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The Political Economy of Futures Market Regulation*

Votes on bills to ban or to tax futures transactions are examined to identify sources of regional opposition to futures markets and exchanges. Opposition to futures markets was located in the grain-producing states but has moderated over time. The second part of the paper measures the effect of the jurisdictional conflict and subsequent accommodation between the Commodity Futures Trading Commission and the Securities and Exchange Commission on membership seat prices on the Chicago Board of Trade, Chicago Mercantile Exchange, and the Chicago Board of Options Exchange.

I. Introduction

Public regulation of futures markets has a long history. The cotton and the grain futures exchanges were already under some form of federal regulation by 1922. Jumping ahead in time, the formation of the Commodity Futures Trading Commission (CFTC) in 1974 was a response to the anticipated growth in the size of market and in the number of traded instruments and need for a coordinated policy for the regulation of futures markets. While futures markets have been regulated in one sort of a way or another for many years, little is known about the sources of support for regulation and precious little is known about the underlying reasons for the regulations. This paper offers both a brief historical account of the regional sources of support for futures legislation and a more contemporary account of the effects on membership seat prices of the recent jurisdictional conflict between the CFTC and the Securities and Exchange Commission (SEC).

Public apprehension of futures markets and exchanges has a long history. Even though this

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opposition to futures markets is long standing, the underlying causes for this opposition remain a mystery. Though the arguments are not always coherent, it appears that three different explanations have been offered. One rationale for government regulation could be put under the general rubric of protection of the investor. Skeptics have looked at futures markets as forums for professionals to fleece unsophisticated or inexperienced investors. Holders of this simplistic view have hoped to protect inexperienced investors by prohibiting or regulating futures trading. The extensive campaign against the bucket shops at the turn of the century would be consistent with this hypothesis but with others as well. A second but more nebulous explanation places the opposition to the futures exchanges in the context of the broader public crusade against gambling. Throughout the legislative debates during the late nineteenth and early twentieth centuries, futures transactions were often equated with speculation, and speculation and gambling were thought to be no different than identical twins. At that time gambling had few public supporters in the United States. Finally, there is the opposition by special interest groups. Here the most easily identified group is the farm sector. Not all segments of the farm sector have opposed futures trading, and the position of some groups of farmers has changed over time. While some farmers have opposed futures markets, the underlying reasons for this opposition have never been satisfactorily explained. A frequently repeated claim is that futures transactions lower farm prices. This claim is repeated decade after decade but has not been convincingly demonstrated. Testing a plausible hypothesis for farmer opposition remains for future work. This paper has a more limited goal. Section II identifies the geographic source of farm opposition, measures this opposition over time, and suggests this opposition has moderated over time.

Section III studies the effects of CFTC regulations on membership seat prices on the Chicago Board of Trade (CBOT) and other exchanges. During the last 5 years, several important regulatory rulings have been made by the CFTC and in some cases jointly by the CFTC and the SEC. During this period these two commissions disagreed about the jurisdictional boundaries of the two commissions and then settled their differences with an administrative agreement that was subsequently adopted by Congress. Section III examines the effect of the regulatory conflict between and accommodation among these two commissions on membership seat prices on futures and options exchanges.

II. The Political Support for the Regulation of Futures Markets

The introduction of numerous futures contracts during the last 10 years with hardly a quiver of political opposition is testimony to an increased

acceptance and understanding of the economic functions of futures markets. Futures trading has not always been so readily accepted, and futures exchanges have often been the prime targets of agrarian opponents. Opposition to and attacks on futures exchanges were common throughout the late nineteenth and early twentieth centuries. Though the agricultural states were the primary source of this opposition, not all farmers opposed the futures exchanges or were opposed to futures trading. However, the grain farmers located in the Great Plains were the focal point of this opposition. Just why the grain farmers opposed futures trading has not been explained, but the location of this opposition is not in doubt. During the late 1920s the antispeculation supporters sponsored legislation to frustrate futures trading by proposing a ban or a tax on certain futures transactions. These legislative efforts followed on the heels of legislation passed in 1921 and 1922 (the Grain Futures Act), which had imposed information and disclosure requirements on the futures exchanges and prohibited speculative or manipulative practices. The primary purpose of the 1921–22 legislation was to establish a federal monitoring mechanism with the goal of eliminating the alleged manipulation of traders.[1] It appears the thrust of this legislation was to make futures markets work better rather than to eliminate these markets.[2] The Grain Futures Act of 1921–22 passed by large House majorities with most of the opposition coming from the East. This legislation did not satisfy the more committed opponents of futures markets, who equated futures trading with gambling and had sought to ban or to tax futures transactions if the parties to the transaction did not expect delivery. These opponents urged far more stringent regulation of futures markets. They were unsuccessful because a substantial majority of senators believed the 1922 legislation had adequately dealt with the manipulation issue and were opposed to restricting the hedging functions of futures markets. The votes in the late 1920s are used to distinguish between those constituencies who had supported regulation to eliminate manipulative practices and those constituencies who opposed futures trading for some deeper reason, for example, to eliminate gambling or to raise farm prices et cetera. Those senators who supported the legislation in the late 1920s had more in mind than an equitable trading market.

1. The 1922 bill prohibited the members of an exchange from issuing false or misleading information about crop conditions and the use of corners. Reports were to be filed with the Department of Agriculture and to show the terms of all transactions on the board.

2. The 1921 legislation placed a $.20 per bushel tax on futures transactions except those transactions made on designated futures markets. Hence the tax feature appeared directed at bucket shops and not the exchanges (Lurie 1980, pp. 233–56). The Supreme Court ruled the 1921 act unconstitutional because of the tax features. Congress eliminated this provision and then passed the Grain Futures Act in 1922.

The analysis singles out four Senate votes on futures legislation. Three of the four votes were cast in 1928, 1929, and 1938 and the fourth in 1982, some years later. The first three votes are used to pinpoint the regional sources of opposition to futures markets. The votes cast in 1982 will then be compared with the three earlier votes to see what long-term changes in political opposition have occurred over the last half century.

Each bill or amendment involved an attempt to tax or to ban futures trading. The movement against futures trading during the late 1920s was lead by Senator Caraway of Arkansas.[3] Senator Caraway proposed by $0.50 tax on certain cotton and grain futures transactions. In 1928 the Senate rejected this bill by a vote of 47 to 24. Undaunted by this defeat, Senator Caraway offered a still more comprehensive bill in 1929 that would have banned futures trading completely. This bill met with no more success and was rejected by the Senate 47 to 27. The third vote was taken 9 years later, in 1938. The Commodity Exchange Commission urged repeal of the $0.03 transaction tax on futures that had been imposed in 1926 (by voice vote). The Senate repealed the tax by a vote of 50 to 28. The combined votes on these three measures are presented in columns 1–3 of table 1 by census region. Column 3 shows the percentage of votes against the taxation or the ban of futures. Political opposition to futures transactions was centered in the West North Central and West South Central regions. The antispeculation and antigambling sentiments of inhabitants in the Great Plains states is plainly revealed through the votes cast by the senators from these regions. The strongest political support of existing futures markets came from the Northeast and Middle Atlantic regions.

Between 1938 and 1982 Congress considered other legislation dealing with futures markets. Futures transactions in onions were banned in the 1950s, while a later attempt to ban trading in potato futures failed. These episodes appear to be minor disturbances and against the main current toward greater acceptance of futures markets. Political opposition to futures exchanges and futures trading had been declining since the early 1920s (Cowing 1965, ch. 7). This decline was reflected in the outcome of the 1982 vote.

