Testimony of

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Good morning, Chairman Angelides, Vice Chairman Thomas, and members of the Commission. I welcome the opportunity to appear before you today to testify on the very important topic of the role played by over-the-counter (OTC) derivatives in the financial crisis.

The Role of Over-the-Counter (OTC) Derivatives in the Financial Crisis

Executive Summary

Although various factors were at work in causing the financial crisis, unregulated derivatives played an essential and uniquely dangerous role. Their impact can be classified into two main effects.

First, ***unregulated credit derivatives were largely responsible for creating systemic risk that turned isolated problems into a system-wide crisis.***

Second, ***unregulated commodity derivatives created excessive volatility in commodities prices, which hurt the economy at a time when it was already under intense stress*** from the effects of the financial crisis.

From a systemic risk perspective, OTC derivatives created a complex and opaque web of interconnections between different institutions and markets, which set the stage for the crisis of counterparty confidence that precipitated the freezing up of credit markets.

From a volatility perspective, OTC derivatives facilitated and encouraged excessive speculation in the essential food and energy commodities used to feed the U.S., and on which our economy runs. This excessive speculation, including the especially damaging form of speculation known as "index speculation," generated volatility. This volatility benefited the dealers while harming the rest of the economy, and society as a whole. [1]

Both of these risks could have been significantly mitigated if over-the-counter (OTC) derivatives were cleared through a central counterparty (CCP) with novation and daily margin. Because of the lack of transparency in OTC derivatives, a regulator charged with overseeing systemic risk would have been hard-pressed to avert the crisis in the absence of such a clearing requirement. The specific risks associated with excessive speculation in commodities

[1] This issue is discussed in two papers by Frenk, D., and Masters, M. *Balanced Markets: The Social Role of Markets* (2010) and *Anthropic Finance: How Markets Function* (2010). These are available at http://www.bettermarkets.com/papers/Balanced and http://www.bettermarkets.com/papers/Anthropic respectively.

derivatives would also have required aggressive speculative position limits of the sort I have described in previous testimony.[2]

I would first like to give a brief summary of the history of derivatives leading up to the crisis, and the deregulation that made it possible for such a destructive event to occur. I will then go into more detail on the two specific effects of deregulated derivatives during the crisis: systemic risk, and excessive volatility.

The History of OTC Derivatives Leading Up to the Crisis

The sorts of complex financial derivatives, including credit derivatives, that were most heavily implicated in the financial crisis are a relatively recent invention. Invented in the late 1980s, they became popular in the 1990s, and then surged after 2000. However, derivatives in general have been around for much longer.

Derivatives are financial contracts that derive their value from an underlying asset. Derivatives exist on financial instruments as well as on consumable commodities. The U.S. derivatives markets on consumable commodities date back to 1865; derivatives markets on financial instruments did not appear until much later (in the 1970s).

In 1936, Congress passed the Commodity Exchange Act, recognizing that the derivatives market for consumable commodities was created solely for the benefit of *bona fide* physical hedgers. This legislation allowed regulators to police the commodities futures markets for fraud, manipulation and excessive speculation. As an additional safeguard against systemic risk, commodity futures were forced to trade on exchanges that required central clearing. Prior to the implementation of mandatory exchange clearing, futures markets had suffered from periodic crises of the sort witnessed in derivatives in 2008.

The 1936 Commodity Exchange Act enabled commodity futures markets to function well for over half a century.

Beginning in the 1980s, a wave of deregulation undid the important network of safety measures that was a necessary condition of the fair and efficient operation of the financial sector. It is generally accepted that a well-functioning financial sector is essential to economic prosperity. [3] In the 1980s, however, the notion of a well-functioning financial sector was mistakenly conflated with the idea of a deregulated one. This was tantamount to equating a well-functioning automobile

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[2] Masters, M., Testimony before United States Senate Committee on Agriculture, Nutrition and Forestry, June 4th 2009. Available at http://www.appapillai.com/blog/wp-content/uploads/2009/06/masters-testimony-1.pdf

[3] See Joseph E. Stiglitz, *Freefall: America, Free Markets, and the Sinking of the World Economy* (W. W. Norton & Co. 2010).

with one possessing an accelerator pedal but no brake.

In the 1990s, financial derivatives became increasingly popular, first catching up with commodity futures, and eventually eclipsing them.

The Commodities Futures Modernization Act of 2000 (CFMA) brought about a dramatic and perilous change to this previously stable system. CFMA affected both commodity derivatives and credit derivatives. On the commodity side, CFMA arbitrarily created a new category of "exempt commodities" which were allowed to trade on Exempt Commercial Markets (ECM), free from speculative position limits and, more importantly, free from the CFTC regulations of Designated Commercial Markets (DCM).

This new legislation was founded on the belief that some consumable commodities (such as crude oil) had such large deliverable supplies that they were not susceptible to manipulation. This was a grave error for two reasons.

