

The Origin, Propagation, and Magnification of the Financial Crisis*

A Prospectus for the No Way Out project

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1. Introduction

President John F. Kennedy famously said that “victory has one-thousand fathers, but defeat is an orphan.”¹ The ongoing financial crisis suggests a corollary to his advice. Defeat may be an orphan, but it has more than a thousand biographers. Scores of financial writers, academics, and other analysts are in the process of interpreting recent strains in financial markets and policy actions by high officials and positing a range of different implications for the global economy.

Those competing narratives are not just about book sales. Society is in the process of drafting a narrative to explain what just happened. The story that is settled on will determine the legislative and regulatory response in the near term, as well as attitudes toward financial instruments and intermediaries over the longer term.

Thus far, the evolving narrative has been narrow and focused inward to the United States. At one level, this would seem natural because the story usually starts with excesses in residential construction and mortgage finance here at home. However, a purely domestic discussion falls short on two counts. First, while the fickle nature of financial markets seems unprecedented after almost three decades of “great moderation” in advanced economies, they have remained commonplace in emerging market economies. Thus, looking to that more varied experience can help understand the macroeconomics of high volatility. Second and probably more important, a domestic focus neglects the important role of the international sector in both fostering initial excesses and propagating the correction. Such channels of

¹ http://thinkexist.com/quotation/victory_has_a_thousand_fathers-but_defeat_is_an/210525.html

propagation are essential in understanding how the initiating downturn in the U.S. housing market, while large relative to economic activity, produced a stunning contraction in global financial markets. Understanding the appropriate role of the international sector will also reveal policy opportunities to facilitate recovery, not all of which have been taken.

Five sections follow.

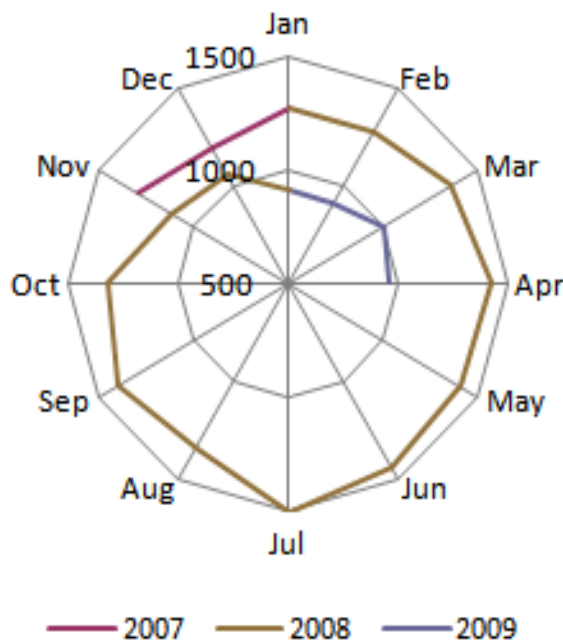
First, **the origin of the problem** will be traced to excesses in the housing market, which were fueled by financial innovation, governmental encouragement, and ample global saving. Open financial markets did precisely what theory has predicted ever since Mundell wrote: Market interest rates were increasingly related to world conditions, not those in any particular country. Thus, the scope for uncoordinated domestic action by the Federal Reserve was limited.

Second, **the downturn domestically** initially played out as a sharp correction in one sector that had allowed a decade of excesses to accumulate. Large numbers would be involved when the correction comes in a \$27 billion asset class. But this crack in financial markets widened through the domestic economy.

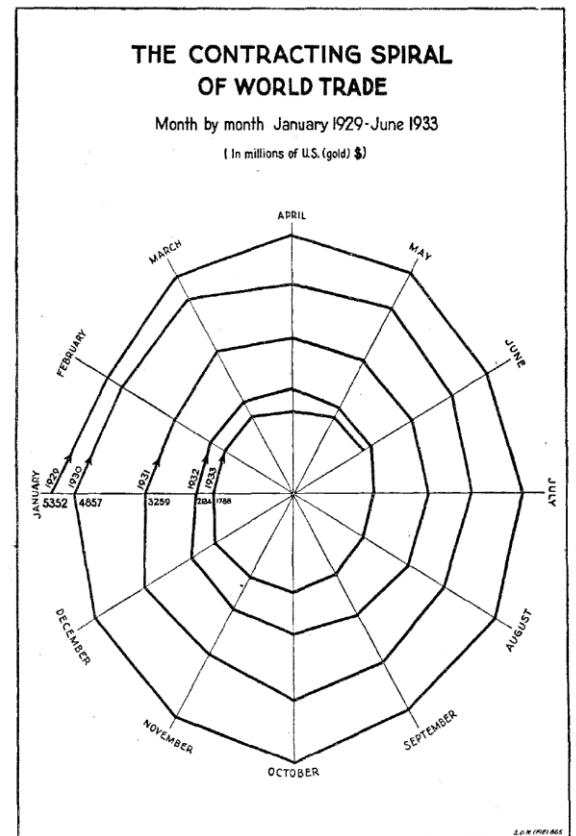
Third, **the propagation and magnification of the downturn** owed importantly to global linkages. The United States was not alone in having a burning-hot real estate market, in part because it had exported some of its innovations in housing finance. More fundamentally, trade linkages have turned out to be very important. The left panel of Figure 1 plots monthly world exports since 2007. The format is a “radar” chart, where monthly values are displayed along the rays and was

chosen to make the reader uncomfortable. That is because the spiraling inward of world trade over the past two years has the precedent in the right panel—the experience from 1929 to 1933 in a chart made famous by the League of Nations Economics Unit.

Figure 1
World exports
 Billions of U.S. dollars



Source: IMF International Financial Statistics



Note. — Cf. Monatsberichte des Österreichischen Institutes für Konjunkturforschung, Nr. 4, 1933, p. 63.

The international propagation of the shock also owed to an essential aspect of the financial world: Support for a particular market depends on participants' expectations about the behavior of others. In general, this sets the stage for multiple equilibriums and herding. In this particular case, the thundering herd all attempted to leave the plain at once. With the possibility of a self-reinforcing withdrawal from

markets, “liquidity” can be ephemeral. That is not a lesson unknown to reserve managers in many emerging market economies that are prone to “sudden stops” of foreign capital, to use Guillermo Calvo’s phrase.² It was, however, news to U.S. officials.

