

Accounting, Economics, and Law

A Convivium

Volume 1, Issue 1

2011

Article 2

Risk, Speculation, and OTC Derivatives: An Inaugural Essay for Convivium

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Recommended Citation:

Stout, Lynn A. (2011) "Risk, Speculation, and OTC Derivatives: An Inaugural Essay for Convivium," *Accounting, Economics, and Law*: Vol. 1: Iss. 1, Article 2.

DOI: 10.2202/2152-2820.1004

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Risk, Speculation, and OTC Derivatives: An Inaugural Essay for Convivium

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Abstract

Speculative trading, including speculative trading in derivatives, is often claimed to provide social benefits by decreasing risk and improving the accuracy of market prices. This assumption overlooks the possibility that speculation can be driven not just by differences in traders' risk aversion and information investments, but also by differences in traders' subjective expectations. Disagreement-based speculation erodes traders' returns, increases traders' risks, and can distort market prices. There is reason to believe that by 2008, the market for OTC derivatives may have been dominated by disagreement-based speculation that contributed to the Fall 2008 credit crisis.

KEYWORDS: speculation, derivatives, risk, hedging, information, arbitrage, disagreement, heterogeneous beliefs, CDS

JEL Classification Codes: D53, D82, D84, G01, G28, K20, B10, C70, D14

Acknowledgements: Lynn A. Stout is the Paul Hastings Professor of Corporate and Securities Law at the UCLA School of Law.

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1. Introduction

In the Fall of 2008, the global finance industry was tipped into crisis following the announcement of large trading losses suffered by insurance giant AIG in the over-the-counter (OTC) market for credit default swaps. Credit default swaps (CDS), a type of financial derivative, are frequently described in the media as “insurance” against declines in the creditworthiness of bond issuers. Insurance in turn is typically thought of something that spreads and reduces risk. Yet the sudden collapse of AIG, preceded by the derivatives-fueled collapses of investment banks Bear Stearns and Lehman Brothers, suggests that by 2008 the CDS “insurance” market had gone seriously awry. Rather than spreading and reducing risk, over-the-counter CDS trading seemed to have concentrated and increased it. How?

There is an obvious tension between the claim that derivatives are used to hedge against risk, and the observed increase in risk that actually accompanied the explosive growth of the OTC derivatives market in this century’s first decade. This tension makes it worthwhile to revisit basic assumptions about what the OTC derivatives market is about.

Derivatives often are described as “products,” “investments,” “assets,” “innovations,” and (as already noted) “insurance.” This Essay argues these words are misleading euphemisms. The simpler and far more accurate word that should be used to describe derivatives is “bets.” And while bets can indeed be used to hedge against risk, they can also be used for a more economically questionable activity—speculation. The common law has long recognized that speculative betting on market phenomena can increase risk rather than reducing it. Accordingly, the common law treated purely speculative derivatives contracts quite differently from true hedging contracts. Contemporary regulators would do well to heed the common law’s common-sense example.

2. Derivatives as Bets

Finance theorists often divide derivatives into two basic categories, futures (a contract of sale for future delivery of something at a price determined today), and options (a contract of sale for future delivery of something at a price determined today, where one party has the option to repudiate the contract). But the more interesting and significant characteristic of derivatives contracts—the very thing that makes them “derivative”—is the fact that they are futures and options contracts where the underlying asset being “sold” is never actually delivered by the seller, or received by the buyer. Indeed, neither buyer nor seller may ever own, or even ever see, the underlying asset. Rather, one party to a derivatives contract typically performs simply by paying the other some amount of money

determined by changes in some market price, interest rate, or credit rating that occur between the time the derivatives contract is entered, and the time the contract is performed. This process of performing by “paying differences” (as courts called it in the nineteenth century) makes clear the true nature of a derivatives contract. A derivative is nothing more, or less, than a bet: a promise to pay money determined by the occurrence or nonoccurrence of some future event. (Stout, 1999)

It is important to recognize that betting can be very useful for hedging against risk. For example, if I own a house and I am worried about the risk it will be destroyed by an earthquake, I can make a bet with an insurance company that if an earthquake damages my house, the insurance company will pay me money in an amount equal to the damage. Most people call this kind of wager “homeowner’s insurance,” although a derivatives trader might call it a “home value swap.” Whatever the label, when a person makes a bet that will pay off only in the event she suffers some loss, her betting has had the economically beneficial effect of offsetting the loss and so reducing her risk. It is truly insurance.

