

Payment Economics and the Role of Central Banks

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I would like start by commending the organizers of this conference for their goal of “making payments mainstream.” If I could do a bit of wordsmithing, I would add the word “economics” after the word “payment,” because a distinct and coherent field of payment economics appears to be emerging, and it deserves some attention, especially among central bank policymakers (Lacker and Weinberg, 2003). At the core of this field are systems of exchange financed by private and/or public liabilities and the institutions that facilitate the clearing and settlement of these instruments. In other words, payment economics can be defined as the study of the mechanics of exchange. It is based on the core insight of monetary economics that the instruments that people use to pay for goods and services serve to communicate reliably (that is, in an incentive-compatible way) about the buyer’s past actions (Townsend, 1989, and Kocherlakota, 1998). Payment economics extends banking theory to encompass the role of banks as private issuers of payment instruments, and reflects the observation that virtually all institutions usually thought of as banks are significantly involved in payments. Indeed, the defining feature of banks appears to be their issuance of payment instrument liabilities, as opposed to their role as balance sheet intermediaries between savers and borrowers. Banks, from this perspective, are specialized institutions for facilitating the transmission and recording of relevant payment information, and the industrial organization of the banking system therefore affects the characteristics of the monetary system. Payment economics thus lies at the intersection of monetary and banking economics with industrial organization.

The fact that payment instruments and specialized institutions are at the core of the economics of payment arrangements has important methodological implications. It means that the choice of payment instrument and the structure of the institutional arrangements that support them should be viewed as endogenous. This defines an approach known as mechanism design, the cornerstone of modern monetary theory. Under this approach, payment instruments are seen as messages that embody contingent contracts, and one can model the information and risk allocation characteristics of alternative payment arrangements in a way that takes into account the limitations imposed by real world payment technologies – for example, the costliness and falsifiability of communication, verification, and authentication. For example, the mid-1980s presumption that paper checks were socially inefficient because of their higher processing costs ignored other, apparently consumer-relevant, characteristics of checks.

The central role of communication in payments instruments and institutions has implications for the organization of payments activities. Communication technologies invariably are characterized by such features as economies of scale, common costs, and

joint production. These features often take the form of network effects, in which much of the benefits and costs of network activities are shared among multiple participants. Private organizations that deal effectively with such characteristics can be described as clubs, in which terms of membership are just as important as the pricing and terms of service provision in inducing efficient participation. There is a tradition in Industrial Organization of questioning the extent to which competition ensures efficient performance in markets with these characteristics. This hinges on the extent to which markets are contestable, as has been emphasized by Ed Green and Dick Todd in their essay for the Minneapolis Fed's 2000 Annual Report (Green and Todd, 2001).

The organizers posed for this panel a challenging set of questions that at their core concern the role of central banks in payments. I would like to sketch out a tentative view that seems consistent with the emerging lessons of payment economics. It is not the only possible view one could take, but it strikes me as compelling, and until a better one comes along, I view it as a logical benchmark model.

This view is built on two core ideas. First, central banks have more or less nationalized the clearinghouses at the "apex" of the payment system. One can debate whether this was efficiency enhancing, as Goodhart (1988) argues, or whether it arose instead to re-allocate the costs and benefits of clearing and settlement activities. Clearinghouse activities appear to have aspects of club goods, as I noted earlier, and for club goods there is often a range of allocations consistent with efficiency – that is, with Pareto optimality. Central bank intervention sometimes alters the distribution of net benefits among payment system participants. For example, the Fed's entry into check clearing seems to have been less about efficiency improvements than it was about shifting the costs of clearing checks drawn on country banks. In any event, legal restrictions nowadays more or less compel many banks to settle at least some transactions through the transfer of central bank account balances.

The second core idea is that many, if not most, of the private sector institutions that are the major players in the payment systems benefit from a substantial public sector safety net. In many cases explicit deposit insurance provides the most visible government support. But in addition, significant support is provided in conjunction with central bank payment operations. Central banks generally supply credit, both intraday and overnight, to key payment system participants. (The Swiss, until recently, were notable exceptions.) Moreover, there is a widespread perception among private payment system participants that central bank credit will be made available, perhaps even overnight, to facilitate the resolution of operational problems or other settlement disruptions. As Marvin Goodfriend and I have emphasized in a joint paper, this constitutes a backstop line of credit provided by the central bank (Goodfriend and Lacker, 1999). Indeed, operational protocols and the routine provision of daylight credit in some cases leave the central bank with no other choice but to lend. For example, in the case of the disruption at the Bank of New York in November of 1985, the extension of overnight credit was a *fait accompli* (Lacker, 2004).

