A STUDY ON CENTRAL BANKING ROLES AND CLEARINGHOUSE ASSOCIATION

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Ⅰ. Introduction

Central banks do play major roles in virtually all real-world monetary systems today. It is obviously important to account for them. Can we account for the emergence of central banking by extending the invisible-hand story of market evolution? The answer depends on just what is meant by the term "central banking". If government sponsorship[1] is among the defining characteristics of a central bank, then answer is no. In that case, the story of a central bank's emergency obviously cannot rely entirely on markets processes.

If we decide that a certain sort of private institution without government sponsorship qualifies as a central bank, we need to keep in mind that an account of its evolution says nothing immediately about the rationale for establishing, or the subsequent development of, a government-sponsored

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1) Government "sponsorship" rather than "ownership" is the operative term inasmuch as the Bank of England became a central bank long before it was officially nationalized until 1946. Private member banks even today nominally own the regional Federal Reserve Banks.

central bank. It remains to be seen how the two sorts of institutions are related. For this reason, it is important to keep the broader concept of central banking distinct from the narrower concept of the functions undertaken by a government-sponsored monetary authority.

What makes as institution a central bank? The literature shows a surprising lack of consensus on the question. Economists have identified central banking with at least five major roles:

1. serving as a bankers' bank,
2. having a monopoly of note issue,
3. acting as a lender of last resort,
4. regulating commercial banks, and
5. conducting monetary policy.

An institution can play one or more of these roles without playing all five. The question of whether "a central bank" is a market-evolved institution is thus more usefully reformulated as the question of which of these central banking roles are likely to be played by private institutions, and which are peculiar to government-sponsored monetary authorities.

Ⅱ. A Bankers' Bank

The minimal role commonly cited as defining a central bank is that of acting as "a bankers' bank," and institution whose liabilities are held by commercial banks as part of their reserves.[2] (A bank that provides correspondent banking services to other bank is not generally called a "bankers' bank" except insofar as its correspondents hold its liabilities as reserves.) A private clearinghouse association (CHA) bank whose liabilities are held by member banks, and transferred among them as a medium of settlement, certainly qualifies as a central bank in this minimal sense. We have seen that such a bankers' bank can emerge spontaneously as an economical device for interbank money transfers.

2) The Penguin Dictionary of Economics(Bannock et al. 1974, p. 63) defines a central bank as "a banker's bank and lender of last resort."

Is there any reason for a government-sponsored bank to absorb the role of bankers' bank? Walter Bagehot, the pre-eminent Victorian banking authority, persuasively argued in his classic work Lombard Street(1873, pp. 92-100) that the government-granted privileges of the bank of England-its exclusive possession of the government's balances, its monopoly of note — issue in London, its effective monopoly of joint-stock banking in England up to 1826, and its implicit guarantee against failure — had played a crucial part in its gaining the deposits of other banks. Bagehot conclude:

> with so many advantages over all competitors, it is quite natural that the Bank of England should have far outstripped them all. Inevitably it became the bank in London; all the other bankers grouped themselves round it, and lodged their [gold] reserve with it. Thus our one-reserve system was not deliberately founded upon definite reasons; it was the gradual consequence of many singular events, and of an accumulation of legal privileges on a single bank which has not been altered, and which no one would now defend.

In a more recent account, drawing on historical experiences in several nations, Charles Goodhart(1988, p. 5) confirms that the typical central bank gained its role of being a bankers' bank in the way Bagehot described:

> [Its] privileged legal position, as banker to the government and in note issue, then brought about consequently, and naturally, a degree of centralization of reserves within the banking system in the Central Bank, so it become a bankers' bank.

Thus, if the central government grants legal privileges to a particular commercial bank, sufficient to make that distinctly larger and more secure than any other in the financial center, it is understandable that the privileged bank will become a banker to the lesser banks in the system, even though that development may have been no part of anyone's original intention. From the granting of privileges onward, one might call the development of a government-favored bank into a central bank "natural" as Bagehot and Goodhart do.[3] This path of development, as a whole,

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3) The development is then "natural" in the same sense that comedian Steven Wright suggest that it counts as "dying a natural death" when one is hit by a train : "You get hit by a train, naturally you die." The standard meaning of "natural" in economics — as in the phrase "natural monopoly" — is, however, "brought about by market forces rather than by government intervention."

