Derivatives Regulation: Efficiency versus Public Choice Perspectives

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There are typically two directions taken with respect to the economics of the regulation of derivatives. The first involves a discussion of the efficiency of the derivatives markets, and possible regulatory solutions to inefficiencies. The second involves the public choice view of regulation as the result of forces not necessarily concerned with the overall efficiency of the market. This paper aims at providing a comprehensive methodology for the examination of the regulation of derivatives, looking at the efficiency of the current and possible or even feasible regulatory schemes, while using public choice rationale for examining potential regulatory outcomes. We examine several cases of past and current regulatory conflict, and discuss the outcomes in terms of both efficiency and the regulatory realities.

I. Introduction

Derivatives are a form of contracting which allow individuals and firms to alter their exposure to price risk or some other risk without transferring ownership of a good or asset. Due to a typical high degree of leverage associated with derivative contracts and their recent profusion, there have been significant losses to firms trading over-the-counter derivatives, and firms subject to losses arising from *rogue* traders in several varieties of derivatives. Regulation of derivatives in the United States to date has been patchwork, and typically reactionary, rather than based on political economy. Indeed, derivative regulation can be said to have whipsawed over the last 10 years. In late 2000, with the Futures Trading Practices Act Congress enacted what had been the existing regulatory framework for many derivative transactions, such as credit default swaps. Prior to that time, the Commodity Futures Trading Commission had carved out a safe harbor for many over- the-counter derivatives which otherwise would have been in violation of the Commodity Exchange Act. The Act provides that all contracts for future delivery (futures, swaps) shall trade on exchanges, unless they are forward contracts, which in simple terms more or less require actual delivery. Due to this broad definition, the Commission specified that certain derivatives, such as credit default swaps and some currency derivatives were an exception to the requirement and did not require exchange trading and the associated regulatory oversight. In 2010, after tremendous financial losses related to credit default swaps, Congress reversed itself and instructed the Commission to revisit the issue. Regulations based on that change in law are in the works. We examine the history of derivative regulation, and it's political versus efficiency-oriented sources, as well as offering a methodology for the evaluation of current efficiencies or inefficiencies generated by or lessened by such regulation.

A. The setting

There are two aspects of derivatives that need explanation before proceeding. The first is the nature of derivatives contracts. The second is the institutional structure of derivatives trading. While these are inherently intertwined, we discuss them in succession, including references to existing regulations and literature where applicable. A *derivative* is a contract whose payouts depend on (or, is *derived* from) the value of some asset, security or other derivative or index. Derivatives include futures, options, swaps, interest rate caps and floors, and countless other similar contracts and combinations. The simplest example is a futures contract, which is an agreement to trade an asset in the future, where the futures price is agreed to at the time the contract is negotiated, and there is an understanding that the obligations may be easily terminated prior to the trade occurring by *offsetting* the contract.

For example, on the Chicago Mercantile Exchange (CME), one futures contract calls for delivery of 5,000 bushels of soybeans in July. Prior to July, individuals may agree to buy or sell soybeans for delivery in July, and all these contracts are identical in terms, other than price. If the July delivery price of soybeans rises between that time and July, then those agreeing to deliver soybeans will be worse off, and those receiving will be better off *vis a vis* this futures price. The CME will make payments and collects to parties daily as the price for July soybeans changes. Parties may offset their positions by trading an opposite position in July soybeans on the exchange. The execution of an opposite trade eliminates the individual's position with the CME entirely. No soybeans need to be delivered or bought, and the traders need not have any relationship to the soybean industry. Beyond this simple type of futures contract, the complexity with which derivative contracts can be constructed increases geometrically. For instance, one strand of derivatives is even referred to as *exotic* options.[i] The basic derivative contracts remain futures and options, which can also be viewed as the building blocks for more elaborate contracts. An option gives one party to the contract the right but not the obligation to enter into a transaction at a price fixed in advance (the *strike or exercise* price). Indeed, since a long futures position can be modeled as the combination of a long call option position (the right to buy) and a short put option position (granting someone else the right to sell) with the same *strike* price, then essentially all derivative contracts can be modeled as combinations of options contracts.[ii]

The infamous derivative which made the news in 2008 is the credit default swap. This contract allows traders to trade the pure default risk associated with a particular bond. The buyer of the swap pays the seller a regularly scheduled premium, and the seller pays the buyer in the case of a default by the issuer of the underlying bond. For example, an investor could by a corporate bond, and a credit default swap on the bond, and have cash flows guaranteed, essentially transforming a risky investment into a risk free investment. The scheduled premiums will reflect the riskiness of the bond, and will be directly related to interest rate premium over treasuries. Essentially, at the start of the swap the premiums will be such that the value of the swap reflects the true default costs. In this sense, the present value of the risky bond and the swap will be equal to a comparable treasury security. What made these contracts famous at this time is that many of them were written on mortgage backed securities. These issuers of these securities purchase a group of mortgages, and then offer investors various securities which pay off different pieces of the cash flows carved out of these mortgages. This type of securitization, which dates back quite a bit, facilitates the flow of funds into the mortgage industry. Fannie Mae and Freddie Mac are large securitizes, and they also purchased a large quantity of other mortgage backed securities, and traded in credit default swaps on the securities. Many of the mortgage backed securities were rated AAA, the highest grade, indicating low default risk, even though many of the mortgages underlying the securities were actually low quality. The resulting underestimation of the risk meant that credit default swaps were cheap (low premiums). When the real risk was realized, and mortgage defaults grew, the credit default swaps became quite valuable (theoretically) to the buyers, while the sellers, such as AIG, were in deep trouble.

