1994

Paying for the Deal: An Analysis of Analysis of Wire Transfer Law and International Financial Market Interest Groups

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Earlier drafts of this Article benefitted enormously from the comments of my colleagues at William and Mary, Peter A. Alces, Charles H. Koch, Jr., and Neal E. Devins and from the suggestions of John F. Dolan, Wayne State University Law School and Fred H. Miller, University of Oklahoma College of Law. The author gratefully acknowledges their kind help.
I. MEASURING AND SATISFYING THE PAYMENTS INTERESTS OF FINANCIAL MARKET PLAYERS

This is an article about whether the new and complex law governing the movement of big money satisfies the interests of the money movers. The purpose of wire transfer law should be to satisfy the interests of three groups that regularly participate in financial market transactions: traders, settlements departments and funds transfer systems. Is this purpose met, and how can we gauge whether it is?

The crux of the analysis is contained in two conceptual steps. First, do the "rules of the wire" produce one or more of the following microeconomic benefits for one or more of the financial market players: reduce uncertainty and transactions costs, efficiently allocate risks and losses, avoid moral hazard and free rider problems or generate economies of scale? Second, do the rules lower credit, market, settlement and systemic risks associated with transactions in securities, money-market instruments and foreign exchange? If funds transfer law

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2. Of course, these interests should be satisfied without contravening appropriate public policy. Indeed, one purpose for Federal Reserve participation in the drafting of the U.C.C. and the U.N. Model Law was to ensure that appropriate public policy concerns were considered.

This is a companion article to Raj Bhala, The Inverted Pyramid of Wire Transfer Law, 82 KY. L.J. 347 (1993-1994). In that article, I lay the theoretical foundation for the current work. The Inverted Pyramid addresses the issues of why and to whom wire transfer law is important and argues that the answers are found in the interests of financial market players and, ultimately, the growth and development of financial markets. This Article takes up where The Inverted Pyramid left off by critically analyzing specific provisions in wire transfer law in relation to the interests of the players.
provides an affirmative answer to both questions, then players in the financial markets are more likely to use funds transfers to settle payment obligations arising from their deals. In turn, courts will uphold their arrangements as consistent with public policy which will alleviate uncertainty and transaction enforcement costs. The rules of U.C.C. Article 4A and the U.N. Model Law generally, but not always, yield these answers; where they do not, statutory reforms are needed.

The thesis advanced is two-fold. First, microeconomic and banking concepts should be the critical analytical tools for measuring how well specific provisions of funds transfer law advance the interests of financial market players. Most of the insights are derived through a small number of straightforward concepts. With respect to microeconomics, there are five key tools: (1) transactions costs, (2) uncertainty, (3) efficient loss allocation, (4) moral hazard and (5)

3. This Article is not intended to be a full-scale technical exposition of the microeconomics of funds transfer law. Professors Cooter and Rubin justify their use of microeconomic analysis on the grounds that their topic (loss allocation in consumer payments) "is a technical and largely monetary subject . . ." Robert D. Cooter & Edward L. Rubin, A Theory of Loss Allocation for Consumer Payments, 66 Tex. L. Rev. 63, 66 (1987). These are also features of wholesale funds transfers and accordingly make microeconomic analysis "an appropriate and promising place to start." Id. But, the essence of the argument here is to place funds transfers in the broader context of the financial markets. To make the link between financial market activity and the attractiveness of funds transfers as a means of payment to financial market players, the application of microeconomic tools in an informal, non-mathematical manner suffices.

4. This is a generic term designed to capture a number of specific costs that arise in particular situations, including the costs of negotiating and monitoring a cooperative solution, the costs of communication, strategic costs, and the costs of enforcement (which arise because ambiguous or inappropriate rules prompt litigation). See Robert Cooter & Thomas Ulen, Law and Economics 100-02 (1988). The specific cost envisioned in settling payments obligations arising from financial market transactions is the cost of the funds transfer.

5. The meaning of "uncertainty" intended here is "primary" or "event" uncertainty, which "exists because certain future events that are crucial to economic decisions taken today are unknown or unknowable." Cooter & Ulen, supra note 4, at 55. In contrast, "secondary" or "market" uncertainty exists where "information about certain future or present events is known to some but not to all economic actors." Id. The latter involves informational asymmetry. If the application of the laws governing funds transfers leads to unpredictable results, or if there is a legal void in that no funds transfer laws exist, then all parties are likely to share the same informational disadvantage (although in some instances one party may have less of a disadvantage and act accordingly). Future events, such as the outcome of an interloper fraud case, are unknown; hence there is primary uncertainty.

6. See Cooter & Rubin, supra note 3, at 70-86, which discusses the loss spreading, loss reduction, and loss imposition principles and the consistency of legal policy recommendations suggested by these principles. For a more theoretical treatment of efficiency, see John L. Hanks, On a Just Measure of the Efficiency of Law and Governmental Policies, 8 Cardozo L. Rev. 1 (1986) and David G. Carlson, Reforming the Efficiency Criterion: Comments on Some Recent Suggestions, 8 Cardozo L. Rev. 39 (1986).

7. This is "the problem that arises when the behavior of the insuree changes after the purchase of insurance so that the probability of loss or the size of the loss increases." Cooter &
economies of scale. The four key banking concepts are different types of risk analysis: (1) credit risk, (2) market risk, (3) settlement risk and (4) systemic risk. The extent of the intersection between the law and the interests of the players should be gauged using fundamental analytical concepts drawn from these two disciplines.

Second, U.C.C. Article 4A and the U.N. Model Law adequately address many, but not all, of these interests. Where a gap exists between the law and its purpose, statutory reform is required. Technical rules regarding: (1) same-day execution, (2) consequential damage liability, (3) receiver finality, (4) discharge, (5) payment order processing, (6) money-back guarantees, (7) interloper fraud and (8) variation by agreement should be assessed using these microeconomic and banking concepts in order to appraise the link between funds transfer law and the growth and development of the financial market. Where the technical rules fail to serve the broader policy goal of aiding the growth and development of domestic and international financial markets, changes to the rules are in order.

ULEN, supra note 4, at 65-66.

8. These occur “when the cost per unit (or average cost) of production declines as the total amount of output increases.” Id. at 97 n.5.

9. “Credit risk” is “the risk that a counterparty to a transaction will fail to perform according to the terms and conditions of the contract, thus causing the holder of the claim to suffer a loss.” BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, FEDERAL DEPOSIT INSURANCE CORPORATION, AND OFFICE OF THE COMPTROLLER OF THE CURRENCY, DERIVATIVE PRODUCT ACTIVITIES OF COMMERCIAL BANKS: JOINT STUDY CONDUCTED IN RESPONSE TO QUESTIONS POSED BY SENATOR RIEGLE ON DERIVATIVE PRODUCTS app. III at 2-3 (1993) [hereinafter, JOINT DERIVATIVES STUDY].

10. This is “the risk of a change in the price of an asset.” Id. app. III at 7.

11. As “between two counterparties, [this is] the risk that a counterparty to whom a firm has made a delivery of assets or money defaults before the amounts due or assets have been received; or the risk that technical difficulties interrupt delivery or settlement even if the counterparties are able to perform.” Id. app. III at 9.

12. Systemic risk pertains to the contagion effect and is the financial market analog to the domino theory of international politics. It is “the risk that a disruption (at a firm, in a market segment, to a settlement system etc.) causes widespread difficulties at other firms, in other market segments or in the financial system as a whole.” Id. app. III at 10.

13. See infra part III.A.

14. See infra part III.B.

15. See infra part IV.A.

16. See infra part IV.A.

17. See infra part IV.B.

18. See infra part IV.B.

19. See infra part IV.C.

20. See infra part V.A.

21. It is generally accepted that many of these technical rules arose as a result of negotiations among the drafters. The analysis offered herein does not suggest that political deal-making in the drafting process is unimportant or that an economic construct is a complete explanation of the
Whether funds transfer law\textsuperscript{22} adequately addresses the interests of those involved in settling these payment obligations is an unexplored topic. This lack of exploration is ironic because every day we hear or read about trillions of dollars worth of transactions in the markets for foreign exchange,\textsuperscript{23} short-term instruments,\textsuperscript{24} corporate securities,\textsuperscript{25} derivative products\textsuperscript{26} and interbank lending.\textsuperscript{27} What we do not focus on is how the payment obligations generated by these transactions are settled. We implicitly, but wrongly, assume that the trade of U.S. dollars for Japanese yen, the purchase of British Telecom shares by Credit Suisse on behalf of a private client on the London Stock Exchange and the overnight loan of ten million French francs by Banque Nationale de Paris to Citibank is done when the traders at the financial institutions agree over the telephone to the terms and conditions. There are, in truth, many more activities involved; one of

\textsuperscript{22} The term “funds transfers” is technically more accurate than the term “wire transfers” because payment orders may be transmitted not only by wire (electronically), but also orally (by telephone) or in writing (by letter). See U.C.C. § 4A-104 cmt. 6 (1989). It is legally incorrect to think of a funds transfer as money moving through a pipeline. A funds transfer is a transfer of bank credit from one account to another. Id. § 4A-104 cmt. 4. The account holder has a non-possessory personal property interest, or chose in action, in the bank account. See BLACK’S LAW DICTIONARY 241 (6th ed. 1990).

\textsuperscript{23} This is a global, twenty-four hour market for trading national currencies. See generally RUDI WEISWEILLER, HOW THE FOREIGN EXCHANGE MARKET WORKS (original English language ed. 1990).

\textsuperscript{24} This is a generic term for the interbank market in several distinct, short-term money market instruments such as U.S. Treasury bills (short-term debt issued at a discount and redeemed at face value), short-term government agency securities (e.g., discount notes issued by the Federal National Mortgage Association), commercial paper (promissory notes issued at a discount and redeemed at par value, or paying a fixed interest rate) and repurchase agreements or “repos” (the temporary sale of securities subject to an agreement of repurchase where the difference between the sale and repurchase prices yields a set interest rate). See FEDERAL RESERVE BANK OF NEW YORK, A POCKET GUIDE TO SELECTED SHORT-TERM INSTRUMENTS OF THE MONEY MARKET (1987).

\textsuperscript{25} This refers to the equity and debt securities issued by corporations. Derivative instruments include futures contracts, options and swaps. See id. app. III at 5, 8, 10.

\textsuperscript{26} “[A] derivative is a financial contract whose value depends on the values of one or more underlying assets or indexes of asset values.” JOINT DERIVATIVES STUDY, supra note 9, at 2.

\textsuperscript{27} A principal form of interbank lending is the purchase and sale of Federal funds (Fed funds) and repurchase agreements (repos). The Fed funds “market is described as one in which commercial banks borrow and lend excess reserve balances held at the Federal Reserve.” Charles M. Lucas et al., Federal Funds and Repurchase Agreements, FED. RESERVE BANK OF N.Y. Q. REV., Summer 1977, at 33, reprinted in part in FINANCIAL MARKETS: INSTRUMENTS AND CONCEPTS 9, 9-10 (John R. Brick et al. eds., 2d ed. 1986). Accordingly, there is an overlap between the terms “short-term money market instruments” and “interbank borrowing and lending” in that Fed funds and repos are short-term instruments and the subject of interbank lending. Note also that borrowing Fed funds is referred to as a “purchase” of Fed funds while lending is referred to as a “sale.”
these is the settlement of the payment obligations. How are the U.S. dollars sent to their purchaser? How does Credit Suisse pay for the stock? How does Banque Nationale de Paris get the francs to Citibank? The answer to each of these questions is very likely the same: wire transfer. The hidden fact is that many, if not most, payment obligations are settled by wire transfer.

The remainder of this Article is organized into five parts. Part II establishes a hypothetical international financial transaction and identifies the key players and their interests. This hypothetical is referred to in the subsequent parts. Part III focuses on the interests that traders in financial markets have with respect to a funds transfer statute. Similarly, Part IV studies the interests of settlements departments of financial institutions and Part V examines the interests of funds transfer systems in which the financial institutions participate. The emphasis in Parts III-V is on the critique of U.C.C. Article 4A and the U.N. Model Law in light of these interests, using analytical tools drawn from microeconomics and banking. Conclusions are set forth in Part VI.

II. FINANCIAL MARKET TRANSACTIONS AND INTEREST GROUPS

A. The Interest Groups

Who are the movers of big money? Financial institutions, namely commercial banks like Citibank and securities firms such as Merrill Lynch, are the most prominent participants in domestic and international financial markets.28 The conventional approach to analyzing the markets is to view these institutions as a whole and consider them as monoliths. Unfortunately, this approach obscures the rich diversity of groups within each institution, as well as the diversity of their interests. The approach also fails to account for private groups and networks...

