JEFFREY C. WILLIAMS

THE ORIGIN OF FUTURES MARKETS

Theorists considering futures markets have emphasized their exceptional convenience and economy in transactions.[1] Exchanges' supervision of the terms in contracts helps avoid the expense of negotiating each bargain anew. Standardized contracts also make it possible to cancel an obligation by taking an offsetting position in another contract and paying or receiving the difference between the prices of the two contracts, a practice the exchanges' clearinghouses facilitate considerably. It is just such interchangeable contracts that permit short selling. The exchanges follow tested procedures for settling disputes and ensuring performance without recourse to the courts. Such security encourages the use of futures markets, and this in turn reduces for all the costs of searching for others with whom to deal. Consequently, merchants temporarily substitute futures contracts for commitments they intend to negotiate later with terms tailored to the particular transaction.

There has been surprisingly little study of early futures markets to determine either the origin of these special features or the importance of organized exchanges in their development. What little is known does suggest that futures markets were slow to emerge and that central exchanges made a crucial contribution.

The Chicago Board of Trade adopted formal rules concerning futures trading in 1865. Several years later, in 1870, cotton traders formally incorporated into the New York Cotton Exchange for the purpose of trading futures contracts. The Liverpool Cotton Brokers' Association promulgated rules about forward sales first in 1864 and then more extensively in 1871.[2] A number of years passed before these exchanges

JEFFREY C. WILLIAMS is Assistant Professor of Economics at Brandeis University.

1 Holbrook Working, "Hedging Reconsidered," *Journal of Farm Economics* 35 (November 1953): 544–61, and Lester G. Telser and Harlow N. Higinbotham, "Organized Futures Markets: Costs and Benefits," *Journal of Political Economy* 85 (October 1977): 969–1000.

2 Although the year 1869 has been given as the earliest date for written rules in Liverpool, the minutes of the Liverpool Cotton Brokers Association for 29 April and 17 June 1864 mention the voting into force of rules on cotton "to arrive." Attached to the minutes of 23 August 1867 is an elaborate printed contract. (See Liverpool Record Office, 380 Cot 1/2.)

installed even the most rudimentary clearinghouses,[3] or decided upon a method for ensuring the performance of contracts.[4]

It was the tradition among both grain and cotton traders that speculation in futures had arisen just a few years prior to these formal beginnings, that is, during the Civil War.[5] But Stanley Dumbell discovered there was trading of cotton "to arrive" in Liverpool before the Civil War during the speculative binge of 1857.[6] Actually, it was known that there were some forward transactions in grains in Chicago in the 1850s, but that evidence gave the impression such dealings were sporadic and haphazard. Dumbell did not challenge the prevailing view that "the innovators of such methods were pure speculators whose practices were frowned upon by the more reputable merchants and brokers."[7] He also believed that Liverpool was behind New York City in adopting futures trading in cotton because "New York was already infected by the new methods of trading emanating from the Chicago grain market."[8]

More recently, Harold Irwin refuted the belief that speculators were the prime movers in the development of futures markets. In interviews with men involved with the establishment of futures trading in butter and eggs at the beginning of the twentieth century, Irwin learned that produce merchants who handled the commodities, not speculators, encouraged the new markets.[9] His position is now widely accepted, although it is conceded that speculative interest is necessary to sustain trading.

Thomas Odle's research into the history of grain marketing on the Great Lakes in particular supported the view that forward markets advanced considerably as it became possible to standardize a contract.[10] Odle argued that the new systems of grading in the western lake ports, supervised by the various boards of trade, made possible a considerable

[3] The Chicago Board of Trade, for instance, began a clearing association in 1883, although clearing was not required of all parties until the 1920s.

[4] For a history of margin rules, see Jeffrey Williams, "The Economic Function of Futures Markets" (Ph.D. diss., Yale University, 1980), 140–45.

[5] Charles Taylor, *History of the Board of Trade of the City of Chicago* (Chicago: Robert O. Law, 1917), 146, and E. J. Donnell, *History of Cotton* (New York: James Sutton, 1872), 614.

[6] Stanley Dumbell, "The Origin of Cotton Futures," *Economic History* 1 (May 1927): 193–201.

[7] Ibid., 194.