In 1982, 44 years after the 1938 vote, the Senate was offered another opportunity to tax futures transactions. The Reagan administration proposed several user taxes among which was a user tax on futures and option transactions. The proceeds of the tax were to fund the CFTC. Opposition by the exchanges to the tax was uniform and vocal. The Senate rejected the proposed tax by a 65 to 25 vote just as it had rejected similar attempts in the late 1920s. However, senators from the

3. An interesting and informative summary of the antispeculation legislation can be found in Cowing (1965).

TABLE 1 **Political Opposition to the Taxation of Futures Transactions: Senate Votes**

	Votes on the Taxation of Futures Taken In:								
				1982					
	1928, 1929, and 1938			All Votes			Republican Votes		
Region	For (1)	Against (2)	% Against (3)	For (4)	Against (5)	% Against (6)	For (7)	Against (8)	% Against (9)
Northeast*	3	25	89.3	4	5	55.6	3	2	40.0
Middle Atlantic†	0	13	100.0	1	5	83.3	1	3	75.0
East North Central‡	7	17	70.8	5	5	50.0	3	1	25.0
West North Central§	23	11	32.4	2	12	85.7	1	9	90.0
South Atlantic‖	14	22	61.1	5	11	68.8	3	5	62.5
East South Central#	4	14	77.8	1	7	87.5	1	0	.0
West South Central**	12	10	45.5	1	5	83.3	1	1	50.0
Mountain††	11	25	69.4	3	12	80.0	3	7	70.0
Pacific‡‡	5	7	58.3	3	3	50.0	3	1	25.0
All states	79	144	64.6	25	65	72.2	19	29	60.4

* Maine, New Hampshire, Vermont, Connecticut, Massachusetts, and Rhode Island.
† New Jersey, New York, and Pennsylvania.
‡ Ohio, Indiana, Illinois, Michigan, and Wisconsin.
§ Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.
‖ Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida.
Kentucky, Tennessee, Alabama, and Mississippi.
** Arkansas, Louisiana, Oklahoma, and Texas.
†† Montana, Utah, Nevada, Idaho, Wyoming, Colorado, New Mexico, and Arizona.
‡‡ California, Oregon, and Washington.

Great Plains states, who were the champions of futures taxation in the 1920s and 1930s, were the chief opponents of the 1982 proposed tax. The votes cast in 1982 by all senators and by only Republican senators are shown in columns 4–9 of table 1. These votes show the dramatic change in political sentiment that has occurred in the West North and West South Central regions over the last half century. By the early 1980s these regions had become the foremost opponents of futures taxation. The votes cast by senators from the West North Central and South Central regions during the 1920s and 1930s differed significantly from the votes cast by senators from all other regions.[4] On the other hand, the votes cast by senators from the West North Central and West South Central regions in 1982 could not be distinguished from the votes cast by senators from other regions.[5]

Not surprisingly, Republicans as a party gave the administration's position more support in 1982 than the Democrats did. It is of greater significance, however, that the votes cast by Republican senators from the West North Central and West South Central regions supported the administration's position only 16.7% of the time, while votes cast by Republican senators from all other regions supported the administration's position 47.2% of the time.[6] So Republicans from the Great Plains states deserted the administration's position in significantly greater numbers than did all other Republican senators. This represented a long-term change in voting position and presumably reflected a corresponding change in the interests of farmers in the Great Plains states. It appears that many farmers from these regions now recognize the direct and indirect benefits that futures markets provide during periods of uncertainty.

Modest support for the tax came from the East North Central, Pacific, and Northeast regions, but even in these regions the majority of the votes cast opposed the tax. Among these three regions, the votes cast by senators from the Northeast have changed more over the first half century and then toward more support for the taxation of futures and away from the staunch opposition exhibited earlier. This change could very well be due to the diminished importance of agriculture in the New England economy.

This voting history suggests that antagonism by farmers toward futures markets and futures exchanges has moderated during the last half century. The reasons for this political evolution are not easy to un-

4. The hypothesis that the two proportions came from the same population is rejected at the 1% probability level with a t-value of 4.9.

5. The difference between the two proportions is 1.4 times the standard error of the difference between the two proportions.

6. The hypothesis of no significant difference between the proportion of votes cast by Republican senators from the Great Plains states and Republican senators from other states is rejected at the 6% probability level. The difference between the proportions is 1.9 times the standard error of the difference between the two proportions.

cover or to test. Farm size has increased, and larger farmers are more supportive and tolerant of futures exchanges than small farmers are (Cox 1975). But long-term changes in farm size have not been larger in the Great Plains states than elsewhere. The sophistication and education of farmers has increased. Perhaps the role of futures markets is better understood now than in the past. While these changes may all have contributed in some small way, they do not fully explain why the political opposition to futures markets diminished more in the West North and West South Central regions during the last half century.

While the votes on futures taxation clearly show a moderating trend, it would be a mistake to infer that suspicion of futures markets has completely disappeared.[7] During the 1978 reauthorization hearings and House debate, considerable doubt was expressed over the ability of the CFTC to police the futures industry. To allay these concerns, Representative Baldus of Wisconsin offered an amendment that would have allowed states to pass and enforce commodity futures laws that were identical to sections of the federal law. The proponents of this amendment argued that the CFTC did not have the resources or the ability to monitor the futures industry. Adoption of the amendment would expand enforcement resources by encouraging state enforcement and help protect inexperienced investors. Industry opposition to the amendment was vocal because it feared multiregulatory regimes and a rapid increase in suits. The House rejected the Baldus Amendment 141 to 260. The votes are shown by census region in columns 1–3 of table 2. The strongest support for state enforcement came from the Northeast and Middle Atlantic regions. There was more than token support for the amendment from the West North Central region but virtually no support from the West South Central regions.

The votes on the Baldus amendment are not easily assessed without a standard of reference. Because this amendment was designed to increase or to improve investor protection, it would be useful to compare the votes cast on the Baldus amendment with the votes cast on a comparable issue. The closest approximation to a comparable issue is a bill proposed by the Carter administration in the same year to establish an independent Office of Consumer Representation. The proposed bill would have permitted the Office of Consumer Representation to represent the interests of consumers before federal agencies and courts, to sponsor research and conferences, and to perform other duties that protected consumer interests. This legislation aimed at expanding enforcement resources so that the consumer viewpoint was advanced

7. Further evidence of a residual concern is the proposed appointment of a representative of the soybean industry to the board of directors of the CBOT. One possible reason for this appointment is the desire by the CBOT to attenuate any opposition by the soybean producers to the CBOT.

TABLE 2 Political Support for Greater Enforcement Resources for the CFTC and for the Office of Consumer Representation, 1978

	Votes for State Enforcement of Futures and for the Establishment of the Office of Consumer Representation						
	Baldus Amendment			Office of Consumer Representation Bill			Ratio of Column 3 to Column 6
Region	For (1)	Against (2)	% For (3)	For (4)	Against (5)	% For (6)	(7)
Northeast*	14	6	70.0	19	4	82.6	.85
Middle Atlantic†	37	36	50.7	52	22	70.3	.72
East North Central‡	25	56	30.9	41	40	50.6	.61
West North Central§	13	19	40.6	9	26	25.7	1.58
South Atlantic‖	15	45	25.0	16	48	25.0	1.00
East South Central#	7	17	29.2	4	21	16.0	1.83
West South Central**	2	39	4.9	11	30	26.8	.18
Mountain††	7	11	38.9	5	14	26.3	1.48
Pacific‡‡	21	31	40.4	32	22	59.3	.68
All states	141	260	35.2	189	227	45.5	.77

* Maine, New Hampshire, Vermont, Connecticut, Massachusetts, and Rhode Island.
† New Jersey, New York, and Pennsylvania.
‡ Ohio, Indiana, Illinois, Michigan, and Wisconsin.
§ Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.
‖ Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida.
Kentucky, Tennessee, Alabama, and Mississippi.
** Arkansas, Louisiana, Oklahoma, and Texas.
†† Montana, Utah, Nevada, Idaho, Wyoming, Colorado, New Mexico, and Arizona.
‡‡ California, Oregon, Washington, Alaska, and Hawaii.

before federal courts and agencies. The House rejected the bill 189 to 227.

