The Role of the Central Bank

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1. Introduction and Executive Summary

This paper analyses the role of the central bank in the modern world, focusing in particular on its involvement in the payments and financial systems. I provide an overview of the functions of central banks. I then focus on the role of the central banks in promoting an efficient payments system and I disucuss their role in supervising and regulating the payments and financial systems.

2. An Overview of the Functions of a Modern Central Bank

The primary role of a central bank in a modern society is to provide a stable means of payment. This is generally viewed as providing or facilitating the use of a medium of exchange and ensuring the stability of its value, developing and overseeing an efficient payments system, and possibly promoting a stable financial system.[1] In this note I take it as given that the first of these tasks – monetary policy – is the primary responsibility of a central bank and focus on the latter two tasks, asking what should be the extent of a central bank's involvement in the payments and financial system.

In looking at the role of a central bank in a modern financial sector one must ask two questions. First, is there a market failure that requires government intervention and second, if there is, is the central bank the appropriate arm of government to provide the intervention. I examine the central bank's participation in the payments and financial system in this light.

In deciding the proper role of the central bank it is important to take into account that its design and expertise should be dictated by its primary function: making monetary policy. I start with the premise that a modern society ought to delegate monetary policy to an operationally independent body of experts. This is because monetary policy requires techncial expertise and political pressure might cause monetary policy to be used opportunistically if the central bank were not operationally independent. In deciding whether a task is best allocated to the central bank, rather than to some other part of the government, it is important to ask how complementary the task is to the central bank's primary task and whether or not the task is apt to compromise the ability of the central bank to carry out its primary task. One must also ask whether it is appropriate for an independent body to carry out the task and whether carrying out the task might threaten the central bank's independence. Some tasks may appear more technical and less political than other tasks. Allocating more technical tasks to an independent central bank and allocating tasks which may seem more political to some other part of government

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[1] Under some circumstances and in some economies, collecting an inflation tax might be an appropriate role for a central bank. Central banks may also provide financial services to both the public and private sector.

may be appealing to a democratic society and may be apt to preserve the central bank's independence.

3. Promoting an Efficient Payments System

In this section I briefly describe the problems associated with large-value payments and describe the current infrastructure.[2] I explain why the nature of this market suggests a role for the central bank provision and regulation of services.

Imagine the situation faced by banks or other financial institutions attempting to buy and sell securities before the development of modern payments systems. Banks would execute transactions by sending payments and securities' certificates of ownership by post or courier. Along with being cumbersome, this approach led to several types of risk.

First, payment might be slow, leaving a seller unable to use funds as he might have planned; this is referred to as *liquidity risk*. Second, one party might run into financial difficulties and be unable to complete their side of the transaction after the other party had completed its side. This is called *credit risk*. Third, a sequence of additional transactions might depend on an initial transaction taking place. Other banks might suffer losses or even become insolvent if the banks involved in the original transaction failed to complete it. This is termed *systemic risk*. Other problems are introduced when transactions occur across international borders. Risk associated with cross-border transactions is often referred to as *Herstatt risk*.[3]

The goal in designing an infrastructure for large-value payments is to provide a framework for handling a high volume of transactions at low cost while minimising the risks associated with carrying out these transactions. Electronic wire-transfer systems such as Fedwire and CHIPS in the United States, CHAPS in the United Kingdom and TARGET in the EU solve the problem of transfering funds by allowing individual payments to be made almost instantaneously and costlessly. The low-cost transfer of securities is facilitated by securities where ownership is indicated by registration with the issuer, rather than by certificates, and by intermediaries who hold any physical certificates and are listed as the owners of certificateless securities on the issuers' books. The brokers and banks that are the intermediaries' clients are listed on the intermediaries' books as the securities' owners and the customers of the brokers and banks are listed on the brokers' and banks' books as the securities' ultimate owners. This does away with the need for any transfer of physical proof of ownership and minimises the amount of bookkeeping associated with any transaction.

If two financial institutions or banks have a number of bilateral exchanges, these exchanges can be made more efficiently by netting their transactions. Aside from lowering transactions costs, this may reduce credit risk. Netting might be effected by an exchange of two separate legal obligations for one obligation. In case one party becomes insolvent, the other party loses at most the net amount. If many firms have multilateral exchanges they can set up multilateral netting arrangements. Alternatively, a single entity called a *clearinghouse* may effect the netting between large numbers of banks, acting as the counterparty in each transaction. A different approach from netting is to use real-time

[2] Good descriptions of large-value payments systems are in Green [5] and Miller and Van Hoose [8]. Regulation of the retail part of the payments system is part of the general regulation of the financial system.