[8] Ibid., 196.

[9] Harold S. Irwin, *Evolution of Futures Trading* (Madison, Wisc.: Mimir Publishers, 1954).

[10] Thomas Odle, "Entrepreneurial Cooperation on the Great Lakes: The Origin of the Methods of American Grain Marketing," *Business History Review* 38 (Winter 1964): 439–55.

expansion of trading "to arrive" in Buffalo after the panic of 1857. Reliable grades were also a prerequisite for the budding market in Chicago, in which interchangeable warehouse receipts were delivered on contracts.

The cumulative impression of these observations on the history of futures markets is that futures markets evolved, like most everything else, from primitive to advanced forms. Not surprisingly, Joseph Burns inferred that futures markets emerge from efficient spot markets.[11] Burns, whose position was fairly typical, believed that

> As an economy and its markets develop, markets become increasingly specialized: from rudimentary local spot markets to centralized spot markets, to forward markets, to futures markets and decentralized spot markets, and to option markets for futures and actuals (the assets traded on spot markets).[12]

This pattern of development is exactly Irwin's theme; he titled his book *Evolution of Futures Trading*. Irwin maintained that "while little direct evidence is at hand concerning the early time contracts in corn and wheat, it is reasonable to conclude they were informal and in keeping with the crude nature of early grain marketing."[13] Modern markets, on the other hand, with clearing houses, elaborate rules, floor traders, and high volume, represent the pinnacle of development. Although there may have been some trading for future delivery in the years just before the Civil War, such trading was surely infrequent, informal, and insignificant, and one would naturally suppose the history of futures markets after the Civil War records successive improvements as the markets took on more of their modern form. Similarly one would naturally conjecture that the 1840s, when Boards of Trade were not yet organized, when few warehouses handled commodities in bulk, when communications were limited, and when the volume of shipments was small, witnessed few, if any, transactions for future delivery.

Yet the conjecture that forward markets in the 1840s were primitive cannot be farther from the truth. Instead of being infrequent, trading for future delivery occurred regularly; instead of being insignificant, trading for future delivery amounted to a considerable volume, often above the level of shipments; instead of being informal, trading for future delivery included procedures for settlement by payment of differences and for adjudging defaults. The accepted history of futures markets is not correct, and this fact should cast considerable doubt on

[11] Joseph M. Burns, *A Treatise on Markets: Spot, Futures, and Options* (Washington, D.C.: American Enterprise Institute, 1979), preface.
[12] Ibid., 2.
[13] Irwin, *Evolution of Futures Trading*, 78.

many inferences about futures and the role of organized exchanges based on the accepted history.

The year 1847 most sharply contradicts the belief that advanced markets evolved from primitive markets. At that time the active forward markets were in New York City and to a lesser extent Buffalo, and principally in flour, and this may explain why the history of futures has been misrepresented. Historians have directed their attention to Chicago because by 1865 Chicago dominated the grain trade. But before 1848, when railroads and the canal first began service, Chicago was far from important. Once the extent and sophistication of forward dealing in the New York markets is recognized, the lineage of modern markets can be traced back not to a spontaneous birth in Chicago but through London to Amsterdam in the early seventeenth century, when the Dutch traded grain, herring, and securities for future delivery.[14] With such a long history, it would certainly seem futures markets are integral to the market system.

First of all, it is surprising to find options in widespread use in New York City in early 1847. Near the end of February 1847, the *Buffalo Morning Express* reported, "There is a large speculative movement in flour, and within the week, privileges to the amount of 20,000 bbls have been bought at 12½¢ per bbl on $7.25 @ 7.50; 25¢ on $7.12½ to be taken up hours after [the] Steamer arrives."[15] Transactions in privileges occurred quite often, but the following trade on 20 February in corn meal is even more remarkable: "privilege of 2000 bbls at 12½¢ to be delivered about 20th March, the privilege to be taken up hours after Steamer arrives."[16] This transaction is for an option on a contract for future delivery, surely a highly advanced form of trading.