crucially depends on the granting of special privileges to a particular bank, however, and such privileges are neither inevitable nor compelled by market forces. In other historical cases, where large commercial banks have acquired sizable interbank reserve deposits, for example in New York in the last century, the reason has been laws against branch banking that excluded outside banks from opening their own offices in the financial center.[4]

As Bagehot(1873, pp. 66-68) explained, "the natural system — that which would have sprung up if Government had let banking alone — is that of many banks of equal or not altogether unequal size." In such a system, no commercial bank "get so much before the others that the others voluntarily place their reserves in its keeping." A clearinghouse bank that serves as the bankers' bank in such a "natural system" is not a commercial rival, but a jointly owned institution that specializes in clearing and settlement.[5]

Ⅲ. Monopoly of Currency Issue

For Bagehot and Goodhart, a legal monopoly in the issue of banknotes contributes importantly to turning the institution possessing it into a central bank. Vera Smith, whose The Rationale of Central Banking offered the most thorough discussion of the topic in the century following Bagehot, argued emphatically that the other central banking functions followed from the monopoly of notes. In her view, it is therefore the monopoly of note-issue, and not any of the "secondary" other functions, that is the essential or defining attribute of a central bank. Wrote Smith(1990, p. 168):

4) For a contrary view, see Goodhart(1988, pp. 34-35), who believes that purely market forces account for "a concentration of such interbank balances among a few, central, well-established commercial banks." Congdon(1981) believes that a national government cannot avoid sponsoring a central bank, because it supposedly must give its own banking business to a single commercial bank, which then inevitable becomes the bankers' bank.

5) The Suffolk Bank clearing system of New England, 1819-1858, was an exception, being administered by a single commercial bank that charge other banks for its services. Most of the Suffolk's clearing business was eventually taken, however, by the Bank for Mutual Redemption, which was organized as a cooperative among member banks, to whom it offered better terms than the Suffolk had (Mullineaux 1987).

> The primary definition of central banking is a banking system in which a single bank has either a complete or a residuary monopoly in the note issue. A residuary monopoly denotes the case where there are a number of note issuers, but all of these except one are working under narrow limitation, and this one authority is responsible for the bulk of the circulation, and is the sole bank possessing that measure of elasticity in its note issue which gives it the power to exercise control over the total amount of currency and credit available.
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> It was out of monopolies in the note issue that were derived the secondary functions and characteristics of our modern central banks.

Smith identified these "secondary functions" as the holding of the bulk of the banking system's outside-money-reserves (serving as the bankers' bank), and the power to exercise control over the credit market (a form of monetary policy).

Smith found that a monopoly of note issue is not a natural monopoly, the product of economies of scale, but is rather the product of legislation. Thus she concluded : "A central bank is not a natural product of banking development. It is imposed from outside or comes into being as the result of Government favours." There is no reason to believe that a single commercial bank, or a clearinghouse bank of the sort discussed above, would acquire a monopoly of note issue absent government intervention. According to a survey of the historical record by Kurt Schuler(1992), every banking system that has allowed competitive note-issue — even that of the tiny island of Malta — has supported a plurality of issuing banks.

Ⅳ. Lender of Last Resort

For Goodhart(1989) and other, a key characteristic of a modern central bank is that it supports the banking system by acting as a lender of last resort. A lender of last resort stands ready to inject high-powered money into the system in the event of an internal drain. An "internal drain" occurs when the public's increased preference for holding high-powered money prompts redemption of bank-issued money on a scale that threatens to deplete a fractional-reserve banking system of

reserves, and so force a sharp contraction in the quantity of bank-issued money. "High-powered money" is money that currently or potentially serves as bank reserves.[6)]

Humphrey and Keleher(1984, p. 277) thus speak of the lender of last resort acting as a "backstop or guarantor to prevent a panic-induced collapse of a fractional-reserve banking system." An injection of high-powered money can be made through loans to trouble banks, as it traditionally was, and as the term "lender of last resort" suggests. However, in modern banking systems, the injection can instead be made — and there are strong arguments (Goodfriend and King 1988) for preferring that it be made — through open-market purchases. In such cases, the term "lender of last resort" is something of a misnomer.

