
Richard C. Koo
Chief Economist
Nomura Research Institute
Tokyo
March 2009
Exhibit 1. US Economy Is Deteriorating Rapidly

Sources: US Department of Labor, FRB
Exhibit 2. EU Economic Sentiments Are Worsening

(Seasonally adjusted)

Euro Area Economic Sentiment

Ifo Business Climate

Source: Ifo Business Survey, European Commission
Exhibit 3. Exports and House Prices Are Falling in China

House price in Shenzhen (left scale)

China’s exports ($ bil., right scale)

Note: Seasonal adjustment by Nomura Research Institute.
Exhibit 4. Japan’s Industrial Production and Employments Are also Weakening

Note: The forecasts are calculated from METI's survey on planned production.
Sources: Ministry of Economy, Trade and Industry (METI), and Ministry of Health, Labour and Welfare
Exhibit 5. Low Interest Rates Have Failed to Revive Economies or Asset Prices

Sources: BOJ, FRB, ECB, BOE and RMB Australia. As of Mar. 18, 2009.
Exhibit 6. Features of Balance Sheet Recession

- A balance sheet recession emerges after the bursting of a nationwide asset price bubble that leaves a large number of private-sector balance sheets with more liabilities than assets.
- In order to repair their balance sheets, private sector moves away from profit maximization to debt minimization.
- With the private sector de-leveraging, even at zero interest rates, newly generated savings and debt repayments enter the banking system but cannot leave the system due to the lack of borrowers. The sum of savings and debt repayments end up becoming the leakage to the income stream.
- The deflationary gap created by the above leakage will continue to push the economy toward a contractionary equilibrium until the private sector is too impoverished to save any money (=depression).
- In this type of recession, the economy will not enter self-sustaining growth until private sector balance sheets are repaired.
Exhibit 7. US Demand for Funds Is Falling Sharply

Source: Nomura Research Institute, based on FRB, Senior Loan Officer Opinion Survey on Bank Lending Practices.
Note: D.I. are calculated from the answers to the question, "Apart from normal seasonal variation, how has demand for C&I loans changed over the past three months?"
D.I. = ("Substantially stronger" + "Moderately stronger"×0.5) - ("Moderately weaker"×0.5 + "Substantially weaker")
Exhibit 8. US Housing Price Futures Moving Closer to the Japanese Experience

Exhibit 9. House Prices and Rents Diverged substantially during Housing Bubble

Note: Seasonal adjustment by Nomura Research Institute.
Source: Nomura Research Institute, based on Office of Federal Housing Enterprise Oversight (OFHEO) house price index and US Department of Labor CPI.
Exhibit 10. Americans Spent $1.5trn that Should Have Been Saved

Savings shortfall = $1,544bn

Note: Average savings rate for US households in 1997-98.
Source: Nomura Research Institute, based on US Department of Commerce data.
Exhibit 11. Japan’s GDP Grew even after Massive Loss of Wealth and Private Sector Rushing to Pay Down Debt

Sources: Cabinet Office, Japan Real Estate Institute
Exhibit 12. Cumulative Capital Losses on Shares and Land since 1990 Reached $15 Trillion or 3 Years Worth of Japan’s GDP

Source: Cabinet Office, Japan "National Accounts"

Funds Raised by Non-Financial Corporate Sector

Sources: Bank of Japan, Cabinet Office, Japan
Exhibit 14. Japanese Government Borrowed and Spent the Excess Savings of the Private Sector to Sustain GDP

Source: Ministry of Finance, Japan
Note: FY 2008 includes supplementary budget, and FY 2009 is just initial budget.
Exhibit 15. With Government Borrowing and Spending the Increase in Private Sector Savings*, Large Deficit Does Not Mean Higher Interest Rates

* Household savings plus corporate debt repayment

Sources: Cabinet Office, Japan, Japan Bond Trading Co., Japan Securities Dealers Association
Exhibit 16. Japanese Companies Made Huge Progress in Reducing Debt Overhang

Credit Extended by the Banks to Corporate Sector as a Ratio to Nominal GDP (Right Scale)

Credit Extended by the Banks to Corporate Sector (Left Scale)

Sources: Bank of Japan, "Loans and Discounts Outstanding by Sector" "Loans to Individuals", Cabinet Office, Japan "National Accounts"

Notes: 1. 'Credit Extended by the Banks to Corporation' is extended to 1970 by NRI after adjustment for discontinuities in statistics in 1993 and again in 1975.
2. As a percentage of nominal GDP. For GDP statistics before 1979, 68 SNA is used.
Exhibit 17. Japanese Corporate Leverage Came Down Sharply

Sources: Ministry of Finance, Japan, US Department of Commerce
Exhibit 18. Premature Fiscal Reforms in 1997 and 2001 Weakened Economy, Reduced Tax Revenue and Increased Deficit