Options on contracts for future delivery also proclaim that the market for future delivery iself was far from crude in New York City. During early 1847, when receipts of flour during the shipping season would be anticipated to average around 20,000 barrels a day, the volume of trading for future delivery and "to arrive" represented a sizable portion of the available flour. For example, in early March, "Within a week, some 5000 bbls have been taken at $6.75, to arrive in June."[17] A particularly active day was 20 April when 18,000 barrels sold deliver-

[14] Charles Wilson, *Anglo-Dutch Commerce and Finance in the Eighteenth Century* (Cambridge: Cambridge University Press, 1941), 13, referring to J. G. van Dillen, "Termijnhandel te Amsterdam in de 16de en 17de Eeuw," *De Economist* (1927), 503–23.

[15] *Buffalo Morning Express*, 20 February 1847. In the nineteenth century, options were often called "privileges."

[16] Ibid.

[17] Ibid., 8 March 1847.

able in May and June.[18] In early May "the Flour market is active for future delivery."[19] Most often the forward sales considerably outnumbered sales of flour on the spot. For instance, on 13 April 3,500 barrels on the spot changed hands, while 11,000 barrels to arrive soon, 3,500 to arrive in June, and 2,000 to arrive in July were sold.[20] Even on those days termed "dull" by market reporters, sales for future delivery predominated.[21] As large as the reported volume was, "There was also last week sales of 15,000 bbls to arrive at current rates, which had not before been reported."[22] Heavy volume was not confined to the days just before the opening of navigation. In the first days of February "It was supposed that within a fortnight 20,000 bbls have been sold to arrive at $5.60 to $6.25 on the opening of the [Erie] canal and at $6.50 to $6.75 on the opening of the [Hudson] river."[23]

In these transactions in flour, reporters referred to both sales "to arrive" and sales for future delivery. There is some controversy whether "to arrive" sales are akin to those for future delivery. Charles Taylor attributed the beginnings of grain futures at Chicago to the use of "to arrive" contracts.[24] Irwin, in contrast, believed "time contracts in corn and in wheat were considered as distinct from the sales made "to arrive" which ordinarily referred to grain shipped or about to be shipped."[25] Similarly, Dumbell maintained that "to arrive" contracts, at least by the time of arrival, applied to a particular lot of cotton, unlike contracts for delivery during a particular month. His account of the development of the Liverpool market suggested that futures subsumed "to arrive" contracts.[26]

Actually, "to arrive" markets were closely related to early futures markets, and "to arrive" contracts were by no means exclusively short-term marketing agreements referring to a specific lot. The connection between futures and "to arrive" contracts can best be seen by picturing how grain passes through a port. Arriving by water or rail, shipments must usually be transferred into store or onto another vessel. Of course it costs something to move grain into a warehouse or onto a carrier taking it out of the port. The distinction between a "to arrive" contract and one for future delivery is simply who pays these loading and unloading fees. If a seller contracts "to arrive," the buyer assumes the

18 Ibid., 21 April 1847.

19 *Chicago Daily Journal*, 12 May 1847, report for New York City market of 7 May 1847.

20 *Buffalo Morning Express*, 14 April 1847.

21 Ibid., 15 April 1847.

22 Ibid.

23 Ibid., 10 February 1847.

24 Taylor, *History of the Board of Trade*, 193.

25 Irwin, *Evolution of Futures Trading*, 76.

26 Dumbell, "Cotton Futures," 193–99.

charges for getting the grain off the ship or railroad car. If the two make a contract for future delivery, the seller takes on the responsibility of seeing that the grain is in a warehouse. They could also contract for free on board, which means the seller, and not the buyer, arranges for the grain to be on a vessel ready to leave the port and to be free of any loading charges.[27]

Although many "to arrive" contracts were short-term and applied to produce already shipped, many others called for arrival many months in the future. Months ahead, these contracts could hardly have applied to produce already on its way or even to a specific lot.[28] Furthermore, allowance of a whole calendar month gave more flexibility in the time of arrival than necessary if the shipment was already under way.

If the terms of distant "to arrive" contracts had been altered just slightly so that the seller paid for delivery charges, they would have been contracts for future delivery. It is not surprising that newspaper reporters used the terms synonymously. It really does not matter who pays these charges, or whether the produce is sold "to arrive," "delivered," or "free on board," because who pays is primarily a matter of commercial convenience. The important distinction is whether title to the good passes now or in the future. By whatever name, the majority of transactions in flour called for delivery in the future.