Bagehot(1873, pp. 57-71) provided the now-classic argument that "whatever bank or banks keep the ultimate banking reserve of the country must lend that reserve most freely in time of apprehension." His argument was directed at the contemporary management of the Bank of England, which through "privileges and monopolies" had acquired the "very anomalous" and "very dangerous" position of being the sole holder of ultimate (gold) reserves : "Whether rightly or wrongly, at present and in fact the Bank of England keeps our ultimate bank reserve, and therefore it must use it in this manner". A bank in that position is "the only place where at such a moment new [high-powered] money is to be had." It therefore has the duty of providing new high-powered money to the market when an internal drain threatens to contract the banking system and commercial credit. Further, it should assure the market, in advance, that it will pursue such a policy, to allay depositiors' apprehension that if they don't withdraw now their banks will be out of reserves, and unable to pay when they do seek to withdraw.[7)]

It is clear in Bagehot's work, and in the subsequent literature, that to undertake a lender of last resort role is to fulfil a prescription for central bank behavior, rather than a part of the definition of what constitutes a central bank. A central bank may fail to act as a lender of last resort (the Federal Reserve System in 1931～1933 is often cited as an example), but it does not in that event

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6) A dictionary (Pearce 1986, pp. 182-183) notes : "The reserve assets which from the base on which the banking system creates bank deposits [or bank-issued currency] ... are collectively termed 'high-powered money' since ... a change in the quantity of these assets will produce a multiplied change in the bank deposit component of the money stock" in a fractional-reserve system.

7) To reduce moral hazard, Bagehot advised that the lender of last resort should lend at a "penalty" rate (high enough to make the borrowing bank regret being in the position of needing the loan), and should lend only to solvent (but illiquid) banks. The Bank of England at that time not having audited balance sheet information on other commercial banks, Begehot's proposed test for solvency was whether the borrowing bank could offer good collateral.

stop being a central bank. The attribute that helps define a central bank is rather the ability to act as a lender of last resort, and that means : the ability to expand the stock of high-powered money at the appropriate time.

An institution is capable of playing a lender of last resort role if it can, when the occasion arises, expand the available stock of the assets that commercial banks hold as reserves. A bankers' bank will normally have the capability. Unless barred by some legal restriction, a bankers' bank can expand the volume of its own liabilities, which ordinary banks hold as reserves, by expanding its own balance sheet.[8] As already noted, one source of the bankers' bank role is a legal note monopoly. An institution with a monopoly of note-issue, whose notes serve as a reserve asset for ordinary banks, can expand the stock of high-powered money (at least in the short run, which is the time — frame within which a lender of last resort operates), again provided that there are no legal barriers to expansion.[9]

A government may be able to expand the stock of high-powered money, and thereby to act as a lender of last resort, even without employing an agency that engages in banking (in the normal sense of deposit-taking). The US Treasury occasionally did so between 1850 and 1907. It deposited its own gold into the banking system, and made open-market purchases of securities, to expend the stock of bank reserves in timely fashion (Timberlake 1978, pp. 176-180). The Government of Canada acted to supplement bank reserves in 1907 and 1914, and provided a lender of last resort rediscounting facility between 1914 and 1934 (Bordo 1990, p. 26). Thus, the ability to play a lender of last resort role is not by itself sufficient to make an institution a central bank. At a minimum, the institution must also be a bank.

A private clearinghouse association (hereafter CHA) bank, whose member hold its liabilities as reserves, also has the potential to expand the sum of high-powered money in an active fashion, and thereby to act as a lender of last resort, provided that its members authorize it to do so. Where a CHA bank's liabilities are high-powered money to its member banks, but not to the banking system generally, an expansion in the stock of high-powered money is more effectively achieved through advances to member banks than through open-market operations.[10] The banks receiving advances

8) A strict currency board, because it is not allowed to go below 100 percent reserves, is not able to act as a lender of last resort.

9) Peel's Act of 1844 restricted the Bank of England from expanding its note circulation at its discretion, but not from expanding its deposits.

10) An open-market purchase of securities might simply result in a drain of reserves in favor of non-member banks.

can use them in trying to meet the public's unusually high demand for high-powered money.

Each CHA member is exposed to a risk of loss on CHA loans. This risk may deter member from agreeing to a CHA policy of making loans in ordinary periods. When there is no extraordinary demand for high-powered money by the public, an individual bank that is illiquid, but solvent, should be able at reasonable rates to borrow from, or sell assets to, holders of existing high-powered money. In a panic, such loans and asset sales are extraordinarily costly. A bank that would be solvent at normal asset prices may become insolvent if forced to sell off assets at panic prices. A CHA policy of making loans in panics serves as coinsurance scheme(Gorton 1985, p. 281) against an individual member bank's risk of finding itself in such a bind.

