A Common Thread

In the financial crisis, crisis management, recovery, and global economic prospects

Vincent Reinhart
Resident Scholar
1/30/2011

Remarks at the Special Governors’ Meeting of the Bank for International Settlements, hosted by the Bank of Japan in Kyoto, Japan.
A Common Thread

As befits a dinner conversation, I was asked to address broad themes on a topic such as the financial crisis, financial reform, economic recovery, or global imbalances. On thinking about those issues, however, there was one feature that seemed central to all.

This observation allowed me to use one of my favorite quotes. The famous quantum physicist Richard Feynman explained in lectures on physical laws that “nature uses only the longest threads to weave her patterns, so each small piece of her fabric reveals the organization of the entire tapestry.”\(^1\) Careful observation of micro behavior can produce insights on macro outcomes.

There are two other reasons to open with this quote. First, it serves as a warning that I am going to use a few mathematical metaphors to explain the origins and propagation of the crisis as well as aspects of the policy response. Second, the quote offers me an opportunity to be ironic, but I will reserve that for the end.

My argument is simple: The character of the laws of the global financial system is such that a common thread ran through the behavior of individuals, institutions, authorities, and economies. In particular, this common thread helps in answering the three hardest questions about the global financial crisis that can be put to anyone who had even the least bit of confidence about market economies. This common thread was woven into crisis management in 2008 and 2009 and financial reform in 2010. This common thread also helps in explaining the deep recession and sluggish expansion in advanced economies. And

this common thread is useful in understanding global imbalances and the attendant pressures of the world financial system. I will talk about each in turn.

*The Three Hardest Questions about the Global Financial Crisis*

I do not have to tell this group that the past three years evidenced an extraordinary turn of events in financial markets and economies. The panel below gives one reckoning from the U.S. perspective. Plotted is the annual change in household wealth, relative to income, for more than a century.

**Change in U.S. household net worth as a percent of nominal GDP**

Sources: Federal Reserve Board, Flow of Funds Accounts, Historical Statistics of the United States, Johnston and Williamson (2010), and Officer (2009), author’s calculations.
In 2008, that last painful jagged drop at the right of the figure, household wealth worth about one year’s income disappeared. As is evident, this was the largest one-year drop in the century of data provided.

How could this happen? Actually, there are three questions embedded in that larger one, which I list in order of their difficulty.

- First, why did regulators and supervisors let this happen?
- Second, why did market discipline not work?
- Third, why did firms not act in their longer-term interest?

The common thread in answering all three questions is the complexity of financial institutions. This, by the way, is not about any one country, but rather the global landscape in which a large financial institution works. Law, regulation, accounting standards, industry practice, and the tax code give financial institutions incentives to make their balance sheets and income statements unrepresentative of their risk taking. Essentially, innovation in finance over the past few decades importantly included techniques to structure products in ways to profit from differences in institutional arrangements. The success in exploiting such arbitrage opportunities made the public face of large institutions more intricate and specific to jurisdiction and circumstance.

The geometric intuition is that in each jurisdiction in which it operates, a large financial institution sees an irregular frontier of opportunities. Innovation lets the institution adapt the face of its balance sheet to that specific jurisdiction. That way it can extract, or
arbitrage across, all those opportunities. With each regional face irregular, the resulting complete entity is misshapen and hard to describe.

*Supervision.* As a consequence, a large complex financial institution cannot be supervised effectively because examiners cannot understand the entity from the outside. Digging deeply into the reports of the firm and talking to its managers, as teams of examiners almost universally do, may help to delineate its operations within one jurisdiction, but the rest of the entity is the seven-eighths of the iceberg under the surface of the water. Basel II was an implicit admission of this problem, in that it allowed the largest of firms to use their internal risk models and delegated the assessment of the credit risk of instruments to rating agencies.

*Market discipline.* A large complex financial institution cannot be monitored effectively by counterparties. Simply, lenders do not always understand which part of the entity they deal with, and reputation risk can further blur the distinction of legal liability. Similarly, equity owners mostly look to star CEOs to value the firm but not much beyond. In that regard, it is not an accident that the fewest number of hostile takeovers occurs in the financial industry. Potential buyers appreciate that a large institution’s balance sheet is a black box. They will not understand everything inside it unless they buy it and open up the top.

*Internal controls.* If its balance sheet becomes opaque and its organization complex, a large financial institution becomes extremely difficult to run efficiently. Effectively, a small management team cannot be expected to understand the product of thousands of financial
engineers, lawyers, accountants, and compliance officers. If they do not, these monitoring difficulties lead to problems in internal controls. The consequences may include unsuitably steering clients to inappropriate instruments and extracting outsized compensation.

*An aside on the Financial Crisis Inquiry Commission.* The recent report of the Financial Crisis Inquiry Commission heaped considerable responsibility on the first item on my list, regulatory failures, for the origin and depth of the problems of the past three years. I think that this was unfair and unproductive in many respects. The report did not acknowledge sufficiently other contributors to the crisis nor did it recognize the difficulty in understanding financial institutions as those institutions morph their shape.

