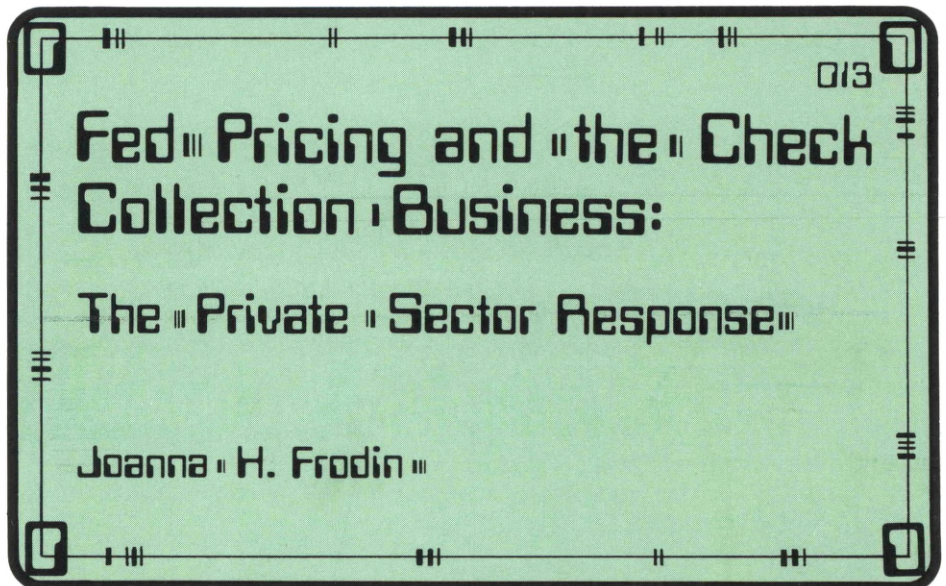
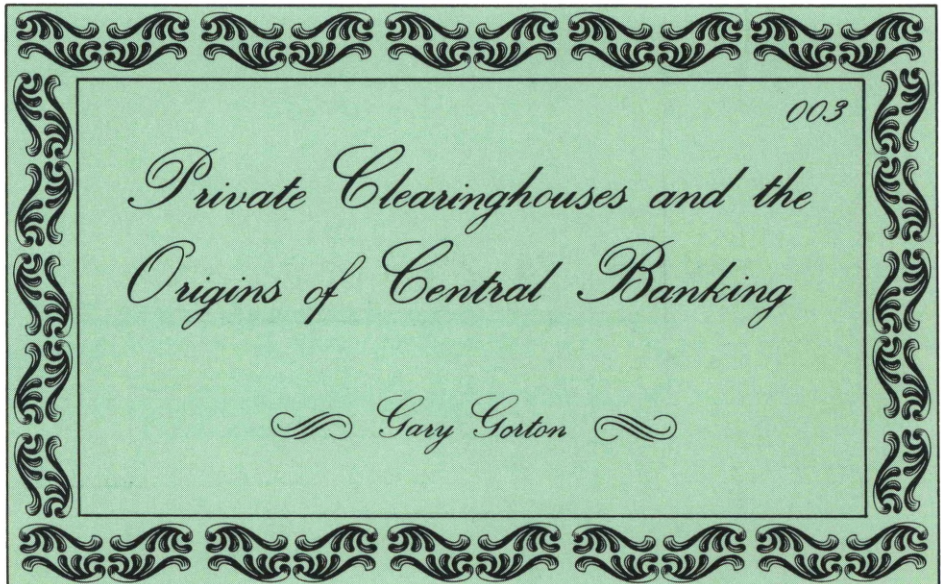


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Before the Federal Reserve System was established in 1914, the U.S. had developed effective private institutions for regulating the banking industry, and for mitigating some of the shocks of the business cycle. These institutions were clearinghouses. They began simply to facilitate the exchange of checks; as they grew to assume the task of maintaining public confidence in the banking system, they also grew in power and structure, and eventually provided the design—and much of the detail—of our nation's central bank.

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A look at the market for check collection services since the advent of Fed pricing in 1981 reveals how vastly its landscape is changing: Market suppliers are breaking new ground in re-pricing, re-designing, and re-packaging their services; clearinghouses are reviving or springing up anew; and the old geographical boundaries are crumbling.

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The Federal Reserve Bank of Philadelphia is part of the Federal Reserve System—a System which

includes twelve regional banks located around the nation as well as the Board of Governors in Washington. The Federal Reserve System was established by Congress in 1913 primarily to manage the nation's monetary affairs. Supporting functions include clearing checks, providing coin and currency to the banking system, acting as banker for the Federal government, supervising commercial banks, and enforcing consumer credit protection laws. In keeping with the Federal Reserve Act, the System is an agency of the Congress, independent administratively of the Executive Branch, and insulated from partisan political pressures. The Federal Reserve is self-supporting and regularly makes payments to the United States Treasury from its operating surpluses.

The Monetary Control Act of 1980 has been a catalyst for prodigious change in the financial environment in the United States. Amid the many developments, a little-known institution, the clearinghouse, has shown several interesting forms of reaction. To students of financial history, the adaptive response by clearinghouses to challenging environmental change comes as no surprise. This issue of the *Business Review* touches on the past and present behavior of this unique form of financial organization. —Donald J. Mullineaux, Senior Vice President and Chief Economist, Federal Reserve Bank of Philadelphia.

Private Clearinghouses and the Origins of Central Banking

Gary Gorton*

Today it is hard to imagine the business of banking without the presence of a very large, occasionally recalcitrant, market participant, namely, the Fed. As the nation's central bank, the Federal Reserve System acts as a "lender of last resort," lends money to banks by discounting, supervises and regulates banks, and facilitates the payments mechanism. These functions of the Federal Reserve System are common to most of the world's central banks. One might claim a central bank *is* what a central bank does, so that identifying these functions amounts to *defining* a central bank. Yet these functions are not unique to central banks; indeed, they accurately describe the role of private bank clearinghouses in the United States in the nineteenth century.

The history of the development of clearinghouses is marked by banking panics which shook the financial system, and by the steps clearinghouses took to survive those panics. As one step followed another, U.S. clearinghouses evolved functions and powers similar or identical to those which eventually became the province of a new institution, the Federal Reserve System, established in 1914.¹ In fact, recurring banking panics were often cited as justification for a central bank in the United States.

¹Banks were supervised by state authorities or by the Comptroller of the Currency under the laws of the National Bank Act (passed during the Civil War). Also, the U.S. Treasury performed some central banking functions. See Esther R. Taus, *Central Banking Functions of the United States Treasury, 1789-1941* (New York: Columbia University Press, 1943), and David Kinley, *The Independent Treasury of the United States* (Washington: Government Printing Office, 1910).

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The Federal Reserve System was modelled after private clearinghouses because these organizations successfully developed a method to restore confidence in the banking industry during a banking panic. They invented the clearinghouse loan certificate, which allowed banks to transform their illiquid portfolios into money. During the latter part of the nineteenth century, clearinghouses had gone so far as to create their own money during panics—money which was acceptable to bank depositors and used in exchange. The historical development of the loan certificate process is the story of how the banking industry was able to cope with panics without the presence of a central bank.

THE FIRST U.S. CLEARINGHOUSE

During the latter part of the Free Banking Era, 1837-1860, the use of checks drawn against bank deposits grew rapidly, so much so that deposits became the predominant means of exchange. The use of checks grew fastest in large centers of business where most banks were located, and where the sheer number of transactions made cash payments inconvenient. Sizable transactions began to be conducted by check. For large borrowers at banks it became convenient to have their checking accounts credited rather than to take the loans in cash. Businessmen no longer needed more bank notes and coin than was necessary for retail transactions; the rest could be deposited, and yet remain easily accessible.