The CHA can offer loans at an interest rate below the market rate prevailing in a panic, thus providing the burden-sharing of insurance, but above the normal market rate, thus reducing the potential moral hazard of a bank responding to the insurance by taking insufficient care to keep adequate reserves. (By meeting a temporary peak in the real demand for high-powered money with a temporary increase in supply, the lender-of-last-resort policy can be expected to help to moderate the peak on interest rates, and the valley in asset prices that occurs.) Although a bank that finds itself in a strong reserve position when a panic occurs might, at the moment, prefer the CHA not to lend to weaker banks, the same bank may agree before the fact to a lender-of-last-resort policy because it recognizes the chance that it might find itself in need of aid.

Richard H. Timberlake(1984) and Gary Gorton(1985) have recounted how the CHAs in various US cities came to recognize, and use, their potential to expand the stock of high-powered money during the banking panics of 1857-1907. These CHAs provide examples of the spontaneous development of private lenders of last resort.

During normal times the New York Clearing House Association(NYCHA) held a 100 per cent cash reserve against its liabilities which were used to settle interbank clearings.[11] The NYCHA liabilities took the form of larger-denomination bearer certificates rather than book-entry deposits. In the panic of 1857, the Association agreed to issue certificates against member bank "deposits" of temporarily irredeemable country bank notes, in effect loaning new certificates into existence. (The country banks agreed to pay interest to the Association for the implicit loan of holding their suspended notes, and the interest was passed on to the holders of the "loan certificates.") As Timberlake(1984, p. 4) point out, "the issue of clearinghouse loan certificates temporarily made the clearinghouse itself

11) Evidently the use of CHA bank liabilities, rather than specie, in settlement was motivated by the desire for easy physical transfer rather than for interest on reserves.

into a fractional reserve institution", and it thereby expanded the stock of high-powered money. This successful experiment became the precedent for an established CHA policy in later panics, in New York and other cities, of issuing extra certificates through loans to member banks against collateral securities. After a panic had passed the loans were repaid and the extra certificates retired.

CHAs also developed the policy, in later panics, of issuing small-denomination notes that member banks could borrow, and pay out, to satisfy the extra currency-holding demands of the public. The CHAs took on the role of issuing currency only because the National Banking Acts in force legally prevented commercial banks from supplying additional banknotes at their discretion. The clearinghouse notes also violated the laws, but their obvious usefulness prevented any federal prosecution.

Ⅴ. Regulation of Commercial Banks

Modern government central banks devoted much of their manpower to regulating commercial banks. Regulation of the banking industry need not come from an external source, however. Member banks are impelled by self-interest to delegate a certain amount of regulatory authority to a private CHA even though they initially from the association simply to handle clearing and settlement. CHAs have, historically, been an important vehicle for "self-policing" by commercial banks, and, in fact, pioneered external bank examination, and several other practices now used by government regulators.

Each bank wants to be assured that its fellow members, whose notes and checks it accepts every day, will not default at the next clearing session. For this reason, the banks have good reason to welcome CHA monitoring of every member's solvency and liquidity. Private CHAs have historically required, as a condition for membership, that member banks meet a minimum capital requirement, furnish regular financial statements, and submit to auditing by CHA examiners.

The history of the Chicago Clearing Houses Association, as chronicaled in the work of F. Cyril James(1938, pp. 372-373, 499, 515-516), illustrates this motive at work in the development of CHA regulation. The Association was founded as a partnership of the member banks in 1865. Within two years, "it had begun to insist that all members, even the private and unincorporated banks, should

furnish periodical statements if financial condition as a demonstration of their solvency." After the panic of 1873, it required "an unimpaired paid-up capital of $250,000" as a condition for new members, and "it was agreed that member banks which cleared checks for [non-member] institution should assume responsibility for the ultimate payment of cashier's checks and certificates of deposit issued by the non-members." In 1876, the Association authorized the governing Clearing House Committee "to make an examination if any bank connected with the Clearing House whenever the Committee thought such action desirable." A particular bank, whose examination showed problems in 1881, was required to furnish "a bond of $500,000 to guarantee its clearing debts until such time as its condition should improve." In other cases, the Committee called for capital infusions. The ultimate penalty for non-compliance with CHA regulations was expulsion from the Association, which would deal a serious blow to a bank's requtation, as well as raising its costs of clearing and settlement.

Each of these regulations[12)] reflects the desire of each member bank to eliminate the danger of others defaulting. The CHA certifies the soundness of banks, primarily for the sake of other banks, their clearing partners.

