Remarks

Takatoshi Ito
Hitotsubashi University

1. What we learned

After two days of discussion, we have only scratched the surface of "systemic risk." In fact, I feel like I have watched the first 30 minutes of the movie "Alien" for the first time. You board the abandoned ship. You find a little girl who appears to have survived the disaster, but she is too afraid to talk. Then strange things start happening around you. Small creatures appear, but obviously, at this point, you have not seen the full figure of the monster. Maybe, you can fight the monster and go home free.

It is very difficult to discuss a monster, called a systemic crisis, that you have not seen. Yes, we see little crises here and there. We only see bits and pieces that may or may not lead to a full-blown systemic crisis. We hear voices of people who experienced the 1930s, but they are not articulate on what really happened. We hear stories from central bankers on the cases of "near-miss." Maybe the central bank of the late 1990s is so powerful that we will not see a systemic crisis after all.

Therefore, it is understandable that there is no agreement on the definition of systemic risk, as illustrated by Philippe Hartmann's presentation. But the paper did the best in doing a survey of the systemic risk literature. I think that we now have a better understanding of systemic risk.

We have also learned about various sources of shocks and about various propagation mechanisms. Shocks may come from stock price changes, bond price changes, as well as from bank failures. The propagation mechanism may come through the payment system or the settlement system, or maybe just through a shift in expectations. Influences from one market to another, separated by financial product types or by geography, are called "spillovers" and "contagion." We have a very good paper by Kodres and Pritsker on the mechanism of contagion, and this paper will set a rigorous framework for analyzing spillovers.

Market microstructure matters because systemic risk goes through the market and participants' behavior depends on microstructure. For example, the introduction of a circuit breaker alters volatility, as shown by Muranaga and Shimizu and by Goldstein, Evans and Mahoney. More work is needed in this direction.

The role of the central bank in preventing a systemic crisis is important. There is always a tradeoff between preventing a crisis and creating moral hazard.

Goodfriend and Lacker proposed to build a reputation for limited central bank lending, and this direction is worth exploring.

2. The following items are what I expected to learn but I am afraid I did not find them being discussed in this conference.

- Episodes of systemic crises or near-crises and lessons from these experiences: two papers, one by Brown and Steenbeek and one by Shimizu and Ui, came close. I think that case studies, or even episodes narrated by former central bankers, would provide us with rich materials with which to build a model or to use as check points in empirical analyses.
- Contagion is a key concept which transforms an individual crisis into a systemic crisis. Although Kodres and Pritsker have built an elegant model, it focuses on one particular channel, hedging, as a source of contagion. Many other possibilities are present, and I expected to see more.
- The interplay between regulatory changes and market participants' reactions was not emphasized in many of the papers in this conference. It is well-known, and was in fact often mentioned during the conference, that any action to save financial institutions will create moral hazard. But how much moral hazard? We have not heard much about how market participants have reacted or would react to policy regime changes.
- In this regard, in any discussion on policy implications we have to pay attention to the so-called Lucas critique. Market participants change their behavior when the regulatory authorities change rules, regulations and implementations. Therefore, any empirical results obtained in the old regime cannot be applied or simulated under the new regime. Therefore, every new crisis is necessarily different. The regulatory authorities learn from the past, but the crisis will evolve too.

3. My classification of contagion

Since contagion is a key concept for understanding systemic risk, let me offer my classification:

Direct Contagion: This is through a direct asset-liability relationship. Counterparties of borrowing and lending of a failed institution may fail, i.e. there is a domino effect. Examples are abundant. Obviously, prudential regulations on the health of financial institutions are important to prevent these linkages. If the failed institution is very large—and this is the "if" which leads to the so-called too-big-to-fail principle—it is likely to have systemic risk, through direct linkage.

System Flaw: When the system is involved in unwinding the trades of a failed institution, there is another systemic risk: the difficulty of unwinding trades, or forced loss-sharing in a system involving many participants who may not have

direct trades with a failed institution. Problems related to netting, exchange, deposit insurance system, and loss-sharing rules belong to this category. For example, what would have happened if Barings' losses had exceeded the reserves of SIMEX? The paper by Brown and Steenbeek can be extended in this direction.

