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Staff Paper

SOME COMMENTS ON PROPOSED CHANGES IN DELIVERY SPECIFICATIONS FOR CBOT CORN AND SOYBEAN CONTRACTS

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1. Introduction

Considerable concern has been expressed in recent years about delivery specifications for Chicago Board of Trade (CBOT) corn and soybean futures contracts. Delivery specifications determine what cash price the futures price can be expected to converge to at expiration, what basis relationships can be expected to occur, and the degree of hedging effectiveness for different market participants. Delivery specifications also influence how well the markets perform, the liquidity they provide, and determine (at least to some extent) the potential for price manipulation. Delivery specifications therefore have a significant impact on the operation of futures markets, and of the entire grain production and distribution system.

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2. The Importance of Futures Markets

Futures markets for corn and soybeans are extremely important mechanisms for price discovery and risk management. Prices discovered on futures markets are used to guide pricing structures throughout the entire domestic marketing channel. This means that delivery specifications, and the performance of these markets, is not just an issue for CBOT members and traders making direct use of futures. Futures price determination affects the entire grain sector from producer, to handler, to processor, to final consumer, and the markets must perform well for all of these participants.

Corn and soybean futures market performance is particularly important to the state of Michigan. Michigan is a net exporter of grain and supplies livestock feeding operations in the East and Southeast. Corn and soybeans constitute two of Michigan's most important field crops and each contributes significantly to state and local economies. Michigan grain producers, handlers, and processors therefore have a big stake in the performance of grain futures markets. Price discovery in these markets influences the entire pricing structure and hedging effectiveness for Michigan producers and traders.

3. An Outline of the Problem

For many years, CBOT corn and soybean futures contract specifications allowed delivery by warehouse receipt in Chicago only. However, the general decline of Chicago as a major commercial center for cash grain trading has led to a reduction in local warehouse space and usage, and a diminished relevance of the Chicago price for the majority of those engaged in the grain trade. In response to these concerns, Toledo was added as an alternative delivery point for corn in 1976 (at a 4 cent per bushel discount), and for soybeans in 1979 (at an 8 cent per bushel discount). St. Louis was also added as another alternative delivery point for corn, but the price premium has never been large enough to encourage significant deliveries there. The choice among alternative delivery locations is purely at the discretion of the seller.

Toledo was added as an alternative delivery location to act as a "safety valve"—the discount was set at a level that would encourage delivery in Chicago under normal conditions, but allow delivery in Toledo if a local supply disruption, or attempt at price manipulation, caused the Chicago price to rise above a level generally reflective of supply and demand conditions in the country as a whole. In these cases, Toledo would become the cheapest delivery location and futures prices would converge to the Toledo price.

Studies by Peck and Williams (1991), and by Pirrong, Kormendi, and Meguire (1994), suggest that Toledo has performed this "safety valve" role fairly well. Data summarized in Peck and Williams (1991) show that deliveries of corn and soybeans in Toledo are typically a small proportion of total deliveries (less than 5%) for most contracts, but that there are occasional contracts in which Toledo takes the majority of deliveries (more than 75%). This is exactly the pattern that might be expected to exist if Toledo is acting as a "safety valve." Furthermore, Pirrong, Kormendi and Meguire (1994) have provided evidence that the Toledo delivery option has made corn and soybean futures prices more reflective of general supply and demand conditions in the country as a whole, thereby increasing hedging effectiveness for the majority of market participants.

Despite the evidence that futures market performance and hedging effectiveness have generally improved for corn and soybeans since the addition of Toledo as an alternate delivery point, problems still remain. The decline of cash trading in Chicago is indicative of declines in most Great Lakes commercial grain centers, and of the diminished role of Great Lakes ports in grain exports. The majority of exports now flow through Gulf Ports via Mississippi barge traffic, and exports have (and will continue to) become a more important determinant of marginal grain prices in the U.S. Hence, there is continued concern about the ability of Chicago and Toledo prices to effectively represent system-wide supply and demand conditions corn and soybeans in the country as a whole. In particular there are four main potential problems with the current Chicago/Toledo/St. Louis delivery points.