Not only flour had an active forward market in New York City. "The sales [of corn] today are 35 to 40,000 bush at 90 @ 95¢ for Southern, Jersey, and Long Island, nearly all for future delivery."[29] Almost every day through the first half of 1847 there was heavy trading of corn for future delivery, with such transactions, as in flour, considerable outnumbering sales of corn for immediate delivery. Although the New York market dealt in wheat to a lesser degree, "the demand for wheat, for future delivery, is considerable."[30]

A market for future delivery of breadstuffs was also quite active in Buffalo in 1847, and a detailed listing of several days' trading in flour illustrates both the scope and terms of the transactions. On 13 April 1847 in Buffalo,

> There were sales of 1000 bbls Black Rock flour deliverable in New York in the month of May, at $6.25; 1000 deliverable in June at $6, and 150 deliverable

[27] For an example of a forward contract calling for delivery f.o.b., see *Milwaukee Daily Free Democrat*, 1 January 1853.

[28] In addition, during the 1860s the "to arrive" market in Buffalo clearly had standard contracts that did not necessarily refer to a particular boat load. (See *Buffalo Commercial Advertiser* in June 1869, for example.) Similarly, the market in cotton "to arrive" in Liverpool during the Civil War became divorced from particular lots. (See *Manchester Guardian*, 1 January 1864, summarizing the market in 1863.)

[29] *Buffalo Morning Express*, 10 February 1847.

[30] Ibid., 3 May 1847.

here now. There was also a sale of 500 bbls Michigan to arrive by 10th May at \$5.12½; 500 bbls Buffalo City Mills on private terms.[31]

On 20 April, the sales comprised 2,000 barrels one brand Wisconsin to arrive by 15 May, 1,000 Brooklyn Mills Michigan to arrive, 1,000 barrels two brands Ohio to arrive, and 450 and 750 barrels in store in Buffalo.

These transactions in flour reveal one way traders made their contracts fairly general in the absence of broad grades defined by exchanges or state inspectors. Contracts called for delivery of the output of a specific large mill, such as "Buffalo City Mills," or from a particular region, such as "Michigan," known to be of consistent quality. Wheat, corn, and oats were designated by locality, such as "Ohio red," or "Sandusky" wheat, and "New Jersey" corn. Although these regions were not as general as No. 1 spring wheat, they still included enough produce to make any contract general enough to be liquid.

In 1847, only a handful of warehouses had elevators, without which it is difficult to handle grain in bulk. Unless grain is handled in bulk, warehouse receipts are rarely interchangeable. Consequently, the conventional wisdom that fungible warehouse receipts were necessary to the development of futures trading must overstate the case.

Broad but precise grades such as No. 1 wheat and exchange of fungible warehouse receipts rather than the commodity itself are usually cited as evidence of an advanced spot market. The existence of forward trading before these improvements occurred should expose as false the belief that forward markets arise from advanced spot markets. Considering the importance of forward markets in allocating resources over time, why would any one suppose they would develop only after the spot market was quite advanced?

The trading in 1847 itself does not contradict the natural supposition that trading for future delivery cannot exist if communications are primitive. Although the western lake ports did not get a telegraph until 1848, Buffalo and New York City were connected in late 1846. Perhaps then, the flurry of trading in 1847 accompanied the introduction of the telegraph. Consequently it is surprising to read in the market reports for Buffalo in May 1843 that despite heavy arrivals in the port, there were few transactions in the market because "a large proportion of wheat in port is being delivered on former sales to arrive."[32] A month later in June 1843, "A large quantity of produce coming in is either consigned through, or delivering on former contracts."[33] In

[31] Ibid., 14 April 1847. "Private terms," if ever disclosed, usually involved a forward sale.

[32] *Buffalo Daily Courier*, 16 May 1843.

[33] Ibid., 30 June 1843; see also 24 May 1843.

New York City at the same time, over the span of a few weeks, market reports mentioned sales to arrive in wheat, corn, rye, flour, and even pickled hams.[34]

Forward transactions in New York City and Buffalo in the 1840s naturally were insignificant in volume compared to those on modern futures markets. Sales of 10,000 barrels of flour or 50,000 bushels of corn correspond to only 10 contracts, while the most active markets today trade 50,000 contracts each day. But 10 contracts per day in the 1840s compared to the total movement of flour or corn is equivalent to 50,000 contracts in the 1980s.