But bets can be used for purposes other than insurance. In particular, bets can be used to *speculate*—to try to reap profits from predicting future prices, interest rates, or credit ratings. In fact, bets are ideal vehicles for speculation. Speculating in the spot markets for gold, houses, or interest rates by actually buying and holding gold ingots, houses, or promissory notes is expensive, difficult, and requires the commitment of significant capital. In contrast, speculating by placing a bet can be virtually costless, at least until the bet comes due. It is much cheaper and much easier to speculate on a company’s creditworthiness by entering a CDS agreement, than by buying and holding a large portfolio of the company’s bonds.

3. The Common Law Approach To Derivatives Betting

Laymen and lawmakers traditionally have looked on purely speculative derivatives contracts with suspicion. In the popular mind, derivatives speculation was just another form of gambling, associated with not only with increased risk, but also with wastefulness and market manipulation. Reflecting this suspicion, the common law drew a careful distinction between a derivatives contract in which at least one party was truly hedging a preexisting commercial risk (deemed legally enforceable), and a purely speculative derivatives bet between two parties who were both trying to profit from predicting the future (deemed unenforceable as against public policy). As the U.S. Supreme Court explained in 1884:

“The generally accepted doctrine in this country is ... that a contract for the sale of goods to be delivered in the future is

valid, even though the seller has not the goods, nor any means of getting them than to go into the market and buy them; but such a contract is only valid when the parties really intend and agree that the goods are to be delivered by the seller and the price to be paid by the buyers; and, if under guise of such a contract, the real intent be merely to speculate in the rise or fall of prices, and the goods are not to be delivered, but one party is to pay to the other the difference between the contract price and the market price of the goods at the date fixed for executing the contract, then the whole transaction constitutes nothing more than a wager, and it is null and void.” (Irwin v. Williar, 1884, at 508-09)

This rule against enforcing “difference contracts” (the nineteenth-century term for derivatives) was subject to an important exception. Even when neither party intended to make or to take delivery of the goods that had been “sold” under the contract, a difference contract would be enforced if one of the parties could prove it held an economic interest that would be damaged by the very same occurrence that would allow it to profit from the wager. This “indemnity” exception to the general rule of unenforceability was mirrored in insurance law, which enforced insurance contract bets only when the policyholder sought indemnification for an “insurable interest” at risk. (Stout, 1999, at 718, 724-25)

Why did common law courts view derivative contracts lacking an indemnity interest as unenforceable on grounds of public policy? In brief, because it viewed such contracts as gambling, and gambling in turn was believed to create problems for both individuals and the broader society. In particular, gambling was thought to pose the distinctly economic—as opposed to moral—concern that it increased risk.

Unlike true hedging—which reduces risk, or at least assigns risk to a party who can bear it more cheaply—gambling, including speculative derivatives gambling, does indeed increase risk. The logic is straightforward. When two people gamble, instead of two people who each have some money, we often end up with one who has lots more money and one who has none. This increased variation in wealth is, of course, the very definition of financial risk, which economic theory typically posits reduces social welfare. Showing an intuitive understanding of the costs of risk, the common law disfavored purely speculative derivatives wagering because it “induces men to risk their money or property.” (Brua’s Appeal, 1867, at 299) This was believed to contribute not only to the impoverishment of the losing gamblers and their dependents, but to other social problems as well, including “bankruptcies, defalcations of public officers, embezzlements, [and] forgeries.” (Cunningham v. National Bank of Augusta, 1882, at 403) In an eerie presage of the 2008 credit crisis, one nineteenth century

opinion fretted that enforcing speculative off-exchange derivatives would increase the chances of “carrying down the bona fide dealer in [the speculator’s] collapse.” (Kirkpatrick v. Lyons v. Bonsall, 1872, at 158)