While the objective of the Carter bill differed in some ways from the objective of the Baldus amendment, there was a similarity in the objectives of the two pieces of legislation. Both the Baldus amendment and the Carter bill were designed to enlarge the rights and resources of the government to protect consumers or investors. The votes cast on the Carter bill presumably reflected regional differences in support for consumer protection legislation. The votes on the Baldus amendment might merely reflect those same differences in regional support for consumer protection. On the other hand, they could reflect, more than an interest in consumer protection, a special concern over possible manipulation in futures markets. If so, relatively more support for the Baldus amendment than for the Carter bill would come from regions concerned about protecting traders in futures markets. The vote on the Carter bill is shown in columns 4–6 of table 2. Forty-five percent of the votes supported the bill, while only 35% of the votes supported the Baldus amendment. Column 7 shows the ratio of the percentage of votes for the amendment to the percentage of votes for the Carter bill.

For the United States as a whole, the ratio equals .78. A ratio in excess of .78 shows relatively more interest in the region for the protection of traders than for consumer protection. The ratios are greater than one in the West North Central, East South Central, and Mountain regions. A residual concern about the adequacy of self-regulation in the futures industry apparently exists in these regions. While the Great Plains states opposed the taxation of futures transactions in 1982, the West North Central region offered relatively more support for the monitoring and regulatory enforcement of the futures industry. By 1982 the West South Central states showed minimal concern over the efficiency of futures markets or over the protection of traders.

This brief historical account suggests that the political strength of the opponents of the futures industry and futures exchanges has diminished over time. The second major change worth emphasizing is the dramatic growth in the size of futures markets and, in particular, in the size of financial futures markets. As these markets have expanded, so too has the implicit political support for the futures industry. The number of users of futures markets has increased dramatically. These two trends—the decline in farm opposition and the growth of the futures industry—suggest that future political controversies will not be over whether futures markets should exist. Rather, future conflicts are more likely to be intraindustry conflicts between exchanges and to be over how the political process can be used by one group of futures or securities exchanges to secure an advantage over others.

III. CFTC Regulations and Membership Seat Prices

In 1974 the CFTC was granted exclusive jurisdiction over all futures transactions on or off organized exchanges. The limits of this authority were not precisely defined in 1974, and potential disagreements over the limits appeared distant since trading was then primarily in grains and meats. As new futures instruments were introduced, for example, Treasury bonds, broad-based stock indices, and options on futures, the lines of regulatory authority blurred, and a jurisdictional dispute arose.

The 1933 and 1934 securities acts had established SEC jurisdiction over securities exchanges. Securities law and an extensive set of rulings and procedures have evolved over the years. The CFTC is a young agency; it is less well established and has less political influence and capital than the SEC does. During its short history, the CFTC has been criticized periodically as an ineffective commission, unable to police the futures industry.[8] Both agencies are charged with maintaining active and liquid markets and protecting investors from fraud or manipu-

8. For a representative statement of this view, see the statement by Representative Neal Smith (U.S. House of Representatives 1982).

lation. However, the dislosure and informational requirements of the SEC appear more demanding, and the monitoring of the securities industry by the SEC is more extensive. Whether or not these more demanding standards are socially desirable, the greater stringency of SEC regulations is confirmed by the staunch opposition of the futures industry to an extension of SEC authority. The presence of two regulatory regimes with different reporting requirements, different enforcement programs and resources, and different but potentially overlapping jurisdictions has created problems for members of securities and futures exchanges, the commissions themselves, and investors.

The proposed development of futures on stock indices and the CFTC-SEC controversy over the trading of options on GNMAs on the Chicago Board of Options Exchange (CBOE) are two illustrations of this jurisdictional conflict. From the SEC's perspective, differential regulatory regimes help subvert the SEC's active program to monitor and control insider trading since insiders can use the futures markets to escape SEC regulations.[9] The SEC's concern with futures on stock indices, especially the more narrow industry stock indices, is based on this type of argument. The SEC has consistently opposed the introduction of narrow indices proposed by the CBOT by arguing that the potential for manipulation is greater for the indices with a limited number of issues than for the broad-based stock indices.

On the other hand, the controversy between the CFTC and the SEC over options suggests that more than the concern over manipulation or insider trading could be at work here. During the 1978 reauthorization hearings, the SEC had argued before Congress that options on Government National Mortgage Association securities (GNMAs) should be regulated by the SEC even though GNMAs were exempt securities. This view was opposed by the CBOT and was not accepted by Congress. Nevertheless, the SEC gave the CBOE permission in 1981 to trade options on GNMAs.

Because the GNMA market is a large and liquid one, manipulation was not the issue here. The campaign by the SEC to assign options on GNMAs to the CBOE cannot be easily explained by the concern over insider trading or manipulation. The option example suggests a second hypothesis. The SEC behavior might be better understood as a means of protecting securities and options exchanges under SEC jurisdiction. This protection may be secured in a number of ways, for example, by expanding the number of instruments traded on SEC-regulated exchanges or by discouraging the development of lower-cost trading substitutes or exchanges under CFTC jurisdiction. Certainly, CBOE support for broader SEC jurisdictional boundaries is consistent with this alternative hypothesis. Since the CBOE would have been the primary

9. For a comprehensive summary of the SEC's position, see the statement by Harold Williams, chairman, SEC (U.S. House of Representatives 1978).

beneficiary from the trading of options on GNMAs, this support is not surprising. Similarly, if options on stock market indices are substitutes for futures on these same indices (or for options on these futures), the CBOE, regulated by the SEC, is in direct competition with CBOT and the Chicago Mercantile Exchange (CME), both regulated by the CFTC. The SEC could be acting to prevent a loss in the capitalized value of seats on securities and option exchanges by an extension of its jurisdiction.

Which of the two hypotheses might explain the jurisdictional conflict between the two commissions is not easy to determine. The two competing explanations for this jurisdictional conflict—the protection of the investor and the protection of security and option exchanges—are not easily tested because they often yield similar predictions. If an extension of SEC authority reduced the incidence of manipulation and trading on futures markets, then seat prices on futures exchanges would be expected to fall because the futures exchanges have already adopted rules and regulations to discourage manipulation of traders. A successful exchange cannot attract traders if the exchange acquires a reputation of not complying with the terms of the contracts and of exploiting customers. Hence still further or more extensive regulatory attempts to monitor manipulation can be expected to lower seat prices.[10] If an extension of SEC authority raised the cost of trading on futures exchanges or reduced the offerings of futures exchanges, the seat price on futures exchanges would also decline. So both hypotheses predict a decline in seat prices on futures exchanges if SEC regulatory authority is expanded.

The protection of the options or securities exchanges would make sense only if futures (or options on futures) are substitutes for options on the underlying security, for example, the Standard and Poors 500. Then raising the cost of trading futures would increase the demand for options. If futures and options were complements, a rise in the cost of trading futures would reduce the demand for options and lower the seat price on the futures and the options exchanges. Hence a test consistent with the protection-of-exchange hypothesis is that options and futures (on, say, some underlying stock index) are substitutes. The manipulation hypothesis does not require any such specification. If options could be shown to be net complements for futures, this evidence would be inconsistent with the protection-of-exchange hypothesis. In practice it is difficult to test whether options are or are not substitutes for futures since stock index instruments are relatively new, with short volume histories, and the narrow industry stock indices have not been approved and have never traded as of this time.

