Discussion of "Replumbing Our Financial System: Uneven Progress"*

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1. Introduction

Professor Duffie has written a wide-ranging and thoughtful paper on the plumbing of the financial system. In the paper, he points to a number of areas in both the U.S. and global financial systems where there are challenges in repairing and redesigning that plumbing to make the system more resilient.

Before discussing the paper, let me take a step back and point out that the robustness of global payment and settlement systems during the recent financial crisis is an underappreciated success story. It represents the returns on the significant investments made by the official sector in collaboration with the private sector. Obvious examples of the types of infrastructures which have been designed and carefully put in place over the years include the following:

- real-time gross settlement systems (RTGS)
- delivery versus payment (DvP) settlement protocols
- payment versus payment (PvP) settlement protocols
- continuously linked settlement (CLS) for global FX cash transactions

Also, there can be little doubt that the presence of a central counterparty (CCP) for interest rate swaps used by major dealers

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helped to ensure the continued orderly functioning of the interest rate swap markets throughout the crisis.

Nevertheless, a variety of weaknesses revealed themselves. These are the subject of Professor Duffie's paper: tri-party repo clearing, money-market funds, the need for CCPs, prime brokerage, and the risks posed by the FX derivatives trading infrastructure. The paper also points to the changes in the Federal Reserve's emergency authorities. I will not comment on those. Nor will I say anything about tri-party repo or prime brokerage. I will focus my discussion on global issues related to central clearing of over-the-counter (OTC) derivatives.

The decision to mandate central clearing of OTC derivatives has been made to ensure that an individual failure does not become a systemic failure. CCPs help to achieve this objective because they

- improve counterparty risk management,
- reduce gross exposures through multilateral netting, and
- increase transparency, including by providing data.

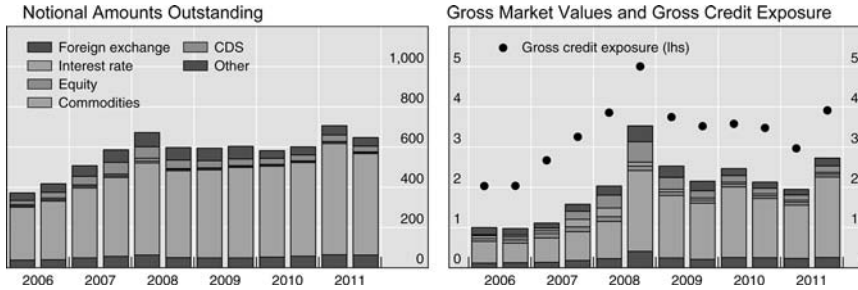
To see what I mean, contrast the case of AIG's end-June 2008 unhedged credit default swap (CDS) exposure, which had a notional amount of $446 billion, with the experience of Amaranth, the hedge fund that lost $6 billion in a matter of weeks in September 2006 trading energy futures on an organized exchange. No doubt the opacity of the OTC market facilitated AIG's ability to take such a large total position.

AIG Financial Products specialized in bespoke credit derivatives, which, as the paper points out, may not find their way to CCPs going forward. However, the Basel III framework calls for much stronger counterparty risk regulation and capital adequacy provisions. The objective is to lower the appetite for having things off a CCP and, in cases where a product is difficult to novate to a CCP, require more capital to be held against the retained exposures.

2. The Size of Global OTC Derivatives Markets

Global OTC derivatives markets are among the largest in the world. The left-hand panel of figure 1 shows the total *outstanding notional*

Figure 1. Global OTC Derivatives (by data type and market risk category, in trillions of U.S. dollars)



Sources: Central banks of the G10 countries, Australia, and Spain; BIS.

volumes of OTC derivatives captured by Bank for International Settlements (BIS) statistics. As of end-2011 these volumes were above $600 trillion. By this measure, interest rate derivatives are by far the largest market segment. This reflects in part that the current form of interest swaps makes it difficult to remove or tear up economically redundant contracts.

The bars in the right-hand panel show the *gross market values*—the sum of the absolute market values of all open contracts. The term "gross" indicates that contracts with positive and negative replacement values are not netted between bilateral counterparties. These numbers are notably smaller than the notional values. The panel also illustrates that the gross market value of FX derivatives is at least as large as for CDS, a point also stressed by Professor Duffie.

The dots in the right-hand panel show the *gross credit exposure* of all outstanding contracts, i.e., the market value of the outstanding contracts after taking account of legally enforceable bilateral netting agreements. Here the numbers are single-digit trillions. Credit exposure is one-half of 1 percent of the gross notional amount—that is, 3 versus 600.