Before 1850, banks cleared checks with a daily exchange and settlement—each bank sent a porter to make the rounds of all the other banks. The porter carried a ledger book, checks drawn on other banks, and bags of gold. At each stop, the porter turned over checks drawn on that bank and picked up checks drawn on his bank. If the value of the checks he presented exceeded the value of those he picked up, he collected the difference in gold. If the balance netted out against his bank, he paid in gold. Porters crossed and recrossed each other's tracks, lugging bags of gold, hoping to reach each of the other banks by the end of the day. The system had the simplicity of Indian camps in which each tepee had a path leading to every other tepee. But as the number of banks grew, these paths became a tangled web. By 1850 the fifty banks in New York City found that the

daily exchange could not be made within working hours.

The New York banks then agreed to continue exchanging checks daily, but to settle accounts on Friday mornings. On Fridays bedlam reigned. J. S. Gibbons, an observer, described the scene:

A Porters' Exchange was held on the steps of one of the Wall Street banks, at which [the porters] accounted to each other for what had been done during the day. Thomas had left a bag of specie at John's bank to settle a balance, which was due from William's bank to Robert's; but Robert's bank owed twice as much to John's. What had become of *that!* Then Alexander owed Robert also, and William was indebted to Alexander. Peter then said that he had paid Robert by a draft from James, which he, James, had received from Alfred on Alexander's account. That, however, had settled only half the debt. A quarter of the remainder was cancelled by a bag of coin, which Samuel had handed over to Joseph, and he had transferred to David. It is entirely safe to say that the Presidents and Cashiers of the banks could not have untangled this medley. (Gibbons, p. 294)

In response to this chaos, New York City banks established a clearinghouse in 1853, officially adopting a constitution in 1854. The basic principle of a clearinghouse is simple. Each bank settles its balances with one institution, the clearinghouse, rather than with each bank individually. The St. Nicholas Bank, for example, delivers to the clearinghouse all the claims it holds against other banks. The clearinghouse receives the debit items and credits the St. Nicholas Bank with that amount. The clearinghouse then delivers all the claims that the other banks hold against the St. Nicholas Bank and debits its account by that amount. The outcome is the net balance of each bank at the clearinghouse. By meeting in a single place at a specified time and exchanging with only one other party—the clearinghouse—check clearing was dramatically simplified.

Once the New York Clearinghouse had been established, bank porters no longer had to criss-cross each other's tracks to settle accounts, but balances at the clearinghouse still had to be settled in gold. To improve the process of exchange further the clearinghouse issued specie certificates to replace gold in clearing balances at the clearinghouse. Each bank deposited gold with a designated

clearinghouse member bank, and received specie certificates to use in settling at the clearinghouse. The certificates were issued in large denominations and were used exclusively to replace gold coins in clearinghouse settlements. Gold was still used in clearinghouse settlement, but the certificates reduced the amount needed. In 1857 the specie certificates amounted to \$6.5 million, and the daily exchanges to \$20 million.

The clearinghouse system at this stage reduced the use of cash, removed the risk of transporting large amounts of gold through the streets, and minimized the costs of runners, porters, messengers, and bookkeepers. Clearings through the New York City Clearinghouse grew by leaps and bounds. Impressed with the success of the clearinghouse in New York City, Boston established one in 1856, followed by Philadelphia and Baltimore in 1858. The first clearinghouse in the Midwest was established in Chicago in 1865. By the 1880s clearinghouses dotted the American banking landscape.

The clearinghouse was originated to facilitate the exchange of checks, but by 1859, J. S. Gibbons could write: "It has already added to this many other uses which were not contemplated, and more are suggested." Indeed, the advent of clearinghouses set the stage for banks to act together in response to crises. The New York Clearinghouse could not prevent the Panic of 1857, but the experience of the panic proved to be a stimulus for the development of central banking functions by clearinghouses.

PANICS AND THE CLEARINGHOUSE LOAN CERTIFICATE

Between 1800 and 1915 twelve banking panics erupted in the United States, almost always just after business cycle peaks. In the face of worsening economic conditions, depositors feared that there would be bank failures, resulting in losses on deposits. Losses meant that for each dollar in a checking account, the bank would repay less than a dollar in gold or government currency to the depositors. Actually, only a small number of banks declared bankruptcy during these recessions, but at the outset of each recession, depositors did not know which banks were really in trouble. Since depositors lacked good information about the condition of individual banks, the failure of a single large bank or a few small banks could cause

people to expect other banks to fail. Checks from all banks were then viewed as being very risky, and depositors rushed *en masse* to demand their currency (redeem deposits) from all banks. Since even solvent banks held only a fraction of their deposits in cash reserves, no bank could meet the demands of large numbers of depositors trying to withdraw funds at one time. Nor could the banking system. The banking system was illiquid; it could not readily convert enough assets to cash to satisfy depositor demands. The loss of confidence in bank money spread rapidly across all financial institutions.

In response to panics, clearinghouses evolved ways to restore confidence in bank deposits. If a needy member bank could be prevented from going bankrupt, all the clearinghouse members would benefit. Had the needy banks failed, depositors might expect other banks to fail, putting the solvency of these otherwise healthy banks in jeopardy by creating liquidity problems. Clearinghouses discovered a way to satisfy depositor demands for currency, at least partially. By providing liquidity to needy member banks, the clearinghouse prevented the further erosion of confidence in the banking system.

The first crisis to occur after the founding of clearinghouses in the United States was the Panic of 1857. As the panic swept the nation, banks tried to meet the demands for gold from their depositors, but their gold reserves were insufficient. The New York City banks first reacted by suspending convertibility; that is, the banks would not convert checks into currency for the public. This merely postponed the day of reckoning. Then to meet depositor demands, the specie certificates, which clearinghouse members had already been using to settle their daily balances at the clearinghouse, were transformed into a new financial instrument, called loan certificates. The loan certificates became the equivalent of specie in settling balances at the clearinghouse.

Loan certificates were issued against the assets of clearinghouse member banks. The loan certificates were backed by member banks' portfolios, parts of which were submitted as collateral. An individual clearinghouse member bank which needed currency to satisfy its depositors' demands applied to the clearinghouse loan committee, submitting some of its loans and bonds for ex-

amination as collateral. Upon accepting the collateral, the clearinghouse issued certificates amounting to a percentage of the value of the collateral, and the needy bank agreed to pay 6 percent interest. The certificates could then be used to replace currency in the clearinghouse settlements. Clearinghouse loan certificates, as they came to be called, were issued for specific lengths of time, typically three months.

With depositors on all sides demanding gold, the clearinghouse reduced its own use of gold by issuing loan certificates against the assets of the member banks. The loan certificates could be used instead of gold in settling at the clearinghouses. Therefore, the gold that had been used in settlement transactions was now available to be paid out to depositors. Unlike the specie certificates, which the clearinghouse used for convenience to replace gold in settlements, the loan certificates were not backed by gold. Yet banks accepted the certificates instead of gold in exchange at the clearinghouse.