Taking the terms on which central banks clear, settle, and lend as given, the usual presumption is that competitive pressures will drive private sector institutions toward second-best efficiency. Underpriced access to central bank credit will of course distort private sector choices. Absent countermeasures, banks will take excessive risks and central bank credit will be overused, a distortion often referred to as moral hazard. It is in the nature of lines of credit, however, that they are underpriced at the point in time at which they are utilized. Credit lines provide guaranteed access to funds at a prespecified rate that does not vary with the borrower's ex post creditworthiness. Thus borrowers essentially obtain insurance against adverse shocks to their creditworthiness. Private line of credit lenders are generally compensated for this insurance provision through up-front fees. Other features of typical credit lines act to constrain moral hazard. Lenders limit the extent of their liability through loan covenants that let them deny credit if certain financial conditions are not satisfied. In addition, lenders generally monitor borrower financial conditions on a regular basis, and often reserve the right to audit borrowers.

The potential for moral hazard due to a public sector safety net, and in particular the provision of central bank credit in connection with payment operations, is to my mind the central rationale for central bank oversight of payment system participants. Such oversight should be aimed at measuring and efficiently constraining private risk taking that could affect the extension of central bank credit or the provision of public sector support. Much central bank payment system supervisory activity obviously fits this description well. Having said that, it is my sense that central banks have not come close to fully offsetting the safety net's moral hazard distortion, although I would be hard pressed to document that claim, except to note the extent to which access to central bank settlement seems to be highly prized by financial institutions.

This description of central bank payment activities implies a minimal service provision role – basically just offering clearing accounts that are used to settle interbank obligations. And, this role is a byproduct of having de facto monopolized interbank settlement. In this, I find Green and Todd (2001) persuasive when they argue that the rationale for more extensive central bank service provision depends on the extent to which there are economies of scope between additional activities and the basic clearing account function. A focus on payment systems as communications mechanisms suggests the importance for this question of the relative effectiveness of alternative configurations of communications architectures, and potential economies in verifying messages and safeguarding information. My sense, however, is that there are far less by way of economies of scope than would be needed to justify, on economic efficiency grounds, the current scale of Federal Reserve service provision, particularly in clearing “retail” payments such as checks and ACH. In fact, I have argued elsewhere that the evidence suggests that the Fed's role in clearing retail payments rests on altering the allocation of clearing costs that would result from purely private provision. The imminent transition away from paper check clearing makes the Green and Todd question a live issue right now in the U.S.

Notice that I have made no use of the notion of “market failure.” My own working hypothesis is that market failures are largely absent from the payment system. After all,

participants in any given payment arrangement are all linked by voluntary contractual relationships. Thus I find it hard to see how an externality, in the classic sense, could possibly arise. (The only genuine payment system externality I know of occurred when the Federal Reserve incinerated worn paper currency, thus polluting the air.) Note that the lack of an observed market does not mean market failure. For example, large banks don't clear checks for rural banks in the U.S. Surely this is due to the terms on which the Fed provides the same service. After all, there was an active market before we did it. But as I argued earlier, we don't need a market failure to motivate central bank supervision of private payment system activities. To me, our policy interest is amply motivated by the presence of a substantial public sector safety net to payment system participants, and the central bank's role in providing and setting the terms and conditions of important elements of that safety net.

The perspective I have just outlined implies that the terms and operational conditions on which central banks extend daylight and overnight credit are of central importance. Years ago, when many aspects of current arrangements were put in place, operational considerations made it costly to implement systems that did not automatically extend daylight central bank credit in one form or another. New technologies may have significantly altered this cost-benefit trade-off, and in my opinion a re-examination of daylight credit policies is in order. For example, many banks monitor and control the extension of daylight credit to many of their corporate customers, and indeed, supervisors expect them to. It would be ironic for central bank risk management to lag behind private sector practices in this regard.

A focus on central bank credit also makes clear that paying interest on reserves is more important than is commonly appreciated. The prohibition of interest on central bank deposits, as in the U.S., greatly enhances the demand for daylight credit, in the sense that larger overnight balances act as substitutes for daylight overdrafts. As a result, limitations on central bank credit extension would be less costly if reserves earned interest. More broadly, it seems plausible that a huge fraction of settlement activity originates in transactions whose main purpose is to allow entities to evade interest prohibitions, and thus to some extent are socially wasteful.

The relation of central bank credit to the broader public safety net has implications that are sometimes overlooked. For example, the collateralization of central bank credit extension may reduce risks to the central bank, but it can increase risk to the deposit insurance fund. Therefore, the central bank ought to consider more than just its own balance sheet risk in making lending decisions. This is especially important because, as the lender of last resort, the central bank can often force an institution's closure by refusing credit.

And finally, notwithstanding several seemingly strong policy pronouncements of mine this afternoon, I do not believe that our understanding of the economics of intraday credit is at this point sufficient to provide quantitative guidance on the optimal pricing of daylight credit, even apart from moral hazard considerations. In that light, I regard

conferences such as this devoted to the advance of payment economics among the most noble uses of central bank resources.

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