WHY HAVEN'T PULP FUTURES CONTRACTS SUCCEEDED? A CASE STUDY

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Abstract

Why have some seemingly promising futures contracts not succeeded in the recent past? In this paper, we will examine one such example, the pulp market. The structure of this paper is as follows. First we summarize the individual attempts at launching pulp futures contracts, and then we note how the pulp markets match up (or not) against the various criteria for the successful launch of a futures contract.

Key Words: Pulp Futures, Pulp Market, Futures Contract

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Individual Attempts at Launching Pulp Futures Contracts

Thus far, there have been at least six attempts to launch futures contracts on pulp, each with varying degrees of success. The following section largely draws from WRAP (2007) in summarizing what the key problems were in each failed attempt.

Table 1. Montreal Exchange

Date	Exchange	Key Problems
Late 1980s	**Montreal Exchange** In the late 1980s a significant amount of planning went into creating a futures exchange market for pulp at the Montreal Exchange; however, it never truly got off-the-ground.	– Delivery settlement (industry unhappy with the concept, especially at that time) – Idea of separating U.S. and Western European markets, which would reduce the liquidity – Reduced volatility: lengthy period when prices first only moved up and then stabilized – Insufficient physical structure (warehousing plans, warrants).

Source: WRAP (2007).

In addition, Toomey (1985) reported that "… Canadian pulp manufacturers … expressed skepticism about the … [launch of a wood pulp futures contract]. Roger Allard, a spokesman for CIP Inc., said his company does not feel the futures contract is an appropriate mechanism for buying and selling pulp. 'Pulp is a differential product, that is to say, it has varying properties and is often made to customer specifications,' he said. 'We can't see how our customers will be served by it.'"

Table 2. Merrill Lynch

Date	Exchange	Key Problems
Early 1990s	**Merrill Lynch** In the early 1990s Merrill Lynch planned a futures exchange market for pulp; however, the project was abandoned fairly quickly due to lack of sufficient interest.	– Delivery settlement concept – Splitting of liquidity (plan was for 4 products: NBSKP and BHKP and both grades in two currencies. USD and ECU) – Bad timing; a) industry slumped badly in 1991-1993; and b) currency fluctuations were very important (Nordic currencies were devalued) – Insufficient knowledge of the industry; lack of "common language" between banking experts and production-oriented industry leaders.

Source: WRAP (2007).

Key to Terms: NBSKP: Northern Bleached Softwood Kraft Pulp; BHKP: Bleached Hardwood Kraft Pulp; USD: United States Dollar; ECU: European Currency Unit, which was replaced by the euro in 1999

Table 3. FOEX

Date	Exchange	Key Problems
1996-1998	**FOEX** FOEX...chose, with a clear recommendation from the pulp and paper industry, the cash-settled approach. The product was NBSKP market pulp in Europe. FOEX used the PIX-index, developed for the purpose and accepted by the different parties of trading. FOEX traded, however, only about 100,000 tons before closing the Exchange and converting into an index provider. *The key reason for very limited trading was the insistence of one of the regulators of trading between only Exchange and industry participants, without the normal intermediaries, i.e. the banks and brokers.* After ceasing trading in summer 1998 and closing the Exchange officially in May 1999, FOEX converted its activity into a specialized index (or price benchmark) provider. The company name was altered to FOEX Indexes Ltd.	– Disagreement between the two regulating bodies (Ministry of Finance and the Bank of Finland "Inspection and Control Office") over how the laws should be interpreted; requirement by Bank of Finland that only direct company contracts allowed (no banks, no brokers) – Exchange was viewed to be "too small" – Obligatory collateral requirement which, in times of already poor profitability (1997-1999), was a problem for some participants – Competition from Pulpex project from mid 1997 (see below), especially as Pulpex viewed FOEX as a competitor – Lack of market makers (as brokers excluded)

Source: WRAP (2007).

Key to Terms
FOEX was originally the Finnish Options Exchange, according to http://www.foex.fi/index.php?page=alias, which in turn was accessed on November 21, 2014.

