Lessons from the Great East Japan Earthquake: Impacts on Payment and Settlement Systems

BCRP-CELMA seminar
April, 2013

Payment and Settlement Systems Department
Bank of Japan
1. OVERVIEW OF THE EARTHQUAKE
Disaster Areas

Tohoku Region

Seismic center

M9.0

Fukushima Daiichi Nuclear Power Plant
After the Earthquake: Sendai Branch, BOJ

Bank Counter Area

Vault

Storage

Sofa at Waiting Room
After the Earthquake: Tohoku Region

Sources: Cabinet Office, Earthquake Research Institute, University of Tokyo.
After the Earthquake: BOJ, Tokyo

Disaster Management Team

Briefing to the Governor
Largest Earthquakes

1952 Kamchatka, Mw 9.0
2011 Honshu Tohoku, Mw 9.0
2004 Sumatra, Mw 9.1
1964 Alaska, Mw 9.2
1960 Chile, Mw 9.5

Source: Earthquake Research Institute, University of Tokyo.
<table>
<thead>
<tr>
<th>Event</th>
<th>Amount of damage to capital stock</th>
<th>Ratio of amount of damage</th>
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<tr>
<td></td>
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<td>Ratio to nominal GDP</td>
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<tr>
<td><strong>Great East Japan Earthquake (2011)</strong></td>
<td>16-25 trillion yen</td>
<td>3-5%</td>
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<td><strong>Great Kanto Earthquake (1923)</strong></td>
<td>4.6 billion yen</td>
<td>29%</td>
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<td><strong>Kobe Earthquake (1995)</strong></td>
<td>9.9 trillion yen</td>
<td>2%</td>
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Sources: Cabinet Office; Hyogo Prefecture; Bank of Japan, etc.
1. Earthquake and Tsunami
   - Damaged a wide range of infrastructures including Fukushima nuclear power plants.

2. Shortage of electric power supply
   - Nuclear power plant problem caused shortage of electric power supply for a wide geographical area including the Tokyo Metropolitan area.
   - Government requested industries to reduce electricity usage.

3. Substantial effects on the supply side, mainly production capacity, for some time.
   - Supply chains were temporarily cut off.
2. THE BANK OF JAPAN’S RESPONSES
1. Maintaining the functioning of financial infrastructure

- Request for special financial measures to assist disaster areas.
- Supply of cash to financial institutions and exchange of damaged banknotes and coins.

- Ensuring stable operation of the BOJ-NET.
2. Ensuring the stability of financial markets

3. Supporting economic activity
   - Enhancing monetary easing to preempt a deterioration in business sentiment and discourage an increase in risk aversion in financial markets.

4. Accurate and timely communication
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4. Accurate and timely communication
3. THE PRIVATE SECTOR’S RESPONSES
Private Sector’s Responses

1. Maintaining provision of cash services
   - Recovering offices and opening temporary windows.
   - Supply of cash to affected depositors.

2. Coordination and cooperation among financial institutions

3. Stable operation by payment and settlement systems

4. Market-wide business continuity arrangements
Closed Offices and Temporary Offices

Number of Closed Offices

Number of Temporary Windows and Offices

Sources: FSA, BOJ.
Ensuring Provision of Cash Services

BOJ Current Account Balances held by Financial Institutions

- Disaster-Stricken Area
- Non Disaster-Stricken Area

Feb-11 = 100

Volume of Cash Provision from BOJ to Financial Institutions

- net cash withdrawal / BOJ current account balance

Source: BOJ.
Ensuring Provision of Cash Services (cont)

Cash Withdrawals by Depositors who Lost Deposit Certificates or Bank Passbooks under the special financial measures to assist disaster areas

 beneficiated areas

Source: BOJ.
1. Maintaining provision of cash services
   - Recovering offices and opening temporary windows.
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Interbank Arrangement for Cash Withdrawal

Area of relocation

1. Requests cash withdrawal and presents ID

B’s depositor

2. Forwards request for cash withdrawal

Paying financial institution B

4. Pays out cash

Disaster area

3. Permits cash withdrawal and sends funds

Account-holding financial institution B
1. Maintaining provision of cash services
   - Recovering offices and opening temporary windows.
   - Supply of cash to affected depositors.

2. Coordination and cooperation among financial institutions

3. Stable operation by payment and settlement systems

4. Market-wide business continuity arrangements
1. Maintaining provision of cash services
   - Recovering offices and opening temporary windows.
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2. Coordination and cooperation among financial institutions

3. Stable operation by payment and settlement systems

4. Market-wide business continuity arrangements
4. LESSONS LEARNED
1. Communication methods (priority and satellite phones) were in place with branches in disaster areas and the government.

2. In-house power generating facilities enabled business continuity at branches in disaster areas.

3. Staffing arrangements were effective for business continuity at the Head Office.

4. Prompt responses and information management by setting up the Disaster Management Team.
1. Review severity and scope of the risk scenarios

- Incorporate severe and extensive damages.

- **Terrorist Attacks**
- **Natural Disasters** (Earthquake)
- **Pandemics** (Pandemic Influenza)
- **Accidents** (Fire, Explosion)
- **Hardware/Software System Failure**

* Nuclear, Biological and Chemical
2. Enhance effectiveness of BCP

<table>
<thead>
<tr>
<th>Securing Managerial Resources</th>
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<tbody>
<tr>
<td>Facilities</td>
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<tr>
<td>Back-up systems, sites</td>
</tr>
<tr>
<td>Power, water and telecommunication</td>
</tr>
<tr>
<td>Alternative Sources</td>
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<tr>
<td>e.g. capability of In- house power generating facilities</td>
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<tr>
<td>Human resources</td>
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<tr>
<td>Staff assignment</td>
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</tbody>
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3. Cooperation among relevant parties

- Ensure consistency of arrangements across relevant parties.
- Industry-wide BCP.

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<thead>
<tr>
<th>Date</th>
<th>Risk Scenario</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 Nov 2010</td>
<td>Outbreak of pandemic influenza</td>
<td>143 Financial institutions and BOJ</td>
</tr>
<tr>
<td>5 Dec 2012</td>
<td>Earthquake hits capital Tokyo</td>
<td>155 Financial institutions, BOJ and FSA</td>
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THANK YOU