Fourth, **policy actions** spanned significant use of fiscal, monetary, and financial policies as all hands were put on deck. The Obama Administration and the Congress acted in a timely fashion to provide fiscal stimulus, but the effectiveness is questionable given the composition and profile of the initiatives. Indisputable is the consequence for the public debt, which is thus far following an upward track. The Federal Reserve aggressively pulled its policy rate down and then resorted to an unconventional expansion of its balance sheet. Such aggressive use of macro policy tools, especially fiscal ones, has precedent, as does the unfortunate tendency to withdraw support prematurely.

The record is much less favorable on direct financial actions to deal with the crisis. Interventions were haphazard at first, as officials confused a fundamental solvency problem for one of illiquidity. Other mistakes included being ambiguous about the perimeter of aid and inflammatory in public statements. Policy was not coordinated across countries, although there were numerous examples of policy emulation as action in one country in a world with open borders to international capital flows forced action elsewhere.

² As in Calvo (1998).

Most problematic is that officials in many countries seem satisfied to delay recognition of the losses on the balance sheets of their national financial champions. The precedent for such forbearance is forbidding.

Fifth, the **opportunities for additional policy action** on the global stage remain significant.

1. The origins of the downturn

Amidst the wreckage in financial markets now, it is easy to forget that the U.S. housing market had a remarkable, decade-long run. Single family house permits, for instance, shown as Figure 2, more than doubled over the fourteen-year period beginning in 1991.

Figure 2
New privately owned housing units started
Thousands of units



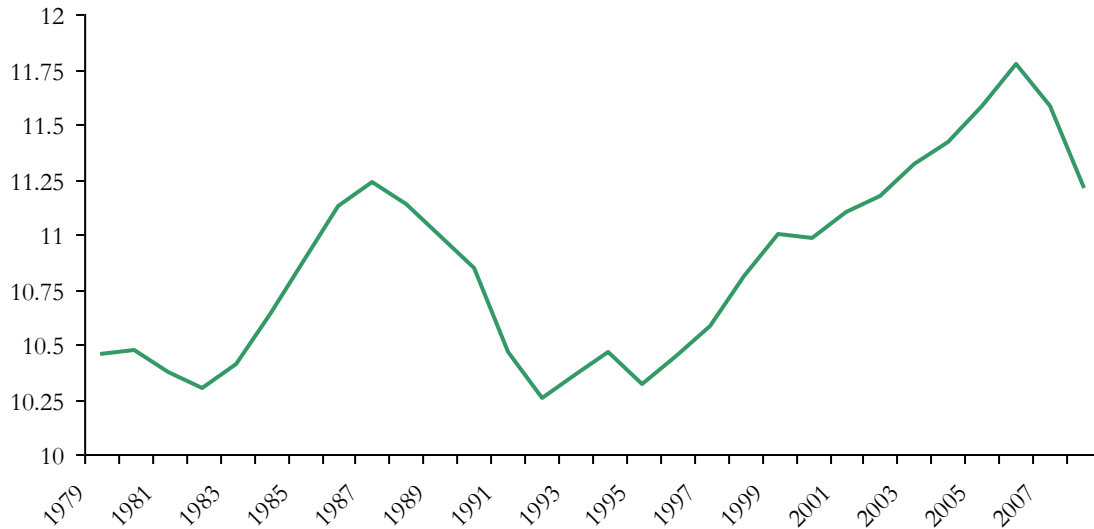
Source: Census Bureau

Fundamentals supported housing demand for much of the 1990s and early 2000's. The growth of real disposable income was solid. Real mortgage interest rates were low. Demographics were favorable, in that the baby boom generation was aging, which led them to trade up their housing stock and made them desirous of second homes. The nation also had a large influx of immigrants a decade earlier, and those permanent residents were seeking starter homes. This created a strong demand for housing and opportunities for capital gains that reinforced that demand.

Financial encouragement of home purchases shifted real resources toward this growing demand. Total employment in construction and finance, shown in Figure 3, increased from 10-1/4 percent of the workforce in 1992 to 11-3/4 percent by 2006. This is a huge shift in resources considering that the denominator in this calculation is currently about 137 millions workers. It also set up a potential tension, in that the resources used to build houses adjust only sluggishly while the price of their final product can adjust more rapidly in the manner of an asset price.³

³ Kearn (1979) used exactly that differential adjustment speed to generate a model of overshooting in home prices.

Figure 3
Employment in construction and finance
As a share of all employees, percent

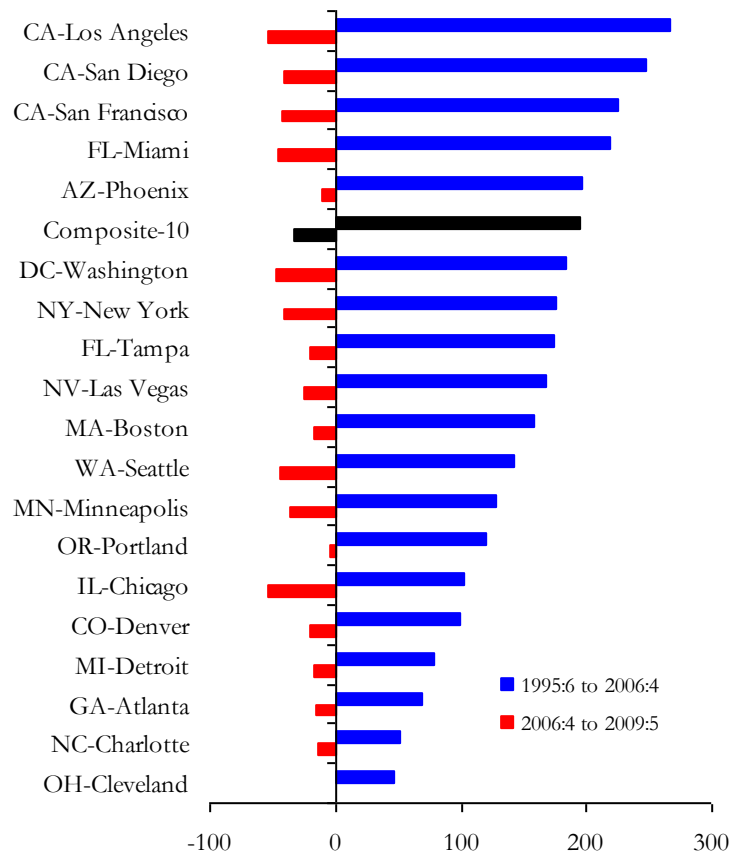


Source: Bureau of Labor Statistics

The market for residential housing, of course, does not follow the paradigms of rationality all that closely, as was noted by Case and Shiller (1989), and is regional in nature. And some regions were hot, indeed, feeding speculation. As shown in Figure 4, house prices appreciated significantly over the period from 1995 to 2006 across all regions of the country, but especially notable were the three-digit-rates in the south east and the west. The high reading from the 19 regions of the Case-Shiller price index available since 1995 was recorded in Los Angeles, at 266 percent. The low, in Cleveland, still represented nearly a 5 percent annual rate of return. The

allure of capital gains can be powerful, and in ways not always captured in the conventional rational expectations paradigm.⁴