Table 4. PULPEX

Date	Exchange	Key Problems
1997-2003	**PULPEX** Late in 1997, "Pulpex" - located at the London Securities and Derivatives Exchange (OMLX) - started to offer standardized, physically delivery- based futures contracts through the OM Group with exchanges in Stockholm and London. It was originally owned jointly by CellMark and the OM- Group and then by Pulp and Paper Research AG, a subsidiary of CellMark. Pulpex offered futures and options on NBSKP and also BHKP, but *liquidity remained low* after more than 5 years of trading with trading ending in 2003 after costs running well above the earnings in each of year of trading.	– *Not enough brokers & market makers* – Run by OM-Exchange in London, which had interest to develop the services only in the beginning (no ownership at the end) – Too few warehouses – In the beginning no warrants to operate the inventory business with; high share of trades ending in delivery – High cost

Source: WRAP (2007).

In addition, Lehtinen (2014) described his experiences as a PULPEX market-maker and provided the following possible reasons for why the contract failed:

– Many different pulp grades;
– Counterparties did not accept benchmark grades, which could then have been used for adding premiums or subtracting discounts to the benchmark in individual deals;
– The forestry industry did not support transparent pricing;
– The banks for forestry companies did not require hedging price risk as a condition for lending to the companies;
– A lack of market makers: at best there were three active market-makers; and
– Pulp as a product has thus far not been well understood by financial participants and speculators.

Table 5. NYBOT

Date	Exchange	Key Problems
2005-2008	**NYBOT** In 2005 the New York Board of Trade (NYBOT) started trading pulp. The exchange used the delivery settlement concept, which the industry continued to be suspicious of, with the contract deliverable against NBSK. In 2007, trading continued to be very limited, compared to the potential volumes and to the resources at the Exchange's disposal. Volumes were less than 10% of the swap-deals concluded for the same product. The contract was delisted in 2008.	– Delivery settlement concept, which the industry was skeptical about – Failure of OM/Pulpex with a very similar concept was still fresh on the minds of potential participants – Too few warehouses – A high share of trades ended in delivery, compared to many other commodities – Lack of willingness from producers to see their pulp (with their stamp clearly seen on each bale) to be auctioned by the Exchange at prices well below their announced list price*

Source: WRAP (2007).

* Kokontis (2014) noted that in general, "concentrated industries" do not welcome the "visible prices" that come with the launch of a new futures contract.

Unfortunately, the contract listed on the NYBOT had little open interest. Noted Pointer (2007): "According to data on the exchange's Web site, open interest in the most-active December pulp future was [only] 176 contracts …"

The exchange did try to broaden the contract's use by adding delivery points. According to *Board Market Digest* (2007), the NYBOT "added China as a delivery point on its pulp futures contract, beginning with the June 2008 delivery. The exchange … certified Changshu Westerlund Terminals in the Port of Changshu Xingao, China, as a licensed pulp warehouse."

But effective on September 12, 2008, ICE Futures U.S. [which the NYBOT had been renamed as of September 2007] delisted all Pulp futures contracts.

Table 6. CME Group

Date	Exchange
2007-2012	**CME Group** The CME Group launched a softwood pulp index futures contract in September 2007. The exchange later launched a hardwood pulp index futures contract as well. Both contracts were cash-settled to indexes provided by "FOEX Indexes Ltd. FOEX is a private Finland-based independent company that specializes in providing audited, trademarked registered pulp and paper price indexes ... [and is] the industry standard for the global forest products industry." The contract specifications for both contracts are on the next page. Like past efforts, the trading volume for the contract was always low. Both contracts were permanently delisted in 2012.

Source: CME Group (2008a).

Figure 1 summarizes the contract specifications for the CME Group's softwood pulp index and hardwood pulp index futures contracts.

Figure 1. CME Group's softwood pulp index and hardwood pulp index futures contracts