First, a commodity that has a large supply and a similarly large demand is balanced so tightly that it does not take a great amount of effort to manipulate the market for that commodity. Second, as I have detailed in previous testimony,[4] derivatives markets for consumable commodities are vulnerable not only to manipulation, but to excessive speculation as well. This may seem like a nuanced difference, but it is important to understand that excessive speculation can take place in the absence of any intent to manipulate.

The CFMA also provided for OTC credit derivatives, which had already started to become popular in the nineties, to become universally deregulated, setting the stage for a rapid and precarious rise in leverage and interconnectedness. After the bursting of the dot-com bubble and the September 11th attacks of 2001, with record low interest rates and the safety checks now removed, swaps dealers quickly grew their businesses to gargantuan proportions, ballooning from an estimated $94 trillion in June 2000 to $684 trillion in June 2008.[5]

At this same moment in time, total Mortgage Backed Securities (MBS), another key player in the crisis, stood at around $14 trillion.[6] A direct comparison of the size of these markets would not be accurate, as one (MBS) is cash based while the other (derivatives) is not. However, these figures serve to illustrate that MBS and derivatives were each of sufficient size to cause major losses on their own.

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[4] Masters, M., Testimony before United States Senate Committee on Homeland Security and Governmental Affairs, June 24th 2008. Available at: http://hsgac.senate.gov/public/_files/062408Masters.pdf

[5] Bank for International Settlements Press Release "The global OTC derivatives market continues to grow," www.bis.org/press/p001113.htm

[6] Federal Reserve Data, available at http://www.federalreserve.gov/econresdata/releases/mortoutstand/mortoutstand20090331.htm

In contrast to the restrained climate of the futures market in 1936, the post-CFMA era saw derivatives trading over-the-counter, without transparency or safety checks, and immune from investigation and prosecution for fraud and manipulation. It is not difficult to see why derivatives desks were among the most profitable units at most large banks during the past decade.[7]

To be specific, a lack of transparency in OTC derivatives allowed dealers to make outsize profits in at least two significant ways. First, because dealers were the only ones who knew all the relevant information for a transaction (i.e. they could see how many firms were interested in similar deals, or deals that would constitute the other side of the position), they possessed an informational edge over their customers. They could therefore use this edge to widen bid-ask spreads and extract maximum profits (e.g. quote a price of $10 million for a deal that would be fairly priced at $9 million). Second, for those transactions that the dealer could not hedge with another OTC customer, their hedging would instead take place on futures exchanges and other regulated markets. Again, dealers could use their privileged position, this time to control the flow of information into those markets, timing their orders to make maximum profits, while in the process distorting the price discovery mechanism for those public markets.[8]

Risks Posed by OTC Derivatives Preceding the Crisis

OTC derivatives soared in popularity in the decade after CFMA, creating a shadow financial system that carried two significant risks:

(1) The interlocking web of very large exposures between the major swaps dealers created the potential for a domino effect, wherein the failure of one dealer could lead to the failure of all dealers.

(2) Losses did not have to be very high in order to force the first domino to fall, due to the extreme leverage that characterized those positions. This leverage was the result of requiring little or no margin collateral to be posted to insure those bets.

When financial products and firms lack transparency, as they did in the period leading up to the crisis, systemic risk results from counterparties' inability to assess risk. When bad news emerges about one or more large counterparties, the solvency of all counterparties is thrown into question. This is why the real threat of OTC derivatives was far less important than the **perceived** threat. The

[7] See, e.g., Frank Partnoy and David A. Skeel, Jr., "The Promise and Perils of Credit Derivatives," (NELLCO, 2006).

[8] Again, these issues are treated at greater length in the two papers *Frenk and Masters (2010) A and B* (full reference in note 1 above).

perception of risk, by itself could have been enough to freeze up credit markets and destabilize the entire financial sector and real economy.

The danger of OTC derivatives, therefore, was not just a function of their capacity to spread losses across many markets and types of participants, but also a function of the opaque environment created by deregulation. Even if the losses on unregulated derivatives were not enough to bring down the financial system, the uncertainty due to their lack of transparency could have done so on its own.

How Risk Could Have Been Mitigated

It is important to note that a regulator assigned to manage systemic risk would have faced the impossible task of evaluating highly complex, off-balance-sheet transactions. They would have been forced to rely on the risk management expertise of the companies they regulated, who clearly, in hindsight, were not as capable of assessing risk as they purported to be. While the regulator might have been able to assess the immediate effect of counterparty A's exposure to counterparty B, they would have also had to evaluate the indirect effect on A of B's exposure to C, and C's exposure to D, and so on. The task quickly becomes impossible to compute.

