



# Diverging derivatives: Law, governance and modern financial markets



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## ABSTRACT

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This paper examines the institutional, political and regulatory history of U.S. derivatives markets from the 1980s until the financial crisis of 2008 to understand the divergence between exchange-traded derivatives and over-the-counter derivatives. Although exchanges like the Chicago Mercantile Exchange and Chicago Board of Trade were powerful market incumbents with strong political connections, they were eclipsed by the over-the-counter market. The latter remained unregulated, despite numerous attempts to do so, and grew to enormous size. With such growth, the political decision not to regulate became increasingly irreversible, even in the face of events like the failure of Long Term Capital Management. The implications for law and the politics of financial regulation are discussed. *Journal of Comparative Economics* 41 (2) (2013) 386–400. Department of Sociology, Northwestern University, 1808 Chicago Avenue, Evanston, IL 60208, United States.

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## 1. Introduction

The term “derivative” possesses a number of useful meanings. It is familiar to anyone who has taken an elementary calculus course because it refers to a mathematical function that is *derived* from another function. In differential calculus, for example,  $dx/dt$ , the first derivative of a continuous function  $x = f(t)$ , can be used to calculate the slope of the tangent line at a particular point, and measure instantaneous change over time. In finance, a derivative is an “arrangement or instrument (such as a future, option, or warrant) whose value *derives* from and is dependent upon the value of an underlying variable asset, such as a commodity, currency, or security” (Oxford English Dictionary). Modern financial derivatives include futures, options, and swaps, as well as more complicated instruments. In this paper, I exploit this double-meaning of “derivative” to discuss how and why the markets for two types of financial derivatives diverged over time.

Modern financial derivatives can be distinguished in a number of ways. Here I focus on where they are transacted. Generally they are traded in one of two venues: on an organized exchange (e.g., on the Chicago Mercantile Exchange [CME], EUR-EX, or HKEx) or over-the-counter (OTC). Exchange traded (ET) derivatives are standardized, fungible, and of limited variety. The host exchange provides clearing services and allows for price discovery and a high degree of both transparency and regulatory oversight. The OTC market, by contrast, involves private bilateral transactions that can be uniquely customized to the needs of a corporate client. There is little transparency, no price discovery (the terms of the transaction are not made public),

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no clearing, and no regulatory oversight. ET markets are publicly regulated, while OTC is subject to looser private ordering, chiefly through an industry group called the International Swaps and Derivatives Association (ISDA).

Modern derivatives markets are part of a larger and recent pattern of “financialization” (Krippner, 2011), and have greatly expanded in activity, value, and significance. Financialization produced high earnings and growing employment in the financial industry (Philippon and Reshef, 2009), and increasingly attracted into financial careers the graduates of elite universities and business schools (Ho, 2009). However, evidence also suggests that financialization has its limits (Cecchetti and Kharroubi, 2012; Lazonick, 2010), and that increased size of the financial industry does not necessarily mean more efficient financial intermediation (Philippon, 2011).

Although they both grew substantially, ET and OTC derivatives markets have diverged over the past several decades. Older organized exchanges (like the CME, Chicago Board of Trade [CBOT] and Chicago Board Options Exchange [CBOE]) expanded into new kinds of contracts (shifting from commodity options and futures into currency, debt and index derivatives), and their volume of business has grown considerably. They also switched from open-outcry (face-to-face trading on an exchange floor) to electronic trading. But as fast as they grew, the exchanges enjoyed nothing like the explosive growth of OTC derivative markets, whose total annual notional values are now in the hundreds of trillions of dollars (far greater than total annual world GDP). The OTC market is much newer, and now much bigger, than the ET market. Whereas in 1986 the total value of outstanding ET derivatives contracts was larger than that for OTC, by 2008 OTC activity was worth roughly ten times as much as that for ET, despite the fact that value of ET had increased 100-fold over this period (Jorion, 2010, table 2).