Both hypotheses presume that an extension of SEC regulatory au-

10. Seat prices might rise if the monitoring function was subsidized or undertaken by the regulatory authority.

thority has had a significant effect on seat prices and volume. This is a natural presumption to make, given the numerous public positions of the two commissions and of the interested futures exchanges. But first it may be useful to determine if regulatory and judicial decisions related to the jurisdictional issue have had an effect on membership seat prices. These regulatory decisions may have had quantitatively small effects. If so, the tensions between the exchanges, between the commissions, and between the exchanges and the commissions, while well publicized, may be much ado about epsilon. If significant regulatory effects are found, one would need to face the still more challenging problem of trying to distinguish between the two explanations.

A. *Statistical Properties of CBOT Seat Prices*

The different types of memberships and membership interests on the CBOT have evolved slowly over the years. The oldest membership is called the "full" membership. A full membership grants trading rights in any market on the exchange. Prior to the development of metal, energy, financial, and other futures markets, futures trading was concentrated in corn, wheat, and soybeans. An associate membership was introduced in 1977. An associate member can trade in all markets except the agricultural futures markets, for example, government instruments, energy, stock indices, financial or commodity options, et cetera. Even more specialized (alphabet) "memberships interests" were introduced in 1982. A Government Instruments Market (GIM) membership interest was introduced in May 1982 and allows trading only in futures on government instruments, for example, futures on Treasury bonds. A Commodity Options Market (COM) membership interest was introduced in August 1982 and grants trading rights only in options on futures (both financial and agricultural options). The Index, Debt, Energy Market (IDEM) membership interest was first traded in June 1982 and grants trading rights in stock indices, commercial paper, municipal bonds (when introduced), crude oil, plywood, and several other, when designated, contracts. For the most part, the purchaser of an IDEM membership interest was speculating on the successful introduction of either a narrow industry or a broad-based stock index since no stock index future traded on CBOT until the Major Market Index future was introduced in August 1984.[11]

Seats are not sold every day, so seat markets are thin, and bid-ask spreads are large. Month-end bid-ask data are available since October 1979 for full and associate memberships and since October 1982 for the

11. An associate member has the same trading rights as a holder of all three membership interests, a GIM and a COM and an IDEM. However, the total value of the seats of the three specialized memberships has sold recently at a 30%–40% premium (middle of 1984) over the seat price of an associate. This suggests that there are considerable advantages to specialized trading.

TABLE 3 Month-End Bid-Ask Spreads

Type of Membership	Average Ask-Bid ($)	Average Ask-Bid/ Bid	Seat Sales per Month (N)
Full membership*	29,371	.127	6.93
	(19,994)	(.092)	
Associate membership†	12,304	.123	7.31
	(8,686)	(.077)	
GIM‡	6,958	.195	4.16
	(5,172)	(.168)	
COM‡	7,180	.292	5.68
	(5,101)	(.292)	
IDEM§	8,408	.497	5.11
	(11,222)	(.598)	

NOTE.—Standard deviation is in parentheses.

* For 55 months between October 1979 and April 1984

† For 52 months between October 1979 and April 1984 with 3 months excluded because no bid or ask data reported.

‡ For 20 months between October 1982 and April 1984.

§ For 19 months between October 1982 and April 1984; 1 month has been excluded because no bid or ask was reported.

alphabet membership interests. Table 3 shows the mean absolute and relative spreads and the number of seat sales per month for the five membership types. There has been an average spread of $29,000 between the bid and the ask for a full membership. This spread is about 13% of the bid value. The relative spread for an associate seat is about the same. Seat turnover is about the same for full as for associates with about 7 seat sales per month over this period.[12] The new memberships have higher relative spreads and fewer sales per month. The spread averages about 50% of the bid for the IDEM membership, and there is considerable variability around this mean.

There is considerable variability in the absolute and relative daily seat price changes. The mean and the standard deviation of daily price changes were calculated on the assumption that the price of the seat does not change on days when there was no sale. Table 4 shows the mean and standard deviation of the daily change in seat price for each type of membership. These data reveal considerable variability in the daily price change. Plus or minus two standard deviations equals $24,584 (from 1976–84) for a full seat and $13,132 for an associate seat (from 1977–84). In relative terms the standard deviation of the daily percentage change is 3.65 percentage points for a full membership and 3.14 percentage points for an associate membership. Surprisingly, the standard deviation of the percentage changes was smaller from 1976 to 1984 than it was from 1966 to 1975. The standard deviations of the

12. The frequency of full and associate seat sales has increased over time.

TABLE 4 Mean and Standard Deviation of Daily Seat Price Change

Type of Membership	Absolute Change ($)		Percentage Change	
	Mean	Standard Deviation	Mean	Standard Deviation
Full, 1966–84	63	4,335	.125	3.65
Full, 1966–75	44	2,589	.161	4.17
Full, 1976–84	86	6,146	.034	2.91
Associate, 1977–84	17	3,283	.080	3.14
GIM, 1982–84	−35	2,227	.045	4.81
COM, 1982–84	55	1,902	.057	4.42
IDEM, 1982–84	−25	1,817	.042	11.81

percentage change have been larger for the specialized memberships. The large absolute and relative variability implies that the effects of regulatory decisions will have to be large before a statistically significant effect can be attributed to the regulation. Modest effects due to regulation will be difficult to disentangle from the effects caused by other variables.

B. Seat Prices on the CBOT over Time

Figures 1 and 2 show daily seat prices for full and associate seats from September 6, 1979, to May 31, 1984.[13] Full and associate seat prices have fluctuated widely over this period. Full seat prices rose throughout 1980 and reached a high of $330,000 in October 1980, while the associate seat reached a high of $165,000 in May 1981. Thereafter, both prices drifted down until the mid-1982, when the full seat price registered a low of $170,000 in June and the associate seat price hit a low of $62,000 in July. Full seat prices begin to recover by mid-1982 and continued to drift upward until mid-1984, but the associate seat price did not recover. Figure 3 shows the ratio of associate to full seat prices and indicates that the associate seat price has declined relative to the full seat price since November or December 1981.

The decline in associate seat price relative to the full seat price is in some ways surprising. The level of membership seat prices will be related, if in an imperfect way, to expected future volume. The price of an associate seat should be related to expected future volume in financial futures, while the price of a full seat should be related to the expected future total volume. Table 5 shows total contract volume in agricultural futures and contract volume in financial futures since 1979. Column 3 shows that the ratio of financial to agricultural contracts traded has increased dramatically. In the first 5 months of 1984 there