[3] The name is from the Bankhaus I.D. Herstatt which collapsed on 26 June 1974. Regulators closed the bank late in the European trading day, but in the morning of the trading day in the United States. The bank had received foreign-currency payments from European banks, but not yet made dollar payments to banks in the United States.

gross settlement systems where the coordinating entity ensures that payment is made immediately. This reduces credit and systemic risk at the cost of reducing banks' liquidity.

The above infrastructure is a public good; it costs a lot to set up and once set up, there is no incentive to exclude additional users. Thus, private-sector firms are unlikely to produce enough of the infrastructure on their own and it is appropriate that governments are involved in its development and provision. As the settlement, payment and clearing system is central to the liquidity of the domestic and international financial system and markets, provision and oversight is complementary with making monetary policy. Moreover, the task is unlikely to be seen as overtly political in nature. Hence, central banks are the natural agents of the government to handle this responsibility. It is sensible that the Federal Reserve System operates Fedwire and a book-entry security ownership system on behalf of the Treasury; it is reasonable that the ECB runs TARGET. While central bank involvement in the provision of the payments infrastructure is desirable, experience suggests that too much government intervention stifles innovation and that a combination of the public and the private sector is the best way to provide public goods. Thus, it is also sensible, for example, that the private sector operates CHIPS and that private sector cooperatives such as SWIFT provide the software used to net transactions.

Along with being involved in the provision of the payments infrastructure, the central bank should regulate private sector involvement in this sector. There are three reasons for this. First, economies of scope are likely to result in significant market power. Second, failures in electronic technology and software can seriously disrupt the payments system. CHIPS, for example, has an average daily payment volume of $1.3 trillion.[4] Third, the decentralised nature of the payments system produces systemic risk and this is an externality. A financial institution which cannot complete a transaction does not take into account the cost of this to another institution further down a chain of transactions.[5] A couple of examples of how this risk might arise are as follows. First, some wire transfer systems promote flexibility by only requiring settlement at the end of the day. Banks can run intraday or *daylight* overdrafts and they routinely wire transfer payments when they have insufficient funds on hand to cover payment. While it is rare for an institution to be unable to honour its commitments at the end of the day, the cost of this occuring may be high. Second, netting arrangements may increase systemic risk. If they entail credit-risk-sharing across participants then this may cause financial institutions to exert less effort in monitoring the credit worthiness of their trading partners. On the other hand, if the risk is not shared and a single trader bears a disproportionate share of the costs of default, then this trader may be at risk of default.[6] It is an appropriate task for central banks to assess the costs and benefits of different outcomes and ensure that incentives exist that promote the best results.

Is there a role for international coordination in the provision and regulation of the payments system? Electronic trading is making it easy for securities to be traded across countries. Securities may be listed on multiple exchanges and multiple electronic payments systems may be involved in a transaction. The rules of exchanges and large-payment systems may vary across countries and this suggests that there is a role for cross-country coordination. An example of such coordination – and central bank partnership with the

[4] See Green [6] for a discussion of this issue.

[5] Humphrey [7] used data from CHIPS and found that a major participant's settlement failure could lead to a significant number level of additional failures. Improved risk management and regulation since his study was done are likely to have reduced this risk.

[6] See Green [5] for a discussion of this.

private sector – was the development of the Continuous Linked Settlement (CLS) Bank in 1997. Concerned with the Herstatt risk associated with the settlement of transactions in the $1.5 trillion a day interbank market for foreign exchange, the Bank for International Settlements and member central banks paid some of the initial costs of the otherwise private CLS Bank which uses high-speed computers to synchronise the two legs of a transaction, matching payments across banks as they occur.

4. Stability of the Financial System

There are a number of types of appropriate government intervention in the financial system. First the government may wish to act as a lender of last resort. Second, the government may want to regulate the financial industry. Third, intervention may be used to protect consumers.