As a result of the resulting financial fiasco, Congress agreed in 2010 to have the Commodity Futures Trading Commission to revisit the regulation of credit default swaps. The Commission is tasked with trying to nudge the futures exchanges to list credit default swaps, putting the trading in a transparent environment. Note that throughout the crisis the futures exchanges were unscathed. Indeed, due to increased volatility and volumes, their financial picture has never been better. Organized exchange-trading of futures contracts evolved in the mid-1800s in Chicago. Gregory (1979) discusses the organization of the exchange such as the Chicago Board of Trade and the CME as an efficient outcome of a loosely defined coordination problem. The exchange and clearinghouse serve the function of facilitating trading, guaranteeing both sides of every trade, and of holding performance bonds for traders in order to assist with the cost of the guarantee, since the trade is set to occur in the future. (The "future" may entail a significant amount of time. The CME's Eurodollar contract allows trading futures on a 3-month interest rate for up to 10 years in the future.) Since 1920 the United States has episodically ratcheted the level of regulation of futures exchanges. In 1921 under the Futures Trading Act there was an attempt essentially to eliminate futures and options trading by the imposition of a prohibitive trading tax. Crashing grain prices at the end of World War I led farmers to petition the government for relief, and pointed the finger at futures speculators. In 1936 the Commodity Exchange Act (CEA) solidified the regulation of futures trading and exchanges, under the auspices of the Department of Agriculture. In 1974, as financial futures began to emerge, the CEA was amended to introduce an independent futures regulatory agency, the Commodity Futures Trading Commission (CFTC). Major revisions to the CEA occurred 1992 and 2000. The most recent changes came in 2010 with the passage of the Dodd–Frank Wall Street Reform and Consumer Protection Act.

Prior to the 1970s all futures trading was in agricultural or other physical commodities. Since the 1970s, after the collapse of the Bretton Woods agreement for currencies, the major gains in exchange futures trading volume have been in the realm of futures contracts based on financial assets, such as government bonds, currencies and stock indices, rather than futures on agricultural commodities. These financial futures volumes swamp the agricultural futures volumes. Prior to 2001 the CEA required that all futures trade on exchanges (with some notable exceptions and exemptions carved out by the CFTC), and that the CFTC approve new exchange-traded futures contracts, monitor trading on the exchanges, seek to prevent and prosecute manipulation of futures prices, and monitor futures traders, advisors, and brokers for a variety of violations of the CEA, with these violations fundamentally related to fraud or the trading of futures in an over-the-counter environment. The definition of *forward contracts* that are explicitly excluded from CFTC oversight remains vague according to the CEA and court cases, and the current status of many derivative contracts not traded on exchanges is a subject of much discussion and litigation.[iii]

In what was seen as a bold move, the CFTC in 1998 asked for public comments on possible changes to over-the-counter derivatives regulation and indirectly the forward/futures distinction. See the Commodity Futures Trading Commission (1998). For a discussion of the exchange-trading requirement, see Culp (1997). In 2000, under a different Chair, the CFTC essentially reversed directions and sought instead a codification of the *status quo*. At the same time, Congress began work on similar codifications of the current regulatory environment, made up till now by a patchwork of law, regulation and case law. One item in this regulatory stew is the particular derivative contract, a futures contract on an individual equity, which has been prohibited in the United States since 1982. The CEA was amended on December 15, 2000 incorporating major changes, including the allowance of single-stock futures trading on either futures or stock exchanges, and formalizing the *status quo* regarding swaps such as credit default swaps. This was reversed in 2010. Individual stock futures have not been successful, since they compete with the much more liquid stock options market.