13. The horizontal segments in each series are due to the assumption of no price change on days with no seat sale.

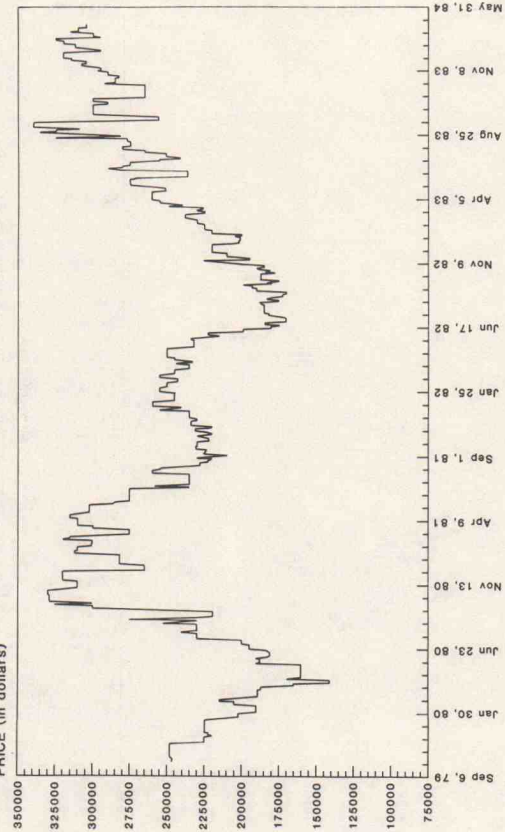

FIG. 1.—CBOT full membership seat prices, October 1979–April 1984

FIG. 2.—CBOT associate membership seat prices, October 1979–April 1984

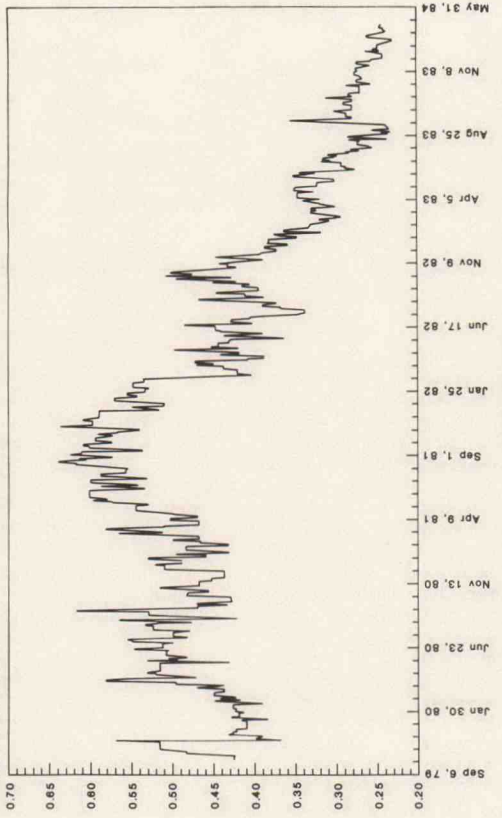

FIG. 3.—Ratio of CBOT associate membership to full membership seat prices, October 1979–April 1984

TABLE 5 Volume of Contracts Traded on the CBOT

Year	Agricultural Commodities* (1,000) (1)	Financial Futures† (1,000) (2)	Ratio of Column 2 to Column 1 (3)
1979	27,091	3,431	.127
1980	35,630	8,815	.247
1981	31,764	16,201	.510
1982	26,979	19,795	.734
1983	37,223	23,722	.637
1984 (5 months)	15,004	15,076	1.005

* Wheat, corn, soybeans, soybean oil, and soybean meal.

† Treasury bonds, GNMA collateral depository receipt, 10-year notes, and options on Treasury bond futures.

was a near parity in trading, while 5 years ago financial futures volume was only 13% of agricultural futures volume.

If financial futures volume has been growing relative to commodity volume, why has the price of an associate seat decreased relative to the price of a full seat? While financial futures volume has grown rapidly, the growth may have been anticipated. Schwert's study of seat prices on the NYSE and the ASE shows that seat prices change when new information about future volume appears (Schwert 1977). The seat price at any point in time reflects the present value of expected future commissions. Expected future commissions depend on expected future volume. Seat prices change when expected volume is revised upward or downward on the basis of new information. One interpretation of the decline in the price of the associate seat from the high in May 1981 is a downward revision in expected future volume of financial futures. The subsequent decline in the associate seat price during the first half of 1982 could be due to continuing downward revisions in expected volume in financial futures. Financial futures volume grew less rapidly during the first half of 1982 relative to the past growth rate. On the other hand, the rapid growth in the volume of financial futures during the first 5 months of 1984 did not produce a rise in the associate seat price. The decline in the relative price of associate seats since the end of 1981 suggests that there was relatively more "bad" new information about expected volume of financial futures than about the volume of agricultural futures. Certainly, the relative decline from September 1981 to June 1982 indicates more disappointments about future volume of financial than of agricultural futures. The rise in the full seat price since June 1982 could be due to the rapid recovery of agricultural futures volume between 1982 and 1983. However, the continued stability of associate seat price throughout the first 5 months of 1984, when financial futures volume outstripped the growth in agricultural futures volume, suggests that other factors are at work.

Concentration on trends in actual futures volume can be misleading. Major regulatory and court decisions can determine whether, where, and what futures instruments are introduced as well as what competing instruments are traded on other exchanges. Consider two examples. (1) The CBOT has petitioned the CFTC to trade industry stock indices. These contracts have never been approved. (2) The CBOT had planned to trade futures on a Dow-Jones Index and was thwarted by the Illinois courts. In each example, the seat price could have increased even before the date when the new contract was expected to be introduced because of the expected rise in future volume. A regulatory delay or an adverse court decision could lower the price of the seat because expected future volume would then be projected lower. Past volume data cannot be used to measure the increase or the subsequent decrease in expected volume because the contracts have never been introduced or traded. In contrast, the long statistical history of corn or wheat volume can be used to develop a prediction of future volume. A reasonable case can be made that the difference between actual and predicted volume is a measure of new information. Regression methods can determine if this new information explains the change in seat prices. This standard operating procedure cannot be employed when new contracts are proposed but never traded. A history of trading volume never emerges. This is a serious deficiency and can only be corrected imperfectly. The dates of important regulatory or court decisions can be identified, and the reaction in terms of seat prices on, just before, and just after these dates can be examined to see if seat prices change on or around these regulatory dates. This procedure is used below to identify the effects of major regulatory events.

C. Selected Important Regulatory or Judicial Events

A canvass of important CFTC and SEC regulations and conversations with individuals familiar with the industry indicated several regulatory decisions had the potential of affecting seat prices. Three events have been singled out for illustration.

1. *Injunction against the opening of the CBOE options market (November 4, 1981).* On February 25, 1981, the SEC granted permission to the CBOE to trade options on GNMAs. This decision capped a running controversy between the CFTC, futures exchanges, and the SEC. The futures exchanges interpreted the Congressional mandate to the CFTC as including options on all instruments traded on a futures market. The SEC advanced a different interpretation. On the ground that a GNMA instrument is a security (although an exempt security), it ruled that any option on a GNMA contract was within its jurisdiction. On February 26, the *Wall Street Journal* reported that the CBOT and the CME were considering a legal challenge to the SEC ruling. The issue was joined on October 15 when the CBOT asked for an injunction

TABLE 6 **Membership Seat Prices ($1,000), September–November 1981: Injunction-Prohibiting Options on the CBOE**

	Exchange			
			CBOT	
Date (1981)	CBOE	CME	Full	Associate
September 16	...	225	...	...
September 28	...	...	...	132
October 2	...	...	222	...
October 8	158	...	222.5	...
October 9	160	...	...	...
October 12	...	...	219	...
			226	
October 14	...	...	230	...
October 15*	148.5	...	220	130
October 20	...	...	...	125
October 22	...	225	223	...
October 26†	...	...	231	...
October 27	158	...	...	...
	160			
October 29	...	...	222.5	140
October 30	165	...	235	...
			220	
November 4‡	...	...	234	...
November 9	161	...	...	...
November 12	...	225	...	...
November 13	155	...	...	...
November 17	...	...	230	...
November 18	...	...	...	138.5
November 19	...	245	...	...
November 20	...	245	235	...
November 24	155	...	...	...