Systemic risk cannot be calculated in this way. The only way it can be managed is through regulation that eliminates the risk to the system. Specifically, a clearing system with a central counterparty (CCP) and novation would have completely removed the systemic risk precondition of the financial crisis, and greatly reduced the probability of the Lehman failure generating a system-wide collapse. ***Nearly all OTC derivatives could have cleared through a Designated Clearing Organization (DCO)***.[9] In fact, the International Swaps and Derivatives Association (ISDA) has long published guidelines for standardization of all derivatives agreements, for example.[10] For those derivatives that could not clear, we would do well to question the social utility of allowing financial instruments of such an extremely esoteric nature to affect the behavior of the US economy.

Had such a clearing system been in place, it would have prevented the systemic risk posed by the interlocking web of interconnected counterparties, as all derivatives participants would have had just one central counterparty. It would also have removed the danger presented by excessive leverage, as margin

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[9] Masters, M., Testimony before United States Senate Committee on Agriculture, Nutrition and Forestry, June 4th 2009. Available at http://www.appapillai.com/blog/wp-content/uploads/2009/06/masters-testimony-1.pdf

[10] See http://www.isda.org/ for a model standardized CDS agreement, the ISDA Master Agreement, as well as a "matrix" of standard provisions in the ISDA Credit Derivatives Physical Settlement Matrix.

requirements would have meant that large bets were backed by sufficient collateral. Finally, a regulated clearinghouse would have preempted the crisis of confidence in counterparty solvency and the associated mass unwinding of derivatives positions. With central clearing in place, if a single holder of derivatives were to fail – regardless of magnitude – the only risk to all other participants would be the risk of the clearinghouse defaulting. That risk would be easily ascertainable due to its transparency, and very low, due to appropriate margin requirements.

OTC Derivatives and Interconnectedness

The financial crisis is generally attributed to a range of causes, including the decline in housing prices, the unsound lending practices of mortgage originators, the securitization of those mortgages, and the poor performance of ratings agencies in assessing those securities. Others have highlighted the record low interest rates under the Greenspan Fed, which resulted in too much money chasing too few fixed-income investments. Importantly, these failures, even in the aggregate, are not enough to threaten the entire financial system; there had to be systemic risk created by complex, opaque inter-relationships, such as the one created not just by the mortgage market itself, but also by OTC derivatives. These hidden and dangerous derivative-based connections existed between financial *institutions*, as well as between distinct financial *markets*, and even between financial and non-financial markets.[11] This system-wide web was made possible by the presence of completely unregulated OTC derivatives. I will address in turn these three types of contagion, and illustrate how OTC derivatives were involved in each case:

1. Between institutions
2. Between distinct financial markets
3. Between financial markets and non-financial markets

1. Contagion Between Institutions

OTC derivatives are bilateral contracts entered into between swaps dealers and their customers and between swaps dealers and each other. These contracts are agreements to pay one another certain amounts of money based on the direction

[11] Steven Schwarcz and others have pointed out that systemic risk ought to be thought of not only in terms of connections between institutions but also connections between markets. See Schwarcz, Steven L., Systemic Risk. Duke Law School Legal Studies Paper No. 163; Georgetown Law Journal, Vol. 97, No. 1, 2008. Available at SSRN: http://ssrn.com/abstract=1008326

of some price series that the contract references. OTC derivatives can encompass interest rates, credit spreads, equities, foreign exchange, commodities and even things as intangible as the weather.

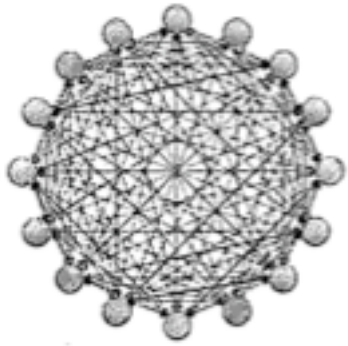
Embedded in every OTC derivative is a credit exposure between the two counterparties based on the likelihood that each counterparty will be able to pay if their bets turn sour. This credit component carries dangerous risk, because often little or no margin collateral is required to be posted to enter into these transactions. For this reason, the major money center banks with the best credit ratings are also the largest swaps dealers, because they are the most sought-after counterparties. This is exacerbated by their "too big to fail" status and implicit government bailout guarantee. An implicit guarantee that became quite explicit with the Troubled Asset Relief Program (TARP).

The larger a swap dealer is, the more exposures it has to various counterparties and the larger the size of those individual exposures. Since there is a great deal of trading amongst swaps dealers, there is an interlocking web of very large exposures amongst the 20 or so largest swaps dealers.

At the peak in 2008, the notional amount of OTC derivatives contracts outstanding totaled over $684 trillion. These positions represented an extreme amount of leverage, as very little margin collateral backed up these huge bets.

When Lehman Brothers went bankrupt, many of the major swaps dealers, as well as Lehman Brothers' swaps customers, immediately lost large sums of money that they were owed. At that point, every swaps dealer radically reevaluated the creditworthiness of their counterparties and questioned who might be the next to fail.