Option contracts began trading on organized exchanges in 1974. A *call* option gives the holder the right to buy an asset at a fixed price, the *strike* price, in exchange for a *premium* received at the time the option is traded. A *put* option gives the holder the right to sell an asset at a fixed pr ice, and also trades for a premium. Option trading has a long over-the-counter history prior to the commencement of exchange trading. The initiation of exchange trading of options coincides with the development of sophisticated option pricing models, independently the Black and Scholes (1974) and Merton (1974). The Securities and Exchange Commission (SEC) regulates option exchanges. Options on *futures* contracts, however, are required by the CEA to be traded on futures exchanges and regulated by the CFTC. Of note, options on equities are the main options traded on options exchanges, and futures-equivalent positions may be constructed from options, yet futures on equities, as described above, were prohibited prior to December 2000. Further, physical options on agricultural commodities, similar to stock options, not on their futures, are disallowed under the CEA. Romano (1996) describes the complex regulatory structure of options:

> *The regime is simply the patchwork product of a political compromise in a longstanding jurisdictional turf battle between the SEC and the CFTC and their clientele exchanges. (Page 44)*

Derivative contracts that do not fall under explicit regulation by the CFTC or SEC are subject to *de facto* use-regulation as a result of the regulation or oversight of the firms trading them. For example bank regulators, by nature of their risk assessment and capital requirements; indirectly regulate the types of over-the-counter derivative products traded by banks. Other firms are under a less structured environment, subject only to the choices made by the board of directors, and ultimately shareholders. It is not clear at present the extent to which these over-the-counter derivatives such as credit default swaps will be successfully integrated into exchange trading.

2. Derivatives Trading

Reference is typically made to two motivations for derivatives trading, the need to hedge, and the desire to speculate. In practice, these two motivations are often blurred. However, the CFTC and the futures exchanges have regulations and financial implications dependent on whether a futures position is deemed to be for hedging or speculative purposes. The common use of the term hedging is that it represents trading undertaken to reduce risk. Speculation, by comparison, is trading which entails increasing risk, rationally (for risk averse traders) on the basis of some positive expected profit.

Derivatives trading involve an initiation and offset period, and these are determined by the trader, so that whether or not a particular trader is hedging or speculating at a particular point in time becomes moot, and may need to be determined by litigation. The typical model for a futures trade involves two periods. Consider an individual with a certain amount of cash, M, which they can invest risk free at the interest rate, r. In addition, they will have an expected position in some commodity, *C*, say *Q* units of *C*, which they will need to sell next period. A "pure" speculator would have no commodity position (*Q=0*). The market price, *p*, of the commodity next period is a random variable. There is a forward market for *C*. The trader can lock in a price of *f* for *N* units of the commodity this period by entering into a futures contract. In the organized futures market, some portion of M would be placed with the broker as *margin*. In the next period, the price of *C* is revealed, and the trader's profit is:

$$\Pi = pQ - c(Q) + N(p - f)$$

The cost function $c(Q)$ represents the costs of holding the commodity over the time till delivery. The number *N* would be chosen according to some optimization scheme, such as maximizing the expected utility of profits, with *p* a random variable. The structure is identical to the early decision under uncertainty literature. In the expected utility framework, individuals with no position in the commodity (speculators) will trade when *f* is not equal to the expected value of *p*. For speculators to buy futures, *f* would need to be greater than *the* expected price *p*. For speculators to sell futures, *f* would need to be less than the expected price *p*. Individuals may use derivatives directly, or in a more common scenario, indirectly (and with limited liability) through derivatives used by firms that are owned by individuals. For example, among others, Southwest Airlines routinely engages in the use of derivatives related to their jet fuel. Thus, purchasing Southwest Airlines stock gives the investor exposure to some energy futures. (One recent quarter Southwest Airlines made more money in their derivatives trading then they lost in operating profits, which led some to question whether Southwest should have been flying at all.) The propensity and nature of derivatives usage should be included in the firm's cost of capital, although this can be problematic. Firms do engage in derivatives trading, for perhaps a variety of reasons, some of which may involve imperfections in the structure of management contracts, others involving economies of scale.

Prior to December 2000, according to the CEA futures were only allowed to be traded on organized exchanges. The futures exchange hierarchy is similar to check clearing using banks and clearing banks and a federal reserve bank. A person wishing to trade futures on an exchange opens an account with a *futures commission merchant*, (FCM), who guarantees the trading of the individual with the exchange, with a compensation of some fees on a per-contract basis. The FCM has an account with the *clearinghouse*, or with a clearing member, who would in turn have an account with the clearinghouse. The clearinghouse acts as the counterparty and guarantor for both sides of all trades. Once an investor has an account, they may trade futures through a member of the appropriate exchange. Some FCMs are members of all exchanges, others must route trades to appropriate members. Options that trade on exchanges are treated somewhat similarly. An option trader has an account with an option exchange member or with a broker as intermediary, who has an account with a clearinghouse. Unlike futures, options have value at the time they are granted, and the purchaser must pay the seller for the option. The seller of an option must maintain a performance bond with the broker/member, while the purchaser does not.