* The CBOE asks for an injunction.
† The U.S. court of appeals temporarily prevents the CBOE from trading options on GNMAs.
‡ The U.S. court of appeals continues the injunction.

to prevent the CBOE from trading options on GNMAs. The U.S. court of appeals granted a temporary injunction on October 26, 1981, and then continued the injunction barring trading on November 4, 1981.

Table 6 shows daily seat prices for four memberships on three exchanges, the CBOE, the CME, and the CBOT, from September to November 1981. The CBOT asked for an injunction on October 15. Between October 9 and October 15 the seat price on the CBOE fell by $11,500. This decrease was comparatively large since the standard deviation of daily price changes on the CBOE in 1981 was $3,361.[14] Because there were 4 trading days between October 9 and October 15, the standard deviation of successive price changes over 4 days would be $6,722 if price changes are independent. The actual decline was 1.7

14. On days when a seat was not sold the price was assumed not to have changed.

times the standard deviation. This evidence suggests that the legal action by the CBOT probably was responsible for the decline in the CBOE seat price. Declines of this magnitude are infrequent (see App.). On the other hand, there was no large price change in the associate seat, the seat more directly affected by the decision. So the evidence is not clear-cut. The U.S. court of appeals decision on October 26 to grant a temporary injunction was followed by a $15,000 rise in the associate seat from $125,000 on October 20 to $140,000 on October 29 (a 12% increase) and a $9,660 increase (a 6.5% increase) in the CBOE seat price. The increase for the associate seat is 1.7 times as large as the standard deviation of daily seat price changes over 4 trading days, while the increase for the CBOE seat over 8 trading days is about as large as 1 standard deviation. So the increase in the associate seat does appear to be relatively large, while the increase for the CBOE is within the range of past changes. Once the injunction was continued on November 4, 1981, there were no further unusually large changes in seat prices. In review, seat price changes suggest that the CBOT judicial victory probably raised associate seat prices on the CBOT (by around 12%) and lowered the seat price on CBOE (by about 7%). However, the statistical evidence, while suggestive, is only marginally significant, and the delayed response of the associate seat price is disturbing.

2. *Announcement of the Shad-Johnson Accord by the CFTC and the SEC (December 7, 1981).* The jurisdictional conflict between the CFTC and the SEC had been smoldering for several years. During the 1978 reauthorization hearings, the SEC had proposed to Congress but did not obtain an extension of its authority. As noted above, it attempted to expand its authority in early 1981 by claiming jurisdiction over options on GNMAs. This move was successfully challenged by the CBOT in the courts. Even while the CBOT obtained an injunction, negotiations between the CFTC and the SEC were proceeding to resolve the conflict. An accord was reached and announced on December 7, 1981. Under the accord, the CFTC relinquished its claim of exclusive jurisdiction over options on any exempt security, certificate of deposit, stock index, or currency; retained jurisdiction over all futures contracts (including futures on exempt securities) and over all options on such futures; could approve futures trading on stock indices or groups, providing certain approval criteria were satisfied; promised not to approve futures on any municipal securities; and retained exchange jurisdiction over options on foreign currencies traded on commodity exchanges. Under the accord a stock index application (*a*) would provide for cash settlement, (*b*) would not be readily susceptible to manipulation, and (*c*) would be composed of a substantial segment of the equity market. The accord gave the SEC jurisdiction over options on

the underlying instrument, while the CFTC retained jurisdiction over futures and options on futures. Hence the accord was in conflict with the injunction issued by the U.S. court of appeals. In addition the accord granted the CFTC authority over broad-based stock index futures, but the SEC received considerable authority over narrow industry indices.

While the accord was announced on December 7, 1981, the negotiations had been proceeding for 5 months (Cohen 1981*b*). There is the possibility that some aspects of the accord had already leaked out. The accord appeared to harm the CBOT most because it reversed and was in conflict with the recently won injunction preventing the trading of options on the CBOE and because it raised questions about the fate of the CBOT industry applications before the CFTC. These applications would now be further delayed or modified or rejected (Cohen 1981*a*). Furthermore, options on Treasury bond futures or other government securities trading on the CBOT would now face competition from options on the underlying government security traded on other SEC-regulated exchanges. The CBOE was pleased with the accord because it now appeared that it could offer options on government securities. The CME appeared to benefit because the accord increased the chances of successfully introducing the broad-based Standard and Poors 500 index. The accord resolved numerous uncertainties and would appear to be a major regulatory decision.

Table 7 shows daily seat prices from November 4 to December 30, 1981. Between December 2 and December 10, the CBOE seat price rose by $15,000 or 9.4%. The Appendix shows that increases of this magnitude occur infrequently. On the CME the seat price rose by $40,000 or 15.4% between November 25 and December 9. On the CBOT the full price rose by $20,000 from November 20 to December 9, while the associate price fell by $6,500 from November 19 to December 9. The absence of any sales of full or associate seats during late November and early December complicates the problem of drawing inferences. The changes in the full and the associate seat prices are not significant changes, given the day-to-day variance on seat prices and the 12- and 15-day intervals between successive sales of the full and the associate seats.[15] The changes in the seat price on the CBOE and the CME are 1.8 and 2.0 of the respective standard deviations of the day-to-day changes in seat prices.[16] The results of these tests present a mixed picture. The accord is thought by many industry observers to be

15. The change in seat price divided by standard deviation of seat price changes is 1.3 for the full seat (12 trading days) and $-.6$ for the associate seat (15 trading days). So these seat price changes were not unusually large.

16. The standard deviation of day-to-day seat price changes is $3,361 for the CBOE and $6,640 for the CME during 1981. The standard deviation of price changes over n days is $n^{1/2}$ times larger, assuming independent daily changes.

TABLE 7 **Membership Seat Prices ($1,000), November–December 1981: Shad-Johnson Accord**

	Exchange			
			CBOT	
Date (1981)	CBOE	CME	Full	Associate
November 12	...	225	...	...
November 13	155	...	...	...
November 17	...	...	230	...
November 18	...	...	...	138.5
November 19	...	245	...	...
November 20	...	245	235	...
November 24	155	...	...	...
November 25	...	260	...	...
December 2	160	...	...	...
December 7*	...	...	235	...
December 9	...	300	240 255	131.5
December 10	175	...	...	...
December 14	...	300	249	132.5
December 15	...	...	241	...
December 18	...	...	260	...
December 21	180	...	260	...
December 29	...	320	...	139.9
December 30	...	...	245	...

* SEC-CFTC accord.

an important regulatory event. The response of seat prices does not paint such a picture. The effects of the accord on seat prices on the CBOT were not unusually large. This could mean that the possibility of successfully introducing the narrow industry indices was already thought to be low or that there could have been some leak of information prior to the public announcement. The relatively large increases in the seat prices on the CBOE and the CME do, however, suggest that the accord did have a significant effect on seat prices and that complete information was not leaked.