Gross credit exposures, though, do not take into account collateral. There is no comprehensive information available on whether or not exposures are collateralized. However, based on the 2012 International Swaps and Derivatives Association (ISDA) Margin Survey, the collateral posted against all counterparty credit exposures was no more than $1.8 trillion at the end of 2011. With counterparty credit

Table 1. Impact of Multilateral Netting on CDS Volumes for Selected Reference Entities

	Gross Notional[a]	Net Notional[b]	Net Over Gross[c]
Financials			
Bank of America	84.7	5.9	7
Berkshire Hathaway	31.6	5.6	18
Goldman Sachs	76.7	5.1	7
JP Morgan Chase	81.2	4.9	6
Deutsche Bank	60.7	4.8	8
Corporates			
Telefonica	49.5	3.6	7
Deutsche Telekom	55.8	3.5	6
Volkswagen	46.8	3.5	8
Arcelormittal	45.5	3.0	7
Enel	45.1	3.0	7
Governments			
France	132.4	22.4	17
Italy	324.3	22.2	7
Germany	114.1	19.7	17
Brazil	162.8	18.6	11
Spain	164.3	14.5	9
Average, Top 1,000 Entities	15,623.1	1,176.8	8

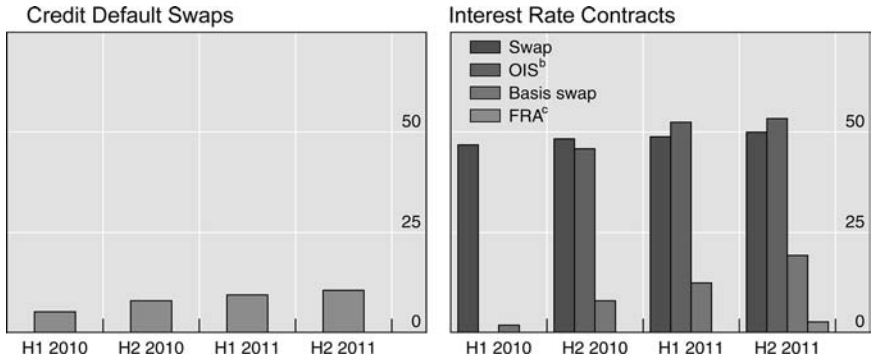
Source: Depository Trust & Clearing Corporation.
Notes: Data are for the week ending March 9, 2012.
[a]The sum of all contracts bought (or, equivalently, sold), in billions of U.S. dollars.
[b]The sum of net protection bought (or, equivalently, sold), in billions of U.S. dollars.
[c]In percent.

exposures before taking collateral into account at $3.9 trillion, this leaves an uncovered open position of at least $2.1 trillion.[1]

Table 1 illustrates the potential impact of multilateral netting of CDS, which can eliminate contracts that do not represent actual reallocation of risk. The impact is substantial: in many cases,

[1]See Gyntelberg and Vause (2012).

Figure 2. Contracts on Central Counterparties[a] (as a percentage of total)



Sources: TriOptima; BIS.
[a]To avoid double-counting, contracts post-novation are included only once.
[b]Overnight index swap; data not available for H1 2010.
[c]Forward-rate agreements; data not available before H2 2011.

multilateral netting has the potential to reduce outstanding contract volumes by a factor of ten or more. This also explains why current industry efforts directed at tearing up redundant contracts have been so effective in lowering the outstanding notional amounts of CDS contracts—from $60 trillion to $30 trillion in notional terms.[2]

Figure 2 shows estimates of the fractions of various categories of OTC derivatives that have been centrally cleared. Overall, there is quite a way to go to reach the G20 objective for all standardized derivatives to be centrally cleared by the end of this year.

3. Implementation

Let me now go through a set of challenges or difficulties that arise as we try to implement the G20's request.

I have grouped the challenges into four categories:

(i) Proliferation—how many CCPs and where?
(ii) Safety—how do CCPs manage risk?
(iii) Scope—who and what should clear?
(iv) Access—how do you clear?

[2]See Vause (2010).

3.1 Proliferation—How Many CCPs and Where?

Professor Duffie discusses the dangers associated with a proliferation of CCPs, or what I would call geographic and instrument fragmentation. The danger here is that you may end up worse off than when you started. Highly specialized CCPs may have little scope to net and compress trades. As a result, they would demand a lot of collateral, so scarce collateral could become even scarcer.