Source: Ministry of Finance, Japan
*: estimated by MOF

unnecessary deficit: ¥97.6 tril.
Exhibit 19. Four Kinds of Banking Crises and Their Remedies

<table>
<thead>
<tr>
<th>Banking Crisis</th>
<th>Yang</th>
<th>Yin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Localized</td>
<td>(I)</td>
<td>(III)</td>
</tr>
<tr>
<td></td>
<td>Quick NPL disposal</td>
<td>Normal NPL disposal</td>
</tr>
<tr>
<td></td>
<td>Pursue accountability</td>
<td>Pursue accountability</td>
</tr>
<tr>
<td>Systemic</td>
<td>(II)</td>
<td>(IV)</td>
</tr>
<tr>
<td></td>
<td>Slow NPL disposal</td>
<td>Slow NPL disposal</td>
</tr>
<tr>
<td></td>
<td>Fat spread</td>
<td>Capital injection</td>
</tr>
</tbody>
</table>

Type (I): 1989 S&L crisis


Type (III): Japan prior to 1995 (for example, problems at two credit cooperatives)

Type (IV): Japan since 1996, Taiwan since 2000, the US Great Depression of the 1930s, and US and UK subprime crisis since 2007

Exhibit 20. Two Capital Injections Ended the Credit Crunch in Japan

Bankers' Willingness to Lend as Seen by the Borrowers, and the Actual Credit Extended by the Banks

('Accommodative' minus 'Restrictive', % points)

Credit Extended by the Banks (right scale)

Accommodative
Restrictive

Credit Crunch

1st Capital Injection
(¥1.8 tril.)

2nd Capital Injection
(¥7.5 tril.)

"Takenaka Shock"
(rushed NPL disposal)

Large Enterprises
(Left Scale)

Global Financial Crisis

Miyazawa Proposal

Bubble Burst

Sources: "Tankan", "Loans and Discounts Outstanding by Sector", BOJ

(Shaded areas indicate periods of BOJ monetary tightening)

(¥/¥%)

20
Exhibit 21. Percentage of House Purchases that May Lead to “Return the Key”

For Houses Bought before January 2009

At Present (Mar. 2009) Home Prices
-30.2%

Lowest Price in Futures Market
(Nov. 2010) [-37.3%]

40% below the Peak

70.4% (1)

82.9% (1)

88.0% (1)

28.7% (2)

41.1% (2)

46.3% (2)


Notes: (1) Maximum share of underwater mortgages assuming that the total number of mortgages is 53 million.
(2) As (1), but with a 10% downpayment.
Exhibit 22. Summary of US Policy Options Based on Japan’s Experience

**Fiscal Policy**
- Economic Stimulus
  - Government spending more effective than tax cuts
  - Must be fast acting and seamless for the duration of recession
- Capital Injection
  - Effective in ending debilitating credit crunch
  - Politically unpopular but sooner and bigger the better

**Monetary Policy**
- Monetary easing largely ineffective except

  **Credit Easing (Asset Purchases)**
  - Benefit: Help financial institutions deleverage
    - May help unclog some markets if the Fed's presence is viewed as permanent
  - Risk: May saddle Fed's balance sheet with distressed assets and lead to a serious loss of trust in the Fed and the dollar

- Liquidity Injection
  - Keeps financial institutions operating
  - Benefit: Exports encouraged, Imports discouraged
- Weaker Dollar
  - Risks: May trigger foreign capital outflow leading to higher interest rates
  - Accelerate imported inflation

Source: Nomura Research Institute
Exhibit 23. US Trade Deficit Is Still Enormous

These data are seasonally adjusted by Nomura Research Institute.
Exhibit 24. Monetary Aggregates Behave Totally Differently under Balance Sheet Recession

High-powered Money (Average Balance)
Money Supply (M2+CD, Average Balance)
Credit Extended to the Private Sector

Textbook Economics (monetary policy effective)
Balance Sheet Recession (monetary policy NOT effective)

Note: Private sector borrowings seasonally adjusted by Nomura, adjustments made for discontinuities in line with BOJ's "Monetary Survey"
Source: Bank of Japan
Exhibit 25. Japan’s Money Supply Has Been Kept Up by Government Borrowings (I)

Credit Extended to Others ( Mostly Government)
Credit Extended to the Private Sector
Money Supply (M2+CD)

Sources: Bank of Japan "Monetary Survey", "Changes in Money Stock (M2+CD), and Credit Statistics"
Notes: "Credit extended to others"= (1) public sector + (2) foreign assets (net) + (3) others.
(1) Public Sector = credit to the government (net) + credit to regional public sector bodies + credit to public corporations
(3) Others= (money + quasi-money + CD) - (foreign assets (net) + domestic credit).
Therefore, increase or decrease in "Credit extended to others" will include impact of increase/decrease in public sector debt, increase/decrease in bank debentures issued by private sector banks and deposits of financial institutions, and errors in data.
Exhibit 26. Japan’s Money Supply Has Been Kept Up by Government Borrowings (II)

Balance Sheets of Banks in Japan

December 1998

Assets
- Credit Extended to the Public Sector ¥140.4 tril.
- Credit Extended to the Private Sector ¥601.6 tril.
- Foreign Assets (net) ¥32.7 tril.
- Money Supply (M2+CD) ¥621.5 tril.