In spite of this concern about increased risk—a concern that recent experience suggests still very much applies today—the common law did not completely prohibit speculative derivatives contracts (“difference contracts”). Rather, it discouraged pure speculation in a more subtle fashion: by refusing to give derivatives speculators access to public courts to enforce their wagers. This rule of legal unenforceability had an interesting effect. In brief, it drove would-be derivatives gamblers to form private gambling clubs owned by sophisticated business parties with both the motive, and the means, to ensure derivatives gamblers could and would make good on their bets. These private gambling clubs—the options and futures exchanges—used membership requirements, capital requirements, and collateral posting requirements to ensure that derivatives bettors actually could, and would, perform on their contracts. Through this process of private enforcement, the futures and options exchanges allowed purely speculative trading to take place while keeping its scope and risks in check. At a result, common law courts eventually recognized the legality of exchange-based derivatives trading. (Stout, 1999, at 719)

4. The Modern Approach

The end result was a legal distinction between purely speculative “over-the-counter” (OTC) derivatives entered off an exchange (which were unenforceable in the courts) and speculative derivatives contracts entered on a private exchange (which were enforced primarily not by courts, but by the exchanges themselves). Unfortunately, this time-tested common law system eventually succumbed, first to the emerging trend toward codification, and then—far more disastrously—to the more-modern trend of “decodification” (deregulation).

As described in detail by Stout (1999), the codification process began at the state level, with the passage in the late nineteenth and early twentieth centuries of state “antibucketshop” statutes that declared off-exchange futures and options contracts not performed by actual physical delivery to be not only unenforceable, but illegal. The federal government soon followed suit with the Future Trading Act of 1921 and the Commodity Exchange Act of 1936 (CEA), which similarly made off-exchange trading in futures and options on certain listed commodities illegal under federal law. In 1974, the U.S. Congress created the Commodity Futures Trading Commission (CFTC) and further expanded the CEA to apply to off-exchange futures and options trading not just in listed commodities, but in “all other goods and articles” as well.

It thus appeared that, by 1974, the old common law rules governing difference contracts (derivatives) had been largely replaced by a federal regulatory scheme. Only a decade later, however, the deregulation trend took hold. Accustomed to dealing only with commodity-market based derivatives like grain futures and silver options, the CFTC was unprepared to deal with the sudden appearance of derivatives contracts based on financial market phenomena, like interest rates or currency valuations. After initially treating interest rate swaps and certain other financial derivatives as outside its jurisdiction, the CFTC in the 1980s and 1990s tried to re-assert its regulatory power over financial derivatives. By that time, however, the OTC derivatives market genie was out of the bottle. The CFTC's efforts were met with heavy Wall Street resistance and lobbying, culminating in 2000 with the U.S. Congress' passage (at Wall Street banks' urging) of the Commodities Futures Modernization Act of 2000 (CFMA). The CFMA essentially reversed the old common law rule by declaring off-exchange derivatives trades by financial institutions to be legally enforceable--including purely speculative trades between two parties who each lacked an insurable interest.

Not surprisingly, the legalization of purely speculative OTC derivatives trading produced an immediate and explosive growth in the size of the OTC derivatives market. (If we legalized burglary or murder for hire, those markets would likely grow, too.) According to the Bank for International Settlements, by the end of 1999 the total notional value of OTC derivatives outstanding was approximately \$88 trillion. (Bank for International Settlements, 2000) By 2008, the OTC market had grown nearly tenfold, to almost \$600 trillion. (Bank for International Settlements, 2008) This figure amounted to about \$100,000 in notional derivatives bets for each man, woman, child and infant living on the planet.

5. The Results of the Modern Approach

One would expect the sudden appearance of a \$600 trillion market to have consequences. The rise of the OTC derivatives market soon did. Interestingly, those consequences were exactly what a nineteenth-century common law judge would have predicted: an increase in risks to derivatives "investors" without any apparent compensating social benefit.