SOFTWOOD PULP	**FUTURES**	**OPTIONS**
Trade Unit	20 metric tonnes (MT)	1 futures contract
Settlement Method	Cash index PI X-NBSKP Europe	Cash index PIX-NBSKP Europe
Point Description	$ per MT	$ per MT
Point (Tick) Size	$.50 per MT = $10.00	$.50 per MT = $10.00
Contract Listing	24 calendar months	24 calendar months
Trading Venue	CME Globex	CME Globex
Product Codes	WP	WP
Hours	Sunday 5 p.m. CT to Friday 4 pm. CT with daily halts from 4 p.m. to 5 p.m. CT	Sunday 5 p.m. CT to Frida)* 4 p.m. CT with daily halts from 4 p.m. to 5 p.m. CT
Strike	N/A	$5 per MT (in $100 range)
Limits	$50 per MT above or below the previous day's settlement price. None in the spot month contract.	None
Minimum Fluctuation	$.50 per MT = $10.00	$.50 per MT = $10.00 Cab .25= $5.00
HARDWOOD PULP	**FUTURES**	**OPTIONS**
Trade Unit	20 metric tonnes (MT)	1 futures contract
Settlement Method	Cash index PIX-BHKP Europe	Cash index PIX-BHKP Europe
Point Description	$ per MT	$ per MT
Point (Tick) Size	$.50 per MT = $10.00	$.50 per MT = $10.00
Contract Listing	24 calendar months	24 calendar months
Trading Venue	CME Globex	CME Globex
Product Codes	HWP	HWP
Hours	Sunday 5 p.m. CT to Friday 4 pm. CT with daily halts from 4 p.m. to 5 p.m. CT	Sunday 5 p.m. CT to Frida)* 4 p.m. CT with daily halts from 4 p.m. to 5 p.m. CT
Strike	N/A	$5 per MT (in $100 range)
Limits	$50 per MT above or below the previous day's settlement price. None in the spot month contract.	None
Minimum Fluctuation	$.50 per MT = $10.00	$.50 per MT = $10.00

Source: CME Group (2008b), p. 3.

According to Kokontis (2014), the "lack of initial liquidity" can kill a contract's prospects.

Table 7 shows the total yearly trading volume (in contracts) for the CME Group's softwood pulp futures contract.

Table 7. Total Yearly Trading Volume (in contracts) for the CME Group's Softwood Pulp Futures Contract

Year	Volume
2007	62
2008	893
2009	129
2010	65
2011	15

Source: The Bloomberg.

Table 8 shows the total yearly trading volume (in contracts) for the CME Group's hardwood pulp futures contract. In 2010 the yearly volume was 325 contracts.

Table 8. Total Yearly Trading Volume (in contracts) for the CME Group's Hard Hardwood Pulp Futures Contract

Year	Volume
2010:	325

Source: The Bloomberg.

Silber (1981) provided a volume and timing criteria for deciding upon whether a new futures contract can be termed successful. In his 1981 paper, Silber "use[d] 10,000 contracts traded per year as an arbitrary cutoff point and consider[s] a contract successful if it reaches that level during the third year after it has been innovated." Silber's "justification for the 10,000 volume criterion is that a contract trading at that level is unlikely to be delisted by an exchange (unless regulations are imposed)." By Silber's metric, both CME Group contracts were, unfortunately, far from success stories.

How the Pulp Markets Match Up Against the Various Criteria for the Successful Launch of a Futures Contract

We can also approach the analysis of why pulp futures trading has not been successful in a more conceptual fashion. Specifically, we can review the criteria provided by one economist and two academics to determine whether the pulp markets are just not suitable for futures trading. Namely, we will successively examine how the pulp markets fare against criteria established by Dr. Richard Sandor, Professor Charles Cuny, and Professor Craig Pirrong.

Dr. Richard Sandor's Criteria

Table 9 summarizes the criteria provided by the economist, Richard Sandor, on whether a new futures contract might succeed or not.