Prior to 1999 options and futures exchanges were membership organizations, typically not-for-profit. In 1999 this began to change, and the CME was the first existing not-for-profit exchange to *demutualize*, allocating exchanging shares in the CME based on memberships. The Cantor-Fitzgerald Futures Exchange was not established as a not-for-profit exchange. In the not-for-profit set up, members purchase seats, which may also be leased, in exchange for voting and trading privileges. Trading privileges are exclusive rights to execute futures or options transactions for others or a proprietary account, and the exclusive ability to trade for a proprietary account directly with other members. Brokers, including floor brokers and members who operate terminals and execute trades, acting as agents, earn a small brokerage, or commission, for every contract executed. Traders, trading proprietary accounts, speculate on price movements, with empirical and anecdotal evidence suggesting that for the most part the proprietary trading, at least in futures markets, takes the form of market making. For an empirical discussion of this trading strategy, see Kuserk and Locke (1993). The demand for demutualization coincided with the migration of trading to electronic platforms. In the *demutualized* set up, with increased electronic trading, futures trading operate much the same as in the not-for-profit floor based model. The difference mainly occurs with *transparency*. An electronic trading platform may allow non-member traders to directly view each others' bids and offers, and bypass the floor traders.

Thus, the loss of the floor trading requirement brought on by increased electronic trading leads naturally to a call for demutualization, in order to maintain the exchange, and clearinghouse, and distribute profits, such as they are, to shareholders *nee* members. The trading of other derivatives, such as swaps, takes place in a bilateral setting, although the standardization of swaps trading under the International Swaps and Derivatives Association (ISDA) lessens the purely bilateral nature of trading. Traders search via computer screens and phones for counterparties. Some traders in these types of contracts take on the role of dealer, attempting to maintain a relatively flat position while earning a small percentage on each trade. Other traders have the same demands as traders of futures and options, that is, a hedging or speculative demand to trade. Without an exchange as guarantor, there is a greatly increased default risk from counterparties to over-the-counter derivatives trading. ISDA membership lowers the default risk by raising the reputational costs associated with default. A default may mean loss of membership privileges, including use of the boilerplate derivatives agreements.

3. Derivatives Traders

Derivatives traders are individuals and firms who expect positive revenue from a derivatives trade, or a reduced uncertainty of profits as the result of adding a derivatives position to their portfolio. A typical example is a shipping firm that purchases grain in the United States to sell in Japan. The firm may wish to lock in the level of the grain price, in case grain prices change during the voyage, while still earning the value added of transportation costs. To hedge they may sell grain futures contracts, while later offsetting, or buying them back, when the grain is eventually sold. Any loss in grain value during the voyage will be (assumedly) reflected in the futures price decline, which will be an offsetting profit due to their short position. The critical issue in discussing the use of derivatives by firms is the extent to which the commodity price uncertainty is already priced into the value of the firm. *Ex ante* the value of the firm will either include or not include the (risky) value of derivatives trading, depending on whether shareholders anticipate or are fully aware of the derivatives trading.

The most important issue is shareholder information regarding the derivatives trading. Romano (1996) offers an excellent discussion of derivative use by firms. Regulators do appear to distinguish the *suitability* of various investors with regard to their status as derivatives traders. For example, in its 1993 swaps exemption regulations, the CFTC limits the set of possible traders to an elite set of firms and individuals. Regulations passed after the December 2000 make similar distinctions regarding sophisticated traders, commercial traders, and others. From the original swaps exemption, the distinction was drawn with reference to the quantity of assets held by the firm or individual. Wealthy investors are allowed to trade swaps while others are not. Such wealth based distinctions show up in other regulations, by the CFTC and SEC. Wealth is being used here either as a proxy for financial trading sophistication, or simply as a signal that there is a lack of concern for the preservation of high levels of wealth.

B. Literature

The rise of financial derivatives trading since the 1970s has led to a surge in regulatory jockeying as traders, exchanges, brokers, etc. have sought to preserve their position in the regulatory *status quo* or carve the future to their advantage. In addition, recurring financial crises tend to focus the congress on regulation. Change has additionally being driven by the rapid growth of electronic trading. Such jockeying for regulatory position has not escaped the finance and regulatory literature. The futures exchanges led financial derivatives trading with currency futures and, later, Eurodollar, stock index, and government security futures contracts. At the same time, the use of swaps was initiated and swelled. A swap is an agreement to exchange the difference between a fixed price or rate and a price or rate observed later (a *floating* price or rate). Typically swaps are agreements for a series of such payments, with the fixed component remaining the same over the life of the swap. The swap is agreed to with a fixed price set such that the present value of the swap is zero. Much of the recent regulatory jockeying, and corresponding literature, has to do with the regulation of swaps and disagreement about the extent to which swaps are or should be covered by the CEA.

The evolution of derivatives regulation, which encompasses mainly the evolution of futures regulation, is thoroughly detailed by Romano (1997). Gramm and Gay (1994, 1997) offer additional insights into the politics behind the regulatory status quo as of 1997. After 60 years of little federal oversight, a leap in regulation occurred with the passage of the Futures Trading Act of 1921. This legislation was the direct result of a restrictive agricultural pricing policy during World War I, followed by the removal of price supports in June of 1920, which itself was followed by large price declines due to post-war surpluses.