Graphical Illustration of Interlocking Web of Exposures



While swaps dealers knew the extent of their own exposures, they did not know the extent of anyone else's exposures. They did not know if one of their counterparties had just lost so much money to Lehman Brothers that they, too, might be forced to file bankruptcy. They reacted by reducing <u>all</u> their counterparty exposures as much as possible, since they did not know who was viable and who was insolvent. This phenomenon was multiplied as swaps dealers' customers took the same actions to limit their exposures. The result: the OTC derivatives market came to a grinding halt, jeopardizing the viability of every participant in OTC derivatives, regardless of their exposure to subprime Mortgage Backed Securities (MBS), as they struggled to unwind their swaps positions at great expense.

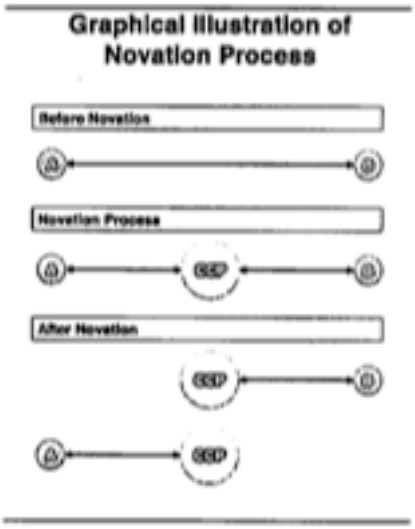
As this unregulated shadow banking system began to collapse, it threatened to destroy the regulated financial system with it. Regulators were forced to pump trillions of dollars into the shadow banking system to enable OTC derivatives dealers to make each other whole on their bets. This prevented a domino effect of dealer collapses that would have destroyed the world's financial system.

AIG, the most notorious of these dealers, was not even a bank, but the Federal Reserve had to bail them out because, if allowed to go under, AIG would have taken the whole financial system down with it.

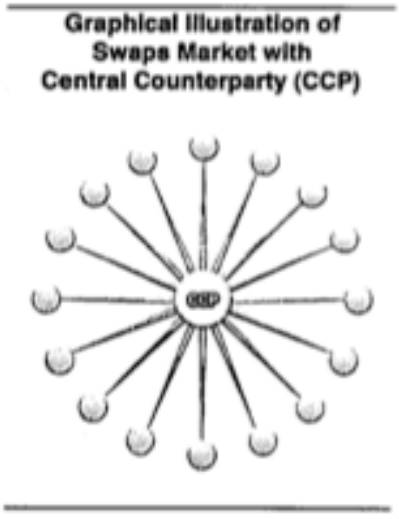
2. Contagion Between Distinct Financial Markets

(a) From one asset class to others

The collapse precipitated by OTC derivatives was not restricted to any single asset class. Although credit derivatives, specifically Credit Default Swaps (CDS), helped catalyze the panic, once it had begun dealers liquidated swaps regardless of type; they just wanted to unwind everything.



An unregulated OTC environment lacks the central clearing mechanism that regulated exchanges provide. In the absence of a central counterparty, dealers are forced to evaluate the counterparty risk for each swap on a case-by-case basis. When Lehman failed, dealers lost faith in *all* counterparties and reacted by reducing their swaps exposures indiscriminately. With centralized clearing and novation on a regulated exchange, this would not have happened for two reasons. First, on a regulated exchange, the clearinghouse is the counterparty to every transaction, so the failure of one participant does not affect the other participants. In contrast, the unregulated OTC derivatives market is akin to a set of Christmas tree lights wired in a series, so when one bulb goes out, every other bulb goes out too. Central counterparty clearing replaces such a naïve approach with parallel wiring. Each bulb is independently wired to a central hub, so that when one goes out, it does not affect the connection between any other bulb and the hub. The second reason why central clearing would have obviated the systemic risk from OTC derivatives is that the margin requirements required by regulated exchanges would



vastly reduce the likelihood of any participant defaulting in the first place. Margin requirements impose a daily discipline that prevents entities from taking outsized risks because they know they must make good on their bets at the end of every day.

Thus, the lack of an appropriate regulatory structure for OTC derivatives, particularly central clearing, meant that a failure in one area (CDS/Lehman Brothers) would have brought down every institution with a swaps position in every other market as well.[12]

(b) From OTC markets to regulated markets

Swaps dealers hedge almost all of their exposure in the futures markets, while their customers often use swaps to hedge various portfolio risks. Thus, when the OTC derivatives markets collapsed, participants reacted by liquidating their positions in the assets those swaps were designed to hedge. Consequently, markets witnessed a sell-off across all asset classes, from commodity futures to stocks and bonds. The problem was exacerbated as market participants not even involved in OTC transactions then faced a rapid drop in asset prices. They were forced to sell off further assets to cover margin calls in the regulated markets, and so a crash that began in the OTC markets spread to the regulated markets as well.