- Price Manipulation. Declining warehouse space and local grain availability at the delivery locations, particularly Chicago, can make it easier to corner and squeeze the markets. This is especially true when there is concentration in warehouse and storage ownership. Any local disruption in supplies can have a major impact on local prices, which then transfers to futures and therefore impacts the entire domestic pricing structure.
- Reduction in Pricing Efficiency. If the futures price is linked (through delivery) to cash prices in locations that have limited relevance to the majority of system-wide participants, then the futures markets will presumably become less relevant to commercial users. Furthermore, to the extent that domestic pricing structures are based on prices discovered on futures markets, then local disruptions in supply or demand at the (relatively small) delivery markets will influence prices throughout the entire system, even if general system-wide supply and demand conditions have changed very little. This may introduce unnecessary "noise" right throughout the grain pricing system. Interest in trading such futures may wane so that liquidity falls and the markets become less viable.
- Reduction in Hedging Effectiveness. If futures prices are linked (through delivery) to cash prices that are increasingly of less relevance to the majority of commercial users, then local supply or demand disruptions at the delivery locations, which are not reflective of general system-wide conditions, will introduce "noise" into the basis. This can reduce hedging effectiveness for the majority of participants.
- Higher Arbitrage Costs. Efficient convergence of futures and cash prices relies on arbitrage (or, more specifically, the absence of arbitrage profits). Multiple delivery locations may increase the difficulty and cost of effective arbitrage, thereby leading to less efficient convergence and "noisier" futures prices.

The CBOT and Commodity Futures Trading Commission (CFTC) should be applauded for taking a close look at this issue and trying to improve the delivery specifications on these important futures contracts.

3. Concerns About Using the Illinois Waterway Delivery System

The current CBOT proposal to extend delivery locations from Chicago to include the northern Illinois waterway from Burns Harbor to Pekin (with no price discounts or premiums) has considerable merit. In particular, there are four key advantages.

First, the quantity of corn and beans moving through the Illinois Waterway Delivery System (IWDS) is large, approximately 5 times larger than flows through Chicago and Toledo for

corn, and more than 2 times larger for soybeans. This will make it more difficult to control physical deliverable supplies in order to manipulate prices.

Second, allowing delivery to be satisfied with 30-day shipping certificates eliminates the need for extensive storage facilities and should allow "delivery" to be accommodated fairly smoothly based on regional grain availability rather than warehouse stocks. Again, this will make it more difficult to manipulate prices by controlling deliverable supplies.

Third, the IWDS is a relatively homogeneous region whose grain output can serve both domestic and export needs. Exports from the region typically flow through Gulf Ports, the main commercial export center for corn and soybeans. This makes pricing relatively transparent and generally more representative of system-wide supply and demand conditions.

Nevertheless, use of the IWDS raises some concerns as well. In particular, four main issues need to be addressed.

- Concentration in Elevator and Barge Ownership. There appears to be some concentration in ownership of barge line and delivery facilities along the IWDS. According to one unpublished commentary, one facility owner supplies approximately 50% of the barge freight on the Illinois River, and two others supply a substantial proportion of remaining barge supplies. This causes a concern about the potential for price manipulation.
- Transportation Disruptions. A river freeze or barge shortage could shock IWDS prices (and, therefore, the futures prices), even when general supply and demand conditions in the country as a whole do not reflect shortage.
- Lack of Price Discounts or Premiums. Lack of price discounts or premiums will mean that delivery will presumably take place at the cheapest delivery location along the river at which deliverable supplies can be shipped. This may add some volatility and noise to the system and make it difficult to determine what "price" the future is converging to.
- Futures on Forwards. Since delivery can be satisfied with 30-day shipping certificates the underlying asset which the future is written on would appear to be essentially a forward contract rather than the physical commodity. It is not clear what effect this will have on futures price convergence.

Despite the inherent advantages of the IWDS there are clearly some concerns that need to be addressed before it is implemented in practice.

4. Concerns About Elimination of Toledo as an Alternative Delivery Location

In addition to extending delivery beyond Chicago to the IWDS, the CBOT proposal calls for the elimination of Toledo as an alternative delivery location. The advantages of eliminating Toledo would presumably be to increase pricing transparency and eliminate the effect of the Toledo delivery option on futures prices. Eliminating the effect of the Toledo delivery option on futures prices would presumably make the futures price follow IWDS cash prices more closely than it would otherwise. The advantage, presumably, would be to increase futures price transparency and lower arbitrage costs, leading to more efficient and predictable price convergence.