The agricultural sector, i.e., farmers, pointed the finger at speculative futures trading for these price declines, and the populism of that era led to intense regulatory scrutiny of the futures markets. The act imposed a huge tax on commodity futures trading, and was ruled unconstitutional. The congress substituted the Grain Futures Act in 1922 without the prohibitive taxation. From 1922 to 1974, many agricultural products were added to the list of commodities covered by the Grain Futures Act, and later in 1936 Commodity Exchange Act. Futures regulation was centered in the Grain Futures Administration in the Department of Agriculture. Finally, another grain crisis and nascent currency trading led in 1974 to the creation of the Commodity Futures Trading Commission, an independent agency. In wide ranging articles Culp (1997) and Romano (1996) summarize some of the debate on derivatives regulation. A large part of the arguments involve discerning the scope of the intent by Congress to allow forward contracting, and many swaps, to be exempt by the CEA. The argument concerns the distinction between a forward contracts, an agreement to trade in the future with the price fixed today, and a futures contract, which could be characterized as a combination of a forward contract and an low cost option to easily offset the forward contract. The CFTC and the courts have found that the critical distinction between these two is the allowance of offset in the case of a futures contract, and its resultant utility as a hedging or speculative instrument, versus the purer merchandising nature of a pure forward contract.

This distinction can be difficult to discern, hence the constant litigation. There are several other peculiarities in the debate, dealing with the exception for derivatives written on government securities and currencies (the "Treasury Amendment," Part 2, Section 2(a)(1)(A)(ii) of the CEA), and the interaction with the SEC over equity index derivatives (the "Shad-Johnson Accord," Part 2, Section 2(a)(1)(B)(iv)). While options on equities are in wide usage, futures on individual equities or even small indices were not allowed without SEC approval prior to December 2000. The SEC allowed trading of Dow Jones Transportation Index options and Dow Jones Utility Index Options on the Chicago Board of Options Exchange, but vetoed CFTC approval of Dow Jones Transportation Index Futures and Dow Jones Utility Index Futures that would have traded on the CBOT. This ruling was reversed on appeal, with the resulting ruling in fact questioning the motive of the SEC in pursuing this ban, as well as the ban on single equity futures. The December 2000 changes to the CEA clarified much of the debate in favor of equity and equity index futures. The SEC and CFTC came up with joint regulations regarding the trading of single stock and small index futures. The Dodd-Frank bill reverses much of the Treasury Amendment, depending on how the regulations come out from the CFTC.

II. General public policy concerns

In this section the general nature of financial regulation is discussed, and placed in the context of the theory of public policy. Schreiber and Schwartz (1985) describe three main goals (not necessarily independent) for the regulation of financial markets: These are (1) Promoting a fair market in which there is no price manipulation or manipulation of information, (2) Promoting a competitive environment to achieve certain results, such as low transaction costs and appropriating pricing of the services of dealers and traders, and (3) Enhancing the quality of prices, in terms of informational efficiency. These goals appear reasonable in terms of common sense market-efficiency concerns. On the other hand, both Stigler (1971) and Peltzman (1976) argue that regulation may be thought of as the output of a market in which parties, in this case financial and commodity futures traders and exchanges, compete for value enhancing regulation that is supplied by the government. This view of regulation is not necessarily linked to the more idealistic view espoused by Schreiber and Schwartz, yet these are also not necessarily at odds. However, the regulatory outcome in a Stigler-Peltzman world need not be close to achieving any efficiency-related regulatory goals such as the three described in Schreiber and Schwartz.

In fact, as described by Romano (1997) and Gramm and Gay (1994, 1997), public policy regarding derivatives has been largely reactionary, driven by crises, and thus easily subject to the Stigler-Pelzman critique. In other words, the debate over derivative regulation is really one of politics, rather than efficiency (in the non-political sense).The 1998 debate regarding over-the-counter derivatives and the extent to which some of them are more properly regulated by an agency such as the CFTC also has some foundation in crises. Large derivative losses by Proctor and Gamble, Metalgesellshcaft, Barings Bank, Orange County, and the negotiated restructuring of the Long Term Capital Management hedge fund, raised the issue of over-the-counter derivative regulation high on the regulatory radar screen. Yet in 2000 the Futures Trading Practices act placed much of the extant over-the-counter derivatives in a safe harbor, under certain restrictions. Similarly, the relevant part of the 2010 legislation is clearly crisis-driven, with credit default swaps an easy target. The extent to which these crises serve to point out weaknesses in the regulatory regime may be helpful in the formulation or revamping of regulations.