Figure 4
Home prices in major cities
 Change over selected period, percent



Source: Case-Shiller S&P

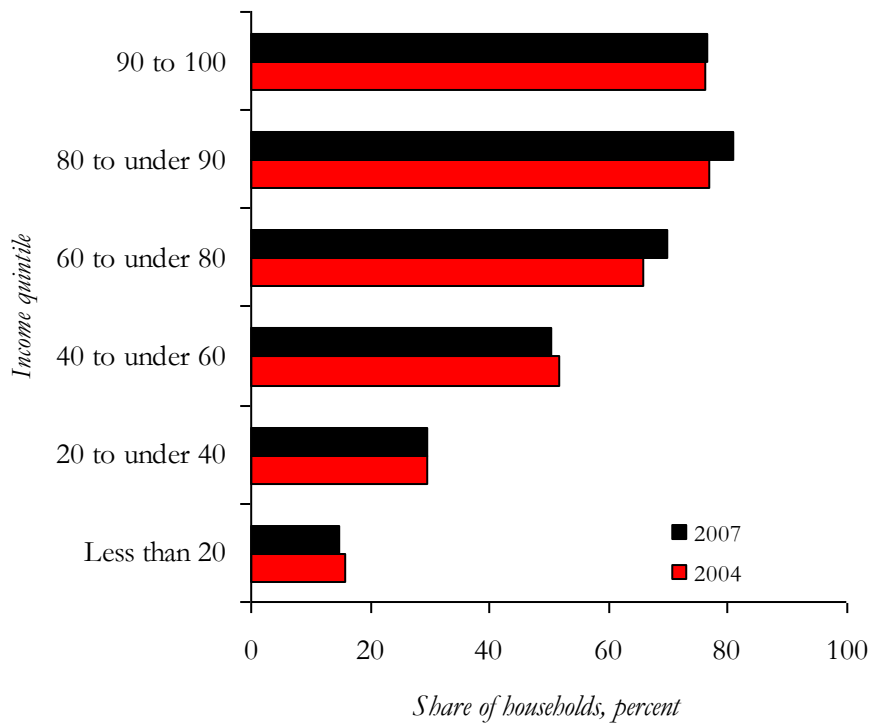
As has been the case for some time, the U.S. government provides considerable encouragement to home ownership, beginning with the tax deductibility of mortgage interest payments. Both the volume and direction of mortgage flows were partly influenced by the financial equivalent of the Army Corp of Engineers in

⁴ Akerlof and Shiller (2009) build a compelling case that the road less traveled of extrapolation and shifting waves of confidence helps to understand events. A re-reading of Kindleberger (1989) teaches that same lesson.

the U.S. government that dredged channels of funding and built up levees of levered resources. The housing related government sponsored enterprises (GSEs) facilitated mortgage borrowing by creating a market for mortgage securitization and by holding large volumes of whole loans and securities on their own books. The Federal Reserve aided those entities by granting the GSEs direct access to the payment system and facilitating the clearing and settling of their securities. Regulatory guidance encouraged housing activity, especially in underserved areas. This encouragement was formalized in the Community Reinvestment act, reporting requirements in the Home Mortgage Disclosure Act, and affordable housing guidelines for the GSEs.

The last two vintages of the Survey of Consumer Finances (SCF), taken in 2004 and 2007, show that upper- income households were the ones who most forcefully followed the government's advice to take levered bets on housing. As shown in Figure 5, it was among households in the 60th to 90th percentiles of the income distribution where the share of those holding debt secured by a primary residence increased the most.

Figure 5
Debt secured by primary residence



Source: Federal Reserve, *Survey of Consumer Finances*

But those households were not alone. Opportunities for wealth creation in the United States are less plentiful at the lower end of the income distribution. For instance, looking at the SCF conducted in 2007, direct equity holdings are concentrated in the top quintile of the income distribution (the first column in Table 1). Lower down the income distribution, people do not hold equities. But everyone holds homes. About 41 and 55 percent, respectively, of all households in the lowest and next-lowest income quintile own homes (the second column). As a consequence of this focus on property, households are under-diversified.⁵ As the memo item shows, except for households in the highest-income bracket, homes constitute about

⁵ Robert Shiller (1993) addressed this issue in terms of institutional design.

one-half of assets. Constrained choice among those with lower incomes made even more appealing the invitation to use leverage (in the form of a home mortgage) to tap an asset class where there had been a rapid run-up in prices.

Table 1

Family holdings of financial assets in 2007

percent

<i>Across percentile of income</i>	<i>Share of families holding asset</i>		<i>Memo: House values as a share of all assets</i>
	<i>Direct stock</i>	<i>Primary residence</i>	
Less than 20 percent	5.5	41.4	47.1
20 to under 40 percent	7.8	55.2	51.8
40 to under 60 percent	14	69.3	48.4
60 to under 80 percent	23.2	83.9	45.3
80 to under 90 percent	30.5	92.6	44.5
90 to 100 percent	47.5	94.3	19.8

