

Lessons from the 2008 Financial Crisis
How Financial Infrastructures Mitigate Systemic Fragility
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Let me take a few minutes of your time this evening, firstly to express, on behalf of us all, our deepest gratitude to Governor Zeti Akhtar Aziz for her most kind hospitality tonight and since our arrival to this beautiful country.

Let me also extend my congratulations to all members of the staff of the Bank Negara Malaysia, the SEACEN Centre, and CEMLA involved in the organization of this Conference, for their excellent work. May this be the first of a series of seminars that will continue for many years to come; halfway our two-day program I am really impressed by the great potential for collaboration among our institutions, for the benefit of both our regions.

Main Message

Let us begin with the main message of my intervention: one of the main lessons from the 2008 crisis is that systemic risk is exceedingly important, and that is closely related to the complexity, homogeneity and opaqueness of the financial system. But the crisis also made quite clear how important financial infrastructures are for mitigating financial fragility and systemic risk.

The nature of financial systems

Financial systems are complex due to the myriad of interconnected banking and non-banking institutions providing a vast range of financial services. They are homogeneous because all institutions, despite of their business line, pursuit returns with the same risk management and asset allocation models and techniques, resulting

in all institutions “diversifying” in a similar manner¹. They are opaque because financial innovations such as credit derivatives and structured products, along with the presence of a large shadow banking system, allow for an unprecedented and obscure transfer of risks and transformation of liquidity and maturity.

It is important to recognize that complexity is by no means an undesirable feature of a system: Mother Nature demonstrates that complexity may bring robustness, where participants’ number and diversity may help to absorb or disperse risk in a proper manner. Nevertheless, in the absence of diversity, with all participants developing similar tasks with identical tools and strategies, complexity may serve as a risk amplifier. Moreover, if the system is complex and homogenous, and the instruments are able to obscure the connections and exposures between participants, risk becomes uncertainty, pricing becomes difficult, and imitating becomes the most rational strategy at individual level... but with extreme costs at systemic level: herding, panic, positive feedbacks, liquidity spirals and financial systems’ fragility.

Consequently, coping with financial systems’ fragility is nowadays the foremost objective of regulators, supervisors and overseers, who are now committed to achieve financial stability, even in rare events such as the mortgage market collapse. Therefore, financial authorities should confront the source of systemic fragility: the undesirable and dangerous combination of complexity, homogeneity and opaqueness.

Despite the joint importance of these three factors, in what follows I will focus on financial infrastructures’ role regarding the complexity and opaqueness of the financial system.

The role of financial infrastructures in the crisis

As it is well-known today, the collapse of Lehman Brothers and the near-collapse of AIG and Bear Sterns made clear that market participants were not able to map their own exposures with ease. It also demonstrated that financial authorities had no information on the structure and dynamics of the connections between market participants in order to technically identify too-connected-to-fail financial institutions.

¹ Homogeneity in risk management is acknowledged and criticized by the IMF (Global Financial Stability Report, 2007); the best example is the widespread use of Value-at-Risk models led by Basel II regulatory framework. Homogeneity in asset allocation is acknowledged and criticized by the BIS (81st Annual Report, 2011); the best example is the widespread use of mean-variance portfolio optimization techniques, which partially explain why almost all market participants, including very risk averse agents such as central banks and pension funds, had positions in illiquid or even toxic assets such as mortgages and complex credit derivatives.

A key variable for understanding and analyzing the financial system was missing: complete and transparent information.

The largest portion of market participants' exposures was fuzzy because they belonged to over-the-counter bilateral transactions, especially to credit derivatives and other structured products; for example, according to Financial Stability Board 2010 figures, bilateral clearing still covers approximately 90% of the \$30 trillion of outstanding credit default swaps.

Because of this fuzziness no financial institution or financial authority had a fair idea of the magnitude of the real exposures in these bilateral transactions in the outbreak of the crisis, and they had no idea of who was at risk through the intricate network of counterparty failure typical of credit derivatives; for example, according to BIS², as late as February 2008 the end-2007 data on major international banks exposures to structured products was still fragmentary and lacking in comparability. Additionally, because over-the-counter transactions do not require collateral or are inadequately collateralized, market participants' uncertainty about their real exposure augmented.