However, regulations enacted during times of crises may be excessive, since regulators may view circumstances of the crises as the norm, rather than the exception. The circumstances after LTCM are quite interesting. The CFTC sought to be proactive, while at the same time Congress was working on legislation. The result was a set of proposals by the CFTC, which were eventually withdrawn after the passage of the Commodity Futures Modernization Act. The CFMA amended both the CEA and the Securities and Exchange Act. And, of course, the congress has reversed itself yet again in 2010 with the Dodd-Frank bill. Now with a change in congressional makeup, it is possible for politics to dictate another change. Generally missing from the regulatory or legislative changes is a fundamental statement of the economic arguments that might lead to need for the cause for regulation of derivatives. Much of the debate, e.g., Gramm and Gay (1994, 1997), discusses anecdotes and what we consider *policy relativism*, without establishing and criticizing the economic basis for possible regulatory goals or the public choice nature of the regulations. The debate often appears focused simply on support for certain institutions (e.g., swap dealers, exchanges, equity broker dealers, banks) or antagonism with respect to certain regulatory actions, without providing a convincing economic argument for or against the position. Thus the regulations remain open to the Stigler-Peltzman critique.

The general benefit from derivatives trading is the reallocation of risk bearing, and the general costs are those associated with the facilitation of this transfer. With this perspective, then, regulation and legislation may be evaluated in terms of inefficiencies in this transfer of risk, or in terms of externalities associated with the transfer. For example, Demsetz (1968) identifies the flows from individuals and firms to market makers, proxies by the bid-ask spread on securities, as a transactions cost. Evaluating this transactions cost is a particular form of regulatory analysis. A second order concern is transfers of wealth associated with derivatives trading. In other words, as a result of a derivatives trade, there is typically an ex post winner and loser to the trade. If ex ante derivative prices are efficient, then these future wealth transfers will be arbitrary, and, as Easterbrook (1985) points out, not much more can be said about them.

A more ethereal cost arises when a derivative trading is highly leveraged. For example, the demand by LTCM's creditors for additional collateral would have apparently resulted in large sales of assets, resulting in significant price disruptions in the set of assets traded by the fund. Such price disruptions will be of a temporary nature at most since the derivatives trading is financially zero-sum.[iv] The arbitrary private wealth transfer, difficult to evaluate for efficiency purposes, may have a temporary but strong impact on price efficiency and, as a second order effect, result in a misallocation of resources based on faulty price information. To come to this conclusion there must be a relatively large liquidity effect which is misinterpreted as a real effect, or at least creates noise masking any real effects, during the "fire sale" by the distressed firm. A large financial disruption resulting from highly leveraged losses is known as a systemic risk….a few firms fail, but there is contagion and the risk spreads to other firms. Beyond price inefficiency, and the deadweight costs of bankruptcy (legal costs, etc.), not much more can be said about highly leveraged derivative positions and resultant dramatic wealth transfers.

Price inefficiency is also an economic issue behind the regulatory concept of *manipulation.* Easterbrook (1986) also raises a second order cost, the fact that the threat of manipulation will likely curtail trading. Manipulation is profiting in a market by the creation of an *artificial* price, creating a situation where traders are executing transactions at prices that do not reflect the *fundamentals* for the market at that point in time. The logic is unfortunately circular, and the courts have found that the critical element is the elusive intention of the alleged manipulator, or even the concept that alleged manipulators naturally have market impact with their trading, and as a result their normal business trading will cause prices to move, obscuring the notion of artificiality.

III. Particular regulatory examples

A. Exchange Trading Requirement

The most prominent regulatory issue surrounding derivatives trading is the exchange-trading requirement, and this is certainly the main issue related to credit default swaps. This requirement is the cornerstone of the regulations regarding fraud and manipulation in futures trading. Concentrating derivatives trading onto an exchange allows regulators to conduct relatively low-cost surveillance and monitor trading and congestions. In addition, funneling all trades onto exchanges, which appear to become unique venues for trading particular contracts, has the potential to increase the informative content of price. This is the concept of market integration. As Romano (1997) and Mulherin *et al.* (1991) point out, the exchanges won the property rights debate over their prices, and exchange exclusivity was enacted as part of the 1922 Grain Futures Act.

The idea motivating the regulation of market integration is that the *price* is produced by the exchange, and has value. That value is fleeting, obviously, and has to be captured by the exchange through an exclusive sale of information regarding the prices generated at the exchange. Allowing others to trade based on the information generated by the exchange amounts, in some sense, to free riding. One way of viewing the sequence of legislative acts that succeeded the grain Futures Act is that the exchanges desired to maintain exchange exclusivity, using the Federal government as property rights enforcer, in return for an increasing degree of oversight. Romano notes how a sequence of crises led to increases in the scope of the Commodity Exchange Act, and points out the political forces that forged the current regulatory scheme. Apparent from this legislative and regulatory history is the clear possibility of the burden of anachronism in these regulations. The regulations clearly have their foundation in the oversight of agricultural derivatives, and yet presently they are applied to the complex financial derivatives environment that has sprouted in the shock of post-Bretton Woods interest rate and currency volatility. In response to the evolving financial derivatives environment, the CFTC issued in the summer of 1998 a "concept release" asking for comments on several questions relating to the trading of what are currently over-the-counter derivatives and their regulation.