Source: Federal Reserve, *Survey of Consumer Finances*

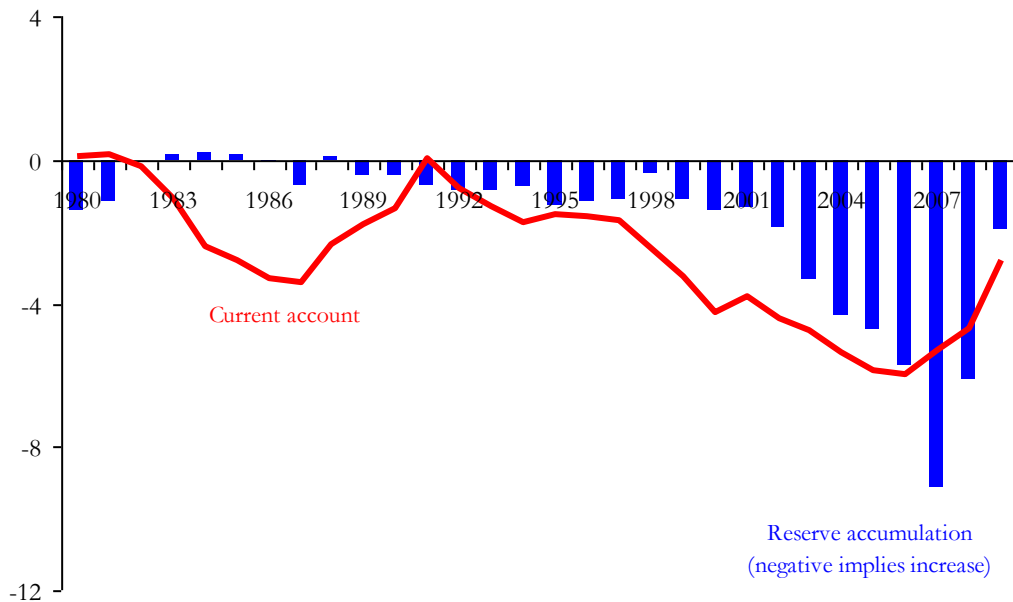
International capital flows facilitated the funding of this housing boom. Many observers noted that the U.S. current account deficit seemed on an unsustainable track in the late 1990s and thereafter.⁶ Indeed, as plotted by the red line in Figure 6, the current account balance bulked to more than minus 4 percent of nominal GDP by the end of the last decade and deteriorated subsequently. As other observers noted, however, the U.S. current account deficit would only become unsustainable once foreigners became less willing to continue to add to their holdings of U.S. obligations. Some of them doubted that this appetite would wane.⁷ In fact, after the

⁶ As discussed, for instance, in Obstfeld and Rogoff (2000).

⁷ See the discussion of Dooley and Garber (2005). This argument has come in different guises, including as the “global saving glut,” as put forward by then-Fed-governor Ben Bernanke (2005).

Asian crisis that began in 1998, foreign official entities picked up their purchases of reserve assets, seen as the blue bars in Figure 6.⁸ Those official purchases tilted heavily toward U.S. government securities. According to a survey by the International Monetary Fund, the Currency Composition of Official Foreign Exchange Reserves (COFER), about two-thirds of official reserve assets were held in U.S. dollars, on average, over the past twelve years.⁹

Figure 6
U.S. current account balance and reserve accumulation by emerging market economies
 Relative to U.S. nominal GDP, percent

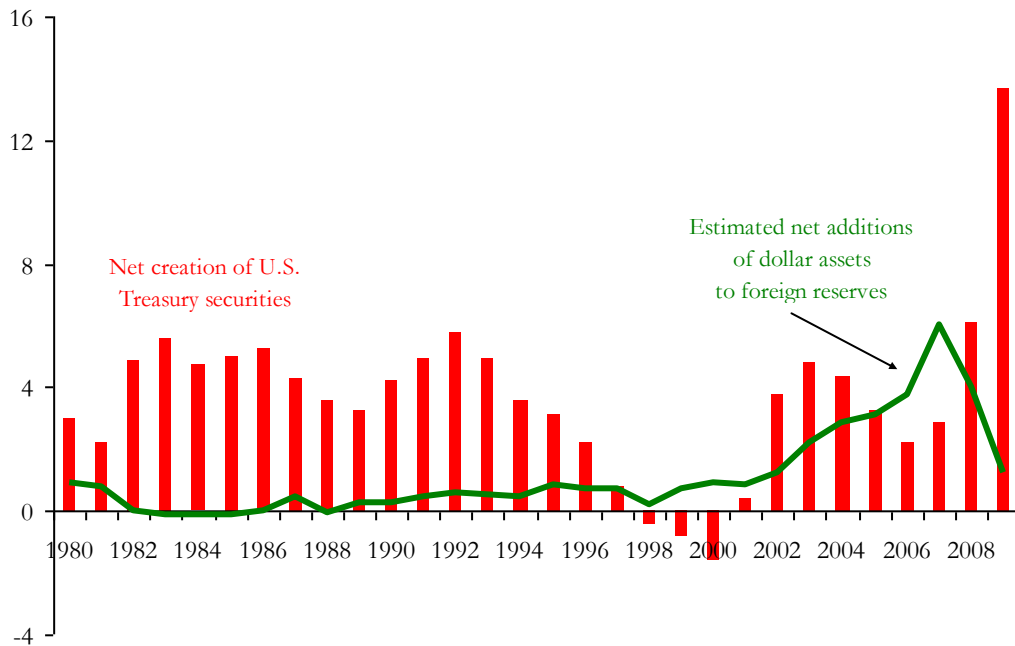


Source: International Monetary Fund, *World Economic Outlook* (4/09)

⁸ The rationality of that reserve accumulation is explored in Carroll and Jeanne (2008).
⁹ That holds for the portion of reserves for which currency composition can be attributed. The unattributed portion is probably even more heavily concentrated in dollars. See <http://www.imf.org/external/np/sta/cofer/eng/index.htm>.

Thus, foreigners seemed willing to accommodate increased U.S. demands on their saving. One way of seeing this more starkly is to compare the net creation of U.S. Treasury securities—that is, the negative of the federal deficit—to an estimate of net additions of dollar assets in foreign official reserves. This is done in Figure 7. The solid line plots an estimate of foreign official purchases of U.S. government securities, which is just the average from the COFER of dollar reserves making up two-thirds of the total times total reserve acquisition. Note, in many years, foreign official accounts appeared willing to fund the entire U.S. federal deficit.

