

Comments by C. Freedman on presentation by Larry Radecki on Report of the CPSS Working Group on System Interdependencies, Bank of Canada Conference on Developing a Framework to Assess Financial Stability, November 7, 2007¹

This CPSS report will be the latest in a long line of CPSS reports on payments and settlement systems. These reports have been extraordinarily useful in helping both central banks and private sector institutions understand in detail the design of such systems, the issues and problems raised by these systems, and the ways in which such difficulties might be addressed. Typically, the first part of such documents has provided a description and considerable detail on the way the systems operate, something that may sound rather dull and prosaic but that turns out to be incredibly important in helping private sector and public sector practitioners, as well as academics, understand the intricacies of such systems. The CPSS has taken the lead for many years in providing this kind of information. In this context, I remember one commercial banker commenting, with a little discomfort and perhaps resentment, that the central bankers seem to understand the systems better than his colleagues in the private sector. The second part of these documents typically provided a discussion of problems and issues in the systems. And sometimes there was a third part to the report (although not in the report under discussion), recommending policy changes or initiatives.

As an example, the CPSS reports discussing settlement of foreign exchange transactions, which led up to the creation of the CLS Bank, described how settlement of foreign exchange transactions occurred at the time, pointed out the potentially enormous risks to counterparties associated with such forms of settlement, and made it clear that changes to the arrangements were needed. In this case, the private sector took the initiative and developed the CLS Bank to address these risks.

Many of the issues relating to the interdependencies among various payments and settlement systems have, as Larry pointed out, been known for quite some time. In fact, in the case of Canada, as we were approaching the completion of the design of the risk-proofed securities clearing and settlement system (DCS as it was then called) and the new large value payment system (LVTS), I wrote an internal memo in 1996 for the Bank of Canada called "the interface of the major clearing and settlement systems: some preliminary thoughts". This note related to the interface of the LVTS, the DCS, and Multinet (a North American foreign exchange clearing and settlement system that was being planned at the time).² Subsequently, the Bank convened a meeting of staff from all the major financial institutions who were involved in the three planned systems. What was fascinating to me at the time was the fact that, within some of these institutions, the people dealing with the design of the different settlement systems did not even know one another. Somewhat later, in 1999, I wrote a Bank of Canada technical report entitled "the regulation of central securities depositories and the linkages between CSDs and large

¹ I would like to thank Clyde Goodlet for helpful suggestions on an earlier version of these comments.

² The section headings of the note were descriptive of the contents -- the use of LVTS for settlement of outcomes in DCS and Multinet, the transfer of risks across systems, frequency of settlement, the ability to use net credit in one system to offset net debit in another, overall requirements for collateral, and hours of operation.

value payment systems" in which a section was devoted to the linkages between the DCS and the LVTS.

Having noted that we were aware of such issues, I would quickly add that the depth and breadth of the discussion in the first part of the CPSS report goes much further than we did at the time in thinking about the m. As is very common in CPSS reports, there is a taxonomy, in this case a taxonomy of various linkages and interdependencies. This is extremely helpful in providing a framework for thinking about the issues and for understanding the range of possible interconnections in the real world. In particular, I found the 3x3 matrix, which Larry mentioned, to be very helpful in thinking about the range of possibilities. On one axis, the matrix sets out the form of interdependencies -- system based interdependencies, institution based interdependencies, and environmental interdependencies. On the other axis, it sets out the type of relationship -- clearing and settlement relationships, risk management relationships, and general operational relationships. The resulting nine cells are filled in considerable detail in the discussion in the text.

The second part of the report addresses "whether and how the development of interdependencies among payment and settlement systems affects the overall safety of the global financial system." The working group analyzed the implications of interdependencies for the sources of risks faced by systems and their participants, the potential paths through which disruptions can be transmitted across systems, and the effectiveness of risk management policies in preventing the transmission of disruptions across systems. This was done in the context of three case studies -- operational and financial disruptions affecting a key system (a generic international central securities depository), operational and financial disruptions originating from a major financial institution, and an operational disruption involving an important service provider.