3. *Announcement of Shad-Phillips numerical stock index guidelines (January 19, 1984).* On January 19, 1984, the CFTC and the SEC published suggested numerical guidelines for narrow industry indices. These guidelines specified the minimum conditions for the industry indices. Minimum conditions were placed on the number of stocks (25), total capitalization ($75 billion), and relative weights (no stock could account for more than 25%). These guidelines followed a running disagreement between the CFTC and the SEC over several applications, for example, the CME energy index. The guidelines were applicable to nondiversified or industry-specific indices. With the announcement of the numerical guidelines, the industry applications of the

TABLE 8 **Specialized Membership Seat Prices ($1,000) January 1981: Numerical Stock Index Guidelines**

	Membership								
	IDEM			GIM			COM		
Date (1984)	Bid	Price	Ask	Bid	Price	Ask	Bid	Price	Ask
January 4	16	...	20	35	...	40	48.1	50 48.15	51
January 5	16	...	20	35	...	39	48.1	50 51	57
January 6	16	...	20	36	...	39	48.1	...	55
January 9	16	...	20	35	37	40	47	48.1	54
January 10	16	16.5	20	35	36	40	47	...	54
January 11	16	...	20	35	...	39	47	...	54
January 12	16.3	...	20	35.5	...	39	47	49	52.5
January 13	16.3	17.5	25	36.5	...	39	47.5	47.5	52.5
January 16	16.3	...	23.5	36.5	...	39	47.5	...	52.5
January 17	19.2	20	23.5	37	...	39	47.5	47.5	52.5
January 18	14.5	...	23.5	37	39	39	47	...	52.5
January 19*	14.5	19.2 17.6 15.35	23.5	36	39	41	42	...	52.5
January 20	14.5	...	20.0	36	39	41	47.5	47.5	52.5
January 23	17.6	15	19.5	36	...	41	47.5	...	52.5
January 24	17	17.6	19	36	...	41	42.5	47 48 47.5	52.5
January 25	17	...	19	36	...	41	42.5	...	52.5
January 26	17	...	19	36	...	41	42.5	...	52.5
January 27	17	...	19.3	34	...	41	42.5	...	52.5
January 30	17.1	19	19.3	34	...	40.5	42.5	...	52.4
January 31	17.1	...	19.3	34	...	39.5	42.5	...	52.4
February 1	17.1	19.3	17.8	34	...	39.5	42.5	...	52.5

* The numerical guidelines are announced.

CBOT, which were originally submitted in February 1981, were once again cast in doubt.

Table 8 shows the bid and ask seat prices for the IDEM, GIM, and COM membership interests from January 4 to February 1, 1984. On January 19, sales of IDEM interests were reported at progressively lower prices.[17] The first sale was at $19,200, the second at $17,600, and the third at $15,350. Between January 17 and January 23 the IDEM price fell by $5,000.[18] The bid decreased by $1,600 and the ask by $4,000. The GIM and COM membership interests show no unusual changes over this same period. The decline of $3,850 (from $19,200 to $15,350) in the IDEM seat price on January 19, 1984, is 2.1 times the

17. These sales could have been made on either January 18 or January 19. If they were made on January 18, the information on the numerical guidelines probably had become public information on January 18.

18. The sale at $15,000 was reported on January 23 but could have been made on January 20 since the closing bid was $14,500 on January 20 and $17,600 on January 23.

standard deviation of day-to-day changes in IDEM seat prices from June 1982 to May 1984. The $5,000 decline between January 17 and January 23 is 1.4 times the standard deviation of price changes over a 4-day trading period and 1.6 times the standard deviation over 3 trading days. This evidence does suggest that the adoption of numerical guidelines was interpreted as lowering the probability of successfully introducing industry indices. It should be noted the seat price subsequently recovered so that the IDEM seat price actually increased from the end of December 1983 to the end of January 1984. The Appendix shows that the decline of $4,650 between January 17 and January 19, 1984, is unusually large even when all days without seat sales are eliminated.

D. Summary

These events are not a random sample of all regulatory events. They were selected because they were thought by industry observers to be of some importance. Daily seat price changes around these event days were, however, not always large. The injunction against the opening of the CBOE option market lowered seat prices on the CBOE and raised the associate seat price on the CBOT. The Shad-Johnson Accord was the probable cause of the higher seat prices on the CBOE and on the CME. This conclusion must be qualified, however, because the accord did not cause a statistically significant drop in the CBOT associate seat price. The Shad-Phillips numerical guidelines announcement gives the clearest evidence and appears responsible for the abrupt drop in the IDEM price. The direction and magnitude of these seat price changes suggest that the public conflict between the CFTC and the SEC was not about trifles.

A number of qualifications to these tentative conclusions need to be stated. First, a change in seat price can only be said to large or small against some standard. In this case the standard had been the standard deviation of day-to-day price changes. What standard deviation is appropriate can be a matter of debate. The standard deviation used included all days and treated a day without a sale as a no-change observation. This practice of including no-trade days reduces the standard deviation. If the no-trade days are excluded, the standard deviation of seat price changes would be larger, and a different assessment might be reached. However, the Appendix confirms that seat price changes around these regulatory events were relatively large even when days without a seat sale are excluded.

The price changes around regulatory or judicial events have been attributed to the regulatory or judicial decision. A more comprehensive analysis should take account of seat price changes caused by unanticipated volume. A study of the change in monthly seat prices was conducted but proved to be unsuccessful. After including several variables

for unexpected volume, only a little more than a tenth of the variance in month-to-month seat price changes could be explained. Dummy variables were used to identify months with important regulatory changes. The coefficients of these regulatory dummy variables were seldom statistically significant and in some cases were significant but had the wrong sign. Within each month other random effects occurred that were sufficiently numerous and important to swamp or offset the effects of regulation. Even a cursory examination of the months in which important regulatory events occurred shows considerable price variability both before and after the regulatory event. For example, even though the Shad-Phillips announcement of numerical guidelines reduced the IDEM seat price by $5,000 from January 17 to January 23, the IDEM seat price rose over the whole month of January. Hence a regulatory dummy variable for the month of January 1984 would have a positive, not a negative, coefficient unless the other reasons for a monthly rise in the seat price could be accounted for. Unfortunately, separate variables for unexpected monthly volume in each of the wheat, corn, soybeans, Treasury bonds, and GNMAs contracts only explained a small fraction of the change in monthly seat prices. Consequently, the analysis of month-to-month changes in seat prices failed to identify regulatory effects.

IV. Conclusions

Votes cast on proposed bills affecting futures markets can be analyzed to identify the supporters and the opponents of futures trading and futures exchanges. Over the last 60 years farmers have been neither successful nor united in prohibiting futures trading. While there was opposition, it was located primarily in the Great Plains states. More recently, votes on futures market legislation indicate that the opposition to futures markets by farmers in the Great Plains states has moderated over time. As a political force, farmers have been successful in banning futures trading in only one market, the onion market. This general failure is explained in part by the disagreement among the different groups of farmers over the desirability of futures markets.

The reasons for the early opposition and for the subsequent decline have been and remain a puzzle to most economists. A plausible though untested speculation is that farmers have become better educated and have a better appreciation and understanding of the role of futures markets. While this sounds like a plausible hypothesis, it is not entirely convincing. Farmers in some states supported futures trading in the 1920s and the 1930s, when a majority of farmers were less well educated. To be entirely convincing, one would need to show that a greater increase in educational attainment had occurred over time in

the Great Plains states than elsewhere and that this increase lead to the moderation in opposition throughout the Great Plains states.

The long-term decline in farm opposition to futures markets and the spectacular growth of the financial futures segment of the industry indicates the political stature of the futures industry as a whole is on a more secure footing today than it has been at any time in the last 60 years. Legislation to ban futures trading was offered in the 1920s, but for such legislation to reach the floor of the House or the Senate today would take a minor miracle. Future political conflicts are more likely to involve how the political process can be used to the benefit of one exchange over another. Conflicts are more likely to be between futures exchanges or between futures exchanges and securities and option exchanges.