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28. See generally A Survey of the International Capital Markets, ECONOMIST, July 21-27, 1990, at 1. Large corporations such as IBM also participate in the markets, typically to hedge against currency or interest rate risk exposures on their balance sheets. See, e.g., Eugene E. Comiskey and Charles W. Mulford, Risks of Foreign Currency Transactions: A Guide for Loan Officers, 5 COM. LENDING REV. 44, 44-45 (1990). Wealthy, sophisticated individual investors are also participants. See, e.g., Salomon Forex, Inc. v. Tauber, 8 F.3d 966 (4th Cir. 1993) (involving a doctor trading over-the-counter foreign exchange option contracts). Central banks such as the Federal Reserve participate intermittently in some markets to implement domestic monetary or international exchange rate policies. See, e.g., Review of Treasury Department's Conduct of International Financial Policy: Hearing Before the House Committee on Banking, Finance and Urban Affairs, 101st Cong., 2d Sess. 4-22, 60-74 (Aug. 14, 1990) (statement of David C. Mulford, Under Secretary of the Treasury for International Affairs); FEDERAL RESERVE BANK OF NEW YORK, FEDPOINTS 44: FOREIGN EXCHANGE INTERVENTION (1988). The most prominent participants are, however, commercial banks and securities firms.
formed by several institutions acting collectively. It is not enough to ask about Citibank's or Merrill Lynch's interests with respect to a funds transfer statute. Rather, these institutions must be intellectually dissected and specific groups must be isolated.

1. Traders

This close inspection of financial institutions results in the identification of two distinct interest groups: traders and settlements departments. Financial institutions employ large numbers of traders to buy and sell foreign exchange, short-term money market instruments, corporate securities and derivative products. The world of the trader is one of advanced information technology in which she electronically communicates instantaneously with her trading counterparties around the world by electronic devices. In seconds the trader buys and sells millions of dollars worth of Thai baht, General Motors commercial paper, Singapore Airlines stock or put options on British pounds. This is a world in which geographical borders mean nothing; information technology and financial market deregulation allow a trader to make transactions anytime, anywhere.

The trader wants to be able to move rapidly to take advantage of profitable trading opportunities, and to do so cheaply so that the very costs of transacting do not devour a sizeable chunk of her profits. Paying or receiving payment for foreign exchange or financial instruments bought or sold by means of paper-based instruments like checks is slow and cumbersome. Moreover, a paper-based system has opportunity costs: Expected payments that are held up in the check collection process would be unavailable for use in new financial deals.

It is not surprising, then, that the trader prefers to settle payments obligations arising from her transactions in the markets mentioned above by means of a funds transfer. A funds transfer system has the benefits of low cost and high speed. The trader's preference for funds transfer settlement is apparent in that foreign exchange obligations are settled by funds transfer. A less well known example of the trader's

29. Interbank lending operations, which involve settlement by funds transfer (see supra note 27), may be conducted out of the institution's treasury function. For present purposes, the distinction between the trading and treasury departments is immaterial.

30. In practice, there is a division of labor on the trading floor of financial institutions. Traders tend to specialize in one market, such as Far East equities, rather than several distinct markets.

31. See generally RICHARD O'BRIEN, GLOBAL FINANCIAL INTEGRATION: THE END OF GEOGRAPHY 1-6 (1992) (discussing the end of geography as a relevant factor in financial transactions).

32. See J. ORLIN GRABBE, INTERNATIONAL FINANCIAL MARKETS 75 (2d ed. 1991); see also
preference is that payments associated with derivative products, specifically options and futures, are made by funds transfers.\textsuperscript{33} Payments obligations arising from purchases of some stocks, bonds and government agency issues are settled by funds transfers.\textsuperscript{34} In fact, funds transfers are an increasingly common method for settling corporate stock and bond transactions.\textsuperscript{35} In the short-term money markets, funds transfers also are used to settle payments obligations arising from purchases and sales of Fed funds and repos.\textsuperscript{36} Payments obligations associated with commercial paper also are settled by Fedwire funds transfers.\textsuperscript{37} The trader's preference for funds transfer as a means of payment is based on the inherent celerity and cost of this device. Consequently, the trader wants a funds transfer law that promotes both high speed and low cost funds transfers to settle payments obligations arising from her purchases and sales in these important financial markets.

ROGER M. KUBARYCH, FEDERAL RESERVE BANK OF NEW YORK, FOREIGN EXCHANGE MARKETS IN THE UNITED STATES 36 (rev. ed. 1983).


35. See the discussion of the same-day funds settlement proposal of the National Securities Clearing Corporation (NSCC) and the Depository Trust Company (DTC) contained in MEMORANDUM FROM THE DEPOSITORY TRUST COMPANY AND NATIONAL SECURITIES CLEARING CORPORATION TO USERS AND INTERESTED PARTIES RE: A SAME-DAY FUNDS SETTLEMENT SYSTEM PROPOSAL FOR INDUSTRY EVALUATION 5 (June 1, 1992) [hereinafter SDFS PROPOSAL]. Essentially, the current DTC-NSCC system for settling transactions in common stocks, preferred stocks, corporate and municipal bonds, unit investment trusts and warrants is a next-day funds settlement system. An NSCC member or DTC participant that owes money to NSCC or DTC as a result of a securities transaction pays by certified check. If NSCC or DTC owes money, payment is made by draft. The certified checks and drafts clear in one day. \textit{Id.} at 5-6. However, NSCC and DTC propose to switch to a same-day funds settlement system whereby all payments to or from members and participants arising from securities transactions would be made by Fedwire funds transfers. \textit{Id.} at 1, 5-6. This would be a "same-day funds settlement system," which currently is offered by NSCC and DTC only for commercial paper trades. \textit{Id.} at 5.

36. PURPOSES & FUNCTIONS, supra note 34, at 109. Indeed, it has been suggested that the Fed funds and repo markets should be called "the markets for short-term immediately available funds" because both markets are settled in "immediately available funds" (a term referring to funds transfers through Fedwire). \textit{Lucas, supra} note 27, at 10.

37. DAVID M. WEISS, AFTER THE TRADE IS MADE: PROCESSING SECURITIES TRANSACTIONS 214, 386-87 (1986). See also supra note 35 for the discussion of the same-day funds settlement proposal of the National Securities Clearing Corporation and the Depository Trust Company.
2. Settlements Departments

When the trader has agreed with her counterparty to buy or sell foreign currency or a financial instrument—such agreement typically is made over the telephone—she will issue payment instructions (orally or in writing) to her colleagues in the settlements department. The settlements clerks, employed by the same financial institution as the trader, are charged with the responsibility of processing large volumes of payment orders in a short period of time. The orders reflect completed transactions entered into by all of the institution's traders. Accordingly, certainty in the sense of routine algorithms for handling the orders is critical. If the settlements department had to examine each order by hand for potential inconsistencies or fraud, then payments could not be made quickly. Similarly, knowing when final payment is made, (that is, when a credit received is irrevocable) and when discharge occurs (that is, when an underlying contractual obligation arising from a trade is discharged) adds certainty to the movement of money. There is, then, a synergistic relationship between the trader and the institution's settlements department with respect to moving big money: The trader wants to make or receive payments rapidly, which is made possible in part by standardized methods for processing payment orders.

The settlements department is commonly referred to as the back office. This is a misleading label, however, because it conjures up notions of mounds of paper piled up on desks of bureaucratically-minded employees. In fact, the back office is a critical link in a funds transfer chain because of the systemic importance of its operations. The October 1987 stock market crash demonstrates the systemic risk problem associated with the failure of one or a few trading institutions and the relevance of funds transfers. When the crash occurred, many

38. See Kubarych, supra note 32, at 35-36 (discussing mechanics of foreign exchange settlement).
39. Since the October 19, 1987 stock market crash, these systems have been the subject of increasing attention from financial market regulators. As the U.S. General Accounting Office (GAO) stated:

Properly operating clearance and settlement systems are important to the efficiency and integrity of financial markets. Their failure to continue to operate in volatile markets can further exacerbate market instability. The inability of a major clearing member to meet major obligations could jeopardize the financial health of all the clearing organizations to which it belongs, because the trade guarantee makes the clearing organization responsible for fulfilling the financial obligations of its failed clearing members.

1990 GAO REPORT, supra note 33, at 15. See also Bank for International Settlements, Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries (1990) [hereinafter Lamfalussy Report, after the Chairman of the
commercial and investment banks that were obligated to pay for securities were unable to fulfill this obligation, or were late in doing so. Among the reasons for the delayed payments was that "[t]he federal wire transfer system essential for fund transfers did not work on several occasions." In other words, problems in making funds transfers caused delays in discharging payments obligations. Creditors were, therefore, at risk during the period of delay. To the extent that they relied on timely payment from their debtors to fund their own payments obligations, creditors risked defaulting on these obligations. From the back office's perspective, to avoid such systemic risk, funds transfer law should promote standardized, automated means for processing payment orders and resolving problems. It should satisfy the concerns regarding the authentication of payment instructions and allocation of the risk of interloper fraud. Rules on receiver finality and discharge are necessary. These interests are particularly acute during periods of stress caused by turmoil in financial markets.

3. Funds Transfer Systems

A third important interest group in the financial markets is evident not from dissecting a particular financial institution, but from observing the private arrangements that several such institutions make in connection with funds transfers. The two most prominent U.S. systems, the Clearing House Interbank Payments System (CHIPS) and the Federal Reserve's wire transfer network (Fedwire), are used by financial institutions around the world to make funds transfers denominated in U.S. dollars. A "funds transfer system" is "a wire transfer network . . . or other communication system of a clearing house or other association of banks through which a payment order by a bank may be transmitted to the bank to which the order is addressed."

Committee, M.A. Lamfalussy].

40. 1990 GAO REPORT, supra note 33, at 42.

41. To be sure, these considerations are relevant to back offices utilizing other modes of payment such as checks and credit cards. However, those modes are inherently more cumbersome than funds transfers and, therefore, less able to meet the needs of financial market players.

42. See generally PATRIKIS, BAXTER & BHALA, supra note 1, at xxvi, 10-11, 17-19, 140, 192-93. Fedwire is owned and operated by the twelve Federal Reserve Banks. Id. at xxvi. Any "depository institution," as defined in the Monetary Control Act of 1980 (Pub. L. 96-221, 94 Stat. 132 (codified as amended in scattered sections of 12 U.S.C.)), is entitled to use Fedwire. Id. at 11; see 12 U.S.C. § 248(o) (1988). One hundred and twenty-two financial institutions are participants in the privately organized and operated CHIPS. PATRIKIS, BAXTER & BHALA, supra note 1, at 194.

43. U.C.C. § 4A-105(a)(5). The U.N. Model Law does not define this term and, in fact, uses it only once. See U.N. MODEL LAW art. 6(b)(iv).
Reducing systemic risk during periods of market stress such as the October 1987 crash is important to such systems. The failure of one system participant to settle its debts with other participants can cause liquidity problems for these others or, worse, the participant's own failure. The interests of the back office and the systems are consistent: The systems require certainty in payment order processing which, in turn, assures that failures to pay will not be caused by bottlenecks in the back office. In terms of the law, funds transfer systems are interested in systemic risk reduction methods, such as netting payments obligations, that are enforceable and binding.

B. A Hypothetical Spot Foreign Exchange Trade and Related Foreign Stock Purchase Transaction

Consider a hypothetical spot dollar-yen transaction in which on day one a trader at the Bank of Tokyo sells 120 million yen to a trader at Chemical Bank in exchange for $1 million. The payments obligations—the delivery of 120 million yen to Chemical Bank and of $1 million to the Bank of Tokyo—must settle on day three because of the two business day settlement convention in the spot foreign exchange markets. As soon as the deal is completed, the settlements departments of the Bank of Tokyo and Chemical Bank are notified of the deal by the respective traders. In turn, these back offices exchange information relating to the settlement of the payment obligations such as bank account numbers held at correspondent banks. Assume that

44. A spot foreign exchange contract involves a commitment by one trader to deliver a specific quantity of one currency against another trader's commitment to deliver a specific quantity of a second currency. See WEISWEILLER, supra note 23, at 18-19. The deliveries typically occur within two business days of the contract date. Id. at 19. Of course, the traders enter into such contracts on behalf of the financial institutions that employ them. It is, therefore, technically correct to speak of the contracting parties as the trading commercial banks or securities firms, not the traders. A foreign stock purchase simply entails buying shares issued and traded on a non-U.S. stock exchange. The share price is denominated in the currency of the country in which the exchange is located and must be paid for in that foreign currency. Id. at 5-6. Thus, the U.S. purchaser must ultimately obtain that currency by converting U.S. dollars. Id. The two hypothetical transactions established below are linked in that the foreign currency obtained in the spot deal is used to purchase foreign shares.