Figure 7
Net creation of U.S. Treasury securities and net additions to foreign U.S. dollar reserves
 Relative to U.S. nominal GDP, percent



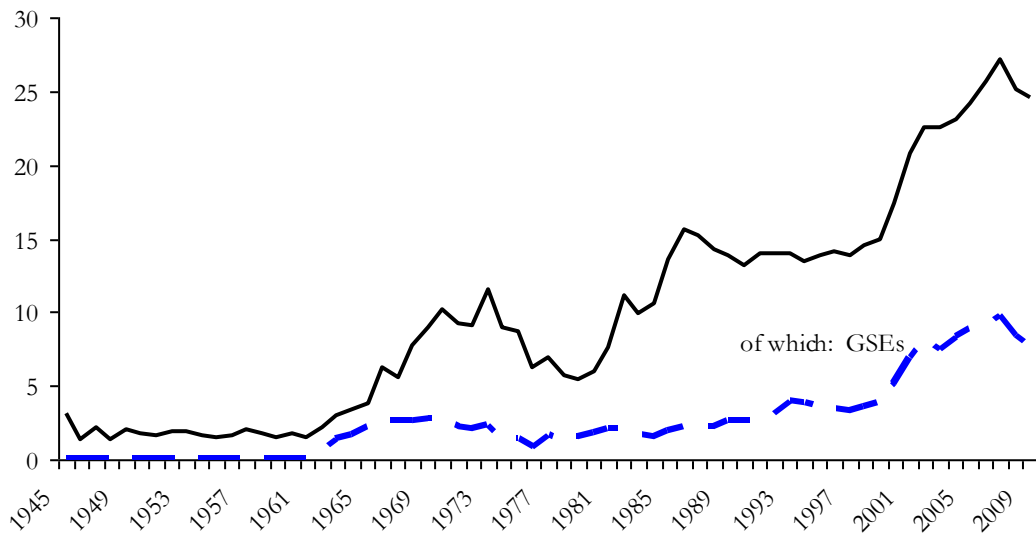
Source: International Monetary Fund, *World Economic Outlook* (4/09)

This willing funding by foreign official accounts altered the composition of finance and kept the level of long-term interest rates in the United States low. First, as for the compositional effect, foreign official entities loaded up on U.S. government securities, leaving private demands unmet. Into this void, financial engineers constructed AAA-rated dollar exposure. How did they do that? They used housing collateral to create mortgage-backed securities and collateralized-mortgage obligations. The top tiers of those payment flows were rated by the rating agencies as triple-AAA, meeting the need, particularly, of foreign banks that were desirous of those securities' special treatment under the Basel II capital rules.

This posed a problem for the investment banks that put in motion the process of financial engineering. Underwriting these complicated securities to meet the demand of foreigners for AAA-rated credit left them with bits and pieces of securities on the cutting-room floor. This unwanted residue of their own underwritings represented highly leveraged bets on the U.S. housing market that proved difficult to remove from their balance sheets. An attractive route was to park these items at special purpose vehicles (SPVs), or entities set up with purportedly enough capital and distance from the mothership to be treated as completely off the corporate balance sheet according to accounting rules. Accounting rules, however, were not reality. In their death throes, the SPVs crawled back to their creator. Therein was one of the major and sudden sources of deterioration in the balance sheets of key institutions.

One way of seeing this increased interest of the foreign private sector in nongovernmental securities is provided in Figure 8. The solid line plots foreign holdings of U.S. private credit, as a share of total holdings of U.S. assets abroad. Foreign exposure to the U.S. credit market increased more than 15 percentage points in the last 10 years. As shown by the dashed line, the government-sponsored enterprises were important in those net additions. They marketed global securities to fund a housing boom in increasing volume, just as the boom was beginning to tail out.

Figure 8
Foreign exposure to U.S. private credit
 Share of total U.S. assets held by the foreign sector, percent

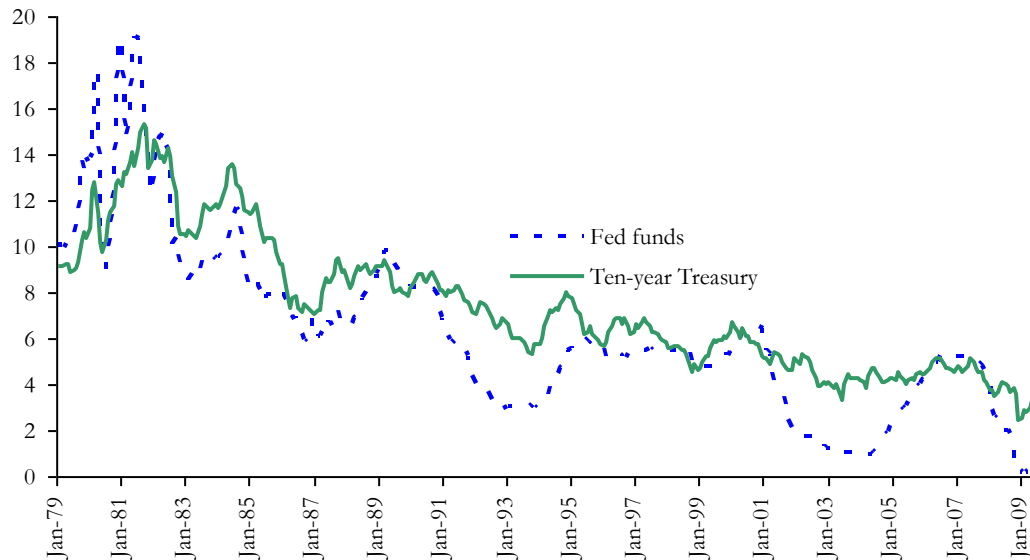


Source: Federal Reserve, *Flow of Funds Accounts*

The second main consequence of these global savings was to keep U.S. long-term interest rates lower than they would have been otherwise. Indeed, as shown by the solid line in Figure 9, the ten-year Treasury yield remained in a narrow range for

at least a decade, even as the federal funds rate, the dashed line, dipped, rose, and then dipped again.

Figure 9
Federal funds and Ten-year Treasury rates
Percent



Source: Federal Reserve Bank of St. Louis, FRED

The figure suggests that the longer-term market rate, which presumably matters for private spending decisions, seemed to become disconnected from the policy rate, the Fed's main lever on the economy. Table 2 shows the simple correlation between monthly changes in the federal funds and the ten-year Treasury rate, in the first column, and the thirty-year fixed rate mortgage rate, in the second column. Back in the 1980s, the first rows, changes in the federal funds rate were predictably associated with changes in longer-term yields, with a correlation on the order of $\frac{1}{2}$. In the era of the housing boom, however, from 1996 to 2006, the effective correlation was zero.