Let me add an analogy of the difficulty of unwinding trades in a futures exchange, which I use in my classes teaching futures. This is from East of Eden, with James Dean playing Cal, a second son who longs for father's affection:

> Cal reached in his jacket pocket, took out the red-ribboned package, and pushed it over in front of his father.
> "What is it?" Adam asked. ...
> Very slowly Adam moved his fingers and fanned the gold certificates. ...
> "What is it? What—" He stopped.
> Cal answered, "We bought futures at five cents and when the price jumped—It's for you, fifteen thousand dollars. It's for you." ...
> He heard his father say, "You'll have to give it back."
> Almost as remotely his own voice said, "Give it back? Give it back to who?"
> "To the people you got it from."
> "The British Purchasing Agency? They can't take it back. They're paying twelve and a half pence for beans all over the country."
> "Then give it to the farmers you robbed."
> "Robbed?" Cal cried. "Why, we paid them two cents a pound over the market. We didn't rob them."

Just imagine the case in which Cal lost out in the futures market.

- A pure bank run is difficult to imagine, since many countries now have an explicit deposit insurance and government guarantee. But history is full of cases of bank runs, especially in the 1920s and 1930s. A failure of one bank changes expectations of bank depositors and investors, and other banks, which do not have a direct asset-liability relationship, experience deposit withdrawals. Some Japanese banks last November experienced this, although the process was rather gradual. In the international context, the Japan premium is a good example.
- Herd Behavior: A sudden change of expectations in the same direction causes market disruption. A bandwagon effect or herd behavior is such an example. Individually rational behavior becomes collectively irrational. For example, the 1987 crash was partly due to the impossibility of "portfolio insurance" when all other participants were in the same boat.

Obviously, the last two categories have some overlaps.

4. Domestic vs. International

Next, I would like to draw a parallel between domestic and international systemic risks. The literature on international systemic crises has borrowed tools from the literature on domestic crises. However, after the Mexican crisis of 1994-95 and the Asian crisis of 1997, the international currency crisis literature is getting richer. Bank runs, herd behavior, and moral hazard are all present both in the domestic and international environments.

I would like to draw attention to the parallel as depicted in the table. Going into details of this taxonomy may need a full presentation, so I will just give the table as food for thought.

	Domestic	International	Policy
Bank run	US 1930s (Diamond and Dybvig)	Korea, Dec. 97. Japan premium (Radelet and Sachs)	Lender of Last Resort
Herd Behavior	Japan, Nov. 97 (Shimizu and Ui)	Malaysia, Indonesia and others after Thailand (Frankel and Wei)	Circuit breaker Capital controls(?)
Moral Hazard	US, S & L in the 80s Japanese forebearance in the 90s	Russia, 98 Asia after Mexico?	Borrowers expect to be no worse off; Lenders expect to be protected.

5. Direction of future research

The following is the list of future research, as I see it.

First, the use of high frequency data is important, because how market participants react to news needs to be documented with better data.

Second, market microstructure is important. The following questions may be analyzed in the future: Whether the OTC market is more volatile than the organized exchange for derivatives, the foreign exchanges, and any other products. Obviously, we see pros and cons regarding this hypothesis.

Third, more studies on market participants' behavior are needed. When regulatory changes occur, participants change their behavior. When a lifeboat is offered, future behavior is changed. Can the central bank really establish a reputation for being tough (that is, by not extending lending to a troubled institution), without demonstrating one? Expectation formation and behavioral changes are important but difficult topics.

Finally, I would like to see more case studies. In the next conference, a paper should be written on the experience of the fall of the Japanese banks and the mistakes of the Japanese government's banking policy from 1991 to 2001, that is, how the strongest financial institutions fall from grace and disappear from the major international markets in ten years. I cannot shake off the questions asked by one of the participants at this conference, in a private conversation yesterday after

a few drinks of beer:

Why did the authorities suffocate all banks slowly so that they did not cause an international systemic crisis? Why couldn't Japan allow one or a few banks to survive and let them be free? (Note that today's newspaper is reporting that the London Interbank Association is considering excluding Japanese banks in calculating the Yen interbank rate, since the Japanese banks offer very different rates from others. This is only the beginning of excluding, tangibly or symbolically, Japanese banks from major financial centers, I think.)

I would like to see a case study answering these questions in three years. Technology will advance in three years, and we will have interactive movies so that we can change the ending of the movie "Alien."

References

Paul Volker on the Silver crisis in 1980-in Martin Feldstein, the Risk of Economic Crisis, 177.

Steinbeck, John, *East of Eden*. Penguin Books, 700-701.