The connection between OTC derivatives speculation and investor risk is straightforward and obvious. Even before passage of the CFMA, regulatory exemptions legalizing OTC trading in interest rate swaps soon led to spectacular trading losses and bankruptcies for Orange County, California's pension fund; for the British bank Barings PLC; and for the hedge fund Long Term Capital Management. (Stout, 1995a and Stout, 2009) Similarly, the CFMA's legalization

of other financial derivatives led to the emergence of an OTC credit default swap market that, rather than reducing systemic risk, eventually caused the 2008 collapses of Bear Stearns, Lehman Brothers, and AIG. (Stout, 2009) The sudden and unexpected collapses of these institutions triggered the Fall 2008 credit crisis.

6. Why Did We Ignore OTC Derivatives' Potential to Increase Risks?

In the light of recent history, it seems worthwhile to attempt a better understanding of why—given the common law's longstanding hostility toward purely speculative derivatives trading—lawmakers by the end of the twentieth century were eager to dismantle longstanding legal deterrents by passing legislation to make even purely speculative OTC derivatives legally enforceable.

Part of the answer may lie in simple forgetfulness. Just as residents of a community that suffers a crime wave and hires police to end it may wonder, several years later when crime has disappeared, why they are paying for police officers, the common-law solution of confining derivatives speculation to private exchanges worked so well that lawmakers and laymen alike lost sight of the possibility that widespread OTC speculation could cause problems.

Another part of the story is political power. Even if derivatives speculation imposes social costs by increasing risks, it can be privately profitable for individual derivatives traders and especially for Wall Street banks that act as dealers in derivatives markets. The U.S. financial industry is politically powerful and exerts enormous influence through its lobbying and strategic campaign contributions to politicians. (Johnson, 2009) Meanwhile, investors who suffer increased risks without compensating returns from purely speculative derivatives trading face their own peculiar obstacles to political action. *Ex ante*, before losing derivatives traders participate in speculation, they expect to profit from their speculative activities. *Ex post*, after they learn they have suffered losses, they are discouraged from political action both by embarrassment, and by the knowledge they can protect themselves from future losses simply by refraining from doing any more trading. (Stout, 1995a) It is accordingly difficult to find a natural political constituency to push for limitations on derivatives speculation.

But it is also possible that much of the blame for lawmakers' willingness to ignore the lessons of business history and the wisdom of the common law may be laid at the foot of economists, many of whom championed the legalization of OTC derivatives trading in 2000 on the grounds that economic theory viewed speculation as a socially beneficial activity. (Stout, 1999, at 739) Yet why would the common law discourage a socially beneficial activity? The answer, perhaps,

may lie in the possibility that when economists and common law judges speak of speculation, they are often describing quite different activities.

7. Three Theories of Speculation

Thus we turn to consider in greater detail what, exactly, is “speculation.” As it turns out, the economic literature identifies at least different theories of speculative trading. These three theories—which we might dub the *risk hedging*, *information arbitrage*, and *disagreement* models of speculation—carry very different implications for the economic consequences and desirability of speculation.

The *risk hedging* theory views speculative trading as a consequence of traders’ different attitudes toward risk. According to this model, speculators are traders who extract trading profits by dealing on relatively favorable price terms with more risk averse hedgers who are willing to accept a less-advantageous price to avoid the risk of future price changes. For example, a risk averse farmer whose wealth is tied up in his wheat crop might want to hedge against a change in wheat prices by selling wheat futures, thus locking in today’s price. A less risk averse speculator—perhaps someone who doesn’t mind risk, or someone who can diversify risk away—might be willing to buy the farmer’s futures contracts and take on the risk of future price changes. Thus, it can be argued that the risk hedging theory is not really a theory of speculation at all. A risk hedging market is really a risk reducing, socially beneficial insurance market.

A second explanation for speculative trading that appears frequently in the economics literature is the *information arbitrage* model. This second approach, often associated with a classic article by Sanford Grossman and Joseph Stiglitz (Grossman and Stiglitz, 1980), describes speculators as careful researchers who invest in information that allows them to identify mispriced assets, allowing them to trade on superior terms with less-informed market participants selling for liquidity or buying for consumption. For example, an information arbitrageur might do meteorological research to predict a drought, and then profit from her superior prediction by buying wheat futures from liquidity-seeking farmers. The information arbitrage model accordingly explains speculative trading as a result of differences in market participants’ willingness to invest in information.