Table 2

Simple correlations between monthly changes in interest rates

<i>Over the period:</i>	<i>Fed funds rate with:</i>	
	<i>Ten-year</i>	<i>Thirty-year</i>
	<i>Treasury</i>	<i>FRM</i>
2/1979 to 12/1987	0.40	0.58
1/1988 to 6/1996	0.34	0.40
7/1996 to 12/2001	0.03	0.13
2/2002 to 12/2006	-0.05	0.13
1/2007 to 6/2009	0.25	0.08

Source: Federal Reserve Bank of St. Louis, FRED

Any analyst pointing to Federal Reserve policy as augmenting the housing boom must first address how the Federal Reserve might have had the leverage to do so.¹⁰ In the event, the simple correlation from 2002 to 2006 between its policy instrument and the rate that matters for housing activity was negative and statistically insignificant from zero. Perhaps this reduced-form coefficient represented a concatenation of partials effects that in their deep structure allowed the Fed some leeway. But perhaps not, or perhaps not in a manner than would have yielded predictable results.¹¹

2. The downturn domestically

¹⁰ Among the prominent critics is Taylor (2009) and analysts at the Bank for International Settlements (2009).

¹¹ That said, housing activity linked to short-term interest rates, namely adjustable rate financing, was more amenable to Fed influence over this period. In that regard, the issue might more appropriately be couched in terms of the Fed's gradual adjustment of its policy rate starting in 2004. Policy gradualism created intertemporal bargains that benefited short-term funding. An additional effect of policy gradualism may have been to encourage financial strategies reliant on low short-term interest rates, the "carry trades" described in Frankel (2007).

Housing-market fundamentals softened starting in 2004 as an increasing number of buyers were priced out of the market and the Federal Reserve started increasing short-term interest rates.¹² Meanwhile, economic growth slowed and the nation looked less favorably on immigration.

As a simple supply-and-demand framework dictates, a shift inward in the demand curve cuts the effective price of homes. But the housing market is not that simple. In particular, the effective price of houses has two components: the listed price of purchase and the price of financing that purchase. That is, home buyers care about a combination of both the sale price and the terms and standards on the mortgage.

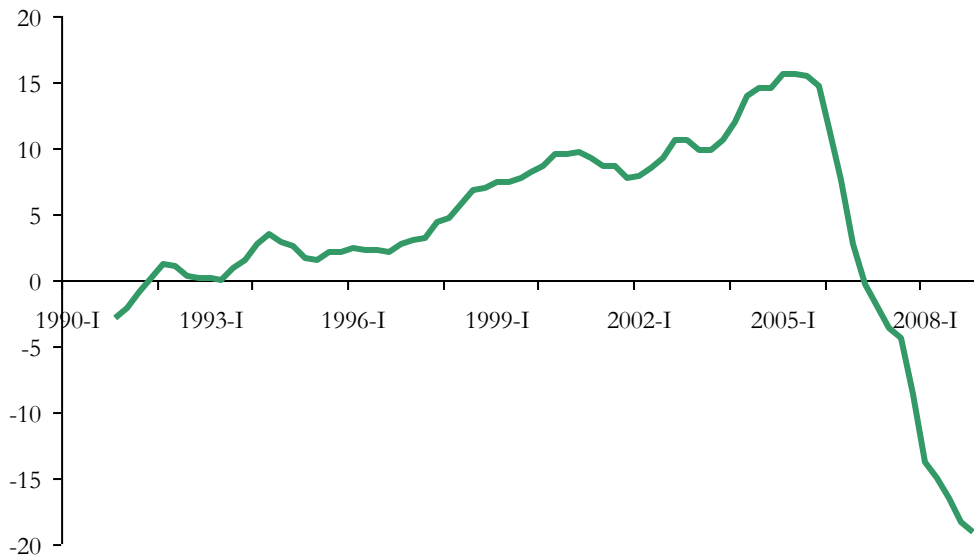
Two problems forced most of the initial adjustment onto the funding, rather than the list price. First, the connection between commerce and finance in real estate had become so close and interconnected that both margins were seen to be in play by essentially the same actor—the builder linked to the real estate agent who was linked to the mortgage broker. Second, conversely, the bond between the loan officer who originated the mortgage and the final investor who held the security using that mortgage as collateral had weakened. The loan officer (mortgage broker) was compensated for the origination, not the final disposition, of the loan, creating a classic principal-agent problem.

¹² As noted earlier, the restraint from the Fed was felt exclusively on the short end of the interest rate structure. Given the prevalence of adjustable-rate financing, this must have imparted some drag on the housing market.

Thus, in the face of a downturn in demand, a cut in the effective price of funding home purchases damped the reduction in the quantity of homes supplied. This involved approving too many mortgages with excessive leverage, cutting qualifying standards for those mortgages, steering borrowers to inappropriate loan products, and sometimes facilitating outright fraud. Prospective purchasers included unwitting victims of these aggressive practices and willing co-conspirators who believed that double-digit capital gains would solve all their problems, even if their purchases were second houses or houses for quick resale.

In fact, there was only so much stretching that could be done in the financing of new houses before those excesses became evident. The first sign was when house price appreciation stopped, seen by the peaking of the Case-Shiller national home price index by spring 2006 (Figure 10). Capital gains quickly faded and turned into losses. Loans made with poor prospects deteriorated in the down-turn, manifest in the poor payment performances on loans made in 2005 through 2007.

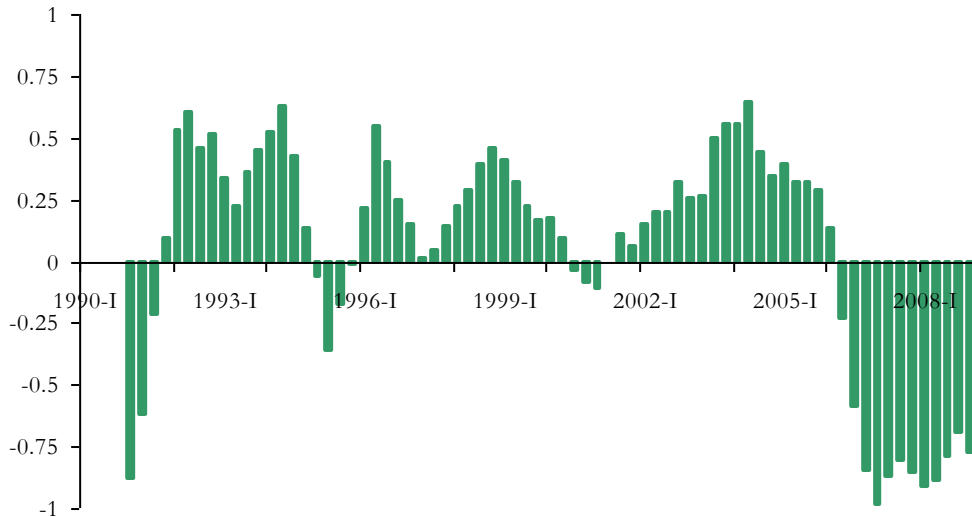
Figure 10
Home prices in ten large cities
Four-quarter change, percent