45. That is, deliveries are made two days after the trade date, here day one. GRABBE, supra note 32, at 75.

46. KUBARYCH, supra note 32, at 35.

47. In a correspondent banking arrangement, which is commonly used to facilitate international banking transactions, one bank provides payment and other services to another bank. "Payments through correspondents are often executed through reciprocal accounts (so-called nostro and vostro accounts), to which standing credit lines may be attached." COMMITTEE OF GOVERNORS OF THE CENTRAL BANKS OF THE MEMBER STATES OF THE EUROPEAN ECONOMIC
the Bank of Tokyo will pay the $1 million by means of a funds transfer through either CHIPS or Fedwire and Chemical Bank will pay the 120 million yen by means of a Japanese funds transfer system, the Bank of Japan Financial Network System (commonly called “BOJ Net”).

The Bank of Tokyo trader is likely to deliver the 120 million yen to Chemical Bank before Chemical Bank pays the $1 million. The reason for this order of payment is that the funds transfer business day opens in Tokyo before opening in New York, due to the time zone difference between the two cities. Assume that the Bank of Tokyo maintains a correspondent account at First Chicago and the $1 million are to be credited to that account. Suppose the Bank of Tokyo intends to use the $1 million to purchase shares in an initial public offering (IPO) of Singapore Telecom (ST) on the Singapore Stock Exchange. The share price is denominated in Singapore dollars, and the Bank of Tokyo purchases the shares through its Singapore broker, Smith New Court (SNC). SNC executes the Bank of Tokyo’s buy order using its
own funds and later obtains reimbursement from the Bank of Tokyo. Any delay in settling the $1 million payment obligation arising from the dollar-yen spot deal has a contagion effect in that it will cause problems in the ST stock purchase transaction. Receipt of a $1 million credit by day three is essential if the Bank of Tokyo is to make payment to SNC for the ST shares in a timely fashion. High speed is important to SNC because it seeks to minimize its risk exposure by matching delivery of ST shares against payment of U.S. dollars.

Specifically, until the Bank of Tokyo pays SNC the $1 million, SNC faces credit, market and currency risks because it has paid out Singapore dollars for the ST shares and holds these on its books for the account of the Bank of Tokyo. SNC's interest is to avoid the scenario in which it has paid out Singapore dollars from its own account and received delivery of the ST shares, but has not yet received settlement in U.S. dollars from the Bank of Tokyo. The longer the span of time between these two events, the greater the risks SNC faces. There is a credit risk that the Bank of Tokyo might default on its obligation to pay for the ST shares because, for instance, the Bank of Tokyo has not received the $1 million to fund the stock purchase. In that event, SNC would have to find an alternative purchaser for the ST shares. By that time, however, the ST share price may have fallen—a market risk—and consequently there may be nobody willing to buy the ST shares at the IPO price that SNC initially paid. There is a currency risk that the Singapore dollar will appreciate relative to the U.S. dollar between the time that SNC purchases the shares as agent for the Bank of Tokyo and the time SNC converts the $1 million reimbursement from the Bank of Tokyo to Singapore dollars. The appreciation of the Singapore dollar would reduce or eliminate the effective broker's commission SNC receives from the Bank of Tokyo. All of these risks are mitigated if the Bank of Tokyo pays SNC promptly. The Bank of Tokyo's ability to pay promptly in turn hinges on the Bank of Tokyo's timely receipt of $1 million in its correspondent account at First Chicago.

52. It may rightly be queried whether the Bank of Tokyo's foreign exchange and equity operations are related in the manner implied by this transaction. The critical point, however, is that one international financial deal is often linked to a subsequent deal which, in turn, partly explains the popular conception that different markets are linked.

53. Telephone Interview with Warren Yeh, Vice President, Smith New Court, New York (June 16, 1993). A delivery-versus-payment system would eliminate the risks because the two events occur simultaneously. It does not exist, however, for Far East equities because there is no central clearinghouse to clear and settle trades whose members are dealing institutions, like the Bank of Tokyo, and brokers, like SNC. Id.

54. See JOINT DERIVATIVES STUDY, supra note 9, at 2-3, 7.

55. See KUBARYCH, supra note 32, at 23.
III. TRADERS

A. High Speed and a Same-Day Execution Law

Because there is a two-day gap between the trade and value date in any spot foreign exchange deal, and an even greater gap in a forward deal, a trader assumes the credit risk of its counterparty during the gap. Ideally, a trader who on day one sells 120 million yen in exchange for $1 million would like to obtain the $1 million on day one, and not wait two days for settlement. If settlement occurred on day one, the risk of the counterparty failing or incurring serious liquidity problems on days two or three would be irrelevant. The facts in Delbrueck & Co. v. Manufacturers Hanover Trust Co. illustrate the problem that every foreign exchange trader faces. Delbrueck's settlement obligations on its three foreign exchange contracts with the German banking partnership Bankhaus I.D. Herstatt, K.G.a.A. were settled through CHIPS, but Herstatt failed before Delbrueck obtained settlement from Herstatt.

Time zones present an obstacle to immediate and simultaneous delivery-versus-payment. This obstacle increases the importance of high speed in settling payments obligations, particularly in situations in which financial transactions are linked as in the above hypothetical. Funds transfer law can encourage high speed transfers and minimize gaps between linked settlements like the yen-U.S. dollar and U.S. dollar-Singapore dollar obligations. For example, the same day execution rule of U.C.C. Article 4A ensures that settlement will occur on day three and not at a later date. Each receiving bank, other than a beneficiary's bank, must execute an accepted payment order on the day of receipt.

56. See supra note 45 and accompanying text.
57. A forward foreign exchange contract is identical to a spot contract except that the date set for delivery of the underlying currencies is more than two days (generally between one week and two years) from the date of the contract. See GRABBE, supra note 32, at 76.
58. 609 F.2d 1047 (2d Cir. 1979).
59. Id. at 1049-50.
60. U.C.C. § 4A-301(a).
61. The "beneficiary's bank" is "the bank identified in a payment order in which an account of the beneficiary is to be credited pursuant to the order ...." Id. § 4A-103(a)(3). The term is included within the more generic term "receiving bank." See supra note 49 and accompanying text. The "beneficiary" is "the person to be paid by the beneficiary's bank." Id. § 4A-103(a)(2).
62. A receiving bank "executes" a payment order by issuing a payment order "intended to carry out the payment order received by the bank." Id. § 4A-301(a).
63. "[A] receiving bank other than the beneficiary's bank accepts a payment order when it executes the order." Id. § 4A-209(a).
64. Id. § 4A-301(a); see also id. § 4A-301(a) cmt. 2. This assumes that each receiving bank
Article 4A is not wholly satisfactory, however, because of a little-noticed rule that allows for a delay in payment by a beneficiary’s bank to the beneficiary. A beneficiary’s bank may delay its acceptance\(^\text{65}\) of a payment order until the opening of the funds-transfer business day following the payment date.\(^\text{66}\) There is no obligation to pay the beneficiary until the order has been accepted.\(^\text{67}\) During the period of delay, the beneficiary’s bank can evaluate the credit-worthiness of its sender while the payment order is in suspended animation.\(^\text{68}\) The purpose of the rule’s flexibility is to allow the beneficiary’s bank to minimize the credit risk of its sender. This flexibility comes at the expense of the beneficiary’s interest in rapid payment. Although the beneficiary’s bank does not want to accept a payment order and pay the beneficiary until the bank receives settlement from its sender, if the bank delays acceptance it necessarily delays payment to the beneficiary.

A beneficiary’s bank, like First Chicago\(^\text{69}\) in the hypothetical, cannot prevent or delay acceptance because payment is through Fedwire,\(^\text{70}\) but
can if the intermediary bank is a Federal Reserve Bank.\textsuperscript{71} In that case, First Chicago could delay acceptance until day four and the Bank of Tokyo would be paid on that day. The Bank of Tokyo’s payment to SNC could therefore be delayed by one day. To adequately remedy the problem, U.C.C. Article 4A could be amended to remove the possibility of delayed acceptance. Another possible remedy is to further limit the allowed delay period. For example, limiting the period to a few hours, assuming this is practicable, might be theoretically consistent with the development of an intra-day funds market. An intra-day funds market is suggested by recent regulatory developments in the pricing of daylight overdrafts.\textsuperscript{72} Pricing an overdraft of a bank account that lasts for a few hours and then is covered by a deposit of new funds means that money has value for periods less than twenty-four hours. One full day is traditionally the shortest period for calculating interest.\textsuperscript{73} Similarly, limiting the period of delayed acceptance to a few hours suggests that the funds being wired have value to the beneficiary on an hour-by-hour (or minute-by-minute) basis.

From the perspective of the Bank of Tokyo trader the U.N. Model Law scheme is even less satisfactory than that of the U.C.C. because delay can occur at any or all points in the funds-transfer chain, not just at the beneficiary’s bank stage. A delay may occur at any point because of the problem of passing value in the correct amount to the next party in the funds-transfer chain. On this point the U.N. Model Law is in need of reform.\textsuperscript{74} At the heart of the problem is the “execution period” concept that allows a receiving bank “one or two days” to execute a payment order.\textsuperscript{75} Although a receiving bank is in principle obligated to execute a payment order on the day of receipt, the bank can execute the order on the following day “for value as of the day of receipt.”\textsuperscript{76} This is a practical statutory accommodation to

\begin{itemize}
  \item \textsuperscript{71} This would occur if CHIPS were used, as it commonly is in the settlement of foreign exchange transactions. Thus, the delay induced by a section 4A-209(b)(3) acceptance would persist beyond the CHIPS settlement on day three.
  \item \textsuperscript{72} See Policy Statement, 57 Fed. Reg. 47,084 (Board of Governors of the Fed. Reserve Sys. 1992); Policy Statement, 57 Fed. Reg. 47,093 (Board of Governors of Fed. Reserve 1992). For a discussion of these developments, see PARIKIS, BAXTER & BHALA, supra note 1, at 162-67. It would be harmful to allow a provisional credit, however, because this would undermine the finality rule of U.C.C. § 4A-405(c).
  \item \textsuperscript{73} See PARIKIS, BAXTER & BHALA, supra note 1, at 46 n.29.
  \item \textsuperscript{74} An interesting issue arises if the U.N. Model Law is adopted by certain states without necessary changes. Arguably, traders will avoid using funds-transfer systems subject to the U.N. Model Law because when competition exists between legal regimes, there may be a reverse Gresham’s Law effect. The good legal regime may drive out the bad one because transactors prefer the beneficial effects (e.g., certainty and predictability) of the good regime.
  \item \textsuperscript{75} U.N. MODEL LAW art. 2(k).
  \item \textsuperscript{76} Id. art. 11(2).
\end{itemize}
banks in countries that cannot process payment orders rapidly. Passing along value as of the day of receipt raises serious practical concerns, however, not the least of which is the calculation of value as of the day of receipt. Presumably an interest rate\textsuperscript{77} will be applied to the principal value of the payment order for the one-day delay.

The cumulative delay wrought by the U.N. Model Law scheme is evident if the facts of the hypothetical are expanded. Assume that Chemical Bank issues a payment order on day three for $1 million to Chase New York, which executes\textsuperscript{78} the order by issuing a conforming order to the Federal Reserve Bank of New York (New York Fed).\textsuperscript{79} The New York Fed executes Chase's order by sending an implementing order to the Federal Reserve Bank of Chicago (Chicago Fed),\textsuperscript{80} which then executes the New York Fed's order by issuing an order to First Chicago in favor of the Bank of Tokyo. Assume further that each receiving bank executes the payment order it receives on the day after receipt for value as of the day received. Chase New York could execute on day four for value as of day three, the New York Fed could execute on day five for value as of day four, and the Chicago Fed could execute on day six for value as of day five.