Why would the clearinghouse member banks accept the new certificates? There are two reasons. First, though the new certificates were not backed by gold, they were backed by securities. Member banks submitted assets to the clearinghouse against which the loan certificates were issued. Moreover, the submitted assets were discounted; that is, loan certificates were issued, usually at 75 percent of the market value of the submitted assets. During a panic, however, there was the risk that a member bank would fail and that the value of the assets submitted as collateral for loan certificates was less than the value of outstanding loan certificates. Thus, the second reason that the loan certificates were acceptable or credible was that this risk was spread among the clearinghouse members. Loan certificates were the joint liability of the clearinghouse member banks. If it turned out that a member bank failed and that the collateral was worth less than the member's loan certificates, the loss was borne by the clearinghouse members in proportion to each member's capital relative to the total capitals of all the members.

In Boston, the risk-sharing idea was boldly articulated in the plan adopted:

The Associated Banks of the Clearinghouse

severally agree each with the other, that the Bills received instead of specie, at the Clearinghouse, from the Debtor Banks, and paid instead of specie for balances to the Creditor Banks, shall be sent in with the next day's settlement at the Clearinghouse; *that such Bills so received shall in the meantime, be and remain at the joint risk of all the Associated Banks, in proportion to the amount of their Capitals respectively.*

And it is further agreed, as above, that the Clearinghouse Committee may at any moment call upon any bank for satisfactory collateral security, for any balance thus paid in bills instead of specie; and each Bank hereby agrees with the Clearinghouse committee, and with all and each of the other Banks to furnish immediately such security when demanded. (Emphasis added. Quoted in Redlich, p. 159)

The Boston plan was to become the model for issuing certificates in subsequent panics.²

Needy banks could temporarily sell parts of their portfolios to the other member banks and receive loan certificates which were as good as gold in clearinghouse settlements. The risk associated with the certificates was shared (or pooled) among the member banks by allocating the liability for them according to each bank's capital as a percentage of the total capitals of the members. In this way an individual bank could try to protect itself from inability to meet its depositors' demands for currency. Other clearinghouse banks benefited because the prevention of member failures would insure that they were not adversely affected through confidence further deteriorating.

When another crisis broke out in November, 1860, the New York City Clearinghouse Association was decisive in response.³ The Association

²During the Panic of 1857 the New York Clearinghouse Association also devised a way to share risk, but with a slight difference: it issued loan certificates against the bank notes of country banks, not the assets of member banks. Country bank notes, during the Free Banking Era, were backed by securities deposited as collateral with state authorities. Hence, in New York, the loan certificates were indirectly backed by the securities deposited with state authorities.

³The November 1860 episode has been described by some authors as a quasi-panic since its cause seems related to the impending Civil War, the Treat Affair, and certain actions of the U.S. Treasury. See Don C. Barrett, *The Greenbacks and Resumption of Specie Payments, 1862-1879* (Cambridge, Mass: Harvard University Press, 1931).

appointed a committee to receive securities from banks needing aid and to issue certificates based on this collateral. The value of the certificates issued was limited to a maximum of 75 percent of the value of the collateral securities, and the borrowing bank agreed to pay 6 percent interest per year. Suspension of convertibility of checks into currency, which seemed imminent in the fall of 1860, was successfully avoided.⁴ In 1860 the plan was restricted to New York City. A year later Boston and Philadelphia adopted the idea of the clearinghouse loan certificate. During the Panic of 1873, clearinghouse loan certificates were issued in New York, Boston, Philadelphia, Baltimore, Cincinnati, St. Louis, and New Orleans.

The loan certificate process allowed clearinghouse member banks to respond to panics by increasing the amount of currency available to satisfy depositors' demands. All banks benefited: confidence was not allowed to deteriorate further, and could be restored, as banks did not fail solely due to illiquidity. The loan certificate process, however, had its limits. The maximum amount of currency which could be made available to the depositors was the amount used in interbank settlements. If this amount was not enough to meet depositor demands, it was considerably harder to restore confidence, and the banking system then had to rely on suspension of convertibility.

ISSUING CLEARINGHOUSE MONEY TO THE PUBLIC

The Panic of 1873 provoked a further innovation by clearinghouses which involved the depositors directly in the loan certificate program. With the loan certificate process confined to replacing gold in interbank transactions, only a limited amount of additional gold could be made available to meet depositor demands. But if the loan certificates could be issued directly to the depositors, and if the depositors would accept them, then the clearinghouse would overcome these limits imposed by the earlier method. The clearinghouse would be issuing its own money to depositors!

⁴Suspension of convertibility, however, did occur in 1861. See, A. Barton Hepburn, *A History of Currency in the United States* (New York; 1924); Cannon, *Clearinghouses* (Washington: Government Printing Office, 1910), Chapter X.

During the Panic of 1873 the New York City Clearinghouse Association centralized and regulated member banks' distribution of currency to the public by issuing a quasi-currency directly to depositors. When depositors arrived at banks demanding currency, banks were authorized to stamp depositors' checks as "Payable through the Clearinghouse."⁵ The checks of depositors were literally stamped by bank tellers at the banks where the depositors had accounts. The quantities of checks that could be certified by a member bank depended on the amount of loan certificates it had obtained. The certified checks became a claim on the clearinghouse, not the individual bank, and could be redeemed for currency. By determining the amount of checks that could be certified by member banks, the clearinghouse rationed the limited amount of currency available to pay out to depositors.

During the panics of 1893 and 1907 clearinghouses took the further step of printing their own money which substituted for government currency. The clearinghouse money could not be redeemed for currency during the period of suspension, so the amount issued was not limited by the currency reserves of the clearinghouse members. The Chicago Clearinghouse Association resolution passed on November 6, 1907 explains how the process of issuing clearinghouse money during suspension worked:

First, any bank being a member of the Chicago Clearinghouse Association may at any time surrender to the clearinghouse committee any loan certificate held by it... and receive in lieu, checks to the amount of the principal thereof, in the denominations of \$2, \$5, and \$10...

Second,... the clearinghouse association shall have the benefit and protection pro rata of the securities deposited... to the same extent as the certificates... issued...

Third, at any time any bank on which [the] checks are drawn may present [them] to the clearinghouse committee and receive credit against the principal of the loan certificates in place of which the [checks] were issued. Any

⁵See O. M. W. Sprague, *History of Crises Under the National Banking System* (Washington: Government Printing Office, 1910).

interest which may accrue on [the] loan certificates... shall accrue... to the Chicago Clearinghouse Association. (Quoted in Cannon, p. 121-122)

Issuing clearinghouse money directly to the public was a straightforward extension of the loan certificate process. Once a bank had submitted acceptable assets as collateral and had received loan certificates, the certificates could then be exchanged for clearinghouse currency in small denominations and given out to the public instead of gold coin or government currency.⁶ The clearinghouse currency was really the loan certificates denominated in a manner convenient for the public—as low as 25¢. The total amount of clearinghouse hand-to-hand money issued during the panic of 1893 has been estimated at \$100 million (about 2-1/2 percent of the money stock), and during the Panic of 1907, at \$500 million (about 4-1/2 percent of the money stock).

The same reasons which explain why loan certificates were acceptable to banks in settling clearings explain why depositors were confident that clearinghouse money had value, and hence, was acceptable. Since the money issued by the clearinghouses was the joint liability of all the member banks, individual depositors were insured against individual bank failures. The risk that a single bank would be unable to return a dollar of gold currency for a dollar in its checking accounts was reduced since the loan certificate was a claim on all the banks in the clearinghouse. Moreover, the clearinghouse money was backed by the securities that member banks had deposited as collateral. If the value of the collateral was insufficient to cover the clearinghouse money issued, then the difference would be made up by the other member banks. Since there was always a chance that other member banks would be unable to make up the difference, clearinghouse money was not a perfect substitute for government currency. [See THE CREDIBILITY OF CLEARINGHOUSE MONEY.]