The primary trigger in this regard was swaps that dealers had taken out with Lehman Brothers, and then insured with CDS from AIG and others. When Lehman Brothers went down, those claimants were faced with double uncertainty. In the first instance, they stood to make losses from the swaps they had entered into directly with Lehman. On top of this, however, they had no way of knowing whether the CDS they had used to hedge their Lehman exposure would actually pay out. Full-blown panic was the consequence, resulting in a paralysis of lending, and attempts to liquidate exposure by all dealers simultaneously as they looked to deleverage all at once.

Pension funds designed to protect the retirement savings of everyday Americans through diversified portfolios found that previously uncorrelated asset classes were now highly correlated. Even funds with zero exposure to OTC derivatives suffered huge losses as a result of the contagion that OTC derivatives propagated.

Perhaps the most dramatic contagion from OTC markets to regulated markets was in credit. Nobody knew how exposed the other institutions were to default by Lehman Brothers. Importantly, the lack of regulation of CDS implied that this exposure had the potential to be very large and very widely distributed.

[12] Had it not been for the extraordinary bailout of AIG, and other measures designed to stabilize the financial system, initiated by the Federal Reserve and Treasury Department.

Because there were little or no margin requirements on CDS, they were highly leveraged instruments, so exposures could be many times greater than they would have been on exchanges. Furthermore, the lack of regulatory oversight allowed even institutions with no direct dealings with Lehman to buy "insurance" on the risk of their default, so there was no way of telling who was at risk and to what degree. Consequently, credit providers had no way to estimate credit risk from potential counterparties, so even regulated debt markets such as repos, money markets, and corporate bonds dried up, as no one was willing to lend to anyone. Thus, the credit crunch that began in OTC credit derivatives eventually impacted all credit markets.

3. From financial markets to non-financial markets

The spread of failure across asset classes, as well as from OTC to regulated markets ultimately led to destructive price volatility even in non-financial markets. First, a clarification on the distinction between financial and non-financial.

Investors hold financial instruments such as stocks and bonds in order to receive dividends, interest, cash flows, etc. These associated cash flows give these instruments intrinsic value as investments. Financial instruments are designed to be held (often for the long term) by investors in a portfolio.

Commodities, in contrast, are non-financial, physical goods like crude oil, copper and corn that are produced from the earth or are produced from things that are produced from the earth. The value that human beings derive from commodities comes from their ability to be consumed, and they do not provide dividends or any other cash flows. Those who "invest" in commodities do so only in the belief that those commodities will rise in price as they become more scarce. Commodities "investment" is therefore, in effect, a form of hoarding. Commodities are essential to our economy (like energy) or essential to life itself (like food). Modern society cannot survive without the ability to consume commodities.

Futures are a form of derivative traditionally used to help producers and consumers of physical commodities manage their risks. Because crop yields and other important factors of supply are highly sensitive to uncontrollable factors, and because they can also vary widely geographically, centralized futures exchanges have existed for over a century in most major consumable commodities. By using these futures, a producer of wheat could pay to lock in a certain price for his harvest in advance, while a consumer of oil products could pay to ensure a steady cost for those inputs. More generally, futures exchanges helped disseminate information about supply and demand by setting one central price that was publicly available to all participants everywhere. Local markets would then benchmark their own prices to futures prices, which were less exposed to the volatility of local conditions.

However, despite the fact that commodities futures were designed to help actual producers and consumers hedge risk, the deregulation of both the futures themselves and associated derivatives (i.e. commodities swaps) meant they had the exact opposite effect during the financial crisis. Originally, local prices were benchmarked to futures prices because of the improved price discovery function they provided. With deregulated markets, that proved to be a double-edged sword. When futures were sold *en masse* in order to offset liquidated swaps positions – not for any reason linked to supply and demand considerations, but *purely* for financial reasons – this financial mandate became the prime driver of physical commodity prices. Due to the deregulation of swaps, a problem that originated on the books of banks (or rather off them) had an immediate and dramatic effect on commodities prices, pre-empting the supply and demand forces that should have determined those prices in a well-functioning market.

With no central clearinghouse for swaps, and no speculative position limits on commodities futures, there was no way to insulate the real economy from losses generated in the financial sector.

One final point to consider. Although the problems began in the private financial sector, they quickly spread to the public sector. As well as contaminating non-financial markets with financial market risk, OTC derivates also spread losses from the financial sector to non-financial firms and the public sector (even before the costs of the bailout to the taxpayer are factored in).