If the beneficiary's bank (First Chicago) accepts the order on day six, then Bank of Tokyo has experienced a three day delay in receiving $1 million. Similarly, reimbursement of SNC is delayed and its currency risk exposure is extended. While the delayed credit to the Bank of Tokyo's account at First Chicago might include interest compensation for three days, whether the credit must include interest is unclear because the U.N. Model Law does not specify the liability of a beneficiary's bank to its customer for delayed payment. The matter is left to the law governing the relationship between the beneficiary's bank and the beneficiary.\textsuperscript{81} Even if interest is paid, the opportunity cost of the delay may exceed the interest rate. For example, Bank of Tokyo might have dedicated the $1 million to a highly profitable investment in a financial instrument on day three, but by day four adverse price movements may have eliminated the opportunity.\textsuperscript{82} Furthermore, the

\textsuperscript{77} "Interest" is loosely defined as the interbank rate. \textit{id.} art. 2(m).
\textsuperscript{78} \textit{id.} art. 2(i) (definition of "execution").
\textsuperscript{79} Chase New York and the New York Fed are intermediary banks, \textit{i.e.}, receiving banks other than the originator's or beneficiary's banks. U.C.C. § 4A-104(b).
\textsuperscript{80} Assuming Fedwire is used, this is an interdistrict funds transfer. 12 C.F.R. § 210.26(f) (1993).
\textsuperscript{81} U.N. MODEL LAW art. 10(1).
\textsuperscript{82} Investments in foreign exchange, equities and fixed income securities are examples of such opportunities in which prices are volatile. \textit{See generally A Survey of International Banking}, \textit{ECONOMIST}, Apr. 10-16, 1993, at 5-14 [hereinafter \textit{International Banking Survey}] (discussing volatility in foreign exchange markets, the measurement of potential price changes and various risk
actual cost of delay may exceed any compensation. SNC is jeopardized by volatility in the foreign exchange, where dramatic price fluctuations occur in seconds.83 If the Singapore dollar appreciates relative to the U.S. dollar during the one-day delay, SNC will experience a loss when it converts the reimbursement from the Bank of Tokyo; the “as of” transfer may not make SNC whole. A more rigorous same-day execution rule that is simple to administer might well address these concerns by eliminating the three-day delay and the necessity for interest compensation.

Funds-transfer law is not the only solution to the aforementioned risks posed by time gaps. In the hypothetical, two ways exist to minimize the gap between the yen and dollar settlements: Private contract arrangements and funds-transfer system rules. Under a private contract arrangement, the Bank of Tokyo can pay yen into an escrow account and instruct the escrow agent to pay Chemical Bank only when the agent has received $1 million from Chemical Bank.84 If the dollars are not received by the end of day three, then the yen will be returned. However, this solution involves significant transactions costs. For each counterparty with which the Bank of Tokyo deals but decides is not suitably creditworthy to waive an escrow arrangement, the Bank must negotiate such an arrangement and pay at least a portion of the escrow fee.

The alternative way to minimize the time gap problem is to amend the rules of the funds-transfer systems used to deliver the dollars and yen by extending the hours of operation of each system so that it overlaps with the other. Recently, the Federal Reserve proposed to extend the hours of operation of Fedwire to overlap with the trading day in Tokyo.85 More generally, the extended hours “could facilitate efforts to control temporal risk associated with the settlement of cross-border and multi-currency transactions, such as foreign exchange transactions”86 and “reduce[e] payment system risk in the settlement of foreign currency and other types of international transactions.”87

management methods).

83. See generally id.
84. The arrangement could involve one escrow agent used by both parties (e.g., a London agent, whose funds-transfer business day overlaps with that of New York and Tokyo), or two agents (one for Chemical Bank in Japan to receive yen and one for the Bank of Tokyo in the U.S. to receive dollars).
85. 57 Fed. Reg. 47,080-83 (proposed Oct. 14, 1992). The proposal called for the Fedwire to open two hours earlier, at 6:30 a.m. Eastern Time (ET) instead of the current 8:30 a.m. opening time.
Although the Federal Reserve asked for comment on round-the-clock operation of Fedwire, neither it nor any other central bank appears ready to implement a funds transfer system that never closes. Indeed, the Federal Reserve has delayed implementing the earlier opening time proposal "pending further analysis of the complex issues raised by commenters." Yet, an extension of Fedwire hours may be just what is needed. A funds transfer system that operates on a twenty-four hour basis can reduce the credit risks associated with twenty-four hour trading by minimizing gaps between delivery and payment. Although the Federal Reserve seems to "especially" appreciate "the role of Fedwire in enhancing clearance and settlement practices in financial markets," it has not assumed a leadership role to ensure that twenty-four hour global trading is not constrained because of Fedwire's limited operating hours.

A related solution in which the Federal Reserve can play a constructive role is the development of a central foreign exchange clearinghouse akin to the book-entry system used to clear and settle trades in U.S. government securities. This system would be open all hours of every day. Heretofore, limited progress toward such a system has been achieved.

B. Low Transactions Costs and Liability for Consequential Damages

"[T]he rules created by law establish implicit prices for different kinds of behavior, and the consequences of those rules can be analyzed as the response to those implicit prices." Legal rules governing payment methods are no exception to the principles that every law has a cost and that microeconomic tools can be used to study the consequences of the law:

Every payment instrument imposes a variety of costs on the parties that use it. These costs include the financial institution's costs in operating the system, which the institution will generally transfer to its customers as a direct or

89. Id.
90. Transactions in U.S. Treasuries occur through book-entry debits and credits to accounts maintained at the Federal Reserve Bank of New York, which effectively acts as a clearing and settlement system for these securities. Institutions that participate in the private FXNET system are able to net on a bilateral basis their spot and forward foreign exchange contracts for the same currencies and value dates. International Banking Survey, supra note 82, at 36. The Exchange Clearing House Organization (ECHO), in which fourteen European banks participate, allows for multilateral netting of spot and forward foreign exchange contracts. See id. The two-day gap between the trade and value dates remains, however, as neither FXNET nor ECHO provides immediate delivery against payment.
91. See O'BRIEN, supra note 31, at 29-35.
92. COOTER & ULEN, supra note 4, at 11 (emphasis omitted).
indirect charge; the customer's costs of using the instrument, such as the time and expense spent getting to a financial institution; and the costs imposed by fraud, forgery, and error losses . . . . All these costs belong to the economic category of "transaction costs" because they are attached to an underlying transaction. This underlying transaction—typically an exchange of goods or services for value—is beneficial to both parties, but the transaction costs reduce the value of the exchange, and both parties to the exchange will want to minimize them. One concept of economic efficiency is achieving a given end at the minimal cost. 93

Funds transfer law is economically efficient if the payment obligations arising from a financial market trade is settled at minimal cost. Costs and the consequent incentives or disincentives these costs create for financial market players are useful tools in assessing liabilities imposed by a funds transfer law.

The liability rules on interloper fraud and consequential damages in a funds transfer law are an important determinant of the cost of funds transfers. Providers of funds transfer services do not want to absorb the full cost of such fraud and damages and will price the risk of these liabilities into their funds transfer fee schedules. 94 In turn, this pricing will reduce the profitability of financial transactions by narrowing the spread between the use and cost of funds. Moreover, funds transfers will be a less attractive means of settling payments obligations arising from financial transactions, which may result in consideration of alternative payments mechanisms. The extent to which traders substitute such mechanisms for funds transfers will be measured by the price elasticity of demand, 95 but over time traders are likely to make adjustments to higher funds transfer service prices. Thus, the demand for funds transfers will become more price elastic. 96

Assume that in the hypothetical 97 Chemical Bank is free to choose to pay the Bank of Tokyo by check, cashier's check or funds transfer. The check is the cheapest alternative, costing thirty-five cents, but poses

94. See U.C.C. § 4A-305 cmt. 2 ("An originator's bank might be willing to assume additional responsibilities and incur additional liability in exchange for a higher fee."); see also Hal S. Scott, The Risk Fixers, 91 HARV. L. REV. 737, 759-760 (1978) (explaining that banks involved in check collection compensated for court imposed prohibitions of contractual risk-shifting by increasing charges to depositors); id. at 784-85 (noting that consumer protection features of laws applicable to new payments systems has no distributional gain because "banks will charge consumers, through interest rates or card fees, for the bank's cost in assuming statutorily imposed risks").
95. "Elasticity of demand is a numerical measure of how responsive demand is to changes in price. It is calculated as the percentage change in quantity demanded divided by the percentage change in price." COOTER & ULEN, supra note 4, at 29.
96. See id. at 30.
97. See supra part II.B.
a credit risk from the Japanese bank's perspective.\textsuperscript{98} The cashiers check is the most expensive alternative, costing five dollars, but eliminates the credit risk problem because the check is drawn both on and by an acceptable bank. The cost of the funds transfer is more than thirty-five cents but less than five dollars. Which payments method should be used by the U.S. bank? The most efficient way of paying for the yen is the one that creates the greatest surplus in the exchange which can then be divided between the Chemical Bank and the Bank of Tokyo. This will be the least costly method. Plainly, the funds transfer becomes a more appealing payment method to Chemical Bank as the relative cost of the funds transfer is reduced.\textsuperscript{99}

This cost is reduced in part by Article 4A's general proscription against recovering consequential damages from a receiving bank.\textsuperscript{100} This statutory fix, however, is incomplete in two respects. First, a receiving bank may agree in writing to assume consequential damage liability, and presumably would do so if it could price the risk of such

\textsuperscript{98} The present exposition is adapted from an example provided by Professors Cooter and Rubin. \textit{Supra} note 3, at 68 n.27.

\textsuperscript{99} As the hypothetical suggests, assessing the cost of alternative payment methods is, ultimately, an empirical question. In contrast, forecasting the extent to which alternative legal rules contribute to those costs is a theoretical exercise where those rules have not yet been implemented (e.g., the U.N. Model Law) or have been enacted only recently (e.g., U.C.C. Article 4A). For example, will a receiving bank increase the price of the funds transfer services it provides (and if so, by how much) in the absence of a rule that prohibits the imposition of consequential damages against the bank without its consent? The answer may depend on an analysis of the market in which the bank operates: Is the market perfectly competitive, so that the bank faces a horizontal demand curve and is a price-taker? Nonetheless, the present lack of data should not bar the formulation of hypotheses about the impact of critical features of the U.N. Model Law because such hypotheses may be testable in the future.

Of course, transaction costs are not the dispositive factor in choice of payment method. The funds transfer is by far the fastest method of payment. Funds transfer presents the added advantages of high security—because of high-technology procedures to safeguard against fraud—and risk reduction—because of settlement guarantees and netting arrangements provided through the funds transfer system used. In other words, there are at least three non-price features of funds transfer that ought to make it a method of payment distinct from other payment mechanisms: low cost, high speed and high security. \textit{See generally} U.C.C. art. 4A prefatory note. Nonetheless, lowering the relative cost of a funds transfer enhances its overall comparative advantage over other payments devices.

Extreme cases of inefficient and unreliable means of making payment demonstrate the proposition. Consider a countertrade (\textit{i.e.}, barter) transaction where an exporter from a market economy is paid in goods or services by an importer that is a state-owned enterprise in a non-market economy. The exporter is likely to devote considerable attention to the issues of whether the goods or services it will receive as payment are adequate in quality and value and whether they are delivered on time. \textit{See Ralph H. Folsom et al., International Business Transactions} 865-69 (2d ed. 1991).

\textsuperscript{100} \textit{See} U.C.C. \textsection 4A-305(a)-(d).
liability and charge its sender accordingly. Contracting out of the proscriptive rule could lead to non-uniformity and "undercut [the] statute's ability to provide for standard allocations of risk . . . and preclude economies of scale." Allowing parties to contract out of the proscription can be justified, however, on the basis that the competitive effects it induces will result in more efficient risk allocation. Moreover, a beneficiary's bank faces statutory liability for consequential damages if it wrongfully refuses to pay a beneficiary. In these instances, however, the bank acts intentionally with knowledge of the loss it will cause by refusal to pay; thus the recovery under U.C.C. Article 4A might resemble the recovery under tort law.