The certificates issued to the public almost always affirmed, in print on the money, that “this

certificate is secured by the deposit of approved securities.” In Portland, Oregon in 1907, the certificates stated that banks had deposited “notes, bills of exchange, and other negotiable instruments secured by wheat, grain, canned fish, lumber actually sold, and other marketable products, and bonds approved by the committee.” In Charleston, South Carolina the certificates stated that they were backed by “securities of double the value of this certificate, or bonds of the United States or of the State of South Carolina, or of the City of Charleston, or of the City of Columbia, 10 percent in excess thereof.” Certificates issued in Danville, Virginia were said to be “secured by the combined capital of these banks, also by collateral worth one-third more than all of the certificates issued.”

Issuing loan certificates in convenient denominations directly to the public was a process of money creation limited only by the percentage applied to the collateral submitted by banks. In principle, banks could submit their entire portfolios. Since gold currency was not being replaced, but instead bank portfolios were monetized directly, much more money could be created to satisfy depositor demands than could be created by replacing currency in interbank transactions.

By temporarily joining together during panics through the clearinghouse loan certificate process, private banks almost literally became one bank. The associated banks reached the point where, instead of economizing on currency, they were creating their own money and issuing it to the public. By exchanging checks for clearinghouse money, banks were able to satisfy depositor demands and, hence, avoid failure due to their illiquid portfolios. Clearinghouse money was acceptable to depositors because it was a claim on the association of banks, not on just a single bank, insuring them against individual bank failure.

DEVELOPING THE REGULATORY FUNCTIONS OF CLEARINGHOUSES

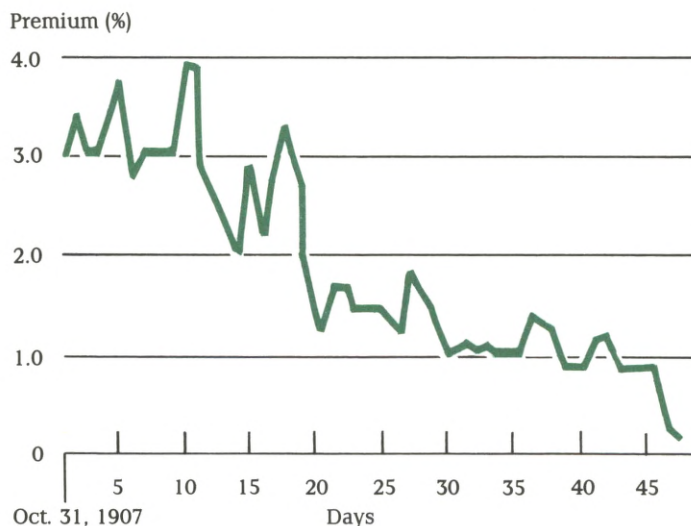
Clearinghouse activity during panics was motivated by the recognition that, in the banking industry, the performance of individual banks had effects on other banks. If a bank failed during a panic or recession, depositors perceived other banks as possibly insolvent, and a run on banks could be sparked or exacerbated. Understanding that the fates of separate banks were thus linked

⁶The National Bank Act, passed during the Civil War, effectively outlawed private bank notes. After the Act was passed the national government issued all currency, including the famous “greenbacks.”

THE CREDIBILITY OF CLEARINGHOUSE MONEY

Even though loan certificates issued to the public were backed by discounted collateral and liability for them was shared, they were discounted against government currency during a period of suspension when the public exchanged with them. In other words, ten dollars of currency (gold coins or greenbacks) bought more than ten dollars of clearinghouse money. The figure below shows the behavior of this currency premium during the suspension associated with the Panic of 1907. The behavior of the currency premium over certified checks during the Panic of 1907 is similar to its behavior during the Panic of 1893 and the Panic of 1873. In general, the currency premium declines continuously until it reaches zero; at that point the exchange rate of one-for-one is reestablished and the suspension is lifted. This behavior of the currency premium reflects the process of restoring confidence in bank money.

THE CURRENCY PREMIUM DURING THE PANIC OF 1907



resulted in clearinghouses developing the function of lender of last resort and money creation. These, indeed, were central banking functions, and, in the United States, they became functions of the Federal Reserve System.

Clearinghouse central banking functions were not undertaken only during panics. Clearinghouses were involved in ongoing regulation of banks because unsound member banks could create problems for other member banks. Since check clearing was an indispensable part of banking, the clearinghouses were able to enforce regulatory functions by using the power to admit or expel members.

During a panic the unsound member banks could not be expelled from the clearinghouses

because of the consequences for public confidence in bank money. Yet such members would jeopardize the clearinghouse's response to panics. Member banks, then, had to be constantly monitored and regulated so that the loan certificates would work to reestablish confidence during panics. To achieve this, clearinghouses introduced supervision of members and established uniform policies on banking matters.

Requiring Information to be Made Public. After the passage of the National Bank act in 1863 a "dual banking system" existed in the United States. There were national banks, chartered by the federal government and subject to the regulations of the National Banking Act. There were also state banks, chartered and, to varying

degrees, regulated by the individual state governments. Often clearinghouse policy imposed the stricter of the two regulatory standards on its member banks. Banks were willing to bear the regulatory burden in order to get access to clearinghouse services.

In New York, before the clearinghouse was established, a state law required each state bank to publish, every Tuesday, a sworn statement of the "average amount of loans and discounts, specie, deposits, and circulation" outstanding during the preceding week. The process of exchanging at the clearinghouse revealed the reserve position at each bank and, according to Gibbons (1859), resulted in a "restriction of loans by the necessity of maintaining a certain average of coin from resources within the bank." In effect, by the conditions of membership, the clearinghouse enforced what it had been the intention of the law to require, and applied these standards to national banks as well. Similarly, in 1864 the Boston Clearinghouse Association adopted a rule requiring national banks to publish weekly reports showing their capital, loans, coin reserves, legal tender notes, deposits, and bank balances. Under Massachusetts state law state banks were already required to furnish that information.

Requiring Reserves. In general, minimum reserves were required by law, either state or federal, depending upon whether the bank was a state bank or a national bank. Where such legislative requirements were viewed as inadequate, clearinghouses adopted reserve requirements for their members. Thus, in the 1850s the New York Clearinghouse recommended that the banks "keep at all times an amount of coin equivalent to no less than 20 percent of net deposits of any kind." Similar action was taken in Philadelphia. The Chicago Clearinghouse would admit no state bank to membership unless it agreed to adhere to the reserve requirements of the National Bank Act, the stricter of the two requirements.

Auditing Member Banks. Clearinghouses frequently audited member banks, as a condition of membership in the clearinghouse, and as a response to rumors about the condition of individual member banks. Oftentimes the audits were made public. Audits were conducted by committees composed of bankers from member banks or by outside auditing firms hired by the clearinghouse.

In 1906 the Chicago Clearinghouse Association became the first to hire a staff of its own examiners.

The Chicago Clearinghouse Association was also the first association to implement and enforce a standardized system of reporting forms. Beginning in 1887 the Chicago Clearinghouse Association required the forms to be submitted four times a year. The Chicago system made for accurate and comparable statements, forcing better accounting methods on some banks. National banks already reported to the Comptroller of the Currency five times a year, but state banks did not. Clearinghouses recognized that the national bank examinations were unsatisfactory.⁷ As a result, better examination methods were adopted independently of the bank regulatory authorities and applied to state, as well as national, banks.