The key failure in the report was its lack of appreciation of the common thread of complexity. It asserts that more rules and regulations are the answer to the failure of rules and regulations. However, do not make the mistake of dismissing this report because legislation on financial reform has already been passed. In fact, the U.S. financial agencies are in the process of writing hundreds of regulations as required by last year’s Dodd-Frank financial reform legislation. The FCIC report, as approved by a majority of the commissioners, is a signal to those agencies from a portion of the political community in Washington that those rules should be aggressive and ambitious. Similarly, the dissenting views from the report among the commissioners indicate that there will be serious opposition to such efforts.

---

Crisis Management and Financial Reform

To recap, the complexity of financial institutions makes them hard to understand from the outside. That has important consequences at a time of crisis when all those firms interact in an environment of heightened uncertainty. In a crisis, the risk managers of a firm have difficulty assessing their own exposures and are likely to extrapolate that their equally opaque counterparties have similar problems. A crisis then produces a self-fulfilling withdrawal of liquidity as traders pull back because they think other traders will as well.

The complexity of financial institutions has important implications for the official community, as well, in terms of crisis management and the process of financial reform.

*Crisis management.* At a time of stress, officials are more willing to offer too-big-to-fail protections. In fact, those are really too-complicated-to-fail protections, because no one in charge can be confident of the consequences of failing to support a complicated institution interconnected with other complicated institutions. This solidified a tilted playing field of access to credit. Some firms are protected, others are not. The associated thinner credit spreads and more open access to markets for the winners encourage firms that are already complicated to stay that way and firms that are not to get complicated. In terms of the political economy, too-big-to-fail protections breed mistrust among the public and erodes faith in markets. Officials might say too big to fail, but most people hear that they are too little to be helped.

---

Financial reform. If the financial system is dominated by a network of interconnected complicated firms, officials are more likely to support incremental financial reform because of the uncertainty fogging more dramatic change. This incremental approach has thus far triumphed in the United States. The problem is that this made the system more, not less, complicated. The Dodd-Frank financial reform legislation added a layer and additional boxes to the supervisory organization chart and enshrined too big to fail in the law. I think it also will confuse the public as to the role of the Federal Reserve by adding another ambiguous mission to the already numerous missions of the nation’s central bank.

The Path Not Taken. There are too many directions a common thread will take us for me to linger on issues of financial reform. But it is worthwhile to consider the path not taken. If complexity is the problem, trying to make the system simpler would seem to be the solution. But that strikes many people as naïve. The world, after all, is complex, and finance is a reflection of the world.

The fact is, however, a complicated world can be described well with a limited palette. The four-color theorem in mathematics holds that the regions of any map can be filled in using at most four colors. That is, if all you have is four crayons, you can color any map of any part of any world and not have two regions next to each other in the same shade.

This implies that a limited number of rules can regulate a rich and varied financial industry. My four colors are consolidation of balance sheets, higher capital, leverage requirements, and modularity of operations. If a firm consolidates its balance sheet completely, that report becomes more representative of its risk taking. If it has more capital
and relies less on short-term debt, then it poses less systemic risk to the financial system. And if the operations of the firm are split into distinct units, then it can be separated at a time of stress.

Similarly by the four-color theorem, a limited number of charters, standardization of instruments, and enforced modularity can be consistent with a rich and varied financial landscape. Note that complaining about complexity is not an injunction about size or scope of activities, per se. A firm can be big, it can have many different operations, but we should be able to understand how it works from the outside and replace its economic role if it fails.

*Complexity and the Business Cycle*

Complexity inclines policy makers to be incremental in their actions, including in policies that are consequential for the business cycle. In the United States, the most important action was to allow financial institutions to delay the recognition of mortgage-related losses. More accurately, it was the lack of action—not forcing the recognition of those losses. Keeping open these problematic loans undermines the balance sheets of households and intermediaries. Such forbearance also impairs the clearing of the market for that entire asset class because the asset is worth more on bank balance sheets than if it were sold.

This imparts a threefold drag on households, intermediaries, and markets. In the past thirty years, such forbearance was associated with two prominent episodes of lost years, as detailed in the figure below. The freezing over of the markets for Latin American debt in
the 1980s and Japanese real estate in the 1990s were associated with significant underperformance of their respective macroeconomies relative to the world.

### Real growth differential during the "lost years"

<table>
<thead>
<tr>
<th>Region</th>
<th>Period</th>
<th>Average</th>
<th>Cumulative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin America</td>
<td>1981 to 1990</td>
<td>-1.8</td>
<td>-17.9</td>
</tr>
<tr>
<td>Japan</td>
<td>1992 to 2005</td>
<td>-2.3</td>
<td>-32.9</td>
</tr>
</tbody>
</table>

The plain fact is that financial crises are costly in real economic terms. My wife Carmen and I wrote a paper for the recent Federal Reserve Bank of Kansas City’s Jackson-Hole Symposium called “After the Fall.” We looked at economic performance surrounding fifteen severe financial crises in the second half of the twentieth century. Some of the results are presented below, although in a different form than in the paper.
The shaded row gives average economic performance across countries in the year of
the crisis. After a severe financial crisis, economies tend to go deeply into recession
(column 1), recover only slowly, and settle onto a growth path lower than the average
performance in the decade prior to the crisis. The unemployment rate (column 2) remains
elevated. Equity prices are more coincident with the crisis and rebound relatively quickly,
but real house prices continue to decline for most of the decade after the crisis.