Concerns have been expressed that eliminating Toledo as a delivery point would significantly reduce total trading volume through Toledo, and hamper commercial grain trade in the eastern corn belt. This seems unlikely to be true. Delivery on futures makes up a small proportion of total trade in most years. Furthermore, grain that was previously used to satisfy futures delivery in the past would mostly still be marketed through Toledo (or other normal channels), rather than now being delivered to Chicago. If Toledo is a viable commercial grain trading center then it should be able to stand on its own without futures deliveries. Uncertainty about how the new futures delivery specifications will affect futures price movements and basis relationships may disrupt the markets initially, but presumably this would be a short-run phenomenon.

Nevertheless, there are other legitimate concerns about eliminating Toledo as an alternative delivery point.

- Increased Potential for Price Manipulation. Without Toledo to act as a “safety valve” there may be increased potential for price manipulation via control of IWDS throughput or transportation facilities. This would have detrimental effects on the entire grain marketing system.
- Decreased Hedging Effectiveness for Eastern Corn Belt Traders. Without the influence of the Toledo delivery option on futures price determination, futures prices will presumably be more closely linked to IWDS pricing and less closely linked to Toledo prices. This may reduce hedging effectiveness in Toledo and the eastern corn belt, while correspondingly increasing hedging effectiveness in and around the IWDS.
- Decreased Hedging Effectiveness for All Traders Operating Outside the IWDS. Without the Toledo delivery option, futures prices will be linked solely to IWDS pricing. Any transportation disruption, or other shock to local supply and demand conditions in the IWDS, will be directly transmitted to futures prices, *even if these changes do not reflect system-wide supply and demand fundamentals for the entire country.* This could potentially reduce hedging effectiveness in the entire system (outside the IWDS).

- *Increased Futures Price and Basis Volatility.* Another way of thinking about the potential for reduced hedging effectiveness is to think about effects on futures price and basis determination. Without Toledo as a delivery option local supply or demand disruptions in the IWDS that do not reflect general system wide supply and demand conditions would add volatility to futures prices and the basis at a wide range of delivery locations, which is the source of the potential decrease in system wide hedging effectiveness. Allowing Toledo delivery can help ensure that futures prices are more reflective of general supply and demand conditions throughout the entire system, since it is unlikely that both the IWDS and Toledo would be experiencing the same kind of local supply or demand disruption at the same time.

It seems clear that there are some legitimate concerns about eliminating Toledo's role as a "safety valve" for times of unusual market disruption in Chicago (or the IWDS).

5. Concluding Comments

While there are some real advantages to extending futures delivery south along the Illinois River from Chicago to Pekin, and allowing delivery with 30-day shipping certificates, there are some legitimate concerns as well. The main concerns are that local supply or demand disruptions along the IWDS, or attempts to manipulate supplies or transportation facilities in the area, will cause futures prices to deviate from fundamental value reflecting supply and demand conditions for the country as a whole.

Maintaining the Toledo delivery option would alleviate most of the concerns about the IWDS by providing a "safety valve" that forces futures prices to better reflect supply and demand conditions in the country as a whole, not just the IWDS. The cost of maintaining the Toledo delivery option would appear to be minimal—a decrease in transparency of the price discovery process and a possible increase in arbitrage costs as the Toledo delivery option needs to be priced by traders. The gains, however, may be substantial. Peck and Williams (1991) have explained the usefulness of Toledo delivery as a safety valve. Furthermore, Pirrong, Kormedi, and Meguire (1994) have shown that the Toledo delivery option not only improves hedging performance for most commercial locations, but that "reducing the discount for delivery at Toledo, and allowing delivery in St. Louis at a premium that reflects its usually higher spot price, improves corn and soybean hedging effectiveness systematically at several major production, consumption and export points" (p. 571-572). This is an argument for making delivery in Toledo less costly, not for eliminating it altogether.

The argument that Toledo should be dismissed as an alternative delivery location because it is not needed should be approached with a great deal of caution. If delivery in Toledo is not needed then it will not occur, the Toledo delivery option will have zero value, and futures prices will be linked directly to IWDS prices. In other words, allowing the Toledo delivery option (at a discount) will have virtually no effect on futures price discovery if the IWDS works as well as the

CBOT expects. On the other hand, there would seem to be little cost in maintaining Toledo in its role as a "safety valve" for the (however infrequent) cases when local supply or demand disruptions in the IWDS (or attempts to manipulate IWDS supplies) cause futures prices to begin to diverge from fundamental market value based on supply or demand conditions in the country as a whole.

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