For example, the sales in the New York City market for delivery in May 1847, combined with sales in Buffalo for delivery in New York, amounted to a considerable quantity of flour committed for delivery. In 1847, the spring opening of the Great Lakes and the Erie canal came unusually late, and it was difficult to transport a sufficient quantity of flour to New York by the end of May. "Scarcely any of the large quantity [of flour] contracted for in May will be delivered, and the factors [in New York], who in many cases are the intermediate parties, are completely 'cornered.'"[35] By the middle of May,

> The large quantities which have been sold to arrive at Buffalo and New York and which will not reach their destination within the contract time owing to the limited means of transportation will have a tendency to keep up prices . . . as contractors are interested in having high prices maintained that the damages for nonfulfillment of contracts may be corresponding.[36]

One might expect the trouble over defaults on contracts would have seriously disrupted trading, as would surely be the case in a primitive market. Quite the opposite happened.

> A large number of contracts for the delivery of flour have been settled today [1 June 1847] at $8.12 for Michigan and $8.25 for Genesee and $5.18¾ for Jersey and western corn meal. All the houses which contracted to deliver breadstuffs have so far settled without litigation or delay, except one, though the balances in many cases have been very heavy, yet, with the very remarkable feature that all hands make money, except such, if there are any, who have sold what they did not possess.[37]

The flour default of May 1847 has several important implications for the history of futures markets. First, there can be no doubt that trading

34 *New York Post*, 13 May 1843; 20 May 1843; 27 May 1843; 27 May 1843; 13 May 1843.

35 *Chicago Daily Journal*, 27 May 1847, report of Buffalo correspondent dated 22 May 1847.

36 Ibid., 29 May 1847.

37 *New York Journal of Commerce*, 1 June 1847.

for future delivery was extensive at an early date. Clearly a large proportion of the commercial houses were involved in the default, and this implies futures trading was a widespread business practice. The squeeze itself, as well as the veiled reference to those "who have sold what they did not possess," indicates short selling on speculation. If the contracts for future delivery were solely merchandising agreements, there would be no comments such as, "Purchasers to fill contracts [for corn] fearing to await the steamer's news, came in and the market went up 2 or 3 cents per bushel."[38] Speculation usually accompanies an advanced, liquid market.

The squeeze in flour indicates that even in 1847, the market for forward delivery was well on its way to being a financial market; that is, a market in which paper rights rather than a physical commodity are traded. The great majority of the contracts for future delivery, unlike most arrangements for immediate delivery, were for round lots, 500, 1,000, or 2,000 barrels. Round lots indicate that the holder of the contract is not so interested in the liquidity and marketability of the flour he will eventually receive as in the liquidity and marketability of his contract–that is, how easily he can sell an offsetting contract. How close the market was to a financial market in contracts can be inferred from the willingness of nearly everyone involved in the default to settle with a monetary payment rather than delivery of flour.

Although in times when supplies were available most contracts were satisfied by delivery of produce, some trades were canceled ahead of time by a payment of monetary differences. For example, on 2 June 1847, "corn contracts were settled at 110¢."[39] One New York paper remarked at the end of May 1847 that, "The settlement of old contracts made to arrive some time hence at low prices tended to advance the market in the early part of the month, and the same causes have induced depression in the later part of it."[40] Settlement of contracts in the early part of May would probably have involved a payment for the difference in the price of the contract and cancellation of the deal rather than delivery of produce.

Not only does settlement by payment of differences indicate that some trading at least was for practical purposes in the contracts themselves rather than the physical commodity at quite an early date, but that a clearinghouse was only a small step away. There is still a step from the settlements between pairs of parties to settling accounts of all parties at the same time, but traders in forward markets did not have to

[38] *Buffalo Morning Express*, 17 July 1847, report for New York City market, 16 July 1847.

[39] *New York Journal of Commerce*, 2 June 1847. Such settlements by the payment of differences were even more common in the 1850s.