As put forward by the Financial Stability Board³, the recent financial crisis exposed weaknesses in the structure of the over-the-counter derivatives markets that contributed to the build-up of systemic risk, where the potential for contagion resulted from the interconnectedness of market participants and the limited transparency of counterparty relationships.

Not surprisingly, centralized markets, which typically register transactions and use Central Counterparties, were a source of support for the safe and efficient functioning of the payment system. As has been extensively documented after the crisis, the major U.K. and U.S. central counterparties were able to orderly unwind Lehman's positions in the month following its bankruptcy. For example, the largest clearing agent of the U.S. (Depository Trust and Clearing Corporation) announced in October 2008 that it had successfully unwound over \$500 billion in market participants' exposure from Lehman Brothers bankruptcy, mainly by netting positions.

As has been widely recognized in the aftermath of the 2008 crisis, clearing transactions centrally via a financial infrastructure such as a Central Counterparty mitigated financial systems' fragility. A Central Counterparty, which is an infrastructure that becomes the buyer of each seller and the seller of each buyer, has the potential to mitigate systemic risk in several ways:

² BIS (81st Annual Report, 2011).

³ Financial Stability Board (FSB), "Implementing OTC Derivatives Market Reforms", October, 2010.

- First, because outstanding positions are reduced due to Central Counterparties' ability to perform multilateral netting of participants' positions, liquidity and counterparty risks may be reduced;
- Second, because each bilateral transaction is replaced with two transactions with the Central Counterparty, not only counterparty risk is mitigated, but the complexity and opaqueness of the interconnections between participants may be reduced;
- Third, as margins, collaterals, guarantee funds, liquidity lines, position limits, and the capital of the Central Counterparties are designed as lines of defense against the default of a member or several members under normal market conditions, the potential contagion effect may be mitigated;
- Fourth, as collaterals are centrally managed by a Central Counterparty that has several sources of liquidity from the lines of defense against default, fire-sale risk may be mitigated;
- Fifth, as Central Counterparties use standardized products and valuation models, products opaqueness may be reduced, therefore enhancing supervision and oversight.

Because of these demonstrated advantages, G-20 members agreed in 2009's Pittsburg Summit that in order to improve over-the-counter derivatives markets, and to mitigate systemic risk, three steps should be taken:

- All standardized over-the-counter derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through Central Counterparties by end-2012 at the latest.
- Over-the-counter derivative contracts should be reported to Trade Repositories.
- Non-centrally cleared contracts should be subject to higher capital requirements.

Therefore, as said before, one of the main lessons from the 2008 crisis is the importance of financial infrastructures such as Central Counterparties and Trade Repositories for mitigating systemic risk.

Challenges ahead - the Colombian case

Despite this lesson seems to be straightforward nowadays, there are still some challenges in its implementation, especially for emerging markets and other non-developed financial systems. In order to address these pending challenges please allow me to briefly refer to Colombia's case with financial infrastructures such as Central Counterparties and Trade Repositories.

Regardless of being dominated by fixed income and equity spot markets, Colombian derivatives market has gained some importance. As in many other countries, our derivatives market is an over-the-counter driven market. Foreign exchange derivatives account for 98% of that market.

Only recently, by mid-2008, the first and only Central Counterparty was established as a joint effort from banks, broker-dealer firms and the local stock exchange. Even though its share of derivatives market is still minor, it has succeeded to continuously and significantly increase the number and outstanding volume of transactions, mainly futures on foreign exchange and sovereign debt securities.

Several decisions have been taken in order to foster the move of over-the-counter transactions to central clearing at the Central Counterparty. For example, financial regulation exempts participants' exposure to the Central Counterparty for calculating credit risk capital requirements, and are excluded from individual and concentration credit limits. Additionally, the central bank has excluded foreign exchange intermediaries' derivatives transactions that are cleared through the Central Counterparty from the calculation of foreign exchange leverage limits.

