Systemic Risk or Not?

The recent crisis has been considered as the result of a systemic risk in the financial markets. The European Central Bank (ECB) has been targeted by the de Larosière Report[1] to set up a special entity to track this type of risk and this focus on systemic risk is not unique. Regulatory authorities in USA and Canada are also asking themselves who should track this systemic risk. But what is systemic risk? Look at the most well known textbook in finance and more specifically those about the management of financial institutions and you will find risks like: Liquidity risk, interest rate risk, market risk, credit risk, off-balance sheet risk, solvency risk, technological risk, operational risk, exchange risk, country risk and so on, but no systemic risk.[2]

Some might say: "Yes, but what about systematic risk?" Systematic risk is not systemic risk. The systematic risk refers to the risk that a firm cannot diversify away by using portfolio techniques. One can find a full development of the concept of the systematic risk when studying the Capital Asset Pricing Model (CAPM).

Steven L. Schwarcz defines the systemic risk the following way: "A common factor in the various definitions of systemic risk is that a trigger event, such as an economic shock or institutional failure, causes a chain of bad economic consequences- sometimes referred to as a domino effect. These consequences could include (a chain of) financial institution and/or market failures. Less dramatically, these consequences might include (a chain of) significant losses to financial institutions or substantial financial-market price volatility. In either case, the consequences impact financial institutions, markets, or both." [3]

Thus, in itself the systemic risk does not exist. We should talk about the systemic nature of some of the risks already fully described in most textbooks dealing with the management of financial institutions.

A credit risk, the risk that a counterparty default on its obligation, can become systemic if the default of this counterparty will result into the default of the owner of this risk resulting into the default of other economic entities linked in some ways to this entity. Thus, a domino effect, a contagion, is the major characteristic of a risk taking a systemic dimension. The A (H1N1) virus is certainly the best example of a systemic risk.

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[1] De Larosière Report (2009).
[2] Préfontaine and Thibeault (1993), Saunders and Cornett (2008) and Sinkey (2002).
[3] Steven L. Schwarcz (2008).

For a risk to transform itself from an isolated event into a chain reaction, two conditions need to be met: The materialization of the risk must be severe enough to jeopardize the survival of the institution and this institution needs to be in a situation where it can export these bad outcomes to other participants to the financial system.

In such a context, the oil crisis of 1973 and 1979 cannot be called systemic because the impact on the economy was not the result of chain effect but of a single event affecting all components of the economy at the same time. The crisis was very severe but it does not spread through a domino effect.

Without the contagion effect, the financial consequences of a failure remain limited to a small number of entities. Take for example the recent failure of the Northern Rock Bank in UK or the failures of two Canadian banks in the 1980s, the Canadian Commercial Bank and the Northland Bank, the consequences of these failures have been limited to their regional markets. No domino effect.

The quasi-bankruptcy of the LTCM hedge-fund in 1998 gives a good example of a solvency risk and of a liquidity risk that reach a systemic status. Because of its size and of the number of its counterparties, some of which major banks on the international scene, a default on the part of LTCM would have resulted into a chain of default from these big players. Here, we find the two components of the systemic nature of some risks, the importance of the negative consequences for the market participants and the contagion effect.

The financial crisis that spread around the world was derived from a credit risk associated with the mortgage market in USA that transformed itself into a systemic liquidity risk. The failure of Lehman Brothers shows how a credit risk might impact on the solvency of an institution resulting intro a confidence crisis that dries up your access to liquidity. Here also we find the two components of the systemization of some risks: important losses and the domino effect.

Since we can conclude that the systemic risk does not exist by itself but that some risks can become systemic, lets try to identify among the risks presented earlier those that are more prone to a systemic effect. That should lead to the identification of the institutions that are also the most subject to a systemization of some of their risks.

The market risk, the interest rate risk, the exchange risk, the country risk, the credit risk and the off-balance sheet risk are risks that can impact on the cash flows of an institution. The end result is an important effect on the solvency of the institution which might lead to a bankruptcy. However, the capacity for these losses to spread in the financial system depends on the link between the participants of this financial system. These links are mainly found in their financing and re-financing operations and in some joint operations or technological transfers.

In the banking world, these operations of financing and re-financing are found mainly on the inter-bank market. As we can see in the following tables, during the height of the crisis, Rabobank, a triple A bank, has reduced substantially its reliance on this inter-bank market.

Because of its AAA, Rabobank got access to other sources of funds which were not accessible to other banks. Thus, to maintain the access to funds for some major banks, the governments needed to intervene by guaranteeing inter-bank transactions to insure the flow of funds in the economy.

7 Due from other banks

In millions of euros	2008	2007
Deposits with other banks	22,585	9,537
Assets transferred under repurchase transactions	4,621	29,738
Loans	3,914	3,960
Other	76	18
Less: value adjustments	(118)	(35)
	31,078	43,218
Reclassified assets	2,698	-
Total due from other banks	33,776	43,218

Table 1- Rabobank lending to other banks. Source: Rabobank Annual Report 2008

19 Due to other banks

In millions of euros	2008	2007
Other loans	4,091	9,898
Money market deposits	105	87
Time deposits	11,882	21,164
Other deposits	6,101	7,767
Repurchase agreements	1,712	7,416
Total due to other banks	23,891	46,332

Table 2 - Rabobank borrowing from other banks. Rabobank Annual Report 2008

This need for re-financing is well illustrated in the following table from the TD Group.

TABLE 44 CONTRACTUAL OBLIGATIONS BY REMAINING MATURITY						
(millions of Canadian dollars)					2008	2007
	Within 1 year	1 to 3 years	3 to 5 years	Over 5 years	Total	Total
Deposits[1]	$299,803	$44,441	$13,845	$17,605	$375,694	$276,393
Subordinated notes and debentures	4	219	227	11,986	12,436	9,449
Operating lease commitments	449	791	602	1,482	3,324	1,874
Capital lease commitments	15	40	3	–	58	76
Capital trust securities	–	894	–	–	894	899
Network service agreements	169	153	–	–	322	492
Automated banking machines	70	124	–	–	194	235
Contact centre technology	30	85	–	–	115	144
Software licensing and equipment maintenance	82	75	–	–	157	168
Total	$300,622	$46,822	$14,677	$31,073	$393,194	$289,730

Table 3 - TD Group need to re-finance. Source: TD group Annual Report 2008

With a total balance sheet of 563,214 millions Canadian dollars, the re-financing need exceeds 50% of the total balance sheet. However, one might consider that their deposit basis is very stable. The TD Group, as Rabobank, has the highest credit rating, AAA.

Thus, the level by which an institution relies on other institutions for its financing or its re-financing might create a liquidity risk. In the case of a crisis of confidence due to high solvency risk, this liquidity risk can acquire a systemic nature and can spread to the system as a whole.

The case of AIG is one where we see this link between solvency risk and liquidity risk. Following some transactions on the credit derivatives market without the required provisioning, the firm got into a solvency crisis that blocked its access to funds resulting into a liquidity issue jeopardizing the survival of a large number of counterparties.

The following figure illustrates how numerous risks end up into an issue of solvency and liquidity. These two risks are those that might turn systemic.

Table 4 - Royal Bank of Canada risks Structure. Royal bank of Canada, Annual Report 2008

Thus, to conclude we can ask ourselves which institutions are prone to the systemization of their solvency and liquidity risks. The answer to this question brings us back to the Schwarcz's definition of systemic risk: a risk that has substantial impact in term of potential losses and a risk that can spread within the financial system. Thus, big banks and investment banks are those to watch with regards to the potential systemization of their solvency and liquidity risk.

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