Like the risk hedging model, the information arbitrage model implies that speculative trading produces social benefits. But rather than presuming that speculative trades benefit both parties by moving risk to the party who can bear it most cheaply, the information arbitrage theory relies on more indirect forms of social benefit to defend speculation. An information arbitrageur’s trades are not, strictly speaking, mutually beneficial. Less-informed traders would prefer a market in which they did not have to compete at a systematic disadvantage against

information arbitrageurs. Nevertheless, information arbitrageurs perform at least two useful economic functions. First, they add useful liquidity to the market, making it easier for others who want to buy or sell for non-speculative reasons to find someone to trade with. Second, information arbitrageurs identify mispriced assets and correct market prices. For example, an information arbitrageur whose weather research reveals that there is likely to be a drought will buy wheat, driving up prices. Farmers will respond by planting more wheat, reallocating social resources in the fashion that helps offset the effects of the drought. These social benefits justify information-arbitrage trading, even though from the perspective of the trading parties it is a zero-sum game where the arbitrageur's profits come at the liquidity trader's expense.

The risk hedging and information arbitrage models of speculation accordingly explain many economists' general enthusiasm for speculators and for speculative markets, including (at least before the 2008 crisis) the market for OTC derivatives. Yet there is a third possible economic model of speculative trading that comes much closer to describing what laypersons mean when they refer to "speculation." This third model may also do a better job of explaining both the explosive growth in OTC derivatives trading that followed passage of the CFMA, and the economic problems that followed.

The third model of speculation explains speculative trading as a result of "heterogeneous expectations" or subjective *disagreement*—that is, differences in individual traders' subjective beliefs about the future. (Hirshleifer, 1977; Stout, 1995a) Consider an archetypal example. Suppose that Bull and Bear are equally risk averse. Although neither owns any corporate bonds, both have invested an equal amount of time and effort into analyzing a particular corporation's (say, GE's) creditworthiness. Based on their research, which focused on different sources, Bull and Bear reach differing subjective conclusions about whether GE's creditworthiness is likely to rise or fall in the near future. Bull predicts a rise; Bear predicts a fall. Given their differing beliefs, Bull willingly sells CDS "insurance" on GE bonds that Bear willingly buys. Both take on new risk that neither was exposed to before. Neither provides liquidity to actual buyers and sellers of GE bonds (although perhaps each can be said to provide "liquidity" to the other speculator). Finally, because neither has superior information—just different information—their trade does not improve the accuracy of GE bond prices.

8. The Reality and Implications of Disagreement-Based Speculation

The possibility that apparently speculative trading can be motivated by subjective disagreement seems obvious to many laymen. Why then, do experts often

overlook it? As noted, part of the answer may lie in many free-market economists' enthusiasm for the risk hedging and information arbitrage models, which imply that all is well in the market, and that speculative trading does indeed serve society's interests.

Another part may lie in game theory, and in particular in a classic article by Paul Milgrom and Nancy Stokey that predicted that, given certain assumptions, rational bulls and bears would never trade on subjective disagreement because each would assume the other knew something important that he or she didn't know. (Milgrom and Stokey, 1982) This influential "no trade" theorem, however, relies on unrealistic assumptions about human beliefs and knowledge. (Stout, 1997). Moreover, whether or not rational actors should trade on the basis of subjective disagreement, *real people do trade on disagreement*.

This is obvious not only from empirical phenomena like the "winner's curse" seen in auctions (Thaler, 1988), but also from casual perusal of any investment newsletter or financial column. And while would-be speculators who lose money may eventually stop trading—at least if they are rational and capable of learning—there are plenty of new traders arriving in each generational cohort to take their place. As P.T. Barnum put it, "there's a sucker born every minute." (Stout, 1995a, at 637-641)

Given the reality of disagreement-based trading, it is important to consider its economic implications. Those implications are not favorable. Unlike the risk hedging and information arbitrage models, the disagreement model of speculative trading predicts that speculation is economically inefficient because it *increases risk without providing any offsetting social benefit*.