CLEARINGHOUSES AND CENTRAL BANKS

Many people think of central banks like the Federal Reserve System as unique creations of government bodies. But by the first decade of this century clearinghouses were behaving very much like today's central banks. Clearinghouses admitted and expelled member banks, audited members with their own examiners, enforced strict accounting and reserve standards, and created money during times of crisis. When the Federal Reserve System was established in 1914 it was designed to accomplish exactly these functions. For example, the discount window at the Fed performed the same function as the clearinghouse loan certificate. Needy banks could borrow money from the Fed by submitting assets as collateral and paying interest.

However imperfect the clearinghouse mechanisms were in preventing panics, they were successful in shortening the duration of panics by restoring confidence in the banking system. Indeed, a rather significant historical episode—the Great Depression—showed that central banks were not capable of preventing financial panics. It took still another innovation, deposit insurance, to put a halt to bank panics. There hasn't been a banking

⁷Comptroller of the Currency audit reports were generally viewed by bankers as inadequate. As one Comptroller of the Currency put it: "bank examinations [were then] illogical and unscientific ..." Quoted in Redlich, p. 286.

panic in the U.S. since the Federal Deposit Insurance Corporation was formed in 1933.

What, then, makes central banks different from clearinghouses? A distinction which seems obvious today is that the Fed conducts a national monetary policy geared to produce adequate economic growth and low inflation. No clearinghouse assumed such a role. But *neither did the Fed* when it was first formed in 1914. The Fed's monetary policy role was an evolutionary one, much as the

clearinghouses extended their range of activities as they developed and grew. In fact, just prior to the founding of the Fed, clearinghouses themselves had proposed linking together in a national clearinghouse association. We will never know whether this step would have led to a national clearinghouse monetary policy, but it is clear that the private bank clearinghouse gave rise to the public institution of a central bank.

THE FIRST CLEARINGHOUSE

Historians are unsure whether the idea for the first clearinghouse came from an Arabian coffee bean or from a mug of beer. Prior to 1770, in London, clearing checks required each bank to send a clerk every day to all of the other banks to exchange checks and settle balances—to “clear” the transactions of the previous day. These runners had to cover considerable ground, becoming exhausted and footsore. It was natural, then, that they would drop into a coffee house or pub for some refreshment.

Tradition has it that one day runners from two different banks happened to be drinking at the same place, and started to discuss the day's work. They discovered that they had checks drawn for the same amount on each other's bank so they proceeded to exchange them. To the runners, meeting at one place to exchange checks over beer or coffee and avoiding the endless treks around the city was a clearly preferable method of exchange. It was not long before other runners were initiated into the secret and the meetings became more frequent, eventually becoming daily.

Bank managers, upon learning what their runners were doing, were of two minds. Some managers denounced their runners as lazy and shiftless. Other managers realized the value of the idea, taking exception only to the coffee or beer. In 1775 the London banks agreed upon a common room on Lombard Street for the location of the first London clearinghouse. Beer and coffee were not served.

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Fed Pricing and the Check Collection Business: The Private Sector Response

*Joanna H. Frodin**

In March 1980, Congress passed the Depository Institutions Deregulation and Monetary Control Act (MCA) and dramatically “changed the rules” in the check clearing business. The law directed the Federal Reserve to offer its check collection services to all depository institutions, for instance, not just to its member banks. Furthermore, it required the Fed to price those services to cover costs, rather than providing them free. One important aim of Congress in imposing pricing was to promote competition and efficiency in the market for check collection services by removing the subsidy extended to some banks through free Fed services.

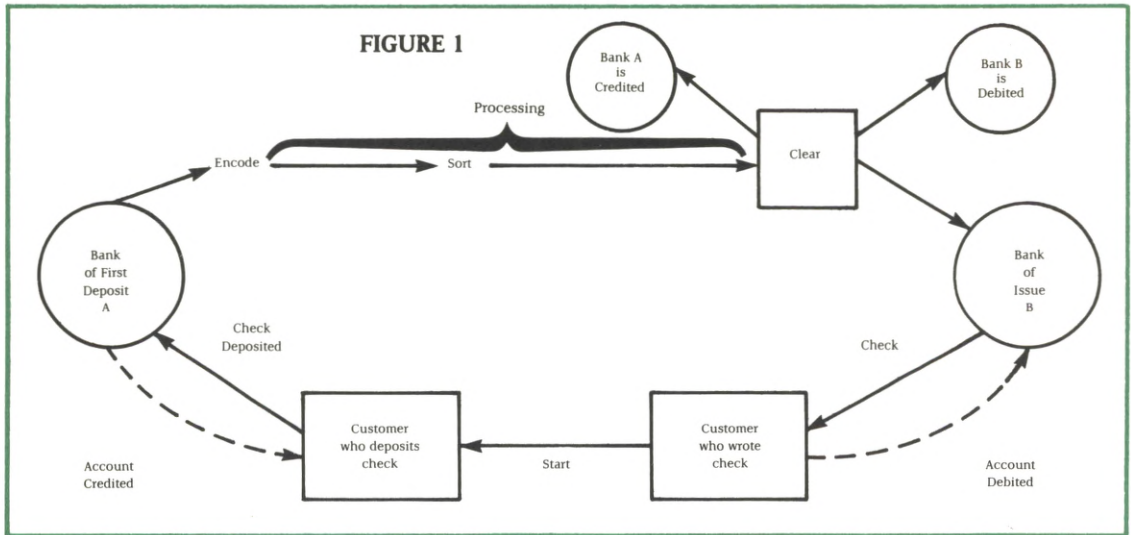
Pricing has changed the structure of economic incentives facing both the suppliers and demanders

of check clearing services. How have the major suppliers in this market, namely, the Federal Reserve, correspondent banks, and clearinghouses, been affected? Has the Fed lost business to the private sector, as economic theory would predict? And how has the private sector responded? Have clearinghouses become more important? Is the market more competitive? Are the changes superficial, one-time responses to pricing, or are they more fundamental ones?

A PRIMER ON CHECK COLLECTION

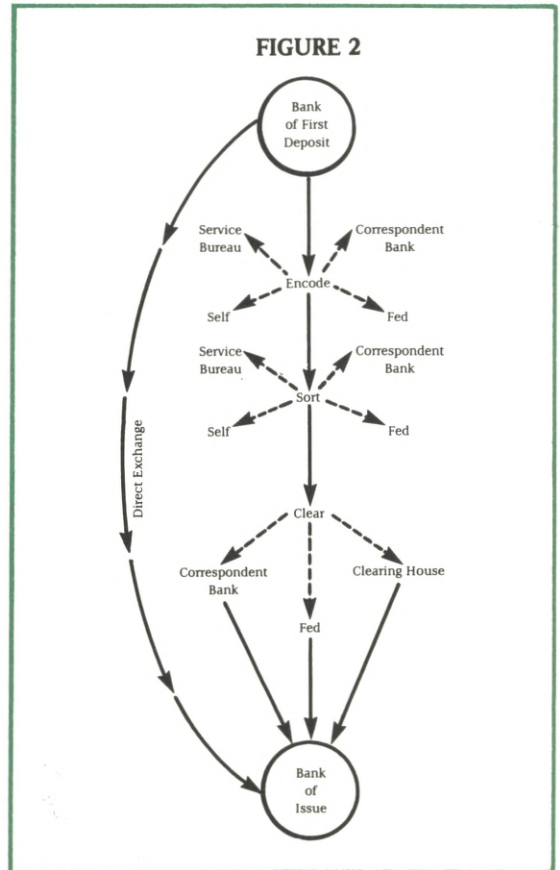
A check takes several steps on its journey from the bank where it is first deposited to its bank of issue (see Figure 1). Once someone deposits a check into an account, the transaction information on the check is encoded. Since most checks are printed with codes for the bank of issue, the customer’s account number, and routing infor-

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mation, it is the dollar amount which is added at this point, in the lower right corner of the check in magnetic ink. Machines which "read" the information do the next step— sorting according to a check's destination (bank of issue). The combination of encoding and sorting checks is known as "processing." Next, a check must be cleared, at which point settlement of accounts of the banks involved takes place. Settlement means the crediting and debiting of funds to and from banks' accounts. After clearing, the check returns to the issuing bank which debits the customer's accounts.