**Median behavior surrounding fifteen severe financial crises in the 20th century**

<table>
<thead>
<tr>
<th></th>
<th>Growth of Real GDP per capita</th>
<th>Unemployment Rate</th>
<th>Change in Equity Prices</th>
<th>Real house prices T-1=100 level</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-10 to T-6</td>
<td>3.3</td>
<td>4.1</td>
<td>8.1</td>
<td>73.3</td>
</tr>
<tr>
<td>T-5 to T-2</td>
<td>4.4</td>
<td>3.5</td>
<td>14.5</td>
<td>92.1</td>
</tr>
<tr>
<td>T-1</td>
<td>3.2</td>
<td>3.4</td>
<td>-15.1</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>T (Crisis)</strong></td>
<td><strong>1.6</strong></td>
<td><strong>5.1</strong></td>
<td><strong>-27.6</strong></td>
<td><strong>95.1</strong></td>
</tr>
<tr>
<td>T+1</td>
<td>-5.8</td>
<td>6.8</td>
<td>-4.5</td>
<td>83.7</td>
</tr>
<tr>
<td>T+2 to T+5</td>
<td>3.0</td>
<td>9.0</td>
<td>10.9</td>
<td>76.4</td>
</tr>
<tr>
<td>T+6 to T+10</td>
<td>3.8</td>
<td>6.2</td>
<td>12.1</td>
<td>82.8</td>
</tr>
</tbody>
</table>

Source: Carmen Reinhart and Vincent Reinhart, "After the Fall," Jackson Hole
Symposium, 8/2010, at http://www.kansascityfed.org/publicat/sympos/2010/reinhart-
paper.pdf.

**Global Imbalances**

This panel has discouraging implications for the global distribution of economic
growth. The advanced economies (often referred to as the “North” in the economics
literature) were the center of the systemic financial crises. Emerging market economies (the
“South”) may have fallen into recession, but they were mostly pushed by their trading partners not pulled in by their financial institutions. If the advanced economies follow the pattern of prior recoveries from severe financial crises, they will grow only sluggishly and unemployment will stay elevated. Emerging market economies do not share that impediment.

The figure below shows real GDP growth for the past thirty years in those two regions. Advanced economies, the dashed line, had already been growing more slowly than emerging market economies, the solid line, for a decade. If the advanced economies do not overcome the drag associated with an incomplete recovery from the financial crisis, this growth gap will only widen. There are many implications of a stretched regional growth imbalance for asset flows and prices. In my remaining time, I will briefly sketch out a few.

First, the deep recession and initially sluggish recovery in the United States has prompted unprecedented policy action. Fiscal deficits have been large, adding to already large debt stocks. The Federal Reserve has eased in a manner unprecedented in speed, size, and form, consistent with its mandate.
Predictably low short-term interest rates encourage investors to seek riskier alternatives, some of which are offshore. As a consequence, many other countries are receiving windfalls of capital flows. In other work, Carmen and I referred to episodes of unusually high capital inflows as “bonanzas.” The share of countries in the world receiving such bonanzas is plotted below, which also shows its sensitivity to prior movements in U.S. real interest rates. These inflows of capital are historically associated with pressures on the local currency to appreciate and booming domestic asset markets.

---

Capital inflows can be a mixed blessing, especially in economies with thin domestic financial markets and when those flows have a short-term focus. Often the effects in emerging market economies are resisted through currency intervention. But, in that case, the thread next runs through accumulating reserves and increased foreign ownership of U.S. government securities.

The willingness of emerging market economies to limit exchange rate fluctuations will be tested as monetary policy in advanced economies remains geared toward domestic considerations. Meanwhile, some advanced economies will be looking to finance large deficits and to roll over large debts. In that environment, prior reticence toward capital controls and other restrictions on finance may well lift. Restrictions of finance, after all, create more captive markets. For emerging markets, this insulates them from monetary policy in advanced economies that may be inappropriate for domestic circumstances. For advanced economies, this limits the competition for the debt they dearly have to sell.
Conclusion

Not all dynamic processes are stable or circles virtuous or tapestries well hemmed. Limitations on international financial trade will create incentives for financial institutions to invent arbitrage strategies and find new jurisdictions to place part of their splintered balance sheets. That is, our financial system may get more complicated still. But rocket scientists will be there to price those products.

And here is the promised irony. Those who price assets are called “rocket scientists” but the math they use is mostly taken from quantum physics. Indeed, the main solution technique to their models comes from Richard Feynman.