Because of the complexity of some of the issues, the report had to make some simplifying assumptions for the case studies on which some of its conclusions are based, which, unfortunately, considerably lessen its value to readers. As Larry noted, the analysis was conducted under the assumption of benign conditions in the financial sector. But many readers would undoubtedly like to know what implications would follow from less benign conditions in the financial system. There could be some value in using simulation studies to complement the case studies and to examine a broader range of possibilities. The report notes an attempt to model interdependencies being undertaken jointly by the Federal Reserve Bank of New York, Sandia National Labs, Helsinki University of Technology, and the Banque de France, which might be helpful in this regard. This would allow the report to delineate a much broader range of possible outcomes and in particular to focus on those that would be especially detrimental to the continued operation of the financial system. While one cannot predict each and every possible outcome, it might be worthwhile to carry out some worst-case scenarios in simulations to see the extent to which they would pose difficulties for the financial system as a whole. In this context, it would have been interesting for the reader if the working group had given us their insights from the most recent financial turbulence in light of the analysis that they have done.

Because of the assumptions made in the course of preparing the case studies (most importantly, the assumption of an otherwise benign environment), it is difficult to know the extent to which one can generalize from the results of these case studies. As the working group itself noted, while interdependencies can influence paths by which disruptions might spread, the actual path will be influenced by many other factors that may be difficult to predict. The behavior of systems and participants in reaction to a disruption would be one important such factor. As we saw in the recent turmoil, in some parts of the asset-backed securities markets the lack of knowledge regarding the value of these securities and the uncertainty generated by such lack of knowledge led to financial institutions responding to the shock with much-reduced willingness to transact with each other and to markets seizing up because of insufficient liquidity. Simulations might be used to model the various possible responses of system operators and participants to a particular event, although one has to recognize the limitations of simulations in our current state of knowledge of how to model behavior in the financial stability area.

One element that seems to get insufficient attention in the report is the role of central banks in responding to such potential disruptions. While the report talks about the steps that CCPs, CSDs and other systems might take during a disruption, given the latitude that the operators of such systems have, the central banks' responses to disruptions are likely to be even more important, as we saw in the recent episode involving particular segments of the asset-backed securities markets.

The report appropriately emphasizes the role of large value payment systems as the key institution in the web that includes payment systems and other settlement systems, financial institutions, and service providers. And it recognizes the importance of bringing together the key players in this web of interdependencies so that their business continuity plans and disaster recovery programs are integrated or at least take into account what is happening in other systems. In Canada, the Bank of Canada has taken the lead in organizing a tripartite committee composed of itself and the operators of the two major domestic systems (LVTS and CDS) to examine its business continuity plans and those of the major settlement systems to see if they have a degree of coherence in the way that they respond to major shocks, because of the importance of each of these entities for the others.³ And it is anticipated that this type of preparation for potential shocks that could cause breakdowns of the system would eventually include the major domestic financial institutions. In assessing the consistency of the business continuity plans of the systems and the participants, attention must be paid to backup arrangements, workarounds, and information exchange, among other things. Central banks have an advantage in doing this because the task requires a system-wide perspective, something central banks are used to taking.

What was surprising in the report? Perhaps the most surprising finding for me (and apparently for the working group) was that the large global banks did not pose the degree of risk that I had expected. As Larry noted, this may have been because most of these banks operate through correspondents in foreign countries and have rather limited direct

³ Technically, this involves looking for any negative externalities associated with individual BCP arrangements.

linkages with payment systems and security systems outside their home countries. But the fact that these correspondents often have many foreign banks using them may pose risks for various participants in foreign exchange transactions.

Looking forward, one of the next steps, either in this report or in a follow up report, should be to focus on policy initiatives that would bring about improvements in the systems or in individual institutions to address some of the major risks that have been the subject of the analysis in the report.

In conclusion, I thoroughly enjoyed reading the draft report and hearing Larry discuss it. While there are some limitations to the findings, the most important of which are the assumptions regarding the benign environment and the insufficient attention to the role of central banks, it will be an important contribution to our understanding of interdependencies and will likely lead to further analyses regarding their implications for policy.