Some telling differences between the two kinds of derivatives markets became apparent during the financial crisis of 2008. Consider the failure of Lehman Brothers in September of that year. Like other major investment banks, Lehman was heavily involved in both the OTC and ET derivatives markets, right up until the bank collapse in September of 2008. As of May and August of that year, Lehman had over 900,000 derivatives positions worldwide (Valukas, 2010, vol. 2: 569). In part because it was one of the most active participants in the credit default swap (CDS) market, Lehman's failure helped ignite a chaotic period in OTC markets in which, for example, financial institutions stopped dealing with each other because of worries over counter-party risk and their inability to value assets (Gorton, 2010: 51). Furthermore, many of Lehman's creditors and counterparties were unable to extricate themselves from their positions once the bankruptcy court imposed a judicial stay (New York Times July 15, 2009, p. B7). Meanwhile, over at the CME, Lehman's exchange-based derivatives positions were cleared and closed out without incident or turmoil. Another of the most prominent financial events also involved the OTC market: American International Group (AIG) was heavily involved in the CDS market. It had to be bailed out by the Federal Reserve in September of 2008 when a ratings downgrade required it to post additional collateral as required by the CDS contracts it had entered into. AIG was unable to meet its collateral obligations, and rather than let it fail the Fed made available \$85 billion in credit (Johnson and Kwak, 2010: 163–170).

Despite these sharp discrepancies in growth rates and performance during the crisis, the two markets have some important connections. Most directly, ET and OTC markets are linked because many of the same financial institutions trade in both at the same time. A large dealer-bank (e.g., Goldman Sachs, Deutsche Bank, or JPMorgan Chase) that takes on risk in a bespoke OTC derivative contract with a client may lay off some or all of that risk on one of the exchanges (Remolona, 1992: 38).<sup>1</sup> Hence, financial institutions use one market to balance their positions in the other. These connections are deepened because some quite similar instruments trade in the two markets (which among other things create arbitrage opportunities). For example, a linked series of foreign exchange futures contracts, traded on an organized exchange, can be used to construct something very close to a currency swap contract, traded over-the-counter. Economically, the two are almost identical. In similar fashion, a futures contract, traded on an exchange, is simply a standardized version of a forward contract that is traded over the counter.

The financial crisis of 2008 produced substantially different effects in the two derivatives markets, despite the connections between them. Worrisome instability in OTC contrasted with robust activity on the exchanges. In the political aftermath, this striking disparity motivated a number of policy proposals in both the United States and Europe to reform OTC markets in such a way as to make them more like organized exchanges, by adding more transparency, regulatory oversight, and clearing arrangements to reduce counter-party risk (Duffie, 2010; Litan, 2010; Skeel, 2011).<sup>2</sup> Since the exchanges were more stable than OTC, why not make OTC more like an exchange? The magnitude of the financial catastrophe notwithstanding, there has been strong resistance to reform from various financial institutions, particularly when regulation threatened to undercut the profitability of OTC activities for core market participants. Dealer-bankers made a lot of money in the pre-crisis OTC market, and consequently were reluctant to change the *status quo*.

In this paper I am going to consider a number of issues raised by the intriguing contrast between OTC and ET: how and why did OTC grow so fast, as compared to ET? After all, derivatives exchanges like the CME, CBOT and CBOE were powerful market incumbents with strong political ties to Washington, DC and they enjoyed enduring relationships with their regulatory overseers in the Commodity Futures Trading Commission (CFTC). They had considerable political and economic resources to wield, and yet OTC markets provided competition that the exchanges were somehow unable to suppress,

<sup>1</sup> OTC derivatives consist of various interest rate and currency swaps, and credit derivatives including CDSs (credit default swaps), CSOs (credit spread options), CLNs (credit linked notes) and CDOs (collateralized debt obligations). See Ayadi and Behr, 2009.

<sup>2</sup> Here, I am not going to determine which of the features that distinguish ET from OTC explains, in a causal sense, their divergence during 2008. Whether it is specifically because of regulation, transparency, clearing, leverage, or some other feature, is a topic for another paper.

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