If a solvent financial institution does not have the cash on hand to meet its customers' demands, then it is illiquid. The effects of this can range from inconveniencing its customers to contagion and serious disruption of the payment system. Routine liquidity can be provided by the private interbank market; assuring adequate liquidity in unusual circumstances is the proper role of the government. There are two types of unusual circumstances. The first is a catastrophic technical failure of the payments systems. For the central bank to provide liquidity in this scenario complements its role in maintaining the payments system.[7] The second has to due with multiple equilibria. In one equilibrium depositors believe there will not be a run on a financial instution and, thus, they do not withdraw their funds. In the other, depositors believe that there will be a run and they withdraw there cash. In both scenarios, beliefs are self-fulfilling. The latter bank-run scenario is a coordination failure and it should be averted. It disrupts the financial system and real resources are lost in the resulting financial restructuring. Moreover, if other market participants observe the run and are uncertain of the cause, this may lead to widespread panic. Only the central bank has sufficiently large resources in the short run to convince depositors that withdrawing their funds is not rational.

A more controversial subject is the role of the government and the central bank in lending to financial institutions that are insolvent, rather than merely illiquid. A justification for government intervention in this case is that some institutions are "too big to fail". Dealing with such institutions is not a natural role for a central bank for a number of reasons. A central bank is not in a position to recapitalise a failing institution. It can do this only by printing money – and jeopardising its monetary policy goals – or by decapitalising itself. It needs the support of the agency with the long-term deep pockets - the Treasury with the power to tax. In the Eurozone, the ECB does not have a national or euro-zone Treasury, as does a national central bank. In addition, recapitalising insolvent institutions is perhaps a more political task than providing short-run liquidity to solvent institutions. It involves more obvious decisions about income redistribution and, if moral hazard problems are to be avoided, the agency undertaking the task must have punitive powers. For example, upon deciding to recapitalise a failed institution the relevant agency ought to have the authority to fire all or a subset of the firm's managers. This suggests that in some countries it might be unattractive to delegate this task to an unelected, independent and possibly even supranational central bank.[8]

[7] The classic example of this type of intervention is the Federal Reserve Bank of New York's $20 billion loan to the Bank of New York in November 1985. The Bank of New York had experienced a software glitch that make it temporarily unable to accept payments and brought the Treasury bond market to a near standstill.

[8] Indeed, Goodhart and Schoenmaker [4] suggest that in practice it is more dependent central banks

There is a complication in assigning roles for various types of interventions in the financial sector: it may be difficult to tell the difference between an illiquid and an insolvent institution, especially in a short amount of time. To allow the central bank to make the decision might expose it to suspicions or accusations that it was bowing to political pressures. Also, if the central bank were not the agency involved in financial supervision and regulation it would not have the necessary information. It may be preferable for this decision to be made by the agency granted these powers.

The financial services industry has a number of features that result in inefficiency. For example, credit markets are characterised by imperfect information and adverse-selection problems. Corporate governance problems may be more severe than in other industries.[9] The agency granted the power to regulate and supervise the financial sector must have the relevant institution-specific information. Except for information about deposit-taking institutions and the interbank market, the central bank has no obvious informational advantage over a dedicated financial regulator like the FSA in the UK. Involvement in the supervision of the stock market, the government bond markets or financial institutions like pension funds, insurance companies and investment banks would be a distraction for the central bank. In addition, regulation may also be viewed as a more political task than varying the interest rate.[10] For the central bank to act as regulator may also conflict with its primary goal. There may at times be a conflict between the monetary authority wanting high interest rates to maintain low inflation and regulators who are worried about the effects of the higher interest rates on the profitability and stability of the banking system. Bank failures can tarnish the reputation of the central bank. Thus, it is probably undesirable for the central bank to regulate and supervise the financial system.

Central banks are often charged with financial consumer and investor protection. In the past, central banks have not always been viewed as handling this task well. Banks are not always seen favourably by people outside the financial industry.[11] There may also be a gap between what the public expects and what the regulator can do.[12] As the central bank need not have any special expertise in this area and its reputation in the monetary policy field risks being contaminated by perceived failures, it may be best to delegate the role of consumer and investor protection to another agency.

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that tend to have regulatory functions.

[9] In conventional firms, debt holders have an incentive to monitor management in bads states of nature as the benefits accrue mainly to them. For a bank, the "debtors" are fragmented deposit holders. This has two implications. First, free-rider problems may prevent the debtors from monitoring the management and second, as deposits are not traded, the market does not observe the price of the bank's debt. This may lead to excessive risk taking by bank managers in bad states of nature. See Boot, Dezelan and Milbourn [1] and Dewatripont and Tirole [3]

[10] Bruni [2] makes a related point, arguing that manoeuvring the instruments of monetary control involves a different type of discretion than is attached to regulatory and supervisory activities.

[11] Thomas Jefferson said, "I believe that banking institutions are more dangerous to our liberties than standing armies."

[12] This point is made by Goodhart and Schoenmaker [4].

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