Source: Case-Shiller S&P

Resources that slowly enter an industry tend also to be slow to exit. While builders slashed the construction of new homes, it was not at a sufficiently steep pace to prevent unsold inventories from accumulating. The contribution of real residential housing construction to GDP growth, which had averaged about 1/4 percentage point from 1996 to 2005, turned negative in 2006. Since then, home building has been a drag on activity.

Figure 11
Contribution of real residential construction to GDP growth rate
 Percentage points



Source: Bureau of Economic Analysis

The end of the bubble also hit the resources and obligations of households.

Table 3 presents an aggregated summary of the balance sheet of households (and nonprofit organizations) at the end of 2006 and changes from then to the first quarter of 2009. At the end of 2006, real estate represented about \$24 trillion of household assets, or one-third of all assets and six-tenths of net worth. Real estate holdings were about \$11 trillion greater than households' direct ownership of corporate equities and mutual fund shares. Claims on that real estate—home mortgages—totaled the single largest item on the liability side of household balance sheets. At the end of 2006, households had about \$10 billion of mortgage debt outstanding, implying that total mortgage loans represented about 40 percent of the aggregate value of housing.

Table 3

Balance sheet of households and nonprofit organizations

Trillions of dollars

	Outstanding At end-2006	Change 2006 to 2009:Q1		Outstanding at End-2006	Change 2006 to 2009:Q1
Total assets	75.6	-11.1	Total liabilities	13.4	0.7
<i>of which:</i>			<i>of which:</i>		
Real estate	24.2	-4.4	Home mortgages	9.9	0.6
Durable goods	3.9	0.3	Consumer credit	2.4	0.1
Equities and mutual fund shares	13.6	-5.1	Net worth	62.2	-11.8

Source: Federal Reserve, Flow of Funds Accounts, B.100

Capital losses on real estate since 2006 have had two material effects on aggregate economic activity. Households have lost about \$4-1/2 trillion of wealth in their homes, which has been compounded by the steeper slide in equity prices to bring net worth down \$12 trillion. Households that are less wealthy consume less, and this paring off of consumption has been a drag on aggregate spending for some time. In addition, households have seen the equity component of their levered investment in real estate erode, with mortgages now representing 53 percent of aggregate real estate values. While this aggregate loan-to-value ratio seems conservative, the erosion of underwriting standards was uneven. Lax loan standards and price declines since the bubble burst have caused a minority of households' equity investment in housing to evaporate. Many of those households have had payment difficulties or defaulted outright on their mortgages.

Those mortgages, which made home purchases possible, also served as the raw material for finance. Financial engineers diverted the promised payment streams from those mortgages into mortgage-backed securities and collateralized mortgage obligations. By way of comparison, Idaho potato farmers own, by law, the irrigation rights to the water in the top sixteen feet of Jackson Lake, Wyoming. As long as the water in Jackson Lake is at least sixteen feet at the start of the season, they will be able to exercise their rights fully. Similarly, investors in the top tranches of a mortgage-backed security would be repaid first. Hence, the securities seemed secure. That is, as long as a severe drought did not come.

For holders of slices of pools of mortgage securities, a severe drought came. Losses on those mortgages reduced their value as collateral in mortgage-backed and collateralized mortgage securities. Those losses punched holes through financial intermediaries' balance sheets. This led to a propagation of the initiating shock through markets both domestically and internationally.

What followed was a widespread reduction from risk taking. Financial institutions sought to conserve their capital given their losses on their mortgage-related securities, their uncertainty about their own positions, in their doubts about their counterparties. In that environment, credit has become harder to get. This is a classic fallacy of composition. Firms' and individuals' efforts to repair balance sheets, by trying to sell their mortgage-related securities, drove down their prices and worsened the aggregate situation.

3. Magnification and propagation mechanisms

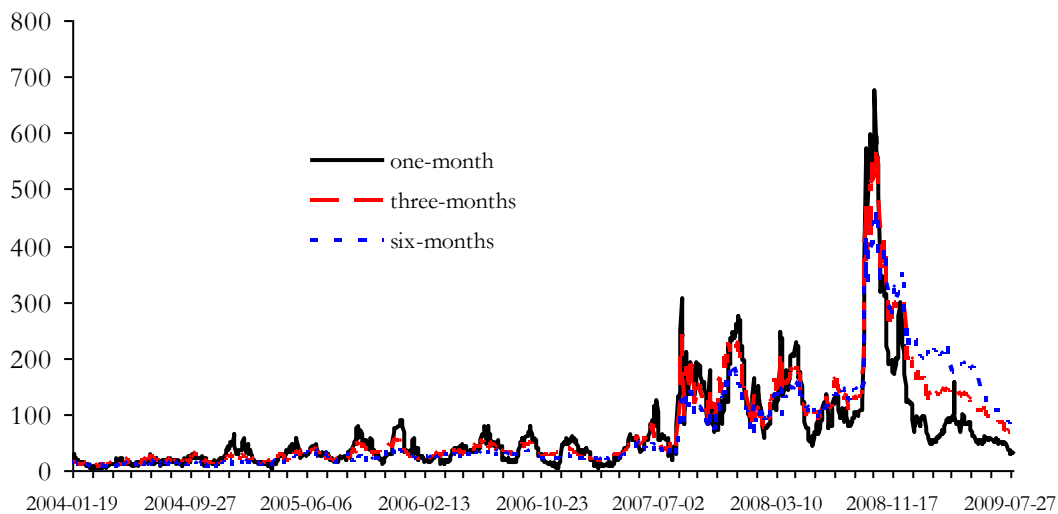
One surprise in this episode is that the initiating economic shock—the loss in home values associated with excesses in building and mortgage lending—appeared small and localized compared to the havoc wreaked on global markets. Four mechanisms contributed to the magnification and propagation of the shock, related to the similar U.S. instruments held worldwide, the similar circumstances in several important countries, the linkages forged by trade, and competing demands on the shrinking pool of saving.