This review by the CFTC appeared to come as something of a shock to the financial and regulatory community, and the press was filled with charges and counter-charges about the hegemonic direction in which the CFTC appeared to some to be headed. The hottest issue relates to swaps. In 1993 the CFTC passed regulations that allowed swaps dealers to continue to trade while not being subject to the trading and recordkeeping regulations of the CFTC, although the CFTC did retain fraud and manipulation checks over swaps. Since this regulation appeared to have little or no effect on the swaps market, there was little or no public outcry. However, in 1998, the concept release appeared to many as an attempt by CFTC to increase its authority and oversight of the swaps market, and the financial community has thus retrospectively questioned whether swaps are covered by the CEA. The Treasury, SEC, and the Federal Reserve also voiced concern over the posited CFTC regulatory direction. The CFTC was urged to postpone any additional action on swaps in the absence of any emergency, and apparently has obliged. Soon after the release, amidst its controversy, the Long Term Capital Management bailout was revealed, perhaps offering some vindication for the CFTCs request for an increase in information. Finally, the push for increased oversight of derivatives was dropped, and, in fact, reversed with the advent of new CFTC leadership. The year 2000 saw a swing toward accommodation of the *status quo* legal environment, and the added push toward legalization of futures on individual equities. This new approach was undertaken both at the CFTC and in the form of new bills drafted by both the House and Senate. The common theme among the CFTCs proposed rules and the draft bills is the reaffirmed exemption of swaps and other derivatives from direct regulation by the CFTC.

B. Risk Disclosure

The concept of asymmetric information is perhaps applicable to the requirement of certain disclosures of risk, and the notion of suitability. Suitability is the fitting of an investment strategy to an investor, and has a history as a fiduciary requirement in the securities area. Securities brokers are required to assess the suitability of investors for a particular investment plan. The implication of this requirement is that the investor is less informed about the risk and return profile of a particular strategy than the broker, who stands to benefit from the investor's trading, and that the broker is required to match the investor with a trading strategy. The CEA, however, does not contain any mention of suitability requirements for derivatives brokers and traders. The assessment of suitability appears to reside with the investor. Further, apparently to date the CFTC has found no basis for interpreting the CEA as requiring a finding of suitability for derivatives traders. A proposed regulation requiring suitability analysis was never adopted, with the CFTC explaining that the proposed regulations were already covered by anti-fraud sections of the CEA and CFTC regulations, and that it was unable to "formulate meaningful standards of universal application." CFTC (1978).As a substitute for the lack of a required suitability check, the CEA has broad registration requirements for trading advisers, broader than that required by the SEC. The breadth of the requirement has raised First Amendment issues, which are in the process of litigation. The economics of disclosure requirements have been covered at length, with compelling results that a fixed requirement deters competition in the space of information, and may lead to an inefficient disclosure of information.

C. Trade Practice Regulation

The CEA, and regulations passed by the CFTC under the CEA, are heavily involved in the regulation of how trading occurs. This regulation includes surveillance of trading, oversight of the exchanges audit trail, and even the cooperation with the Federal Bureau of Investigation in 1988-89 to execute *sting* operations on the floor of some futures exchanges. A major issue in this area is dual trading by floor traders, where they trade as principles while also executing trades for customers. The ability to dual trade raises natural conflict of interest issues. Knowing that the execution of a pending customer order may result in a significant change in price offers a tempting profit for a floor trader. The trader could also profit from reallocating customer and personal trades, keeping winners for the proprietary account. The CEA was amended in 1992 to require a prohibition of dual trading on futures exchanges, but the CFTC has failed to prohibit dual trading on any exchange, using the caveat in the CEA which allows for dual trading in markets with sufficiently good audit trail, or simply delaying the decision for the three largest exchanges. Other trade practice regulations for futures and options are similar to those for equities. These regulations seem to be a case of economies of scale, substituting agency proactive and reactive efforts for private tort-related actions. Thus, for example, when a broker takes advantage of a customer order, the customer has a clear right under common law for a personal legal action. The superimposition of a regulator to intervene in these private matters may be defended by considering the lower costs of a specialty agency, in place of individual actions each of which would involve private legal costs.

D. Manipulation

As mentioned above, a manipulation is the situation where a trader intentionally seeks to profit from creating *artificial* prices. The process of a manipulation typically involves the amassing of a significant portion of some asset on which derivatives contracts are written. In this sense, a manipulator is not unlike a monopolist acquiring rivals. The major difference is that instead of producing a reduced *flow* of goods or services, the manipulator must capture the rents from the manipulation of a *stock* of goods or services in a short period. Further, insofar as large positions were obtained to execute the manipulation, these positions must be liquidated, during the process known as "burying the body."