The U.N. Model Law scheme is less satisfactory to financial market traders than Article 4A. Under the U.N. Model Law scheme, banks face far greater liabilities and, accordingly, have an increased incentive to pass on the risk of incurring such liability to funds transfer users. Failure to execute a payment order or improper execution of a payment order renders a bank liable for any damages provided for under local law if the bank acted "with the specific intent to cause loss" or "recklessly and with actual knowledge that loss would be likely to result." Again the statutory result may resemble that which would be obtained in tort, but there are two unique uncertainties. First, there is no limitation of recovery of consequential damages: "[A]ny remedy that may exist" is a boundless invitation for plaintiffs. Second, there is no guarantee that litigation will arise in an English-based common law country, or in a legal system that allows for alternative pleading of claims. Thus, any imagined similarity between U.C.C. and tort results may vanish. Moreover, the statute's language allows even for the imposition of criminal penalties. Here, the suggested reform is for the U.N. Model Law to specify a remedy for cases of failure to execute a payment order or improper execution of a payment order. Alternatively, the U.N. Model Law could allow the parties to contractually agree on a remedy by means of a liquidated damages clause or other appropriate device. Either solution would eliminate the prospect of potentially Draconian and unjustified penalties.

101. Id. § 4A-305(c) & cmt. 2.
102. Scott, supra note 94, at 776; see also infra part V.
103. See Scott, supra note 94, at 776.
104. U.C.C. § 4A-404(a).
105. See U.N. MODEL LAW art. 14, 17, 18.
106. Id. art. 18.
107. Id.
108. Litigation could arise in a jurisdiction in which it is not possible to make claims for relief under applicable commercial and tort law. For example, perhaps only specific provisions of the commercial portion of a civil code can be cited.
IV. SETTLEMENTS DEPARTMENTS

A. Certainty, a Receiver Finality Law and a Discharge Law

The settlements department is responsible for the end points of the funds transfer. When a settlements department implements payment instructions arising from a trader’s purchase of securities, money-market instruments or foreign exchange, its concern is that the underlying obligation to pay is discharged. When the trader sells in the market, the settlements department focuses on receiving final payment from the buyer. In sum, for the settlements department, a funds transfer law must provide certainty as to the effect of a funds transfer on the originator and beneficiary.

Laws on receiver finality\textsuperscript{109} and discharge\textsuperscript{110} are essential in a funds transfer for the back offices of financial market traders. The omission of a receiver finality provision from the U.N. Model Law makes it unacceptable because this omission results in uncertainty as to when a credit entered into an account as a result of a funds transfer is irrevocable. The discharge provision is relegated to a footnote with a heading that appears to make the incorporation of the provision into the U.N. Model Law even more optional than enacting the Law itself.\textsuperscript{111} The legal status of this footnote is a source of additional uncertainty.\textsuperscript{112} The U.N. Model Law needs a receiver finality rule, and the status of the discharge rule should be that of any other provision.

Paradoxically, the meaning of uncertainty is not obvious.\textsuperscript{113} Uncertainty should not be considered a generic concept, but considered rather in specific factual contexts. From the perspective of an employee in the settlements department the relevant questions are: When has my bank been paid good funds? When has my bank been discharged from

\textsuperscript{109} The U.C.C. Article 4A receiver finality rule provides that once a beneficiary’s bank has paid the beneficiary, thereby satisfying the bank’s obligation to pay the beneficiary arising from its acceptance of a payment order on behalf of the beneficiary, the payment is final. See U.C.C. § 4A-405(a)-(b). The beneficiary’s bank cannot recover the payment. Id. § 4A-405 cmt. 2. The payment cannot be revoked even if the bank credits the beneficiary’s account, but the beneficiary has not withdrawn the credit. Id. § 4A-405(c). The receiver finality rule has two exceptions, one for automated clearing house (ACH) credit transfers and one for a major settlement failure on CHIPS. See id. § 4A-405(d)-(e).

\textsuperscript{110} Id. § 4A-406(a)-(b) contains the discharge rule which provides that an originator is discharged of its underlying contractual obligation to the beneficiary when the beneficiary’s bank pays the beneficiary which occurs at the time the beneficiary’s bank accepts payment. See id.

\textsuperscript{111} See U.N. MODEL LAW art. 19 n.***.

\textsuperscript{112} Id.

\textsuperscript{113} See U.C.C. art. 4A prefatory note (regarding the “great deal of uncertainty” that existed before the statute).
its obligation to pay? Knowing the answers to these questions (or at least that answers exist) before a trading institution uses a funds transfer to send $1 million to the seller of 120 million yen reduces uncertainty. Conversely, the existence of uncertainty requires the trading banks to make decisions based on expected values of outcomes, to consider their orientation to risk and to possibly insure against risk.114

The classic microeconomic illustration of decisionmaking under conditions of uncertainty is to present a business with a choice between earning a certain sum of profits with certainty or a higher amount with uncertainty.115 The result is that the business must price the risk of the uncertainty and insure against the undesirable outcome.116 In the context of receiver finality and discharge laws, the choice is between credits of the same amount, but uncertainty as to their status and effect: (1) an irrevocable credit and certainty about discharge,117 and (2) a revocable credit and uncertainty about discharge.

Here, too, the rational response involves pricing and insurance. If a bank selling 120 million yen at an exchange rate of 120.00 yen per dollar knows that the $1 million credited to its account is revocable, then it will seek to price the risks that the credit will be revoked and that it will have to sue the bank buying the yen on the underlying foreign exchange contract for payment of $1 million. By altering the dollar-yen spot rate from 120 million yen per $1 million to 119.75

114. See Cooter & Ulen, supra note 4, at 55-63.
115. See, e.g., id. at 55-70. In the classic example, the business faces a choice of (1) $100,000 with certainty (i.e., a probability of 1.0) if it continues to sell its existing output and (2) $200,000 with uncertainty (i.e., a probability of less than 1.0) if it introduces a new product line. The choice will depend, in part, on the expected monetary value of the two outcomes, which is the probability of the outcome multiplied by the value of the outcome. Id. at 56-57. Thus, the expected monetary value of the first decision is $100,000 (the product of $100,000 and 1.0). If the probability of the second outcome is 0.75, then the expected value is $150,000. The choice also will depend on whether the business is risk averse, risk neutral or risk seeking. See id. at 58-62. The greater the degree of risk aversion, the higher the value the business will place on the first course of action. See id. at 57.
116. If the business chooses the uncertain path, then it may seek insurance against the risk that income of $200,000 (or at least some amount greater than $100,000) will not be earned. See id. at 63. Purchasing insurance is one option. Another option is self-insurance, which could entail setting aside a contingency pool or reserve. Id.

The funds needed to pay for insurance premiums or the funds needed to be placed in the reserve might be obtained by increasing the price charged to the customers of the business. See Cooter & Rubin, supra note 3, at 71 (discussing the principle of loss spreading). When this occurs, the business has priced the risk. From the perspective of the customers, the price increase is undesirable because their costs have risen. If the output of the business is particularly valued or needed by society (e.g., health care) then the marginal increase in cost owing to uncertainty is undesirable from a systemic perspective. See Cooter & Ulen, supra note 4, at 31-32 (discussing price inelasticity of demand).
million yen per $1 million, the selling bank can price these risks. Distorting a market-determined exchange rate on the basis of one party's perception of settlement finality risk, however, is not practicable in a deep and liquid market like dollar-yen interbank spot trading. No single financial institution is likely to have the market power to price yen differently based on the payments mechanism used.

An economy of scale can be achieved by a statutory receiver finality rule and certainty of discharge. Indeed, the drafters of U.C.C. Article 4A left clear evidence of their intent to maximize certainty:

A deliberate decision was also made to use precise and detailed rules to assign responsibility, define behavioral norms, allocate risks and establish limits on liability, rather than to rely on broadly stated, flexible principles. In the drafting of these rules, a critical consideration was that the various parties to funds transfers need to be able to predict risk with certainty, to insure against risk, to adjust operational and security procedures, and to price funds transfer services appropriately. This consideration is particularly important given the very large amounts of money that are involved in funds transfers.118

The two exceptions to the receiver finality rule do not undermine the rule itself. The first exception, relating to funds transfers involving automated clearing houses,119 is relatively narrow and generally applies to retail payments transactions. The second exception concerns a major settlement failure in a funds-transfer system that nets payment obligations on a multilateral basis such as CHIPS.120 This exception does not undermine the rule because of its improbability. There are elaborate settlement guarantee rules designed to prevent the meltdown that is necessary to trigger the exception.121 An overt settlement guarantee from the central bank is unlikely because of the moral hazard problem it would create.122 Nonetheless, it is also unlikely that the Federal Reserve would deny necessary liquidity to net debtor CHIPS

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118. Id. § 4A-102 cmt. (emphasis added).
119. These are batch transfers that are substitutes for checks. See id. § 4A-405(d) & cmt. 3.
120. Id. § 4A-405(e) & cmt. 4.
121. See, e.g., Rules Governing the Clearing House Interbank Payments System, rule 13 (as amended through Sept. 22, 1993) [hereinafter CHIPS Rules].
122. See COOTER & ULEN, supra note 4, at 65-66 for a discussion of the moral hazard problem in the insurance context. The moral hazard implications of a settlement guarantee are apparent. CHIPS participants would have an incentive to incur large net debit positions and settling participants would have an incentive to incur large net debit positions. See CHIPS Rules, supra note 121, rule 1(f) (definition of "depositor settling participant" & rule 1(i) (definition of "participant"). Settlement risk, and consequently systemic risk, would increase because a debtor that failed to settle a large debit position would jeopardize the liquidity position of its creditors. Thus, banking regulators are confronted with the moral hazard problem in attempting to reduce systemic risk: "Banks' incentives to control the riskiness of their activities could be weakened if a perception that central banks will absorb risks or take action to limit their systemic consequences is generated." LAMFALUSSY REPORT, supra note 39, at 9.
participants (for example, by refusing to make emergency discount window loans) to ensure settlement if the Federal Reserve believed that the failure of one or more participants would cause a chain reaction of settlement failures and deleterious systemic problems.\footnote{123} Indeed, the improbability of the CHIPS meltdown scenario, coupled with the probability of appropriate Federal Reserve action, strengthens the link between the base and apex of the inverted pyramid.\footnote{124} Traders have greater confidence in the finality rules and contingency arrangements.

A serious threat to the receiver finality rule is posed by the application of U.C.C. Article 2 to foreign exchange transactions. A Second Circuit case\footnote{125} in which the court held that foreign exchange is a “good” under Article 2\footnote{126} seems correct under a technical reading of section 2-105 of the U.C.C., but upon further reflection is erroneous. Foreign exchange represents a credit to a bank account and as such is a chose in action.\footnote{127} A foreign exchange transaction involves not “the simultaneous trading of money \textit{qua} goods,”\footnote{128} but rather the roughly contemporaneous exchange of bank credit. Specifically, a credit denominated in one currency by one party is delivered to the counterparty’s designated bank account in exchange for the delivery of a credit denominated in a different currency by the counterparty to the first party’s designated bank account.\footnote{129} The application of Article 2 gives each side the right of reclamation under section 2-702(2).\footnote{130} Yet this result plainly is at odds with the receiver finality rule of U.C.C. Section 4A-405(c).

Unless the \textit{Koreag} holding is overturned or the U.C.C. definition of “good” is modified,\footnote{131} every foreign exchange trader within the ambit of New York’s U.C.C. that sells U.S. dollars and receives delivery of

\begin{footnotes}
\footnote{123}{Presumably, this is one explanation for the intervention of the Federal Reserve when the Continental Bank of Illinois faced a liquidity crisis in contrast to the lack of intervention in the Drexel Burnham Lambert collapse in 1990. For a discussion of the public policy considerations of government bailouts of a private enterprise, see Cheryl D. Block, \textit{Overt and Covert Bailouts: Developing A Public Bailout Policy}, 67 IND. L.J. 951 (1992).}
\footnote{124}{See supra note 2.}
\footnote{125}{In re Koreag, Controle et Revision, S.A., 961 F.2d 341 (2d Cir. 1992).}
\footnote{126}{Id. at 355.}
\footnote{127}{See \textit{BLACK'S LAW DICTIONARY} 241 (6th ed. 1990).}
\footnote{128}{Koreag, 961 F.2d at 355.}
\footnote{129}{See \textit{WEISWEILLER}, \textit{supra} note 23, at 1-2.}
\footnote{130}{Koreag, 961 F.2d at 356.}
\footnote{131}{See U.C.C. \S 2-105(1) (1987). Efforts are currently underway by the American Bar Association Committee on the U.C.C., Subcommittee on Payments to modify the definition of “goods” to exclude funds transfers (materials on file with author). An alternative resolution is the hub-and-spoke approach suggested by Professor Nimmer, in which one spoke of Article 2 would apply to foreign exchange transactions. See \textit{RAYMOND T. NIMMER, LICENSE CONTRACTS: ARTICLE 2 CODE SECTIONS} 14 (1993) (on file with author).}
\end{footnotes}
a foreign currency faces the possibility that the counterparty will reclaim the currency delivered, by revoking the credit in favor of the trader. The Koreag court held that the remedy of reclamation was available to Refco, the seller of U.S. dollars deposited in the bank account of the seller’s insolvent counterparty. A bank selling dollars against yen is in precisely the same position as Refco, a prospect that will unsettle the selling bank’s counterparties. The foreseeable effects of Koreag include increased uncertainty in the foreign exchange markets whenever one party is potentially subject to New York law and attempts to price the risks of reclamation under that statute. Perhaps worse, New York is placed at an international competitive disadvantage as a center for foreign exchange operations, because parties may take their business offshore in order to evade the application of Koreag.