Table 9. Dr. Richard Sandor's Criteria

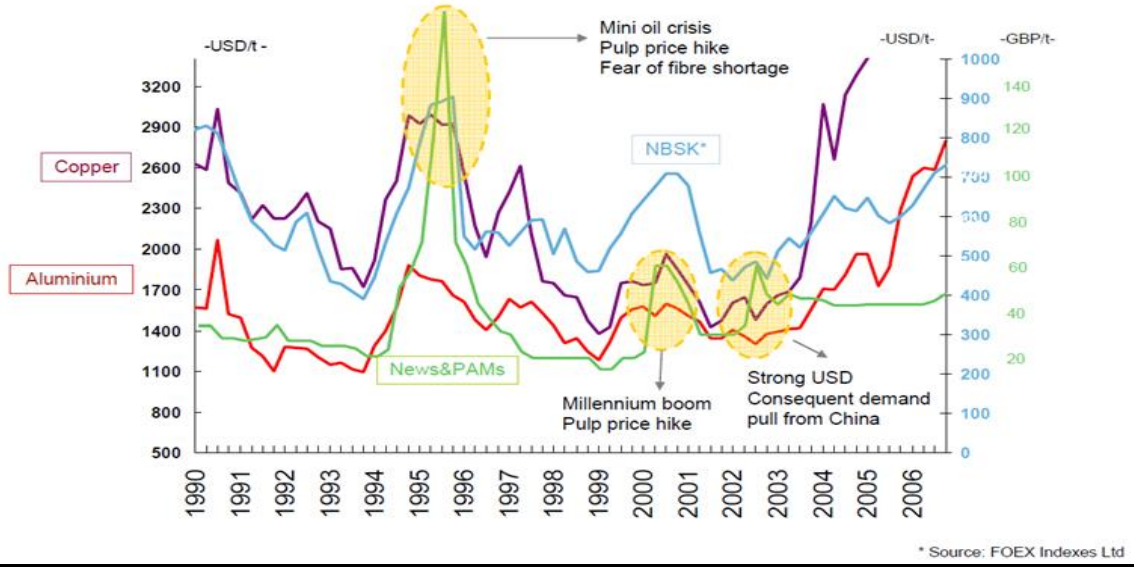
Sandor's Criteria
– Price variability of the commodity is sufficient; – The price of the commodity is competitively determined; – Either the commodity is homogeneous, or there is close movement of prices of different grades of the commodity; – *A prior pattern of forward contracting has broken down;* – There must be a viable cash market (i.e., a market for immediate delivery) in order to facilitate the delivery procedure; and – The futures contract must be properly specified so that hedgers will be attracted to the futures market.

Source: Sandor (1973).

A Sandor Criterion Met: Sufficient Volatility

At least under of one Sandor's criteria, it would seem that the pulp market would be a good candidate for a successful futures contract. Pulp prices have been sufficiently volatile for this market to have merit as a potential futures contract, as shown in Figure 2.

Figure 2. Pulp (and Fiber) Prices as Compared to the Prices of Other Markets That Have Successful Futures Contracts



Source: WRAP (2007), Figure 4.

Key to Terms
PAMS: McKinney (1995): "The majority of grades used in the manufacture of newsprint consists of old newspapers, commonly referred to as ONP, and old magazines and coated flyers, commonly referred to as OMG or PAMS."

NBSK: "Northern Bleached Softwood Kraft [is] the paper industry's benchmark grade of pulp," according to http://www.paperage.com/pulp_paper_terms.html, which in turn was accessed on November 20, 2014.

A Sandor Criterion Not Met: A Prior Pattern of Forward Contracting Has Broken Down

Sandor (1973) was prophetic in understanding a key driver for the later success of crude oil futures contracts; that is, a prior pattern of forward contracting broke down for this commodity market, leading to the need for futures markets for managing price risk. We will briefly describe that history here, followed by discussing the relevance of this point to pulp markets.

In review, the structure of the oil industry changed in the 1970s after numerous nationalizations in oil-producing countries. This forced some oil companies to shift from long-term contracts to the spot oil market, as described in Yergin (1992). An economic need for hedging volatile oil price risk thereby emerged, which the New York Mercantile Exchange responded to with a suite of energy futures contracts, starting with the heating oil contract in 1978.

Arguably, Sandor's observation has continued validity, this time for understanding why pulp futures contracts have not succeeded.

Finchem (1998) reported that "pulp producers and their customers have … manage[d] … [commodity price] risk through portfolio management (i.e., making several products, or making 'value-added' products), inventory management, and [through] *long fixed-price or fixed-quantity contracts*." (Italics added.)

Forward contracting does appear to continue to satisfy sophisticated commercial participants, as seen in a recent Canfor Corporation financial report, which is summarized in Table 10. In other words, a need for futures hedging has not emerged, given the viability of direct forward contracting amongst commercial participants.