As with monopoly, the fundamental economic problem with manipulation is one of the distribution of information. In an asymmetric information world, the manipulator may benefit from insight into shortages developing, for example, when a manipulation may be more feasible. The regulator is then forced to prove that the alleged manipulator's positions, in relative terms, were not merely the result of fortuitous trading in the presence of these shortages. The courts and the CFTC have made the establishment of this distinction a non-trivial exercise. In the absence of an asymmetric information problem, it is difficult to conceive of a successful manipulation. The transactions costs associated with acquiring the commanding position, and later burying the body, are likely to deter any manipulative profits. Added to this will be the expected legal costs associated with any allegations of manipulation.

E. Contract Approval

In addition to all futures contracts being forced onto exchanges, the CFTC is required to approve such contracts for trading. The requirements are that the contract must serve some economic purpose, such as being useful for price basing or hedging, and that the contract be difficult to manipulate. Typically, the process involves an exchange applying to trade a contract, and a period of review, followed by contract approval after some changes. Along with approval, the CFTC may require revisions to existing contracts, although until recently such revisions were not requested. In 1996, the CFTC began the process of inducing changes to the CBT's corn and soybean futures contracts. In many respects this is the most (publicly) proactive that the CFTC had been with regard to contract design. The process involved public hearings and much acrimonious debate and public posturing. The result was significant changes to the contracts, adding an entirely new delivery area. This detail-oriented regulation raises a major issue with respect to the natural monopoly theory, and a conflict between the exchange's opinion of an optimal contract and the socially optimal contract design. The CFTC found that the old design, with significant concentration of ownership of delivery facilities, and limited deliverable supply, was growing increasingly susceptible to manipulation or price congestion. However, a fundamental issue, if the allegations were sound, is why the CBT would continue to trade a contract so flawed as to require regulation. One reason would be if the CBT leadership was connected directly with or captured by potential beneficiaries from manipulations or congestions. This relationship does not appear obvious given the makeup of the CBT.

V. Summary and Conclusions

Often the question of how best to regulate a given market failure is relatively obvious. Pollution can be reduced efficiently with a Pigovian tax or 'clean air' rights; market power may be stemmed with appropriate antitrust policy; or, approval of pricing schemes may solve the natural monopoly problem. The nature of the market for derivative products, however, is sufficiently complex that a "one size fits all" or rather, a "one regulation address all inefficiencies" approach is probably not appropriate. Considering regulation from both an efficiency point of view and a public choice perspective results in a comprehensive methodology for the examination of derivative regulatory issues. This section provides a brief summary of the paper and offers some conclusions. Particular institutional features are discussed in the first section. Here the use of derivative contracts as a tool to reduce commodity price risk is discussed along with the description of how derivatives' trading takes place and a sketch of the history of derivatives regulation. The second section emphasizes that public policy has been driven by crisis and notes that a fundamental consideration of the microeconomics of the regulation of derivatives is missing. The remaining sections seek to fill this void.

Relevant public choice issues are presented in the third section. The possible market failures associated with the regulation of derivatives are reviewed along with the role of regulatory capture, regulatory competition, property rights specification, and the theory of second best. Each of the possible motivations for a positive role for government is discussed with regard to derivatives trading. In the final section current regulatory issues are offered which shed a spotlight on the public choice/efficiency aspects of derivatives regulation. The different regulatory examples presented in the last section call for conclusions and assessment of the current state of affairs in the regulation of derivatives. The requirement that some derivative contracts be traded on exchanges is consistent with efficient regulation to prevent fraud but is also consistent with rent seeking behavior by exchanges to maintain monopoly power. Risk disclosure is a viable regulatory issue in the presence of information asymmetries. Trade practices may be regulated because of both asymmetric information concerns and because of economies of scale issues. Market manipulation is essentially an abuse of monopoly power, and its prevention may be piggy backed onto monopoly regulation. Finally, contract approval by the CFTC may be beneficial if influence during the design process by those who would gain from contract manipulations and congestion is possible. The complexity of the issues associated with derivative contracts and their trading suggests a flexible multifaceted regulatory approach that attempts to address each issue separately, albeit within a context of the promotion of efficient markets. The steps to this approach are best taken after a careful identification of particular market failures.

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Notes

[i] Exotic options include barrier options, the situation where an option cannot be exercised until the price goes above or below a barrier, and asian options which are based on the average of a time series of prices, and other options based on maximum and minimum prices.

[ii] Long indicates the party agreeing to buy the asset and short indicates the party agreeing to sell the asset.

[iii] The clearly exempt forward contracts are those which are simple agreements to deliver an asset in the future, fixing the price in advance, where the delivery of the commodity is anticipated by both parties.

[iv] This obvious fact is mostly overlooked in the popular press when these major derivatives cases are reported. Look back at Barings, Orange County, Metalgesellschaft, and so forth, and there will be little, if any discussion of the derivative winners. The press, and some regulators, treat the losses as if they were a social loss, when in fact this is far from the case.