The interests of both the settlements department and the trader are served by receiver finality. Indeed, receiver finality is required because of the linkages among certain financial transactions. For example, in the hypothetical introduced in Part II.B. the U.S. dollar-Japanese yen spot foreign exchange deal is followed by a U.S. dollar-Singapore dollar conversion which is then followed by the ST share purchase. A trader expecting a credit of funds from one deal who intends to commit those funds in a second deal needs the credit to be irrevocable. Thus, the Bank of Tokyo not only requires timely delivery of $1 million on day three, but requires final payment as well because it intends to purchase ST shares immediately.

**B. Certainty, Payment Order Processing Laws and a Money-Back Guarantee**

The settlements department is focused not only on the end points of the funds transfer, but also on its own duties in handling payment instructions. Routine methods of processing a large volume of payment orders in a short period of time, and black letter rules for

132. See U.C.C. § 2-702(2).
133. Koreag, 961 F.2d at 356-57.
134. In other transactions with the insolvent counterparty, Refco was a buyer of foreign currency (like a bank purchasing yen). Id. at 357. Unlike the seller’s remedies, the buyer’s rights under Article 2 do not undermine the Article 4A finality rule because the buyer’s remedies do not include reclamation. See U.C.C. § 2-711. If a seller breaches, the buyer can cancel the contract and refuse to pay. Id. § 2-711(1). The other remedies available to buyers require goods to be “identified.” Id. § 2-711(2)(a). Bank credits are typically a fungible bulk chose in action in a designated account and are not segregated or identifiable.
135. Accordingly, an argument that receiver finality is unnecessary if payment is made as of a certain value date fails because it views one financial market transaction in isolation from other related deals.
136. See Kubarych, supra note 32, at 23, 35.
dealing with mishaps in directing payment orders and completing funds transfers, are essential if the deals negotiated by traders are to be properly executed in a timely fashion. Rules that require human intervention and the exercise of discretion impede the development of rapid, automated payment order processing systems.\textsuperscript{137}

The interests of the first and second levels of the inverted pyramid converge here. The interest of the settlements department of a bank in certainty coalesces with the interests of the trading department of that bank in high speed and low transactions costs. Human payment order processing and judgment calls are time-consuming and expensive.\textsuperscript{138} This similarity of interests is important because it contributes to risk reduction. The obvious benefit from a funds transfer law that engenders rapid payment order processing is the reduction of settlement risk.\textsuperscript{139} Risk exposure is extended as payment order processing is slowed because the creditor institution must wait longer for settlement from its counterparty. The less apparent benefit of rapid payment order processing involves market risk. The larger the volume of trading activity the more likely it is that the positions taken by different traders in the same institution will offset or hedge one another, thereby reducing market risk.\textsuperscript{140} The London branch of a U.S. bank may have a net long position in yen, while the Tokyo branch of the same bank may have a net short position. From the perspective of the New York headquarters of the bank—as well as that of the Federal Reserve examiners who check the market risk to which the bank as a whole is exposed—these offsetting positions are healthy because the bank is at least partially hedged against a quick appreciation or depreciation in the value of yen against major currencies.

Finally, the trading and settlements departments' common interests in rapid, low cost systems have a practical dimension: generating larger profits from increasing trading volumes. Back offices must cope with a large volume of payment orders generated by the traders' financial deals while not stifling trading activity. No trader wants to learn that increasing trading activity volumes and the opportunity for increased profits (as well as individual bonuses) cannot be accommodated because "the plumbing is clogged." In the worst case, the number of deals a trader can enter into each funds-transfer business day will be determined by the number of payment orders the back office can process.

\textsuperscript{137} See U.C.C. § 4A-207 cmt. 2 (explaining the high-speed, automated means for processing payment orders).
\textsuperscript{138} Id. § 4A-207 cmt. 2.
\textsuperscript{139} See supra notes 11, 51-57 and accompanying text.
\textsuperscript{140} See \textsc{Joint Derivatives Study}, supra note 9, at 17.
The payment order processing rules of U.C.C. Article 4A that allow receiving banks to rely on account numbers instead of names should be weighed against the above considerations. Whether the computers that handle payment orders can process figures or words more quickly is a technological issue. The legal right to rely on one or the other, however, facilitates automated processing. This is particularly true when it is coupled with the absence of a duty to check for mismatches between account names and numbers in a payment order.

The U.N. Model Law, in contrast, provides no unequivocal statement that a receiving bank is free to rely on an account number. For the interests of the back offices to be met, the U.N. Model Law must be amended to include the rules of U.C.C. sections 4A-207(b) and 4A-208(a)(1), which provide necessary guidance. The amendment is urgently needed in light of the liability of a beneficiary's bank for misdirected payment orders. The originator, not the bank, is in the best position to insure that the name and account number of the beneficiary stated in a payment order are correct because the originator received payment instructions from the beneficiary. To place the onus for consistency between name and number on the beneficiary's bank without clarifying that the bank has no duty to check for inconsistencies is an inefficient allocation.

Settlements departments in receiving banks that detect problems in a payment order should not have a statutory duty to notify senders of the problematic payment orders. The U.N. Model Law errs by making receiving banks insurers against "insufficient data" in a payment order and "inconsistencies" in the information relating to the

141. A beneficiary's bank that is unaware of a mismatch between the name and account number of the beneficiary in the payment order received by the bank is free to rely on the number and need not determine whether the name and number identify the same party. U.C.C. § 4A-207(b)(1).

142. See id. §§ 4A-207(b) (applicable to a beneficiary's banks) & 208(a)(1) (applicable to a receiving bank other than the beneficiary's bank). See also id. § 4A-207 cmt. 2.

143. Compare U.N. MODEL LAW arts. 8 & 10 (differing treatment of receiving banks' ability to rely on identifying account number) with U.C.C. §§ 4A-207 & 4A-208.

144. Essentially, the U.C.C. rules allow a receiving bank to process payment orders based solely on account numbers specified in the orders. U.C.C. §§ 4A-207(b), -208(a)(1). These sections also make clear that the bank has no duty to examine orders for inconsistencies between the account numbers and the account names. Id. §§ 4A-207(b), -208(a)(1).

145. See U.N. MODEL LAW art. 10(4).

146. See U.C.C. § 4A-207 cmt. 2. For example, the International Swap Dealers Association (ISDA) Master Agreement and the Foreign Exchange Committee International Currency Options (ICOM) Agreement call upon the parties to exchange payment instruction information in the schedules attached to the agreements. See ISDA Master Agreement (unpublished document, on file with author) & ICOM Master Agreement (unpublished document, on file with author).

147. U.N. MODEL LAW art. 8(4) (applicable to a receiving bank other than the beneficiary's
amount of money to be transferred." The efficient way for a settlements department to handle such orders is rejection: put simply, if the sender cannot get it right, then the receiving bank should not have to investigate up the funds transfer chain. The U.N. Model Law requirement that a receiving bank notify an identifiable sender of insufficiencies and inconsistencies compares unfavorably with the U.C.C. Article 4A scheme. In U.C.C. Article 4A, the intentional manipulation of the concept of acceptance by a beneficiary's bank releases prior senders from their obligations to pay for payment orders.

The U.C.C. Article 4A laws are not self-contained, however, and create a moral hazard problem for those who originate payment orders. Allocating the loss to a beneficiary's bank that pays a beneficiary when the bank is aware of a name-account number mismatch in the payment order is efficient because the bank is plainly able to prevent payment to an unintended beneficiary by rejecting the order in the first place. The beneficiary's bank must proceed against an unintended beneficiary that it paid to get funds back, but the applicable law may be unclear and may vary across jurisdictions. The originator has no incentive to exercise any level of care in designating the name and account number of the beneficiary when it issues its payment order because "Article 4A makes irrelevant the issue of whether [the originator] was or was not negligent in issuing its payment order."

A more subtle scenario further illustrates the potential difficulties presented by U.C.C. Article 4A. Only an originator that is a "bank" is expected to understand "how payment orders are processed and paid." An originator issuing a payment order with an inconsistent designation of the beneficiary is not liable to pay for the order unless the receiving bank served prior notice that it would rely on the account number in the payment order. The dividing line between banks and

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148. *Id.* art. 8(5) (applicable to a receiving bank other than the beneficiary's bank); *see also id.* art. 10(2) (applicable to a beneficiary's bank).
149. *Id.* arts. 8(4)-(5) (applicable to a receiving bank other than a beneficiary's bank) & 10(2)-(4) (applicable to a beneficiary's bank). Notice must be provided only if the sender can be identified. *Id.* art. 8(4)-(5).
150. Under U.C.C. § 4A-207(b)(2), if a beneficiary's bank receives a payment order and knows that the name and account number of the beneficiary do not match, but nevertheless pays the beneficiary, then no acceptance occurred. U.C.C. § 4A-207(b)(2). Because acceptance is the event that triggers a sender's obligation to pay for its order under U.C.C. § 4A-402(b), the sender's obligation does not mature. *Id.* § 4A-402(b). In turn, because the beneficiary's bank did not accept the order, the money-back guarantee of U.C.C. § 4A-402(c) assures each prior sender of a credit to the sender's account. *Id.* § 4A-402(c)-(d).
151. *Id.* § 4A-407 cmt. 2.
152. *Id.* § 4A-407 cmt. 3.
153. *Id.* § 4A-407(c)(2).
non-banks, however, is not made much clearer by the definition of "bank" in U.C.C. Section 4A-105(a)(2). Thus, the scope of application of the rule is uncertain.

A money-back guarantee assures the settlements department that an incomplete funds transfer is not a black hole. Without the guarantee, the risk of losing funds must be priced and incorporated into the overall transaction costs associated with settling a payments obligation that arises from a purchase of securities, money-market instruments or foreign currency. Alternatively, a contractual way to efficiently allocate the risk must be used. The statutory rule yields economies of scale by removing the need to resort to a contract on each settlement.

While the guarantee in U.C.C. Article 4A is unequivocal, the language of the Model Law on this point results in uncertainty: The money-back guarantee "may not be varied by agreement except when a prudent originator's bank would not have otherwise accepted a particular payment order because of a significant risk involved in the credit transfer." The italicized terms render the rule hopelessly unworkable. Even the best expert witnesses from the leading central banks are unlikely to agree either on "prudence" or on whether the risk (of unspecified type) was "significant." The U.C.C. Article 4A guarantee should be the model for the U.N. Model Law to better serve the interests of the players at the second level of the inverted pyramid.

C. Interloper Fraud and the Efficient Allocation of Risk

Modern day electronic pirates abound and threaten the integrity of the system for settling payment obligations arising from financial market trading. The back office is both a receiver and a sender of payment orders generated by trading activity. In each role, the back office's interest is the efficient allocation of liability in the event a pirate is successful in electronically raiding a bank account. A security

154. The definition of bank is "a person engaged in the business of banking and includes a savings bank, savings and loan association, credit union and trust company. A branch or separate office of a bank is a separate bank for purposes of this Article." Id. § 4A-105(a)(2).

155. Each sender of a payment order is entitled to a credit with interest of any funds paid for its order if the funds transfer is not completed; a transfer is completed only if the beneficiary's bank accepts an order for the beneficiary. See id. §§ 4A-402(c), -104(a). Only a sender that designates an intermediary bank which subsequently fails loses this protection. Id. § 4A-402(e).