There is no set formula for a check to follow in the collection process. Since several alternatives exist at each step, a check could take a myriad of different routes (see Figure 2). An institution might handle the whole task itself, for instance, by processing the checks in-house and sending them directly to the bank of issue for clearing. These institutions typically are either small banks, which exchange and clear checks directly with another local bank, or institutions which are large enough to process large numbers of checks by machine and use private courier services to send checks directly to banks for collection. By contrast, a bank might use one or several agents: a local service bureau to encode, a correspondent bank to sort, and a Federal Reserve facility to clear the check. Both correspondent banks and the Fed clear checks



and settle banks' accounts. A major reason a bank uses these agents is to clear checks with banks at some distance. For clearing local checks, a bank has a third option—a local clearinghouse, which holds daily exchanges of checks among its members.

Clearinghouses vary in structure and size. A clearinghouse may be an informal organization with as few as three banks, or it may have formal rules and as many as 100 banks. Most clearinghouses settle their members' accounts through a so-called net settlement account at one of 48 Federal Reserve facilities. Each Fed facility participates at local clearinghouses where it receives settlement information, presents checks from non-clearinghouse banks, and picks up checks to be sent elsewhere.

The choices banks make at each stage of the check collection process depend on many factors. Two economic factors loom large—the cost of the service and its quality. Costs include those of encoding, sorting, transporting, and clearing checks. The quality of service depends primarily on availability of funds, that is, how promptly a bank receives credit on checks it presents for collection. Promptness, in turn, depends on deposit, transportation, and availability schedules offered by various agents. The later in the day an agent is willing to wait to accept checks for clearing and the more quickly it credits funds to the banks of first deposit, the more attractive its service. Early availability matters particularly for high dollar value checks. Other factors affect quality also: timely account information, the handling of items returned because of insufficient funds, charges for overdrafts (a debit in a bank's clearing account), and computer downtime. Noneconomic factors might also affect choices. In particular, some institutions may have a strong preference for using private sector services, while others may have a preference for using the Fed.

A 1979 Federal Reserve study provides an idea of the numbers of checks involved in collection and of the relative importance of the various agents in the check collection process.¹ In 1979,

the number of commercial bank checks written was about 32 billion. As each check journeyed through the process, an average of 2.4 institutions (banks, Fed, clearinghouses) handled it so that the total number of processed checks was 76.7 billion.

The Federal Reserve system processed and cleared directly about one-fifth of this total. While commercial banks individually have smaller correspondent banking networks than the Fed, they processed the remaining four-fifths of the checks. Banks, in turn, relied on several institutions for clearing services. They sent 22 percent of the total they handled to Fed facilities, about 16 percent to correspondent banks, and about 11 percent to local clearinghouses. They cleared the remaining half in their own banks as "on-us" checks.

The relative use of the different clearing agents varied with bank size. The smallest banks relied heavily on larger correspondents and used local clearinghouses, which generally do not process checks, and the Fed to a relatively small degree. The largest banks used local clearinghouses to the greatest degree, reflecting more exchange volume with other clearinghouse member banks. For interdistrict checks (ones which cross Federal Reserve District lines), these banks made relatively small use of the Fed, turning instead to private transportation to exchange directly with banks in other money centers.

FED PRICING AND ITS IMPACT

Pricing of the Federal Reserve's check services went into effect in August 1981 and changed the incentive structure in the check-collection market overnight. Each of the twelve Reserve Banks instituted prices for its district, including its branches and Regional Check Processing Centers (RCPCs).² Pricing changed all the relative costs a bank faced at each stage of the check collection process, and, other things equal, would have made all private alternatives relatively less expensive for Fed members than they were before pricing. For pre-

¹Federal Reserve Bank of Atlanta, *A Quantitative Description of the Check Collection System*. (Copyright by: American Bankers Association and Bank Administration Institute, 1982). The data that follow in the remainder of this section are derived from this publication.

²In the early 1970s, the Fed set up 12 RCPCs in areas with relatively large check volumes outside Reserve Bank cities to speed up check collection. The sites of the RCPCs are: Windsor Locks, Conn.; Lewiston, Maine; Jericho, N.Y.; Cranford, N.J.; Utica, N.Y.; Columbus, Ohio; Baltimore, MD.; Columbus, S.C.; Charleston, S.C.; Indianapolis, Ind.; Milwaukee, Wisc.; Des Moines, Iowa.

vious nonmembers, the availability of Fed services opened up by the MCA presented these institutions with a new option rather than with new relative prices.

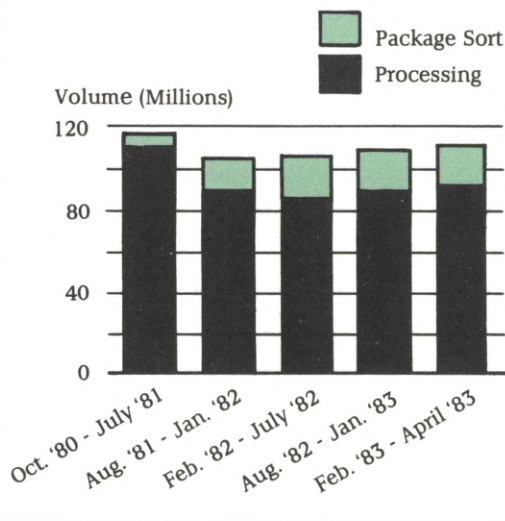
Economic theory suggests that, prior to pricing, free Fed services induced banks to use more Fed and less private sector services. Therefore, where pricing resulted in higher prices for Fed services relative to private services, there should have been some reallocation of resources toward the private sector. Specifically, Fed pricing should have led to decreased use of Fed processing and clearing and to the increased use of private sector alternatives. That is exactly what happened.

In August 1981, pricing brought about an abrupt drop in the use of Fed processing, transportation, and clearing services. The substantial lead time in announcement of Fed changes allowed the banking community ample opportunity to make alternative arrangements, which explains the prompt adaptation to change. In the first month of pricing, the Fed lost 19.7 percent of the volume which it both processed and cleared. The average monthly volume for the period August 1981 to April 1983 was about 22.4 percent lower than that of July 1981.³

The Fed lost less total clearing volume than processing volume, however. Most Fed facilities offered a service called "package sort" which banks can use to clear already processed checks. In this program, banks send packages of checks, with clearing information, to a Fed facility (via Fed or private transportation) for clearing and distribution to various end points (banks of issue or their correspondents). Package sort grew after the Fed priced its services because many banks found the per item price—for private processing plus Fed clearing—more economical than either all-Fed or all-private routes.

Figure 3 shows processed volume, package sort volume, and total clearing volume. While processing volume has remained more or less stagnant, total clearing volume has recouped some of its initial losses, thanks to gains in package sort clearing. While the net loss in clearing during the first six months of pricing was 10.8 percent (compared to 21.4 percent in processing), it narrowed to

FIGURE 3
AVERAGE
MONTHLY CHECK VOLUME
Federal Reserve System



7.6 percent by the February-April 1983 period (compared to 21.1 percent in processing).⁴ These later figures reflect not only bankers' immediate adjustments to non-zero Fed prices, but also subsequent reactions to ongoing changes in quality of service, and to further price changes made by the various suppliers of services. The environment did not remain static.