State governments and pension funds, as well as municipalities in 40 US states are permitted to trade derivatives. Furthermore, around 90% of the largest and most important corporations use derivatives to hedge risk.[13] Therefore, when the dealers indiscriminately unwound positions, the losses that resulted spread from the financial sector to state and local governments, pension funds and the real economy.[14]

Derivatives Transformed Firm-Specific Problems into a System-Wide Crisis

It has been argued that several firms that collapsed, or came close to collapsing, would have failed even without derivatives. After all, it was Mortgage Backed Securities (MBS) that were responsible for the initial wave of losses that triggered the crisis. Although the value of an MBS "derives" from the value of the underlying mortgages, it is not a true "derivative" in the same sense as a CDS. The other familiar name in all this, a Collateralized Debt Obligation (CDO), is a

[13] ISDA *2009 Derivatives Usage Survey,* available at http://www.isda.org/researchnotes/pdf/ISDA-Research-Notes2.pdf

[14] The normative issues surrounding the relationship between private and public sectors, as well as the social role of markets more generally, are discussed in *Frenk and Masters (2010) A* (full reference in note 1 above)

form of MBS, so is therefore *not* a derivative. The one exception to this is a so-called "synthetic CDO", which is, in fact – somewhat confusingly – a type of CDS, and therefore *is* a derivative (it gets its name from the fact that it is a derivative used to artificially synthesize exposure to a CDO). Thus, when considering the role derivatives played in the crisis, it is worth considering the impact of MBS as distinct from CDS and synthetic CDOs.

Between September 16th, 2008 and the end of 2008, AIG paid out $22.4 billion of government bailout funds in collateral postings to CDS counterparties.[15] Over the same period, it paid out $36.7 billion to its securities lending counterparties, which partly acted to cover draw-downs from AIG's MBS losses. For fiscal year 2009, the Congressional Oversight Panel (COP) has recently reported that the bulk of bailout funds were channeled into AIGFP for collateral postings on CDS, GIA and other debt maturities ($50.6 billion vs. a combined $27.9 billion to make good on its own MBS related losses, as well as those of its insurance subsidiaries).[16]

The magnitude of the direct losses at AIG from MBS and from CDS, therefore, are of at least comparable size. To attribute causation of the meltdown to one or the other would therefore tell only part of the story. Indeed, the COP report characterizes the crisis as essentially a two-step event. In the initial phase, AIG faced large losses on its MBS holdings and on its synthetic CDO portfolio (CDS on CDOs) that it had used to make a unidirectional long-term bet on the mortgage market. In the second phase, as AIG's credit rating deteriorated on the back of its poorly performing MBS holdings, the collateral demanded from its CDS counterparties rose sharply, quickly reaching a level which, combined with the MBS losses, rendered AIG insolvent.[17]

Regardless of whether one puts more emphasis on MBS or credit derivatives at the level of the individual firm, from a systemic risk perspective there is no doubt that derivatives had a highly dangerous effect, which would not have arisen from MBS alone. With MBS, it was relatively easy to assess the probable losses for major financial institutions. Comparatively, trying to trace the labyrinthine connections created by CDS (and unregulated OTC derivatives in general) was practically impossible for a regulator, let alone a

MBS alone could have bankrupted several large institutions…

…but CDS was necessary to imperil the entire system.

[15] AIG Discloses Counterparties to CDS, GIA, and Securities (March 15th, 2009) available at: http://www.aig.com/aigweb/internet/en/files/CounterpartyAttachments031809_tcm385-155645.pdf

[16] Congressional Oversight Panel, The AIG Rescue, Its Impact on Markets, and the Government's Exit Strategy, June 10th 2010, http://cop.senate.gov/reports/library/report-061010-cop.cfm

[17] Op. cit., pp. 25-30.

counterparty with no access to information on derivatives holdings at other institutions beyond their own dealings with them. It was this opacity, made possible by deregulation of OTC derivatives, that prompted the total suspension of lending in an environment of extreme uncertainty over counterparty risk. ***Lack of transparency generates systemic risk.***

It is conceivable, therefore, that MBS alone could have bankrupted several large institutions. However, derivatives were necessary to imperil the entire system.

OTC Derivatives and Lack of Transparency

As I discussed above, the lack of a clearinghouse for derivatives lead to a dangerous lack of transparency. This was catastrophically manifested in the explosion of credit derivatives during the crisis. With rumors of difficulties at large investment banks and other institutions, lenders feared counterparty default. At the same time, there was a complete lack of reliable information on which to base estimates of individual firms' creditworthiness because most of their risks were concentrated in derivatives held off-balance sheet. The result was a universal freezing of lending that threatened to bring down the entire financial system. It was in this context that credit derivatives specifically, and deregulated OTC derivatives in general, created a systemic risk that MBS alone would not have generated.

There were also various problems associated with a lack of transparency in commodities derivatives. In 2008, there was approximately $12.6 trillion of OTC derivatives on consumable commodities. Most of this exposure was ultimately hedged by swaps dealers through the commodity futures market, which in turn provided the benchmark against which actual physical commodities were priced.[18] Thus, speculation in OTC derivatives had a knock-on effect all the way down to the underlying physical commodities. The price-discovery mechanism of physical commodities was thereby dominated by financial market participants, and not by the underlying supply and demand reality from actual producers and consumers of those commodities.