Let me clearly state that everyone I am in contact with knows that this is a problem. We are on a rather constant education campaign to explain—especially to national politicians—that creating a CCP in every jurisdiction, in every currency, for every instrument, will more than likely yield a system that is even less safe. That said, if we create a small number of giant CCPs, we will have to address the problems that concentration causes.

On the thorny issue of cross-border access, we need to make sure that we have cooperation so that institutions don't face conflicting sets of regulations and incentives in the different jurisdictions in which they operate.

We also need to understand the extraterritoriality requirements under some U.S. and EU regulations. Dodd-Frank appears to impose mandatory clearing, margining, and other rules on activities of U.S. dealers in overseas markets. And it seems possible that European-headquartered entities trading U.S.-dollar-denominated instruments offshore may have to register in the United States.

3.2 Safety—How Do CCPs Manage Risk?

As pointed out by Professor Duffie, CCPs will typically be too important to fail. Hence they need good risk-management practices to ensure robustness to counterparty failures.[3] On top of sound margining practices, they require a sufficient degree of capitalization, robust loss-sharing arrangements, and effective resolution mechanisms. And, importantly, they will likely need access to central bank liquidity assistance in an emergency. However, we should not restrict the tasks of CCPs to ensure they remain safe. It is more important

[3]For a discussion of alternative CCP risk-management practices, see Heller and Vause (2012).

that we have a firm commitment to make CCPs safe for the tasks they are given.

3.3 Scope—Who and What Should Clear?

Answering the question of who and what should clear requires determining what and who should *not* clear. Professor Duffie notes that there is little justification for exempting FX derivatives. To my mind, there is also little reason to exempt final users—whoever they are. And, I should say, I do not understand the idea of insisting that only standardized contracts should clear.

This introduces the risk that market participants seeking to avoid central clearing may attempt to make a given derivatives contract non-standard by changing small, basically irrelevant, provisions in the contract. This risk may be mitigated in part by the Basel III standard that requires higher capital for derivatives that are not centrally cleared. Hopefully this will provide sufficient incentives for standardization and CCP use.

Central clearing of FX derivatives will require substantial international cooperation. And I hope that it can be done faster than the thirty years it took to set up CLS. But let me make two comments about this: First, I see no reason that CLS has to be a CCP. This is not something that we envision. And second, I would warn against one country or authority trying to take the lead.

3.4 Access—How Do You Clear?

Various alternative access arrangements are currently being considered. Market participants could access existing global CCPs, either as direct clearing members or indirectly through direct clearing members. Market participants and authorities in several jurisdictions are also looking at creating local CCPs to help their domestic financial institutions meet clearing requirements. The benefits of establishing links between CCPs are also being explored.

The conditions under which market participants can obtain access to central clearing could have important systemic implications. In particular, existing access criteria for some major OTC-derivatives CCPs—developed in the era of voluntary clearing—led to direct access to CCPs being dominated by the largest global dealers.

Partly as a result, clearing of OTC derivatives is currently the preserve of a few large dealers, with around five to fifteen institutions dominating turnover in all instruments within each class of derivatives. This raises the concern that a move to centrally clear all OTC derivatives could reinforce the concentration of risk in those global dealers. Although CCP regulation and access policies will continue to adjust to the new era of mandatory clearing, such concentration remains a relevant concern.

4. Concluding Remarks

The official community has been working cooperatively for years in the Committee on Payment and Settlement Systems (CPSS) to address these replumbing issues.[4] In an excellent speech on the subject that he gave in March in Boston, former CPSS Chair William C. Dudley (2012) listed the five main objectives of the reforms that are under way:

(i) Create a strong incentive for standardization.
(ii) Push to meet the goal of mandatory central clearing for all standardized derivatives by the end of this year.
(iii) Ensure that all derivatives trades, including those of the bilateral bespoke variety, are reported to trade repositories, allowing, among other things, calculation of aggregate exposures.
(iv) Strengthen and broaden the principles that I just mentioned.
(v) Push for global adoption of these principles.

Policymakers are working to finalize a new set of principles for financial market infrastructures.[5] The objective is to bring together and strengthen existing internationally agreed-upon requirements for (among other things) CCPs for OTC derivatives.

The main new areas are as follows:

- cooperative oversight among national regulators
- fair, open, and safe access

[4]The CPSS is one of three standing central bank committees with a permanent secretariat at the BIS.

[5]See Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions (2012).

- rules such that if a major participant fails, the CCP can liquefy collateral
- robust and orderly resolution regimes for CCPs themselves

Overall, the replumbing effort is evolving about as well as anyone could expect—better, in fact, than a reader of Professor Duffie's paper would be likely to conclude.

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