156. U.N. MODEL LAW art. 14(2) (emphasis added).

157. The settlements department receives orders after trades are made, and it executes the orders by issuing conforming payment orders. U.C.C. § 4A-301(a) (providing the definition of "execution" for a receiving bank other than the beneficiary's bank).
procedure\textsuperscript{158} to verify the authenticity of payment orders is the anti-piracy device.\textsuperscript{159}

It is a clerk in the back office and not a trader seated on the trading floor who deals with the pirate and who, therefore, must sort out bona fide payment orders from payment orders of pirates. As a receiver, the settlements department wants a security procedure to provide the necessary sorting. Conversely, a sender that fails to take precautions to protect its payment order transmission mechanisms is likely to be charged an extra fee by the receiving banks to which it issues payment orders. These banks will price the risk of interloper fraud and pass this cost back to the sender. Accordingly, a "commercially reasonable" security procedure\textsuperscript{160} both affords protection to the settlements department as a sender and reduces the receiving bank's incentive to increase its funds transfer service fees to insure against interloper fraud loss.\textsuperscript{161}

There is no comparative negligence analysis under the U.N. Model Law\textsuperscript{162} or U.C.C. Article 4A.\textsuperscript{163} Either the innocent customer or the

\textsuperscript{158} Id. \S 4A-201. The term used in the U.N. Model Law is "authentication." U.N. MODEL LAW art. 2(i).

\textsuperscript{159} The significance of interloper fraud rules also are apparent from the back office's interest in certainty. As a receiver, the instructions the back office receives to transfer funds after a trader purchases securities, money market instruments or foreign exchange must be bona fide. Uncertainty is costly: receiving banks will seek to increase the prices they charge for accepting payment orders from their customers. This price increase will represent an increase in transaction costs because the cost of satisfying payment obligations such as the delivery of $1 million in a dollar-yen spot foreign exchange agreement rises. Such an increase in transaction costs is inconsistent with the macroeconomic aim of accommodating a growing volume of financial transactions. A security procedure designed to test the authenticity of payment orders issued by a sender to a receiving bank reduces uncertainty. The need to incorporate into the price of funds transfer services the risk of liability for interloper fraud is correspondingly lessened.

\textsuperscript{160} U.C.C. \S 4A-202(b)-(c); U.N. MODEL LAW art. 5(2)(a).

\textsuperscript{161} The fee schedule of the Federal Reserve Bank of New York illustrates the point. The fee for originating a funds transfer is fifty-three cents per transfer if the originator uses the On-Line Security Procedure, which incorporates an electronic computer transmission. If the originator uses the Off-Line Security Procedure, however, the transfer fee is $10.00 per transfer. FED. RESERVE BANK OF N.Y., FUNDS TRANSFERS THROUGH FEDWIRE, OPERATING CIRCULAR NO. 8, at App. A (Jan. 1, 1991), App. E (Jan. 1, 1993).

\textsuperscript{162} Under the U.N. Model Law, liability initially is allocated to the purported sender. A purported sender is bound by a payment order issued in its name (and, therefore, must pay for the order) if the authentication "is in the circumstances . . . commercially reasonable" and the receiving bank complied with the security procedure. U.N. MODEL LAW art. 5(2)(a). As a second step, liability can be reallocated to the receiving bank. Id. art. 6. The purported sender—who is, after all, an innocent customer of the receiving bank—can shift liability back to the receiving bank if it proves that the fraud was not perpetrated by an insider. Id. art. 5(4). The receiving bank, however, can rebut this not-an-insider defense and again place liability on the purported sender by showing that the purported sender acted with fault. Id. The U.N. Model Law states that the defense does not apply "if the receiving bank proves that the payment order resulted from the actions of a person who had gained access to the authentication procedure through the fault of the
receiving bank bears the full loss. In designing a loss allocation rule, three principles of economic efficiency are relevant: loss spreading, loss reduction and loss imposition. The object is to

purported sender.” Id. In sum, liability is all-or-nothing and is determined using a ping-pong procedure.

163. The Article 4A rules are summarized as follows:

In a large percentage of cases, the payment order of the originator of the funds transfer is transmitted electronically to the originator’s bank. In these cases it may not be possible for the bank to know whether the electronic message has been authorized by its customer. To ensure that no unauthorized person is transmitting messages to the bank, the normal practice is to establish security procedures that usually involve the use of codes or identifying numbers or words. If the bank accepts a payment order that purports to be that of its customer after verifying its authenticity by complying with a security procedure agreed to by the customer and the bank, the customer is bound to pay the order even if it was not authorized. But there is an important limitation on this rule. The bank is entitled to payment in the case of an unauthorized order only if the court finds that the security procedure was a commercially reasonable method of providing security against unauthorized payment orders. The customer can also avoid liability if it can prove that the unauthorized order was not initiated by an employee or other agent of the customer having access to confidential security information or by a person who obtained that information from a source controlled by the customer . . . . If the bank accepts an unauthorized payment order without verifying it in compliance with a security procedure, the loss falls on the bank.


As discussed above, there are three critical steps in analyzing this legal scheme: the agreement, commercial reasonability and the not-an-insider defense.

164. Cooter & Rubin, supra note 3, at 70.

165. The loss spreading principle states that liability for loss due to fraud should be assigned to the party that can achieve risk neutrality at the lowest cost. Id. at 71. A definition of risk aversion is that “a person is said to be risk averse if she considers the utility of a certain prospect of money income to be higher than the expected utility of an uncertain prospect of equal expected monetary value.” Cooter & Ulen, supra note 4, at 58. A risk averse person facing a possible loss will pay more than the average value of the loss to eliminate the risk of the loss. Cooter & Rubin, supra note 3, at 70-71. A person who is indifferent between a certain prospect of money income and an uncertain prospect of money income of equal expected monetary value is risk neutral. Cooter & Ulen, supra note 4, at 62. In the context of losses, a risk neutral person places a value on risk equal to the average value of the loss. Cooter & Rubin, supra note 3, at 71.

166. There are four aspects of loss reduction: precaution, innovation, responsiveness and learning. Liability should be assigned to the party that is: (1) able to adopt precautionary measures against loss at the lowest cost; (2) most likely to develop innovative methods of precaution over time; (3) influenced by the assignment of liability; and (4) most able to learn about its liabilities and adopt its behavior accordingly. Cooter & Rubin, supra note 3, at 73, 84. “Precaution” means adopting safeguards against loss. Id. at 73-74. “Innovation” refers to precaution in a dynamic context in which a party develops new ways of reducing loss based on technological breakthroughs. Id. at 74-75. Assigning liability to a party whose behavior in terms of precaution or innovation is not influenced by the assignment is economically unjustifiable. Id. at 75. “Responsiveness” is the economic way of thinking about Skinnerian behavior modification (i.e., stimulus-response). Id. at 75. “Learning” places responsiveness in a dynamic context: In
devise a loss allocation rule consistent with the recommendations that result from the application of these principles to specific facts. 168

With respect to loss spreading, there are two reasons that financial institutions are more likely than individual customers to achieve risk neutrality. Financial institutions have greater economic resources 169 and they can spread the loss more effectively. 170 Accordingly, the loss spreading principle yields the practical recommendation that fraud losses should be placed on banks. 171 This recommendation ignores other factors and principles and was formulated in the context of consumer payment methods like checks. 172 It cannot, therefore, be accepted in the funds transfer context. The typical user of funds transfer services is a large financial institution. A loss from fraud, therefore, may be a small percentage of its wealth and such losses may be predictable. In the context of the hypothetical described in Part II.B., Chase Manhattan does not necessarily have a comparative advantage over Chemical Bank in spreading loss. This is an empirical issue incapable of a priori resolution. Thus, an unequivocal recommendation about loss allocation from interloper fraud cannot be based on the loss spreading principle. Whether the initial allocation of liability under the U.N. Model Law to the purported sender is efficient turns on the principles of loss reduction and loss imposition.

On balance, the application of the four elements of loss reduction 173 to the problem of interloper fraud in funds transfers does not result in a straight measuring stick with which to evaluate the U.N. Model Law scheme. 174 The hypothetical of Part II.B. can be used to illustrate. Whether Chemical Bank or Chase Manhattan can adopt precautionary measures at a lower cost is not prima facie clear. Conventional analysis states that “[t]he precaution element is unrelated to the size and nature of the long run, a party will learn about the potential liability it faces and conform its behavior to the law. Id. at 75-76.

167. While the focus of the loss spreading and loss reduction principles is on assigning liability, the focus of the loss imposition is on enforcement of the assigned liability. Id. at 78. “To achieve efficiency ... the enforcement process should be as inexpensive as possible.” Id. Liability rules that are simple, clear and decisive increase efficiency because they shift liability to the appropriate party with minimal litigation costs. Id.

168. Id. at 84.

169. I.e., the losses are small in proportion to their wealth. Id. at 71.

170. I.e., the losses are small and predictable. Id. at 71-72.

171. Id. at 71-72, 84.

172. Id. at 71, 84.

173. The elements are precaution, innovation, responsiveness and learning. See supra note 166.

174. This is not surprising, as Professors Cooter and Rubin point out that even in the consumer payments context the loss reduction principal “is generally neutral between financial institutions and consumers.” Cooter & Rubin, supra note 3, at 84.
of the party; its determining factor is the party’s position in the payment transaction. Accordingly, the fact that Chemical Bank and Chase Manhattan are roughly equal-sized giants should not obfuscate matters. Moreover, the conventional analysis is easier to apply to situations where only one party is involved in a payments activity than to the issuance and acceptance of a payment order, which plainly involves a sender and a receiving bank.

Indeed, the situation is one of bilateral precaution: both parties can adopt safeguards at low cost, and more data are needed to determine which of the two parties has the greater capacity for precaution. An additional problem is that such data are static, while the relative capacities of the parties are likely to change as the financial health of the parties alters. These problems suggest that liability should be fault-based, as it is in the U.N. Model Law, because the paradox of precautions is avoided.

Evaluated in these terms, the U.N. Model Law scheme is efficient. The sender has an incentive to avoid losses because, if the receiving bank complies with a commercially reasonable security procedure that has been agreed to, the sender is liable. The sender presumably takes care to monitor employees and other insiders, and to keep secure its wire room wherein confidential information about the authentication device is stored. The receiving bank also has an incentive to avoid losses. The receiving bank cannot retain funds it debited from the purported sender’s account to pay for a payment order if it did not comply with the procedure or the procedure was not commercially reasonable.

Examination of the innovation and responsiveness elements indicates that, in contrast to the precaution element, they do correlate with the

175. Id. at 76 (footnote omitted).
176. E.g., a bank encoding a check or a drawer handing a check to another party.
177. The paradox is that “[a]ny fault rule, including simple negligence, negligence with a contributory negligence defense, and comparative negligence, will motivate one party to satisfy the legal standard of fault in order to avoid liability, while inducing the other party to take precaution because it must bear any residual responsibility for the loss.” Cooter & Rubin, supra note 3, at 74 (footnote omitted). As Professors Cooter and Rubin point out, “[b]ilateral precaution characterizes most false positive situations” (wherein an invalid payment instruction such as a forged check is followed). Id. at 89. Whether the capped consumer liability rule is appropriate in the wholesale funds transfer context is debatable. See id. at 90, 97. The “consumers” in this context are sophisticated financial institutions and the law of diminishing returns on responsiveness with increases in liability may not apply until a high minimum threshold of liability is reached. Of course, a separate issue that must be considered is the cost of determining fault in a fault-based system.
178. U.N. MODEL LAW art. 5(2).
179. Id.
size and nature of the parties. Financial institutions are more likely than consumers to innovate and respond to legal incentives. Analysis of these elements does little to assist in the determination of risk allocation in the funds transfer context, because it is unclear which party is most likely to develop innovative methods of precaution over time. Applied in the context of consumer payment methods, the data suggest financial institutions are more likely to research, develop and implement high-technology, anti-fraud devices. In the funds transfer context, the sending bank seems no less likely to spawn better authentication devices than the receiving bank.

Analysis of the responsiveness element also yields an unsatisfactory result. In the hypothetical transaction, both Chemical Bank and Chase Manhattan are likely to be armed with legal teams and compliance officers, capable of rapidly digesting a new funds transfer law and altering behavior accordingly. Whether one is in a better position to respond than the other is prima facie unclear, although the situation is probably one of bilateral responsiveness. This seems also to be the case with respect to the learning element.

The loss imposition principle suggests that the fault rule in the U.N. Model Law is inefficient. Strict liability, as opposed to fault-based liability, is simple, clear and decisive. Strict liability is also cheaper to implement because it generates less civil discovery and motion practice. Strict liability, however, is not the result suggested by the bilateral precaution analysis.