Table 10. Canfor Corporation financial report

Company	Nature of Company	Sophisticated Derivatives User	Description of Forward Contracting in Pulp
Canfor Corporation	"Canfor is an integrated forest products company with facilities in Canada and the United States. The Company produces softwood lumber, pulp and paper products, oriented strand board, remanufactured lumber products and specialized wood products."	[1] "Canfor utilizes credit insurance to mitigate the risk associated with some of its trade receivables." [2] The Company "utilizes interest rate swaps to reduce its exposure to interest rate risk associated with financial obligations bearing variable interest rates." [3] "A portion of the [Company's] currency risk … is covered by foreign exchange collar contracts …" [4] Canfor is exposed to energy price risk relating to purchases of natural gas and diesel … The exposure is hedged up to 100% through the use of floating to fixed swap contracts or option contracts … In the case of diesel, Canfor uses heating oil, Brent oil and Western Texas Intermediate ('WTI') contracts to hedge its exposure."	"Canfor is exposed to commodity price risk related to [the] sale of lumber, pulp, paper, and oriented strand board. From time to time, Canfor enters into futures contracts on the Chicago Mercantile Exchange for lumber and *forward contracts direct with customers for pulp."*

Source: Canfor Corporation (2012).

2. Professor Charles Cuny's Key Criterion

In Cuny's (1993), the author's key point is that it is not hedging demand *per se* that matters for a contract's success, but *net hedging demand*. Net hedging demand, in turn, refers to hedging demand that is not directly met by other hedgers, resulting in the economic need for intermediaries (speculators) to assume the price risk of the commodity. This point is closely related to Sandor's observation that futures contracts seem to be able to gain traction if a previous pattern of direct forward contracting amongst commercials breaks down.

The contribution of Cuny is that he arrives at this point by reasoning from first principles how it is that a futures exchange can exist in the first place. The following summarizes Cuny's reasoning:

a. "Exchanges are taken to be entrepreneurial entities that design markets …"

b. The goal of exchanges is to "maximize their own revenues."

c. They do so by designing futures contracts that "maximize transaction volume."

d. Commercial "hedgers are not normally in the business of providing liquidity" to a futures market; that is not their core business. Therefore, commercial hedgers are not the participants who provide the necessary amount of transaction volume for an exchange to be able to exist.

e. An exchange's trading volume is largely provided by those who stand ready to take on and manage the risk from commercial hedgers: the speculators.

f. But the services of speculators are not needed if hedging demand is largely balanced out amongst commercial participants.

g. Therefore, substantial net hedging demand is needed for a contract to be viable on a futures exchange.

h. Note that this nuanced view does not contradict Holbrook Working's approach, which emphasizes that a "futures market owes its existence to the demand generated by hedgers." Cuny helpfully refines the Working approach by noting further that it is net hedging demand that is what is most important.

i. Therefore, when "selecting a contract, an exchange [will naturally] align itself with the greatest unsatisfied hedging demand …"

Using Cuny's logic, if direct forward contracting satisfies the hedging needs of pulp market participants, then there is no need for price-risk-bearing specialists, as exist in futures markets, to be compensated for sharing in this risk.

Correspondingly, there would be no economic need for a futures contract on pulp.

3. Professor Craig Pirrong's Criteria

a. Pirrong Criteria That Are Satisfied: Standardization, Large Inventories, and Sufficient Volatility

In Pirrong (2014), the author notes that both standardization and large inventories that need to be hedged are essential for a commodity to have a successful futures contract.

"Pulp is as or more standardized than a good deal of other commodities that support viable contracts." And in fact, "the pulp market [is] … big enough (compared to … [for example] cotton … and the softs [which, in turn, do support futures trading]," writes Pirrong.

WRAP (2007) reinforces Pirrong's point regarding the pulp market sharing characteristics with commodities that do have successful futures contracts. Aluminum is "hedge-traded with huge success. Physical production of aluminum is about 2/3 of the tonnage in the global pulp market (currently about 40 million tonnes) but hedge trading volumes in aluminum now exceed the annual physical volumes actually marketed by a factor of 10." Further, "[i]n tonnage terms, market pulp, recovered fibre and paper [would seem to] have the potential to become the third largest commodity product group hedged globally, after oil and wheat," according to the WRAP report.

Pirrong also notes that commodity markets need sufficient price volatility in order to warrant interest in hedging. According to the author, price volatility for pulp has been "comparable to some other commodities," which have thriving futures contracts.