Notwithstanding Central Counterparties are well known for being safer than individual financial institutions, with only three documented cases of failure⁴, some issues regarding the concentration of counterparty, liquidity and operational risk are to be properly addressed. The ongoing debate regarding Central Counterparties' access to central bank liquidity may be one of the most important issues regarding financial infrastructures' potential to mitigate systemic risk: should the central bank provide intraday or even overnight liquidity in order to allow for orderly liquidation of collaterals and guarantees? Or, as Bernanke said in 1990 after the 1987 stock market crash, should the central bank serve as an "insurer of last resort" for Central Counterparties' in order to allow them to fulfill its obligations even in the most extreme case scenario?

⁴ Caisse de Liquidation (Paris, 1974), Kuala Lumpur Commodity Clearing House (1983), y Hong Kong Futures Guarantee Corporation (1987);

According to the IMF, the European Central Bank, and the U.K.'s Financial Services Authorities, central bank money may provide the resources required by a systemically important Central Counterparty to manage its liquidity risk without distorting financial markets via fire-sale risk, and to assure market participants that the Central Counterparty will ultimately fulfill its obligations, even in extreme conditions not covered by the design of its lines of defense and its equity.

Despite the only Central Counterparty of Colombia is not systemically important because of the low outstanding value of transactions, the Central Bank of Colombia has taken a proactive approach to this issue: we are currently analyzing if granting access to central bank's liquidity facilities is convenient or not, and what mechanisms could be the most appropriate.

Regarding Trade Repositories, which are entities that maintain a centralized electronic record of transaction data, their role on enhancing transparency of information has been emphasized after the 2008 crisis. As with Central Counterparties, Trade Repositories may fill the informational gap that prevented financial institutions from mapping their own exposures, and authorities from understanding the structure and dynamics of the financial system. Colombia has no Trade Repositories, but we are currently analyzing if such centralized register of transaction data may be undertaken by the existing infrastructure of the Central Bank, or if the private sector or another financial authority should undertake it.

As verified in the aftermath of the 2008 crisis, the Central Bank of Colombia recognize that Central Counterparties and Trade Repositories, even though differing in their function, both alleviate the insufficiency of current sources of information for understanding, analyzing and deciding about financial systems. Besides, as explained before, the Central Counterparty not only helps to cast light on the complex and obscure network of connections between financial institutions, but also serve as a centralized and more efficient manager of liquidity and counterparty risks.

Finally, I would like to close my intervention with some additional remarks.

- As demonstrated by the 2008 crisis, infrastructures such as Central Counterparties and Trade Repositories may help to mitigate informational gaps in order to cope with the systemic fragility resulting from the complexity and opaqueness of financial systems;
- Unlike traditional balance sheet data, financial infrastructure data are particularly dynamic and granular and may help to identify the type, volume

and risk profile of the activities and services provided by each type of institution, even at the firm level;

- According to our experience, other infrastructures, such as the Large-Value Payment System, which are typically managed by the central bank, are another rich source of information for understanding and analyzing the structure and dynamics of the financial system.
- Using infrastructure data requires new approaches and techniques. Only after designing and implementing appropriate methodologies suitable for its analysis (e.g. network theory) it is possible to fully exploit the more transparent information provided by infrastructures.
- According to our experience when dealing with Large-Value Payment System information, new approaches and techniques for analyzing infrastructures' information allow for assessing key criteria such as financial institutions' connectedness and non-substitutability, which may help identifying systemically important financial institutions outside the traditional too-big-to-fail concept.

At the end, we, as overseers of the payment system, and acting as one of the guarantors of financial stability, are committed to mitigating systemic risk by all means necessary, where sound and well-designed financial infrastructures serve as shields against fragility, and as sources of key information for financial authorities' prudential and decision-making purposes.

Closing words

I will not continue touching on technical subjects any longer. We have had enough productive work for today, and I am sure that will also be the case tomorrow. It just remains for me to extend a most cordial invitation for a similar conference next year in Colombia. Our colleagues in Malaysia have set pretty high standards of efficiency and hospitality, but rest assured that we will make every effort for following their example and welcome you all in 2012.

Once again I would like to say *muchas gracias* very warmly to Zeti for her gracious invitation tonight and to you all for your kind attention.