The bottom line is that the U.N. Model Law scheme for allocating loss is consistent with the precautionary element of the loss reduction principle and at odds with the loss imposition principle. Application of the loss reduction principle yields this inconclusive result in the funds transfer context primarily because the typical senders and receiving banks are similar: both categories are populated by large financial institutions trading foreign exchange, money-market instruments and securities. The principle can be applied more simply to consumer payment methods like checks and credit cards because the users and providers of the payments services have distinct attributes that produce clear differences in actual and potential abilities. The conventional

180. Cooter & Rubin, supra note 3, at 77.
181. Id.
182. See id. at 76-77.
183. See id. at 81.
184. See id. at 74.
185. See id. at 78-79, 85.
186. See supra note 177 and accompanying text.
analysis does not necessarily lack merit, but more facts are needed. 187 Specifically, more facts about the size, nature and position of the senders and receiving banks are needed for a full analysis.

V. FUNDS TRANSFER SYSTEMS

A. Systemic Risk and Variation by Agreement

To serve the interests of financial market players, funds transfer law must address their systemic concerns. Yet, funds transfer law ostensibly has little to say about systemic risk. The term "systemic risk" is not used in U.C.C. Article 4A or the U.N. Model Law. If, however, funds transfer systems are to develop innovative methods of systemic risk reduction, the legal status of the system and its rules should be clear. Such clarity would enable system participants to implement systemic risk reduction efforts in an environment of greater legal certainty. Moreover, funds transfer law should allow for variation by agreement by system rules.

A critical defect of the U.N. Model Law is that it does not appropriately recognize the existence of funds transfer systems and their rules. Indeed, the U.N. Model Law fails to define the term "funds transfer system." Whether a funds transfer system rule can bind non-participant third parties or whether it can vary inconsistent provisions of the U.N. Model Law are unresolved issues. 188 Whether the fruits of systemic risk reduction efforts of the participants in a funds transfer system can be realized also is unclear.

The neglect is not a result of ignorance. The United Nations Commission on International Trade Law (UNCITRAL) delegates plainly were aware of the existence of funds transfer systems: The term is used once in the U.N. Model Law. Article 14(6) deals with the "skip rule" problem of an intermediary bank's failure coupled with an incomplete credit transfer. 189 UNCITRAL delegates may have chosen to otherwise ignore funds transfer systems deliberately. The delegates may have feared that an express recognition of Fedwire, CHIPS and other funds transfer systems in developed countries would result in a competitive advantage to these existing systems. If the U.N. Model Law...
Law recognized these funds transfers systems—and allowed them to vary the U.N. Model Law by contract—financial market players would choose to use Fedwire and CHIPS. This choice by UNCITRAL delegates is unfortunate, because the systems are well-established. The U.N. Model Law should acknowledge that Fedwire and CHIPS are significant money movers.

In contrast, funds transfer systems are hardly ghosts in Article 4A. In Article 4A the legal status of system rules is clear: System rules governing participants may be effective even if they conflict with Article 4A. Moreover, the third-party problem is resolved. A funds transfer system rule is effective even if it both conflicts with Article 4A and affects non-consenting parties, and the rule may govern the rights and obligations of non-participants. Systemic risk is the reason for certain provisions in Article 4A and the CHIPS Rules. The object of those provisions is to support funds transfer system rules that deal with systemic risk. Whether this is also the case with article 14(6) of the U.N. Model Law is unclear because the skip rule problem is a limited one with little systemic dimensions.

Professor Scott’s explanation that “parties to a transaction may accept optional statutory provisions . . . because the cost of contracting out of them is greater than the efficiencies that might be achieved through such variation” must be supplemented. The analysis of optional rules need not be limited to a cost-benefit calculation, but should be expanded to include the innovation element of the loss reduction principle identified by Professors Cooter and Rubin. Through funds transfer system rules, a funds transfer system can implement methods of precaution over time to reduce losses associated with systemic risk. A necessary prerequisite, however, is that the legal

190. U.C.C. § 4A-501(b).
191. Id.
192. See, e.g., id. § 4A-405.
193. CHIPS rule 13, which sets forth a settlement guarantee mechanism, is such a rule. CHIPS Rules, supra note 121, rule 13. If one or more CHIPS participants fail to settle their net debit positions, then the remaining solvent participants will contribute appropriate amounts to effect settlement. Id. U.C.C. section 4A-405(c) applies if the CHIPS settlement guarantee algorithm is unsuccessful and an unwind of positions is required. Article 4A allows an exception to the receiver finality rule in this instance. U.C.C. § 4A-405 cmt. 4. To be sure, these provisions were drafted in consultation with the Federal Reserve.
194. Scott, supra note 94, at 739.
195. Cooter & Rubin, supra note 3, at 73-77.
196. This is "a rule of an association of banks (i) governing transmission of payment orders by means of a funds-transfer system of the association or rights and obligations with respect to those orders, or (ii) to the extent the rule governs rights and obligations between banks that are parties to a funds transfer in which a Federal Reserve Bank, acting as an intermediary bank, sends the payment order to a beneficiary’s bank.” U.C.C. § 4A-501(b).
regime in which the system operates encourages participants in the system to generate new risk-reduction ideas and guarantees the legal enforceability of funds transfer system rules. If two or more systems operate in the same or similar markets (as do CHIPS and Fedwire), there is a potential for healthy competitive variation in risk-reduction measures implemented through different funds transfer system rules.

Interestingly, systemic risk reduction programs involving the central bank may raise a moral hazard problem. The Federal Reserve has never expressly committed to providing liquidity to CHIPS to ensure settlement finality. While it is inconceivable that appropriate support would not be forthcoming, this does not mean that discount window loans will be made to troubled CHIPS participants. If financial market transactors know with certainty that their counterparties will be bailed out, then there is no incentive to evaluate the credit risk of those counterparties or attempt privately negotiated risk-reduction arrangements. Bilateral and multilateral netting schemes are such risk-reduction arrangements; it is not surprising that the Federal Reserve has looked on these with favor. From the bank regulator’s perspective funds transfer law should, therefore, accommodate the development of netting schemes.

B. Trade-Offs

The difficulty with the Article 4A approach to funds transfer systems is that it fails to resolve underlying trade-offs between private rules and statutory law and, more fundamentally, between freedom of contract and legal compulsion. Suppose that Article 4A was completely variable by agreement. There would be no limits on the systemic risk reduction efforts of funds transfer system participants or on the competitive variation of rules in different systems. Two adverse consequences follow from the legal protection of private rules. First, risk fixing could result, and public law would be needed to control risk allocation between banks and customers. One must distinguish

197. The failure of the Federal Reserve to lend to Drexel Burnham Lambert is a case in point. See supra note 123 and accompanying text.
198. The non-uniform provision in section 5-102(4) of New York’s U.C.C. is analogous to this supposition. N.Y. U.C.C. LAW § 5-102(4) (McKinney 1991 & Supp. 1994). The account party and issuing bank in a letter of credit transaction are free to opt out of Article 5 in favor of the Uniform Customs and Practice for Commercial Documentary Credits. INT’L CHAMBER OF COM., UNIFORM CUSTOMS AND PRACTICE FOR COMMERCIAL DOCUMENTARY CREDITS (1984).
199. Professor Scott rightly characterizes risk fixing as functionally equivalent to price fixing. HAL S. SCOTT, NEW PAYMENT SYSTEMS: A REPORT TO THE 3-4-8 COMMITTEE OF THE PERMANENT EDITORIAL BOARD FOR THE UNIFORM COMMERCIAL CODE 35-36 (1978) [hereinafter 3-4-8 REPORT].
between users and consumers when discussing risk allocation. Although risk allocation between banks and customers in the context of consumer payment systems may be needed, in the funds transfer context it may not. Participants in a funds transfer system are both users and providers of the system's services. A more ominous possible result of fixed risk allocation is tacit collusion among funds transfer systems to allocate risks among participants and thereby minimize competition among systems.

The second adverse consequence of legal protection of private rules is that economies of scale in risk allocation might be lost. Assume that participants are free to vary the money-back guarantee by agreement. Although this assumption is at odds with the current Article 4A rule, it would provide greater certainty than that afforded under the U.N. Model Law. Payment orders would have to be sorted into two categories: those orders whose senders had agreed by contract to waive the guarantee and those whose senders contractually elected to be covered by the guarantee. Operating two payment order processing systems would be expensive and jeopardize economies of scale. Ideally, the cost of operating two systems should be allocated to those senders who opt for the guarantee on the grounds that it would not otherwise be offered. Eliminating the ability of parties to vary Article 4A would avoid the marginal cost of two systems, allow the cost of one system to be spread evenly among all users and assure economies of scale.

The trade-offs become more difficult to resolve when the Federal Reserve is considered in its roles as both a funds transfer system sponsor and a regulator of participants in competitor systems. As long as Federal Reserve Banks offer a priced service that competes with one offered by private sector players that it regulates, a potential conflict of interest exists between these roles.

Even if Fedwire were privatized by being sold to commercial banks to operate, freedom of contract would be illusive. As the statute

202. See Professor Scott's analysis in the context of check collection and the risk of loss from a forged drawer's signature in 3-4-8 REPORT, supra, note 199, at 40-41.
203. Id.
204. Indeed, as a participant in the drafting of Article 4A, the Author noted that the money-back guarantee appeared to be the protection obtained by large corporate users of funds transfer services in return for agreeing to a limit on the liability of banks for consequential damages.
205. I.e., CHIPS.
207. See generally Betty Mensch, Freedom of Contract as Ideology, 33 STAN. L. REV. 753
itself states, Federal Reserve regulations and Reserve Bank operating circulars supersede inconsistent provisions of Article 4A. Although the scope of Federal Reserve Regulation J is the same as that of a funds transfer system rule, the rules of Fedwire are federal regulations, not a system’s rules. In contrast, the CHIPS Rules lack such legal authority. CHIPS Rules are subordinate to Article 4A unless the adopting statute states that Article 4A may be varied by a funds transfer system rule.

VI. CONCLUSION

Funds transfer law should not be critically evaluated from a transaction-neutral perspective, but rather judged in the context of the international financial market interest groups it principally affects. The markets for foreign exchange, short-term money instruments, corporate securities, derivative products and interbank funds generate the bulk of wire transfer activity. Because the catalysts for large-value funds transfers are financial market deals, the nature of the interest groups in the financial markets and their relative positions must be understood before the macroeconomic success of funds transfer law can be gauged. Funds transfer law must be held to the test of meeting the interests of the groups it most prominently affects: financial institutions transacting in foreign exchange, short-term money market instruments, corporate securities, derivative products and interbank lending.

This Article has argued that microeconomic and banking concepts provide the critical tools to gauge whether the law supports trading activities, clearing and settlement procedures, and funds transfer systems. The essence of the test must be to employ fundamental microeconomic and banking concepts to measure the extent to which U.C.C. Article 4A and the U.N. Model Law satisfy the interests of traders, settlements departments and funds transfer systems.

The same-day execution rules contained in U.C.C. Article 4A are problematic because of the potential for delays inherent in a beneficiary bank’s acceptance of a payment order for the beneficiary. The U.N. Model Law rule is unsatisfactory because of the potential for cumulative delays in paying the beneficiary and administrative difficulties in passing value as of a certain date. Both rules could be improved by tightening the time deadlines for action by receiving banks, thereby

meeting the traders' interest in high-speed funds transfers. The open invitation in the U.N. Model Law for draconian remedies in the cases of failure to execute a payment order and improper execution of a payment order is troubling because of the increase in transaction costs it is likely to provoke. Correcting this defect will serve the traders' interests in minimizing costs.

The U.N. Model Law affords little certainty to settlements departments because of the lack of a receiver finality rule and the questionable status of the discharge rule. The failure of the U.N. Model Law to clarify certain payment order processing matters heightens the uncertainty. Both the U.N. Model Law and U.C.C. Article 4A appear to meet the interest of settlements departments in efficiently allocating the risk of interloper fraud.

Systemic risk reduction efforts of funds transfer systems are generally neglected in the U.N. Model Law; these systems are ignored and the status of their rules is unclear. This contrasts with the treatment afforded by U.C.C. Article 4A. Article 4A, however, still needs improvement to adequately tailor the law to the needs of the relevant interest group.

This Article represents only the beginning of the scholarly research agenda on funds transfers. Because these statutes were so recently enacted there is little case law interpretation available. The common law, surely, will interpret and shape the statute. Whether it does so with an understanding of the dynamic money movers and the non-stop global financial markets remains to be seen.

211. See id. § 4A-102 cmt.