Although the Fed as a whole lost clearing volume after pricing, not all 48 Fed facilities did so. Because each facility faced different costs and different markets, and because some did not offer package sort, the effect of pricing on clearing volumes varied considerably. For instance, by February-April 1983, one Fed facility suffered a loss of 39 percent in clearing volume while another experienced an increase of 33 percent.⁵

WHO HAS GAINED CLEARING BUSINESS?

The loss of Fed clearing volume is mirrored in the private sector by gains for private clearing

³Data based on monthly volumes reported to the Board of Governors.

⁴Ibid.

⁵Ibid.

alternatives—direct exchange, correspondent banks, and clearinghouses. While it is difficult to know how the private sector has carved up its increased market share, it is possible to make qualitative judgments about gainers and losers. The findings reported are based on a survey the author conducted of changes in private sector clearing arrangements in the areas served by each of the 48 Fed facilities.⁶

Direct Exchange Picks Up. After Fed pricing, many banks, which previously had used the Fed to clear checks, resorted to direct exchange with banks of issue. This method of collection does not rely on other agents for clearing. Thus, some of the private sector gain in clearing is happening at banks themselves, not at correspondent banks or clearinghouses.

The simplest direct exchange involves banks walking checks across the street and handing them to each other. In local areas with no clearinghouse, banks customarily have exchanged directly if the volume of checks on each other warranted it. When the Fed instituted RCPCs in the early 1970s, however, the use of direct exchange declined in those 12 zones. Banks using direct exchange were usually competitors and, once RCPCs provided a free convenient alternative, many banks chose not to deal directly and to use the Fed. Fed pricing has altered these relative costs and has led to a resurgence of direct exchange.

Growth is occurring not only in local exchanges but also in the use of direct sends to distant banks. These items previously were sent through the Fed or correspondent banks as clearing agents. Typically, banks use private courier services for direct sends. One of the primary motivating factors for longer distance direct exchange is better availability of funds; that is, banks' accounts (in this case with each other) are credited faster than they would be using an agent. For all Fed zones, the survey yielded new examples not only of direct exchanges within local areas, but also of direct sends between cities, states, and Reserve Districts.

Correspondent Banks Change. Prior to pricing, correspondent banks usually priced their

check collection services indirectly. In particular, they required their bank customers to maintain a certain balance with them as compensation for collecting checks. With Fed pricing, correspondent banks faced new costs in providing certain services, such as some interdistrict transfers using the Fed as clearing agent. These new costs served as a catalyst for correspondent banks to reevaluate their costs, their menus of services, and their prices. As a result, many correspondents unbundled their services, revamped them, and priced them explicitly.

It is hard to say whether correspondent banks, as a group, have gained or lost clearing volume. Some correspondents have lost business, in some cases to clearinghouses, and in other cases to the Fed; some have gained business. Many correspondent banks have attracted new business through expanded direct send services which they sell to customer banks. Banks can use a correspondent bank as a transportation agent to direct send checks to the issuing bank rather than contracting courier services themselves. Many correspondent banks have increased significantly the number of end points to which they direct send for customer banks and have lowered the dollar value cut-off, that is, the minimum dollar amount necessary for a direct send program. These changes made their services more competitive with the Fed's transportation system.

One example points out the importance of relative costs. A major correspondent bank in Indiana started an in-state direct send program after its district Fed raised its package sort price. The program initially included one third of the end points serviced by the Fed, with a view toward expansion. Another example illustrates how banks promote direct send programs by emphasizing availability of funds. First Tennessee Bank in Nashville based a direct send service, First Express, on the airline network of Federal Express whose hub is in Nashville. This correspondent bank's objective was to offer customers better availability, via First Express, than the Fed could offer. The private sector could make considerable additional gains in transportation and clearing if expansions of direct send programs prove to be economical in the longer run.

New Clearinghouse Activity. One of the primary findings in the survey was evidence of

⁶Joanna H. Frodin, "Changes in Check Collection After Fed Pricing", Spring 1983, (unpublished).

considerable new clearinghouse activity since Fed pricing. Clearinghouses have expanded both in numbers and in their roles, which suggests that they have gained a significant share of the clearing volume lost by the Fed. Clearinghouses also appear to have attracted business at the expense of correspondent banks. For many banks, using new

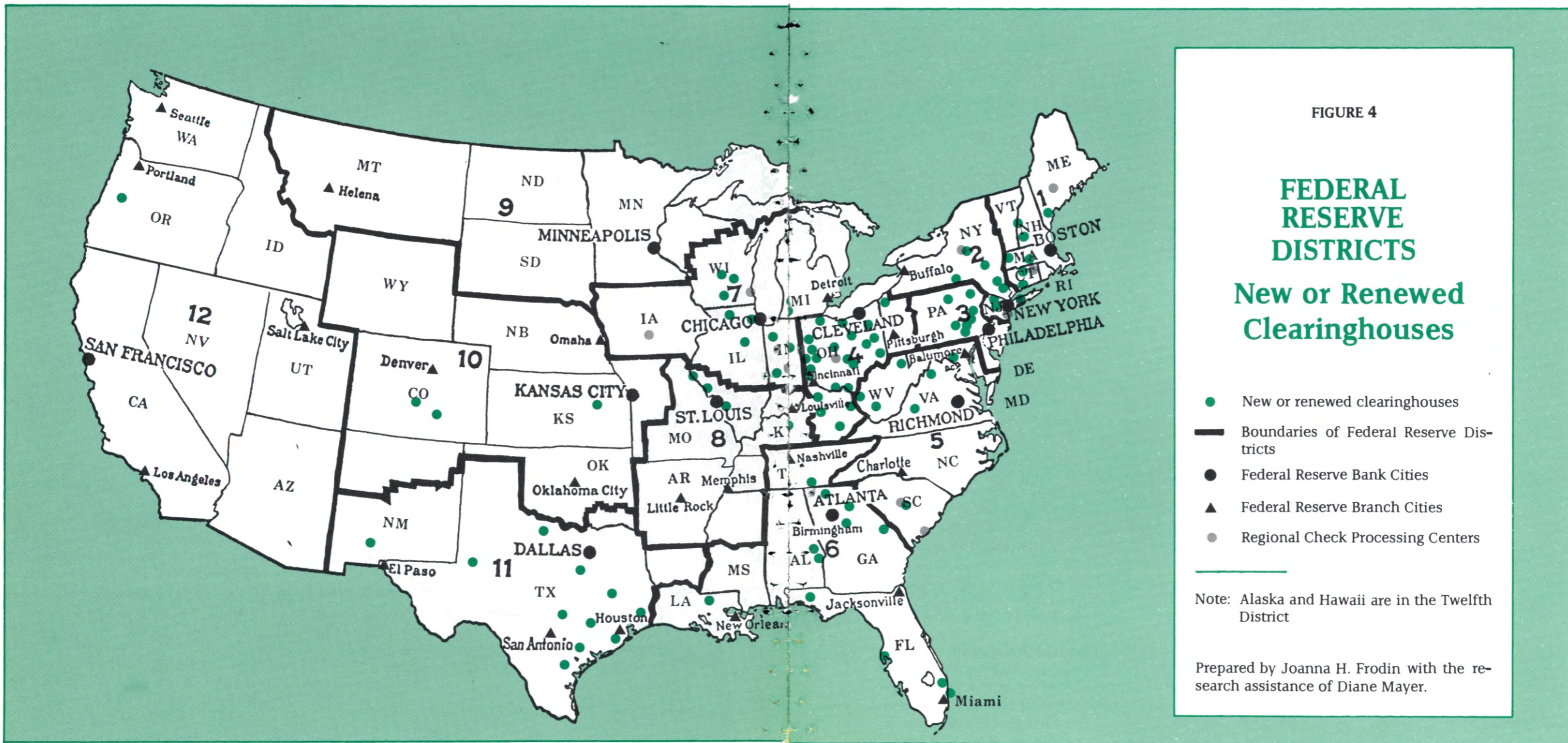
clearinghouses appears to provide the most economical route for certain types of clearing in the post-pricing environment.

