

December 15, 1980

ECONOMIC COMMENTARY

ISSN 0428-1276

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The Pricing of Float and an Efficient Payments Mechanism

by Jim Winner

Most checks are deposited in a bank other than the one on which they are drawn. In such instances, the bank in which the check is deposited (the payee bank) must collect the funds from the bank on which the check is drawn (the payor bank). In the United States, check collection services are provided by both private and public institutions. The private sector collects checks via local clearinghouses, bank service corporations, and an extensive network of correspondent banks; the public sector is represented by the Federal Reserve System, which, until this year, provided check collection services, free of charge, to its member banks.

Because the collection of checks requires the use of real resources (for example, personnel, transportation, and computers), the question arises as to whether the extent to which these resources are employed in collecting checks constitutes an efficient use of the nation's scarce resources. The quantity of resources employed in clearing checks depends both on the number of checks written and the speed with which the checks are collected. In addition to being underpriced because of interest rate ceilings on demand deposits and encouraged by the pricing practices of the banking industry, the use of checks and similar paper instruments has been sub-

sidized by the Federal Reserve System's free check collection services. As a result, the extent to which checks and similar paper instruments (and resources employed in processing these paper instruments) are used is widely recognized as being inefficient.¹ To increase the efficiency of the payments mechanism, the Depository Institutions Deregulation and Monetary Control Act of 1980 requires the Federal Reserve System to charge for its check collection services and for float.² This *Economic Commentary* examines the pricing of float and the related issue of the efficiency of the payments mechanism.

Economic Efficiency and Check Collection

Economic efficiency in allocating the nation's scarce resources requires that an additional unit of a good be produced only if the additional social benefit (marginal social benefit) of the unit is greater than or equal to the additional social cost (marginal social cost) associated with its production. As long as private benefits and social benefits do not diverge, that is, there are no "externalities," the interaction of private producers and consumers in competitive markets will assure an efficient allocation of resources. However, if there are externalities in the production of a good (for example, pollution) or its con-

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The opinions stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

1. For a full discussion of these issues, see E. J. Stevens, "Repricing Payments and Incentives for the Development of Electronic Funds Transfer," *Economic Commentary*, Federal Reserve Bank of Cleveland, October 6, 1980.
2. See Title I Public Law 96-221, 1980.

sumption (for example, hand guns), the market tends to yield an inefficient allocation of resources. Although there are no discernible externalities associated with the production or consumption of payment by check, there is an externality associated with the *speed* of check collection.

The social benefit of increasing collection speed is the reduced risk of loss associated with accepting a bad check. This reduction of risk enhances the general acceptability of checks as a means of payment, benefiting both payees and payors to the extent that payment by other means, such as currency, is less convenient or more costly. However, the amount of a check represents money, and money has time value—it can be invested in interest-earning assets. Therefore, the private benefit associated with collection speed, which includes the time value of money, exceeds the *social* benefit, and, left to the market, too many resources will be devoted to the processing of checks.

If interest rates and the sums of money involved are sufficiently large, payees have an incentive to speed check collection and payors have an equal incentive to delay collection. Any interest income gained by payees through speeding the collection of a check is lost in an equivalent amount by payors. Society, that is, payees and payors considered together, is no better off for playing this zero-sum game. Therefore, resources used to play this game represent a net loss to society. If payors were simply to transfer an equivalent amount of interest income to payees, the resources formerly used to speed check collection would be available to produce other things, and everyone's real income could be increased. The real cost of the negative externality associated with the time value of money is this foregone income.³

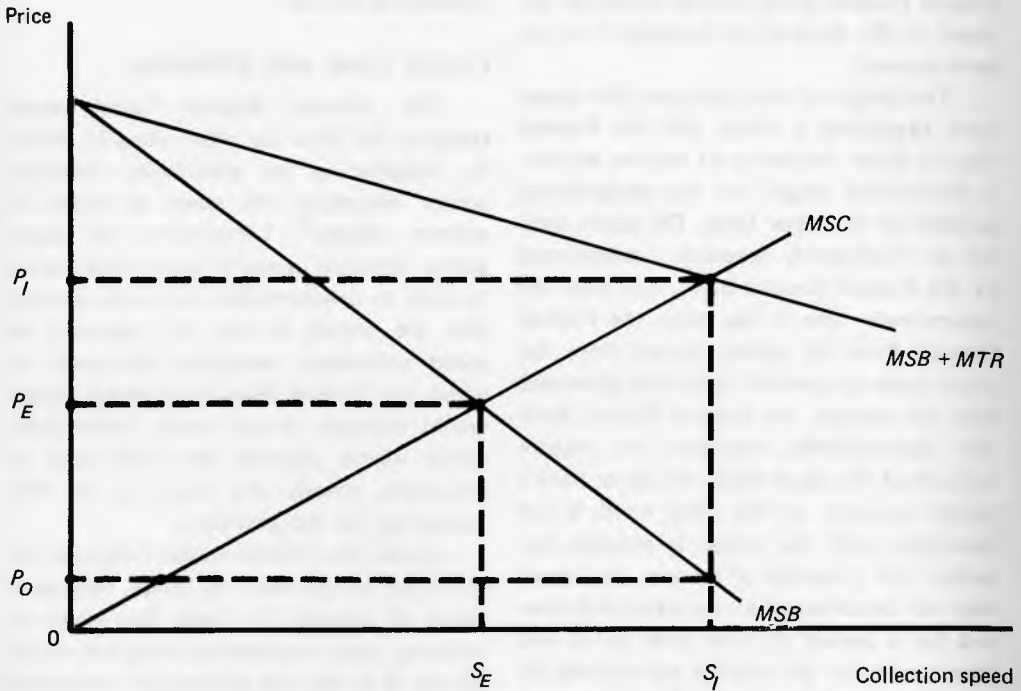
From a bank's point of view, the transfer of funds from a payor to a payee represents an increase in the payee bank's cash reserves and an equivalent decrease in the payor bank's cash reserves. Reserves, because they are the basis on which banks expand their earning assets, possess time value for banks. Thus, when checks are deposited in banks, the incentive to waste society's resources in altering the rate at which checks clear is passed from payees and payors to the banking industry.