OTC derivatives speculation created a distortion in real commodity prices in the real economy that burdened households and businesses at a time when they were already suffering from the immediate effects of the financial crisis on credit and balance sheets. The most direct way in which derivatives distorted commodities prices was by facilitating excessive speculation, including index speculation, which generated excess volatility.[19] It is worth emphasizing that ***derivatives dealers thrive on volatility, while the rest of the economy suffers because of it.***

[18] Masters, op. cit.
[19] Masters, Ibid.

In my testimony before the Senate Agriculture committee last year,[20] I explained how the rapid deterioration of credit markets, which pushed our financial system to the brink, was greatly exacerbated by the meteoric and unjustified rise in food and energy prices during 2008. I testified extensively in 2008 and 2009 on the role of speculation in driving up the prices of life's basic necessities and the damaging effects that this had on our national and world economy. Time does not permit me to share all those facts and figures this morning, but I would refer you to my previous testimonies and the three reports that I have co-authored on the subject.[21]

Further Effects of the Lack of Transparency in OTC Derivatives

There were, and continue to be, several other damaging costs related to the lack of transparency that results when derivatives are allowed to trade over-the-counter.

First, a lack of transparency widens bid-ask spreads, pushing up hedging costs for end users. This is not obvious to the customers themselves, as all they see are the price quotes presented by their dealer. Especially in the case of highly customized products, this gives the dealer a huge informational advantage, and leaves the customer in a very dangerous position.

Ironically, various OTC derivatives dealers have argued against increased transparency regulation, claiming that it would remove liquidity from the system.[22] The truth is that regulation to increase transparency would have quite the opposite effect. This is particularly true for counterparties exiting a position. As anyone who has worked on a swaps desk can attest, some of the fattest profits are made from customers who are under pressure to exit their positions.[23] Those customers face a black box with no other source for bid information than that provided by the dealer. A holder of OTC derivatives, even where those derivative positions were entered into with the best of intentions, is akin to a poker player forced to play with his cards on display. His opposite party, the derivatives dealer, can see all of his cards, and can therefore exploit this informational advantage to the greatest degree possible.

The diagrams below illustrate the breakdown of costs for an OTC derivative versus an equivalent derivative traded on an exchange. Note that the area representing each component is not necessarily to scale, as the diagram is for illustrative purposes only. Much of the opposition to mandated clearing for

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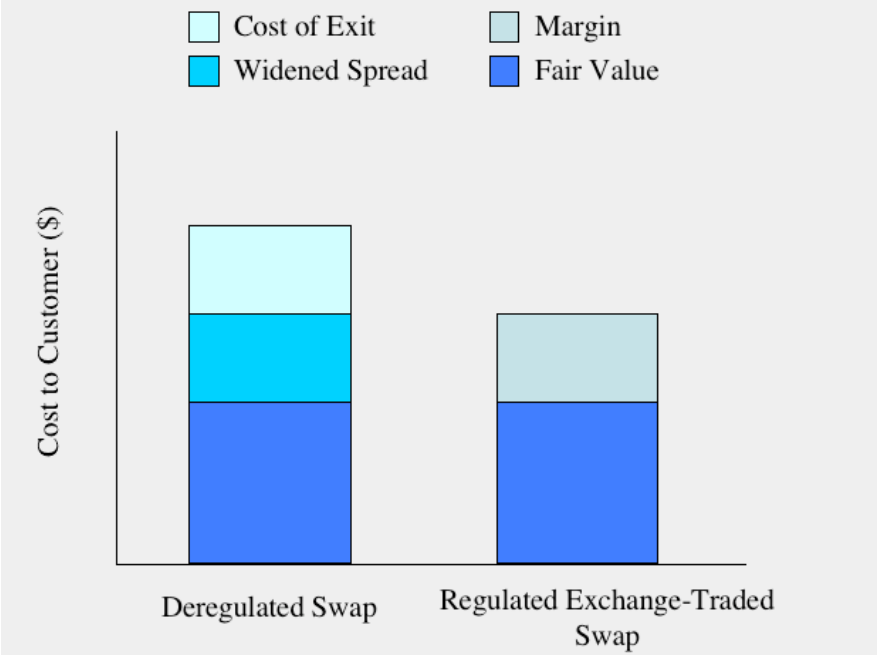
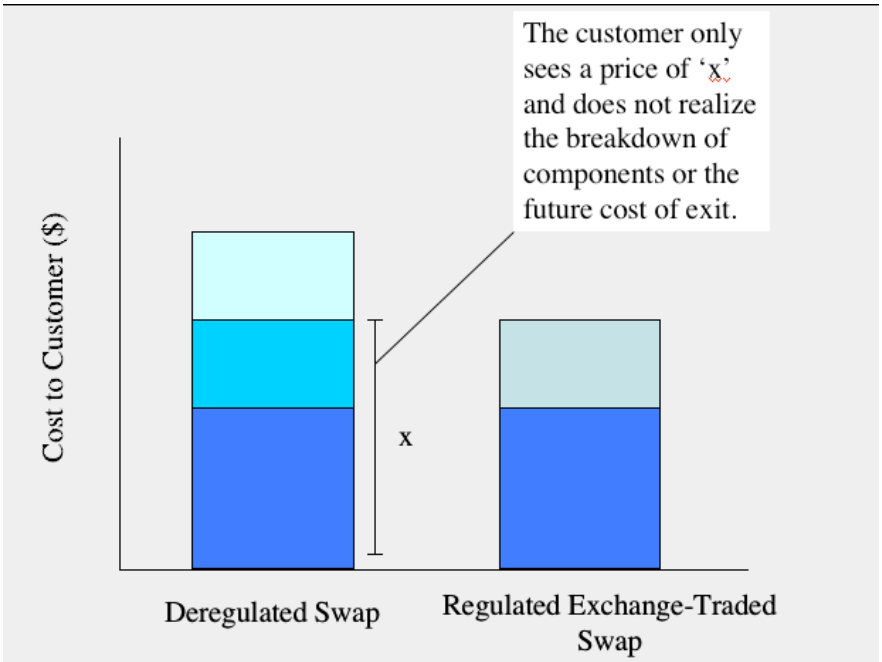
[20] Masters, Ibid.
[21] Available at http://www.accidentalhuntbrothers.com
[22] Several of these arguments are sourced and evaluated in Frenk and Masters (2010) A.
[23] See, e.g., Frank Partnoy, *F.I.A.S.C.O. The Inside Story of a Wall Street Trader*, (Penguin, 1999) for a popular treatment of this subject.