Gary Gorton and Donald J. Mullineaux(1987) have proposed a second possible motive for "endogenous regulation", namely the "joint production" of public confidence in bank liabilities through CHA certification. Maintaining the public's confidence in any given bank is in the interest of all the others, they argue, because one bank's failure might set off runs on the others. Consistent with the public-confidence motive, the New York City Clearing House Association would audit a bank rumored publicly to be in trouble, and would publish the results (not merely report them to its members). Gorton and Mullineaux also argue that the motive of reassuring the public explains why CHA regulation became more intensive during panics.

It is important to note, however, that contagion effects were negligible in nineteenth-century banking system that were relatively free of destabilizing legal restrictions (e.g. Canada and Scotland). Banking in the US suffered under restrictions that blocked branch banking, compelled banks to hold similar sets of assets, encourage pyramiding of reserves, and in other ways fostered under-diversification, homogeneity, and interdependence among banks. Such regulations provided a rational reason for contagion, i.e. for the failure of one bank to raise the public's estimate of the probability

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12) Some other CHAs(New York, Philadelphia) also employed reserve requirements against deposits, and monitored the borrowing, and purchasing, of specie from outside to meet obligations(Gorton and Mullineaux 1987, p. 462).

(given all the other information at hand) that another bank was insolvent. As noted by Dowd(1992), CHAs in freer systems had less need to worry about US CHAs examined by Gordon and Mullineaux, and did little or no last-resort lending. In a free banking system, then, banks may simply have no need for a lender of last resort or for the "joint production of confidence" through clearinghouses.

In any case, a member-controlled CHA will regulation banks only in ways that the banks themselves consider beneficial. Regulation hostile to banks, for example the restriction of interest rates on loans, or the geographic restriction of lending, is exclusively the province of central banks or other government agencies. Official regulation, which some have suggested as an essential function of a central bank, must by definition be the job of a government-sponsored agency.[13]

Ⅵ. Conduct of Monetary Policy

Likewise, only an official central bank can be expected to execute an official monetary policy, i.e. pursue the government's macroeconomic goals through control of a monetary aggregate. But is there any sense in which a private CHA in a spontaneously evolved monetary system would conduct its own monetary policy? Even if a CHA does conduct a lender-of-last-resort policy, which involves a commitment to make deliberate change in the stock of high-powered money on rare occasions, it conducts at most an occasional monetary policy. In normal times, and in the long run, a CHA bank does not control the quantity of high-powered money.

In a system without an official central bank, the public, in choosing the quantities of basic and bank-issued monies it desires to hold (in light of the purchasing power of the monetary unit and the competitive behavior of the banks), and the banks, in choosing the quantities in which they desire to hold basic money reserves (in light of the behavior of the public), jointly determine the quantities of basic and bank-issued monies. In a commodity-money system the market for the commodity the serves as outside money determines the purchasing power of the monetary unit.

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13) Thus the definition of "central bank" offered by the MIT dictionary of Modern Economics(Pearce 1986, p. 59), "the institution charged primarily with controlling a country's money and banking system," implies a government regulatory agency.

There is no agency with the mission, or the power, to vary the quantity of high-powered money in pursuit of any goal like price stability or full employment.

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<국문요약>

중앙은행의 역할과 어음 교환소에 관한 고찰

이 순 단 *

경제학자들은 중앙은행제도를 다음과 같은 다섯가지 주요기능으로 구분하고 있다.

1. 은행가들의 은행으로서 기능
2. 은행권 발행의 독점권 기능
3. 최후의 대부자로서의 기능
4. 상업은행규제 기능
5. 통화정책의 수행기능

민간어음교환소협회은행의 부채는 그 회원은행들이 지급준비로 보류하는데, 이 은행도 또한 본원통화 총액을 적극적으로 확대 시킬 수 있는 능력이 있으며, 이를 통해서 회원은행들이 이 은행으로 하여금 그렇게 할 수 있도록 허용한다면 최후의 대부자로서 기능을 할 수 있다.

어음교환소협회는 공황상태 때 나타나는 시장금로보다 낮은 금리로 대출을 제공할 수 있고, 그렇게 함으로써 보험의 공동부담을 제공할 수 있지만, 정상적인 시장금리보다는 높게 함으로써 지급준비를 보유하는 일에 충분한 주의를 하지 않고 보험을 받으려는 은행의 도덕적 해이 가능성을 줄일 수 있다.

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