The Number of Clearinghouses Grows. The survey revealed that 95 additional clearinghouses have been established since Fed pricing. Seventy-

eight of these are new while 17 are renewed. Renewed clearinghouses are generally ones which were active prior to the institution of Fed RCPCs in the early 1970s, then disappeared as RCPCs attracted business, and have been reactivated. Figure 4 shows the location of these additional clearinghouses as well as Federal Reserve districts

and facilities. The map indicates that additional clearinghouses are not evenly distributed around the country. Rather, there is considerable grouping.

It is difficult to say what accounts for this grouping. It is probable that a state's bank structure is relevant, since it influences the pattern of



check collection. A state's bank structure is defined in terms of branch banking (statewide or limited) or unit banking. With branch banking, a larger proportion of checks becomes "on-us" and is cleared internally by banks than is the case with unit banking. Therefore, clearinghouses are more likely to form in unit banking states.

California, with extensive branching by a few large banks, seems to be a case where banking structure has affected clearinghouse formation since pricing. There have been no new clearinghouses. By contrast, eleven new clearinghouses appeared in the unit banking state of Texas. While the experience in certain states seems closely related to structure, there does not appear to be a strong correlation between structure and clearinghouse formation nationwide. It is likely that other factors, such as variation in population density, geography, and some noneconomic considerations also influence clearinghouse formation. Further study is needed to attribute the grouping of clearinghouses more specifically.

Clearinghouses Expand Their Activities.

Clearinghouses not only have increased in numbers, but also many have expanded in scope—functionally and geographically. Indeed, these changes may indicate important trends in private sector clearing in the future. For instance, many clearinghouses have expanded their activities by exchanging more *types* of checks than before. The common practice in the past was for clearinghouse members to exchange mainly so-called "city" items drawn on each other. Other types of checks (that is, from RCPC areas or Country areas) coming to the clearinghouse would have been sent to the Fed or to a correspondent bank to clear.

Expansion of exchange beyond city items has come from three sources. First, many correspondent banks, which process checks for client banks, now "intercept" these items for "swap," or exchange, at the clearinghouse. This practice avoids the new cost of sending these checks to the Fed to clear. Second, some banks are performing swaps in clearinghouses for affiliates of their parent bank holding company—an expanded, if not an entirely new, activity. Third, one Texas clearinghouse has persuaded banks which are not members of the clearinghouse to send certain non-city items to the clearinghouse rather than to the Fed. These

examples of new, or greatly expanded, activities of clearinghouses imply that, in the future, clearinghouses can extend their role by clearing different types of checks and by enlarging the mix of institutions they serve.

An even broader avenue of expansion—via intra-regional and then inter-regional exchange—seems likely. The survey revealed that many new clearinghouses, as well as expanding old ones, are *intra*-regional in scope, that is, their members come from a larger geographic area than the city-wide area that was typical in the past. For example, a clearinghouse which served one city on Long Island has expanded to become the Long Island Clearing House. Banks in both Southern Michigan and Northern Indiana are now served by the Michiana Clearing House.

Some moves to *inter*-regional exchange are also taking place. One type involves a bank in one region and a clearinghouse in another. Banks in Birmingham, Alabama are presenting checks to members of the clearinghouse in Atlanta, Georgia, through banks which are both their affiliates and also members of the clearinghouse. Another example involves some large correspondent banks in West Texas cities which are presenting checks directly at local clearinghouses in other cities rather than sending them to the Fed.

The survey also uncovered another type of expansion into inter-regional exchange—via inter-clearinghouse exchange. One case involves clearinghouses in Jacksonville, Florida and Atlanta, Georgia. A representative bank in the Jacksonville clearinghouse sends checks drawn on any member of the Atlanta clearinghouse to its representative bank for exchange, and vice versa. Another case of inter-clearinghouse exchange exists between Baton Rouge, Louisiana and Jackson, Mississippi. For these interchanges to occur, there must be sufficiently large dollar values of on-others checks among these two groups of banks to make it worthwhile. The survey revealed that clearinghouses all over the country are talking about such interchanges.

Although the potential for a network of inter-clearinghouse exchanges among business centers is apparent and discussion is ongoing, it is unclear how extensive or how formal such arrangements will become, since interchange is not necessarily mutually advantageous. Also unclear is whether or

not a national clearinghouse system will develop. Although 33 clearinghouses met in 1982 to explore this question, nothing concrete has emerged.

Regardless of whether the ultimate result in this post-Fed pricing environment is a national clearinghouse, there is considerable potential for further development in private clearing through clearinghouses. They may provide a relatively inexpensive clearing alternative for many banks, not only in traditional exchange of city items among members, but for other types of checks issued by a greater variety of institutions from a larger geographical area. The last phase of Fed pricing, the pricing of float,⁷ which is currently being instituted, should provide an additional incentive for banks to use clearinghouses. Float pricing will make it more costly to clear through both the Fed and correspondent banks. This development particularly may encourage additional inter-clearinghouse exchange.

CONCLUSION

Federal Reserve pricing of check collection services, as mandated by the MCA, has wrought considerable change in the market for those services. The immediate effects of the August 1981 change in relative prices were more bank direct exchanges, the formation of additional clearinghouses, and restructuring of correspondent banks' prices. Gains in the volume of checks cleared by the private sector came at the expense of Fed volume losses. This finding bore out theory's

⁷Federal Reserve float, a net addition of reserves to the banking system, is created when the depositing bank's account at the Fed is credited before the issuing bank's account is debited. Until now, banks have not had to pay interest on what amounts to a loan of reserves.

prediction that, if the Fed were a high cost provider, then full cost pricing would lead to changes in consumption away from the Fed and toward private sector alternatives.

However, subsequent developments indicate that more fundamental changes are occurring in this market. While price is still an important factor in the competition among suppliers, the relative quality of service has increased in importance. One key factor in quality is the availability of funds. Recently, the Fed has improved its services, particularly through reorganizing its transportation services; correspondent banks likewise have improved theirs through better transportation, scheduling, and more attention to customers' needs. Individual banks have cut down clearing times by exchanging directly with distant banks. Local clearinghouses, which first expanded in numbers, have expanded their functional role in many other ways: greater geographical area, exchange of more types of checks, exchange for more institutions than previously, exchange with non-member institutions in other cities or states, and inter-clearinghouse exchange.

In sum, the legislative innovation of the MCA has spawned a great deal of market innovation and increased competition. The check collection market is now characterized by more efficient allocation of resources than existed two years ago. Will the process continue along the same lines in the future? While additional change is likely in the directions found to date, the market for collection of funds will become more complex. New competitors using relatively low-cost, electronic funds transfer and clearing techniques will enter to challenge the more traditional paper-based suppliers.

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