WRAP (2007), once again, confirms a Pirrong criterion. "The costs attached to price risk management are not high [,] but they still need to be covered by the price gains or cost savings obtainable from hedging. Market intelligence indicates that if price volatility is less than 5%, hedging does not offer sufficient incentive. When volatility is between 5-15%, one should consider it. If volatility exceeds 15%, it is strongly recommended. Average price volatility for market pulp is in the vicinity of 20-25%," according to the WRAP study.

So far the pulp market has met all of Pirrong's criteria for the successful launch of a futures contract. But one prerequisite has been crucially missing, and it relates to both Sandor's observation and Cuny's theory.

b. A Pirrong Criterion That Is Not Satisfied: Fragmented Marketing Chains

According to Pirrong (2014), "futures contracts are most viable when …" not only are there "large holdings of inventories to be hedged", but also when "there are relatively fragmented marketing chains …"

Noted the researcher: there has been "a lot of vertical integration in pulp, and even freely traded pulp … [has] not been traded in long chains like grain or oil is. [As a result, there are] few trader intermediaries … [with] most [pulp] traded directly from pulp producers to paper producers."

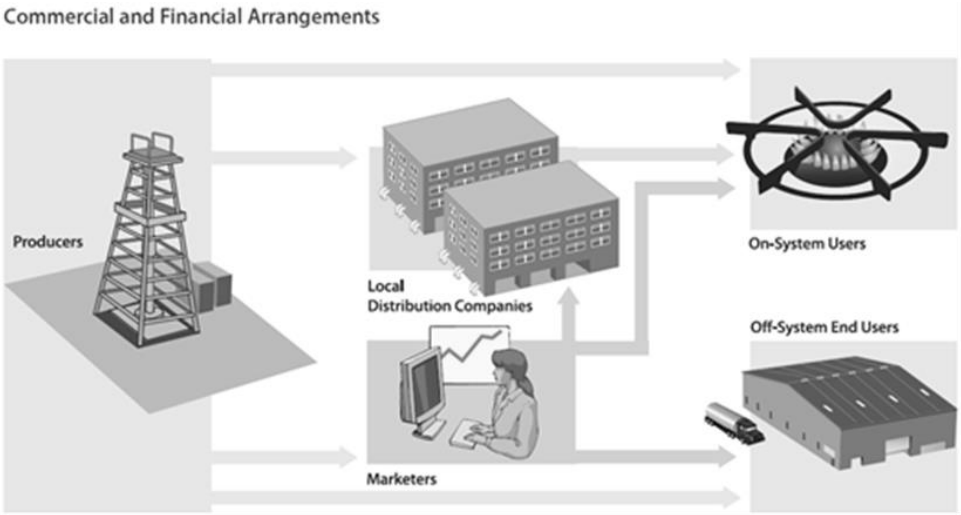
Pirrong summarized this consideration as an "industrial organization issue."

Framing the issue as one of "industrial organization" is another way of thinking about what markets could be suitable for the launch of a successful futures market. In contrast to the pulp market, the industrial organization of the natural gas market became conducive to the launch of a successful futures market by the early 1990s, as will now be discussed.

According to IEA (2012), "Liberalization changed the structure of the US gas industry. Before, strong regulation applied to the different stages, from production to transmission to distribution, to long-term contracts between producers, interstate pipeline companies and distribution companies. Liberalization and open access to pipelines starting in 1985 led to the creation of the competitive wholesale gas market and a new type of company appeared – *gas marketers*, which are the link between producers on one side, and distribution companies as well as large consumers on the other side." [Italics added.]

Exhibit 3 provides a graphic Augustine *et al.* (2006) that "shows schematically some of the types of natural gas transactions that take place as gas makes its way from the fields where it is produced to end users' burner tips."

Figure 3. Natural Gas Industrial Organization



Source: Augustine et al. (2006), Figure 15.

According to Augustine *et al.* (2006), some natural gas producers "sell their gas to marketers who have the ability to aggregate natural gas into quantities that fit the needs of different types of buyers and to transport gas to their buyers. Marketers may be large or small and sell to local distribution companies or to commercial or industrial customers connected directly to pipelines or served by local distribution companies."

"Marketers are able to meet customers' differing needs by bringing together a large number of buyers and sellers. *In addition, marketers and other buyers and sellers of natural gas are able to use financial instruments traded on exchanges to hedge the risks associated with price volatility*," write Augustine *et al.* (2006). (Italics added.)