Liabilities
- Other Liabilities (net) ¥153.2 tril.
- Total Assets ¥774.7 tril.

December 2007

Assets
- Credit Extended to the Public Sector ¥247.2 tril. (+106.8)
- Credit Extended to the Private Sector ¥501.8 tril. (-99.8)
- Foreign assets (net) ¥741.1 tril. (+41.4)
- Money Supply (M2+CD) ¥744.4 tril. (+122.9)

Liabilities
- Other Liabilities (net) ¥153.2 tril.
- Total Assets ¥823.1 tril. (+48.4)

Source: Bank of Japan “Monetary Survey”
Exhibit 27. US Money Supply Growth after 1933 Was also Made Possible by Government Borrowings

Balance Sheets of All Member Banks

Source: Board of Governors of the Federal Reserve System (1976) *Banking and Monetary Statistics 1914-1941* pp.72-79
Exhibit 28. New Deal policies doubled fiscal expenditures without increasing the budget deficit

Exhibit 29. German fiscal stimulus reduced unemployment dramatically

Exhibit 30. Debt Rejection Syndrome Can Last a Long Time: US Interest Rates Took 30 Years to Return to Their 1920s Level

Exhibit 31. The Anatomy of Balance Sheet Recession and Its Cure

Private Sector Bought Assets with Borrowed Funds

Original Money Flow

Private Sector Savings

Fall in Asset Prices

Balance Sheet Problems Develop

Private Sector Moves away from Profit Maximization to Debt Minimization

Central Bank Panics and Dramatically Eases Monetary Policy

Government Procures Funds at Low Rates due to the Lack of Private Sector Borrowers

Fiscal Stimulus

More Defaults

Government Borrowings Help Maintain Money Supply in the Absence of Private Sector Borrowers

Weak Economy and Deflation

More Non-Performing Loans at Banks

“Liquidity Trap”

Nothing Happens because Private Sector Is Minimizing Debt

Vicious Cycle

Private Sector Paying Down Debt

Fall in Aggregate Demand

Keep Aggregate Demand from Falling

Allow Private Sector to Pay down Debt

Repair Balance Sheets

The Problem

The Solution

Repackage Balance Sheets

Private Sector Bought Assets

Source: Richard Koo, Balance Sheet Recession: Japan’s Struggle with Uncharted Economics and its Global Implications, John Wiley & Sons, Singapore 2003
Exhibit 33. Contrast Between Yin and Yang Phases of a Cycle

<table>
<thead>
<tr>
<th>1) Phenomenon</th>
<th><strong>Yang</strong></th>
<th><strong>Yin</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2) Fundamental driver</td>
<td>Textbook economy</td>
<td>Balance sheet recession</td>
</tr>
<tr>
<td>3) Corporate financial condition</td>
<td>Adam Smith's &quot;invisible hand&quot;</td>
<td>Fallacy of composition</td>
</tr>
<tr>
<td>4) Behavioral principle</td>
<td>Assets &gt; Liabilities</td>
<td>Assets &lt; Liabilities</td>
</tr>
<tr>
<td>5) Outcome</td>
<td>Profit maximization</td>
<td>Debt minimization</td>
</tr>
<tr>
<td>6) Monetary policy</td>
<td>Greatest good for greatest number</td>
<td>Depression if left unattended</td>
</tr>
<tr>
<td>7) Fiscal policy</td>
<td>Effective</td>
<td>Ineffective (liquidity trap)</td>
</tr>
<tr>
<td>8) Prices</td>
<td>Counterproductive (crowding-out)</td>
<td>Effective</td>
</tr>
<tr>
<td>9) Interest rates</td>
<td>Inflation</td>
<td>Deflation</td>
</tr>
<tr>
<td>10) Savings</td>
<td>Normal</td>
<td>Very low</td>
</tr>
<tr>
<td>11) Remedy for Banking Crisis</td>
<td>Vice (paradox of thrift)</td>
<td></td>
</tr>
<tr>
<td>a) Localized</td>
<td>Quick NPL disposal</td>
<td>Normal NPL disposal</td>
</tr>
<tr>
<td></td>
<td>Pursue accountability</td>
<td>Pursue accountability</td>
</tr>
<tr>
<td>b) Systemic</td>
<td>Slow NPL disposal</td>
<td>Slow NPL disposal</td>
</tr>
<tr>
<td></td>
<td>Fat spread</td>
<td>Capital injection</td>
</tr>
</tbody>
</table>