Despite the fact that two speculators who trade with each other each expect to reap trading profits, pure speculation of this sort is at best a zero-sum game. Bull can only make money if Bear loses money, and vice versa. Meanwhile, both traders have incurred a cost, because their respective beliefs that that they can predict the future better than their counterparty can has tempted each of them to expose him- or herself to a new risk that he or she wasn't exposed to before, e.g., the risk that GE's credit rating might rise or fall. Similarly, derivatives betting on interest rates, market prices, or inflation rates increases speculating traders' risks, just as gambling increases gamblers' risks.

9. Conclusion, With A Note on Where We Are Now

The idea of disagreement-based trading fits well with the popular image of speculation. It explains a variety of empirical phenomena, such as bubbles and high turnover rates, seen in speculative markets. (Stout, 1995a; Stout, 1999) Perhaps most importantly, it provides a firm theoretical foundation for the

suspicion that speculative trading can increase private risks without providing offsetting public benefits.

In the process, the theory of disagreement-based trading gives us reason to question the wisdom of free market ideology in speculative markets. This may be especially true in the case of speculative OTC derivatives trading. There are at least two reasons to suspect that, after the passage of the CFMA, the OTC derivatives market came to be dominated by speculation of the disagreement-based sort. The first reason is the sheer size of the market, which by 2008 had grown many times larger than the markets for the underlying assets on which OTC derivatives were being written. For example, by 2008 the notional value of all outstanding CDS contracts had reached \$67 trillion, while the total value of all bonds and asset-backed securities issued by U.S. firms was only \$15 trillion (Stout 2009). Although notional value for many reasons can be an inaccurate measure of a market's size, it seems highly questionable to assume that \$67 trillion of CDS written on \$15 trillion of bonds could all be "insurance." It is worth remembering, as well, that in 2008 derivatives contracts were not being written on all securities, but primarily on a favored few, in particular mortgage-backed securities and certain companies' bonds. Thus, the imbalance between the amount of derivatives bets outstanding, and the value of the underlying assets being bet upon, may have been even greater.

The second reason to suspect that the OTC derivatives market was dominated by disagreement-based speculation in 2008 is, quite simply, that the OTC market produced exactly the result we would expect to see from purely disagreement-based trading: a dramatic increase in risk unaccompanied by any evident social benefit. According to the risk hedging model, OTC derivatives trading should have decreased risk, or at least shifted it to parties who could bear it more easily. (This view led famed economist Merton Miller to confidently announce in the 1990s that "derivatives have actually made the world safer, not riskier ... no serious likelihood of a derivatives-induced financial meltdown actually exists." (Miller, 1994) The information arbitrage model predicts that speculative OTC derivatives trading should have neither increased nor reduced risk, merely moved it around while providing more accurate prices in the process. Only the disagreement-based model predicts that the opportunity for speculative trading increases risk. This is, of course, what we have experienced.

As elegant and appealing as the information arbitrage and risk hedging models of speculation may be, they did a remarkably poor job of predicting the consequences of the CFMA and the legalization of speculative OTC derivatives trading. Instead, the market behaved—to our collective misfortune—the way an enormous gambling market would behave.

Which raises the question: might we do well to return to the common law rule that purely speculative derivatives contracts entered off an exchange are

unenforceable as contrary to public policy? Interestingly, the United States' newly-passed Dodd-Frank financial reform bill moves, at least a bit, in this direction. In particular, the bill requires that swaps and other financial derivatives that do not hedge against a "commercial risk" must be traded on a registered exchange, or on a clearinghouse that performs a similar private enforcement and risk-reducing function.

Unfortunately, the bill also contains an exemption that could, depending on future developments, come to swallow the rule. Even purely speculative derivatives contracts are excused from the exchange/clearinghouse requirement if those contracts are "not accepted" for clearing by an exchange or clearinghouse. (Skadden Arps, 2010) Only time will tell, but it seems plausible that Wall Street will prove inventive enough to come up with new and arcane derivatives contracts so bizarre and unusual that they are indeed "not accepted" for clearing.

If this should occur, we may very well find ourselves faced again with the sort of enormous, risk-increasing OTC derivatives market that led to the Fall 2008 crisis. Should such a speculative market arise again, lawmakers would do well to heed the wisdom of the common law. Gambling—including commercial gambling through OTC derivatives—should at best be tolerated, not subsidized through public enforcement of gamblers' wagers.

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