In contrast to the pulp industry where there are fewer trader intermediaries, from this brief description of the structure of the natural gas industry, one can see how the natural gas market meets Pirrong's criterion on the type of industrial organization that is promising for futures contract development.

Conclusion

In reviewing the criteria for a successful futures contract, one could argue that pulp futures contracts have not been successful because:

- A prior pattern of forward contracting has not broken down;
- There has been insufficient *net* hedging demand; and
- The industrial organization of the pulp industry is not conducive to the success of a futures market.

The common theme with each of these points is that it appears that the pulp industry has not been in need of price-risk-bearing intermediaries, whom, in turn, can provide this service on futures exchanges.

Endnotes

This article is excerpted from a three-day seminar on why some futures contracts have succeeded while others have failed.

The information in this article has been assembled from sources believed to be reliable, but is not guaranteed by the author.

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References

1. Augustine, C., Broxson, B. and S. Peterson, 2006, "Understanding Natural Gas Markets," A Policy Analysis Study By Lexecon, an FTI Company, undertaken for the American Petroleum Institute.
2. Board Market Digest: Independent Analysis and Key Information on the Packaging Paper & Board Market, 2007, "Electronic Trading for NYBOT Pulp Futures Only," Vol. 21, No. 12, September.
3. Canfor Corporation, 2012, "Financial Statements." Accessed via website: http://www.canfor.com/docs/investor-relations/2012_canfor_corp_year_end_fs_sedar.pdf?sfvrsn=2 on November 20, 2014.
4. CME Group, 2008a, "CME Group to List Hardwood Pulp Index Futures and Options," Press Release, December 2.
5. CME Group, 2008b, "Softwood and Hardwood Pulp Futures and Options: Based on Key Industry Indexes By FOEX Indexes Ltd.", Commodity Products Brochure.
6. Cuny, C.J., 1993, "The Role of Liquidity in Futures Market Innovations," The Review of Financial Studies, Vol. 6, No. 1, pp. 57-78.
7. Finchem, K., 1998, "Futures Trading Offers Potential," Pulp & Paper Magazine: The Leading Information Provider for the Global Forest Products Industry, March.
8. [IEA] International Energy Agency, 2012, "Gas Pricing and Regulation: China's Challenges and IEA Experience," IEA Publication.
9. Kokontis, W., 2014, private correspondence, October 8. [William Kokontis is a veteran of both the CME Group and the Commodity Futures Trading Commission, https://www.linkedin.com/pub/bill-kokontis/86/420/158.]
10. Lehtinen, K., 2014, private correspondence, October 14. [Kerri Lehtinen had been a Pulpex market-maker and is now the managing director of MG Commodity Corporation in Helsinki, Finland, www.mgcorp.fi.]
11. McKinney, R., 1995, Technology of Paper Recycling, London: Chapman & Hall.
12. Pirrong, C., 2014, private correspondence, October 8. [Craig Pirrong is a Professor of Finance at the University of Houston, http://www.bauer.uh.edu/directory/profile.asp?firstname=Craig&lastname=Pirrong.]
13. Pointer, A., 2007, "CME to Launch Electronic Wood Pulp Contract Later This Year," MarketWatch, April 17.
14. Sandor, R. L., 1973, "Innovation by an Exchange: A Case Study of the Development of the Plywood Futures Contract," The Journal of Law and Economics, Vol. 16, No. 1., April, pp. 119–136.
15. Silber, W., 1981, "Innovation, Competition, and New Contract Design in Futures Markets," Journal of Futures Markets, Vol. 1, No. 2, pp. 123-155.
16. Toomey, C., 1985, "Exchange's Trading in Wood Pulp Would Be First of Its Kind: Manufacturers Express Skepticism," The Gazette (Montreal), Business Section, p. 27.
17. [WRAP] Waste and Resources Action Programme, 2007, "Managing Risks in The Recovered Fibre Market," Final Report, July. Accessed via website: http://www.wrap.org.uk/content/managing-risks-recovered-fibre-market-0 on November 20, 2014.
18. Yergin, D., 1992, The Prize: The Epic Quest for Oil, Money, & Power, New York: Simon & Schuster.