[40] *New York Shipping and Commercial List*, 29 May 1847.

look far for examples of the extension of the clearing principle to many parties. London banks had operated a clearing association since the end of the eighteenth century, which inspired a similar facility in New York beginning in 1853.[41] The principle of clearing among many parties had long been used to cancel contracts for delivery of securities in Amsterdam and London.[42] (In New York City in the 1840s, most dealings in securities also were for future delivery.)[43] Because the market in 1847 was close to having a clearinghouse, it is surprisingly close to the sophistication of modern futures markets.

The settlement of the flour squeeze of 1847 similarly implies that an active futures market existed quite well without the supervision of a central exchange.[44] The extensive trading in 1847 existed without any Board of Trade or government agency supervising the grading of produce.[45] This is not to say there was no attention to grades. Produce was carefully inspected, but the problem was in enforcing a contract to deliver a particular grade or agreeing on whether the delivered produce had the right grade. For lots to be shipped soon, commission merchants could send samples on ahead to permit the shipment to be sold before its arrival.[46] But sample trading could not work for contracts to deliver several months later, which were quite common even in 1847, because such trades could not have referred to specific lots. Traders in Buffalo, who often contracted to deliver flour and grain in New York City, avoided an impasse by including in the contract the term "inspection guaranteed below."[47] Another method was to use the name brand of a large mill. Clearly, individual traders were themselves adept at enforcing the terms of contracts and keeping them comparable to others without the help of an official exchange or the government, because they did trade forward extensively.

More important, within one day after default the parties settled agreeably, without protracted and expensive litigation. Clearly such settlements were routine, because the reporters knew enough of the

[41] J. S. Gibbons, *The Banks of New York* (New York: D. Appleton, 1859), 292–342.

[42] Wilson, *Anglo-Dutch Trade*, 85–87. Variation margin was also in use to protect contracts.

[43] William Armstrong, *Stocks and Stock-Jobbing in Wall Street* (New York: New York Publishing Co., 1848).

[44] In New York City produce dealers met on the sidewalk until 1850 when they moved indoors to the "Corn Exchange," which supervised the trade very little until members reorganized as the New York Produce Exchange in 1860. See Richard Edwards, *Origin, Growth, and Usefulness of the New York Produce Exchange* (New York: Historical Publishing Co., 1884), 42–47.

[45] The State of New York had graded all flour exported until grading was made optional in 1843. No provision had ever existed for state inspection of grains.

[46] For example, see *Daily Milwaukee News*, 26 May 1855, or *Buffalo Morning Express*, 16 April 1847.

[47] *Buffalo Morning Express*, 1 June 1846.

procedures to predict payment of "damages for nonfulfillment of contracts." If elaborate and effective procedures for settling defaults existed before organized exchanges supervised futures markets, what have organized exchanges contributed? In 1863, two years before the Chicago Board of Trade explicitly acknowledged futures trading in its rules, the Board had adopted a rule suspending from membership any one who failed to comply with a contract, either written or verbal.[48] Although this rule suggests the Board could add some security to contracts, its help was not needed in negotiating the terms of contracts, probably because the contracts were already quite standardized. Similarly, from 1841 to 1863 the Liverpool Cotton Brokers' Association managed without any written rules. Only in 1864 was a body of regulations relating to cotton "to arrive" collectively issued, long after such transactions were common. It would seem that central, organized exchanges did little besides put down in writing the standard terms and procedures, and that their contribution to the birth of futures markets is much less than usually thought.

Although early futures markets developed to quite an advanced state without the help of organized exchanges, the existence of informal futures markets in the 1840s indirectly confirms the importance of modern exchanges. Even when communications, storage, and handling of commodities were primitive by modern standards, contracts for future delivery were a common method of conducting business among both merchants and speculators. These unsupervised traders used relatively standard and general contracts, had procedures for settling disputes with little expense, and frequently acted as if the contracts themselves were a good. In short, as early as the 1840s, the markets had most of their modern convenience and economy in transactions. Of course the markets did not appear fully formed in the 1840s. But their precise lineage is not that important, because the fact remains that the origin of the impressive modern markets is not in speculators' gambles, the price fluctuations of the Civil War, lucky circumstances in Chicago, or exchanges' inventiveness and supervision, but in the fundamental need to trade for future delivery.

[48] Quoted in Irwin, *Evolution of Futures Trading*, 81.