Section III examined how the CFTC-SEC jurisdictional conflict affected seat prices on the CBOT, the CME, and the CBOE. One method of judging the economic importance of this conflict was the response, if any, of seat prices to decisions surrounding this conflict. The evidence is most clear in the case of the Shad-Phillips numerical guidelines announcement. This announcement was followed by an immediate decline of $3,850 in the IDEM seat price within a day of the announcement; the bid declined just before the announcement, and the ask declined just after the announcement. The CBOT suit prohibiting the trading of options on the CBOE and the CFTC-SEC accord offer less compelling evidence. In both of these cases seat prices did react to the decision or court ruling, but with a delay. Seats were sold not on the day of the announcement but several days later. However, when the respective seats were sold, the change in seat values was usually in the expected direction and often was relatively large. The decisions by the CFTC and the SEC have had statistically significant effects on the seat prices on the respective exchanges. The evidence suggests that the CFTC-SEC accord and the subsequent regulatory decisions derived from this accord have probably raised seat prices on the CBOE and lowered the seat values on the CBOT.

Appendix

The distribution of daily seat price changes on the CBOE in 1981 is shown in table A1. Separate distributions are shown by days between seat sales. Days without a sale are excluded. The distribution is single peaked around zero, shows signs of kurtosis, and is fat tailed. Event days are October 15, 27, and 30 and December 10. Seat prices changes on event days are also excluded. The standard deviation of all price changes is $6,587, and the standard deviation when there was an interval of 4 or more days between sales is $6,436. The near equality of these two standard deviations implies very little or no new information arrives on days when no seat sale occurs.

TABLE A1 Distribution of Seat Price Changes on the CBOE, 1981

Change in Seat Price ($1,000)	Number of Days between Seat Sales				
	1	2	3	4 or More	All Days Combined
Decline greater than 12.0	1	...	...	...	1
−10.0–−11.99	...	1	...	1	2
−8.0–9.99	...	...	...	2	2
−6.0–−7.99	...	...	1	1	2
−4.0–−5.99	1	1	1	2	5
−2.0–−3.99	2	1	1	1	5
−0.1–−1.99	...	...	1	3	4
0–1.99	3	1	2	3	9
2.0–3.99	1	2	...	4	7
4.0–5.99	1	3	1	3	8
6.0–7.99	1	...	1	...	2
8.0–9.99	3	...	1	1	5
10.0–11.99				1	1
Increase greater than 12.0	...	1	...	1	2
Total	13	10	9	23	55

NOTE.—(1) All seat sales (excludes sales on October 15, 27, and 30 and December 10): standard deviation = $6,587; semiinterquartile range = $3,872; (2) four or more days between seat sales: standard deviation = $6,436; semiinterquartile range = $5,000.

The CBOT asked for an injunction on October 15, 1981. The decline of $9,500 in the CBOE seat price between October 9 and October 15 was exceeded only 3 times during 1981 or in 5.5% of all seat price changes even though it is only 1.4 times the standard deviation of all seat price changes in 1981.

The distribution of seat price changes for an associate membership in 1981 is shown in table A2. Days without a sale are excluded, as are the event days of October 14 and 29, November 11, and December 10. The standard deviation of seat price changes when there was an interval of 4 or more days between sales is $10,892. The standard deviation of associate seat price changes does appear to increase with the number of days between sales. The $15,000 increase in the associate seat price between October 20 and October 29 was in the upper tail of the distribution of price changes in 1981. Only one of the 55 price changes (2%) was larger. If the comparison is with price changes occurring over 4 or more days, the $15,000 increase was exceeded once among 30 price changes (3%). Hence the granting of the temporary injunction appears to have caused a significant rise in the associate seat price.

The Shad-Johnson Accord was announced on December 7, 1981. The CBOE seat price rose by $15,000 between December 2 and December 10. This increase is 2.3 times the standard deviation of all seat price changes in 1981. This increase was so large that it was large relative to the standard deviation of all price changes and was in the extreme upper tail. If this increase was due to the Shad-Johnson Accord, it occurred with a delay of 2 days (there were 2 trading days between December 7 and December 10).

The distribution of seat price changes for IDEM membership between January 1983 and August 1984 is shown in table A3. Days without a sale are

TABLE A2 Distribution of Changes in Seat Price for Associate Membership by Days between Sales, 1981*

Change in Seat Price ($1,000)	Number of Days between Seat Sales				
	1	2	3	4 or More	All Days Combined
Less than −18	...	...	...	3	3
−16–−17.999	...	...	...	2	2
−14–−15.999	...	...	...	1	1
−12–−13.999	...	...	...	...	...
−10–−11.999	...	...	...	...	...
−8–−9.999	1	...	...	3	4
−6–−7.999	2	...	...	1	3
−4–−5.999	...	2	2	3	7
−2–−3.999	1	...	...	2	3
−.001–−1.999	...	...	1	1	2
0–2.999	3	2	1	2	8
2–3.999	2	...	...	...	2
4–5.999	...	1	1	3	5
6–7.999	...	2	1	2	5
8–9.999	...	...	...	...	...
10–11.999	...	1	...	4	5
12–13.999	...	1	...	2	3
14–15.999	...	...	1	...	1
16–17.999	...	...	...	...	...
Greater than 18	...	...	...	...	...
Total	9	9	7	30	55

NOTE.—(1) All seat sales (excluding seat sales on October 15 and 29, November 18, and December 9): standard deviation = $9,024; semiinterquartile range = $5,750; (2) four or more days between seat sales: standard deviation = $10,892; semiinterquartile range = $8,200.

* Sales on event days are excluded (October 15 and 29, November 18, and December 9).

excluded. The distribution is single peaked around zero, and shows signs of kurtosis, and is fat tailed. Excluding the observation on January 19, 1984, the standard deviation of the changes is $3,264, while the semiinterquartile range is $1,500. Because the previous sale was on January 17, 2 trading days separated the two transactions and it would be useful to compare this 2-day change with all 2-trading-day changes. The distribution of all 2-day changes is also shown in table A3. The numerical guidelines were announced on January 19, 1984. The decrease in the IDEM seat price of $4,650 between January 17 and January 19 is the third largest decline among all 24 2-day changes. It is the seventh largest decline out of all 195 seat price changes between January 1983 and August 1984. Therefore 8.3% of all 2-day changes represented larger declines. Slightly more than 5% of all seat price changes represented larger declines even though a decrease of $4,650 is only 1.4% of the standard deviation of all seat price changes. With fat-tailed distributions the standard deviation is inflated.

TABLE A3 Distribution of Changes in IDEM Price by Days between Sales, January 1983–August 1984

Change in Seat Price ($1,000)	Number of Days between Seat Sales				
	1	2	3	4 or More	All Days Combined
Less than 5.99	1	1	...	2	4
−5.99–−5.00	1	1	...	...	2
−4.99–−4.00	...	1*	...	1	2†
−3.99–−3.00	1		...	4	5
−2.99–−2.00	...	2	3	3	8
−1.99–−1.00	2	1	2	3	8
−.99–.01	5	5	5	4	19
0–.99	9	3	3	8	23
1.0–1.99	7	3	1	8	19
2.0–2.99	3	4	...	...	7
3.0–3.99	...	2	...	1	3
4.0–4.99	...	1	...	1	2
5.0–5.99	...	...	...	1	1
Greater than 6.0	1	...	...	1	2
Total	30	24	14	37	105

NOTE.—(1) Two days between seat sales (excluding seat sale on January 19, 1984): standard deviation = $3,200; semiinterquartile range = $1,700; (2) all seat sales (excluding seat sales on January 19, 1984); standard deviation = $3,264; semiinterquartile range = $1,500.

* Decline of $4,650 between January 17 and January 19, 1984.

† Decline from January 17–January 19, 1984, is larger than the decline for other observation in this class.

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