The efficiency loss to society as a result of the time value of reserves to the payee bank is illustrated in figure 1. The vertical axis (price, P) measures the value of marginal benefits and marginal costs in terms of price, while the horizontal axis measures the collection speed for a given number and value of checks. The marginal social benefit (MSB) curve shows that, as collection speed increases, the additional social benefit of increasing collection speed, although positive, decreases. The marginal *private* benefit of increasing collection speed consists of two components: the benefit received from increasing the general acceptability of checks (MSB), which is valuable to the payee and society; and the marginal time value of reserves (MTR), which is valuable to the payee bank but not to society because it is lost in an equivalent amount to the payor bank. For any given speed of collection, the total marginal private benefit can be derived by summing the two components and arriving at the curve ($MSB + MTR$), with the marginal time value of reserves represented by the vertical distance between MSB and $MSB + MTR$. The marginal social cost curve (MSC) shows that, as collection speed increases, the additional costs (and price) associated with increasing collection speed rise.

The economically efficient collection speed occurs at S_E , where MSB and MSC are equal to price P_E . However, because market behavior reflects private incentives, payee banks have an incentive to increase collection

3. Regardless of the means of payment—currency, electronic funds transfer, or check—if the transfer of money in payment is not instantaneous, the time value of money would impose a negative externality on society.

Figure 1 Inefficiency Due to Time Value of Reserves to Payee Banks



speed up to the point where the marginal social cost (and the price they must pay for increased collection speed) is equal to the marginal private benefit. This would occur at S_I , where $MSB + MTR$ and MSC equal P_I . It is clear that at S_I the marginal social cost P_I exceeds the marginal social benefit P_O by an amount equal to the time value of reserves to the payee banks—an economically inefficient result.

The choice among collection services provided by correspondent banks, bank service corporations, and the Federal Reserve System is at the discretion of payee banks. Because payee banks have an incentive to speed collection of checks, private institutions offering check collection services compete by offering rapid collection of checks. If the Federal Reserve must price its services on the basis of marginal social costs, it would have to provide collection service at speed S_I in order to be competitive. If the Federal Reserve cleared checks at the efficient but slower speed of S_E , payee

banks simply would not use the Federal Reserve's service since they would be losing some of the time value of reserves. Under such conditions, even if the full social costs of the Federal Reserve's check collecting services were covered by Federal Reserve prices, checking would remain an inefficient means of payment. *Pricing Federal Reserve check collection services on the basis of social costs would simply incorporate the inefficiency of the private sector into the Federal Reserve's public sector services.*

Federal Reserve Float

While the private sector redistributes a given amount of reserves among banks, the Federal Reserve can and does create reserves in the process of check collection. The amount of reserves thus created is known as Federal Reserve float.

Banks using Federal Reserve check collection services hold their reserve accounts in Federal Reserve District Banks. A payee

bank depositing a check for collection with a Federal Reserve Bank receives credit for the check in the form of an increase in its reserve account.

The length of time between the payee bank depositing a check and the Federal Reserve Bank increasing its reserve account is determined largely by the geographical location of the *payor* bank. The payee bank has an "availability schedule," constructed by the Federal Reserve Bank, that gives the approximate time it has taken the Federal Reserve Bank to collect checks from the payor bank in question. After this scheduled time has elapsed, the Federal Reserve Bank will *automatically* increase the reserve account of the payee bank; the payor bank's reserve account, on the other hand, is not decreased until the check is *actually* collected. For a variety of reasons, the check may not be collected in the scheduled time, and for a period of time both banks will have credit for the reserves represented by the amount of the check. The float generated by this "double counting" constitutes one source of total bank reserves supplied by the Federal Reserve System.⁴