derivatives from end users has focused on the added costs associated with having to post margin. However, these end users fail to recognize that a significant portion of the price they are now quoted for a derivative product OTC is actually just a function of the widened bid-ask spreads that the dealer is able to generate due to his informational advantage. On a transparent exchange, this advantage would disappear, and so the spreads would narrow. The opinion of most experts is that this narrowing effect would more than compensate end users for the additional cost of posting margin.[24]

Under the deregulated system, the artificially widened bid-ask spread is interpolated into the quoted price that the dealer offers to the customer. In addition to this, the customer does not see the potential costs that would arise when trying to exit the position (as described above). A transparent exchange for all derivatives would ensure a liquid market at both ends of the trade.



[24] See Masters, M., *Senate Agriculture Committee Testimony* (full citation in note 2 above)



OTC Derivatives and Hidden Risks.

As I have discussed, OTC derivatives hide risks from counterparties and regulators, and sometimes even from the institution holding the derivatives. I would like to make a few final remarks about one further example of this phenomenon, the effect of "regulatory capital swaps," otherwise known as "balance sheet rentals." European banks were among the largest purchasers of this type of CDS agreement, which enabled them to take extra leverage by appearing to have hedged their risks. Really, these risks were simply moved off-balance sheet, transferred into the counterparty risk of swaps themselves. In 2007, European banks bought around $426 billion of CDS from AIG, and much of it was used to skirt regulatory capital requirements in the way just described.[25] When the financial crisis hit, this worked in concert with the international distribution of U.S. MBS to help spread the crisis around the globe.

In addition to hiding risks from regulators, this mechanism helped to propel the expansion of credit in the run-up to the crisis. In so doing, it paved the way for the

[25] *How AIG's Credit Loophole Squeezed Europe's Banks*, available at http://www.businessweek.com/magazine/content/08_43/b4105032835044.htm

inevitable bust that follows any bubble, whether a financial asset bubble, a speculative bubble in commodities, or a credit bubble.

Conclusion

Many factors contributed to the rapid deterioration in credit markets and large losses on Wall Street during 2008. One single factor, however, threatened to bring down the financial system as a whole: the massive interlocking web of over-the-counter (OTC) derivatives exposures amongst the biggest Wall Street swaps dealers. Many financial institutions might have gone bankrupt or suffered severe losses, but the system as a whole would not have been imperiled were it not for these completely unregulated dark markets.

Furthermore, derivatives were not only implicated in the preconditions and triggering of the financial crisis itself, they were also responsible for kicking the US economy while it was down, through the excessive volatility and artificial price elevation they helped generate in crucial food and energy commodities markets.

Both of these problems could have been averted with appropriate regulation of derivatives. In particular, centralized clearing with novation for credit derivatives would have eliminated the systemic risk element by providing a central counterparty to all transactions, removing the lack of transparency that allowed firm-specific failures to trigger a universal freezing of credit. The same approach applied to OTC commodities derivatives, in combination with aggressive aggregate speculative position limits, would have removed the capacity for manipulation and excessive speculation that propagated the far-reaching effects of excessive volatility in commodities markets.