not be attempted here. But it is evident that the effects of central banking on the cost and quality of the services that banks provide to non-banks are positive. By contrast, the resource cost of central banking is negligible. In general the central bank needs to transact on a regular basis only with banking organisations heavily involved in cheque clearing and payments settlement, and these organisations tend to be large and few in number because their distinctive activities are characterised by pronounced 'network economies'.[3] The average unit size

2 The innovation of central banking ought to raise the ratio of bank assets and liabilities to GDP. The argument that the real capital stock is a positive function of the ratio of bank assets and liabilities to GDP is contained in Ronald I. McKinnon, *Money and Capital in Economic Development*, Brookings Institution, Washington, DC, 1973, notably in Chapter 9.

3 The importance of network economies in clearing business is part of the

of transactions between central banks and commercial banks is enormous (running in the UK's case to many millions of pounds), while credit assessment can be high level and related exclusively to the banking sector rather than being micro-managed at the level of small loans to non-banks. An institution like a central bank has a small cost (in terms of staff, buildings and so on) and a large public benefit. But – in order to deliver its substantial net social benefit – a central bank must be able to lend money to banks. The central bank must be a lender of last resort, as hundreds of textbooks have said.[4]

For all the brickbats thrown at 'bankers', their bonuses, 'Wall Street', 'The City of London' and so on, it cannot be denied that across the industrial world recent decades have seen narrower loan margins, finer spreads in securities and commodities trading, greater diversity in financing options for companies, and increasingly capital-intensive production. Those cynical about market capitalism may mock these advantages, but they are real and important. Is it necessary to recall that communism broke down less than twenty years ago? One of the salient aspects of the transition to market economies in central and eastern Europe from 1990 was the development of profit-motivated commercial banks and the separation of such banks from a central bank with the usual recognised functions. Mono-banking (i.e. the extension of credit from a single banking institution rather than a number of competing institutions) and central planning were hopelessly

explanation for the relatively small number of large clearing banks in most countries and often gives rise to competition concerns.

4 In a celebrated 1987 article Goodhart proposed a somewhat different rationale for central banking from that set out in Chapters 3 and 4 of this study. See Charles Goodhart, 'Why do banks need a central bank?', *Oxford Economic Papers*, 39, Oxford University Press, Oxford, 1987, pp. 75–89.

inefficient at allocating resources, when compared with the highly competitive financial systems of market economies, and the dichotomisation between commercial and central banking which characterises them. We have shown how a central bank not only brings value to the economy in general but that it arises, perhaps not surprisingly given its important functions, as a spontaneous product of market forces in banking. This clearly contrasts not only with the former communist economies, but also with the 'free banking' view that a central bank should be prevented from emerging.

What about the flummery and tinsel? Is it necessary at the beginning of the 21st century for visitors to the Bank of England to be met by gentlemen wearing pink tunics and top hats? In strict functional terms, of course, it is not. The fancy dress does, however, serve the purpose of warning people that the central bank is different from other types of bank. Because no other bank can issue legal-tender banknotes, the Bank of England has been uniquely well equipped to act as go-between in inter-bank transactions, honest broker in banking mergers and arbiter in occasional disputes. Reminders that the Bank has a distinguished history are more than merely decorative.