Payor banks benefit from float, since they can invest these funds in interest-bearing assets. Congress reasoned that float constituted an "interest-free" loan to the banking industry, because the same amount of total bank reserves could be supplied to the banking system if float were reduced and Federal Reserve holdings of U.S. government securities increased by equivalent amounts. The government would then receive interest on the additional holdings of securities through the annual transfer of Federal Reserve surplus revenues to the Treasury. Reflecting this reasoning, the Depository Institutions Deregulation and Monetary Control Act requires that the Federal Reserve charge banks for float. Regardless of the merits of this reasoning, the Federal Re-

serve is currently considering means of implementing the law.⁵

Pricing Float and Efficiency

The Federal Reserve could avoid charging for float by eliminating it, either by lengthening its availability schedule and/or increasing the speed at which it collects checks.⁶ Lengthening the availability schedule would induce payee banks to shift to private-sector collection services that are willing to use real resources to speed collection; increasing the speed at which the Federal Reserve processes checks would increase its own costs. Either alternative would increase the social cost of processing checks and result in an efficiency loss to the economy.

Could the Federal Reserve increase the efficiency of payment by check through a policy of charging for float? One means of reducing costs imposed by negative externalities is to tax any private gain associated with the externality. Private interests, recognizing that any gain is to be taxed, would not incur costs to capture the private benefit of the externality. Because there are no economic costs associated with producing float, charging for float and remitting the revenues to the Treasury would allow the general tax burden to be decreased by the amount of the float revenues.⁷ Thus, charging for float represents a tax on the time value of reserves that, properly instituted, could increase the efficiency of the payments mechanism.

Such a "float tax" would have to be designed in a manner that would reduce or eliminate private incentives to incur costs in an effort to capture the time value of re-

4. For the month of August 1980, float averaged \$5,098 million and accounted for approximately 11 percent of the total reserves supplied to the banking system by the Federal Reserve.

5. See Benjamin Wolkowitz and Peter R. Lloyd-Davies, "Reducing Federal Reserve Float," *Federal Reserve Bulletin*, December 1979.

6. The Federal Reserve has proposed to adopt a combination of these alternatives. See Board of Governors of the Federal Reserve System, "Federal Reserve Bank Services Proposed Fee Schedules and Pricing Principles," Docket No. R-0324, August 28, 1980 (processed).

7. See Wolkowitz and Lloyd-Davies, "Reducing Federal Reserve Float."

serves. An effective way to do this would be to grant immediate availability for all checks deposited with the Federal Reserve for collection, but to charge payor banks for the resultant float. Granting immediate availability would eliminate the incentive of payee banks to speed check collection, and charging payor banks for float would impose a private cost on delaying collection. Payor banks could not avoid the float tax by shifting to private sector collection services, because the choice of collection services is at the discretion of payee banks, and, all other things equal, payee banks would choose the system that grants the fastest availability of reserves.

Payors and their banks would bear the float tax, which would encourage both to seek relatively cheaper means of payment. For example, payors and their banks would find it profitable to encourage payees to accept payment by the electronic transfer of funds among banks—a service provided by automated clearinghouses. In addition, remote disbursement and other costly practices adopted to increase float would become unprofitable, thus reducing their use and improving the allocational efficiency of the payments mechanism.

Charging payors for float and payees for the actual cost of collection would preserve competition between public and private collection services. However, the Federal Reserve could promote economic efficiency by reducing the incentive to use resources in response to the time value of money. Assuming the Federal Reserve could process a given number of checks at the same cost as the private sector, the Federal Reserve could lower its collection costs and, therefore, prices by reducing the speed at which it collects checks. Private collection services, for competitive reasons, would respond by clearing checks at a comparable speed, thus reducing their costs and prices. Price competition between the Federal Reserve and the private sector would assure that the efficiency gains of the float tax were transmitted to the private sector.

Although the float tax would have de-

sirable consequences on the efficiency of the payments mechanism, these gains would have to be weighed against the cost of collecting the tax. The Federal Reserve would incur additional accounting costs associated with collecting charges on float. In addition to these administrative costs, the imposition of the above scheme might interfere with the conduct of monetary policy. Under a policy of targeting the growth rates of the monetary aggregates, the Federal Reserve attempts to supply an amount of nonborrowed reserves consistent with these targets. Granting immediate availability and collecting at a slow speed might supply an amount of reserves, in the form of float, that would exceed the reserves consistent with the monetary targets. The above design for a float tax seems unlikely to hit this constraint, since the float tax would encourage payors and the banking industry to minimize float. Even so, if the absolute amount of float is larger on average, it may make it more difficult to forecast the amount of reserves that will be supplied by float and thus make the short-run control of the monetary aggregates less exact. If this turns out to be the case, the Federal Reserve could, to offset the adverse effects on monetary policy, increase the float tax, further encouraging the banking industry to reduce the amount of float. Another alternative would be to increase its collection speed and count the resulting inefficiency in the payments mechanism as a cost of effective monetary policy.

Conclusion

The Federal Reserve System is understandably reluctant to accept the price and market share consequences of charging payee banks for float. However, a well-designed payor float tax, subject to monetary policy constraints, would have desirable consequences on the efficiency of the payments mechanism. The problems, difficulties, and costs involved in charging for float should be weighed against the efficiency gains that would occur in the payments mechanism as a result of such a policy.