Losses on U.S. instruments held abroad. Because the United States had been financing current account deficits for some time, U.S. mortgage-related risk had been dispersed across these financial institutions. Given that foreign entities faced the same sort of losses, their prospects similarly became clouded and they and their counterparties withdrew from risk taking.

The fever chart of the banking system is the spread of Eurodollar deposit rates over comparable maturity Treasury yields, seen in Figure 12. The spread compares two potential investments for a large complex financial institution with an international presence. It can park excess funds in Treasury securities and earn a risk-free rate, or it can loan them to a competing large complex financial institution offshore, but in dollars, at the Eurodollar deposit rate. The excess of the latter over the former is a measure of the perceived risk of such banking institutions or the relative premium attached to the safest of all investments—Treasury securities. It also measures the cost of bank-balance-sheet space, or how expensive it is to expand liabilities. In the three-and-one-half years prior to July 2007, these spreads averaged

less than 30 basis points for the one-, three-, and six-month maturities. Since then, they have averaged at least 100 basis points higher, indicating that balance-sheet space was expensive indeed. In such an environment, institutions were reluctant to support market activity, make new loans, or take advantage of arbitrage opportunities across markets.

Figure 12
Spread of Eurodollar over Treasury rates
Basis points



Source: Federal Reserve

Trading involves an act of faith—the faith that what is acquired can be resold or will return some form of value. Investors’ faith in the value of securities supported by mortgage collateral was seriously shaken. Indeed, securities even tangentially related to the mortgage market were called into question. It became difficult for any one institution to discern how many dubious mortgage-backed securities it held and to determine whether its capital would provide a sufficient buffer should the value of

those securities plummet in a general market rout. Without sufficient information to discriminate among institutions, investors stepped back from all of them. These changes in investors' participation in a market can have highly nonlinear effects on market liquidity due to the externalities generated by trading. In this environment, a small change in the willingness of investors to participate can cause a fairly sharp contraction in market activity.¹³

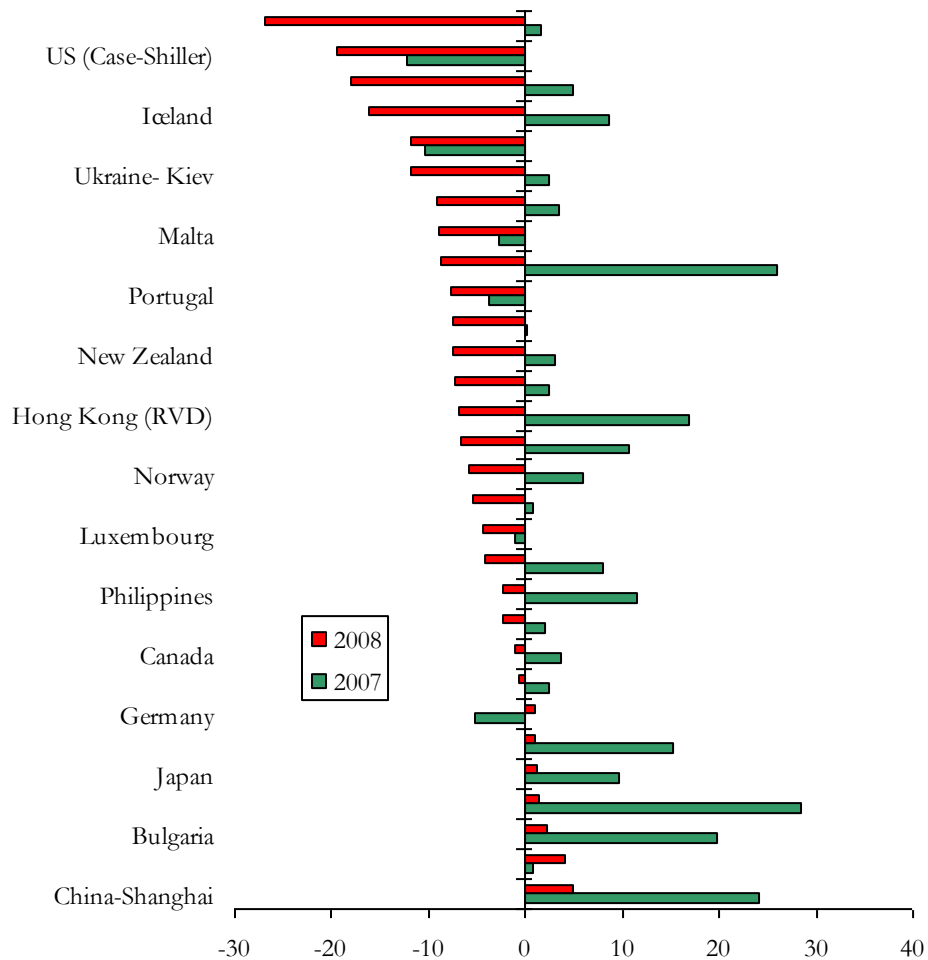
Note that the Eurodollar panel of institutions used to survey the Eurodollar deposit rate includes many large foreign institutions, so this premium on counterparty risk was not unique to U.S. financial institutions. Indeed, the synchronicity of the increase in spreads, decline in equity values, and contraction activity around the world was striking.

Similar circumstances. The fundamental excesses of the U.S. housing market were not unique to the United States. House prices were increasing at rapid rates in many countries, and foreign investors were flocking to those local markets. Reinhart and Reinhart (2008) show that a rapid step-up in capital inflows, which they termed a “capital flow bonanza,” often goes hand-in-hand with rising housing and equity prices. They also show that when the bonanza fades away, those capital market gains reverse. Playing out according to that script, Ireland, Iceland, Spain, New Zealand, and the United Kingdom were all among the countries that had outsized price appreciation followed by a crunching crash. As shown in Figure 13, for instance,

¹³ A simple model highlighting the self-referencing nature of liquidity is given in Reinhart and Sack (2000).

about half the fifteen countries in the sample of global property prices posted double-digit increases in real terms in 2007. In 2008, significant capital losses were the norm.

Figure 13
Home prices in real terms
 Annual change, percent



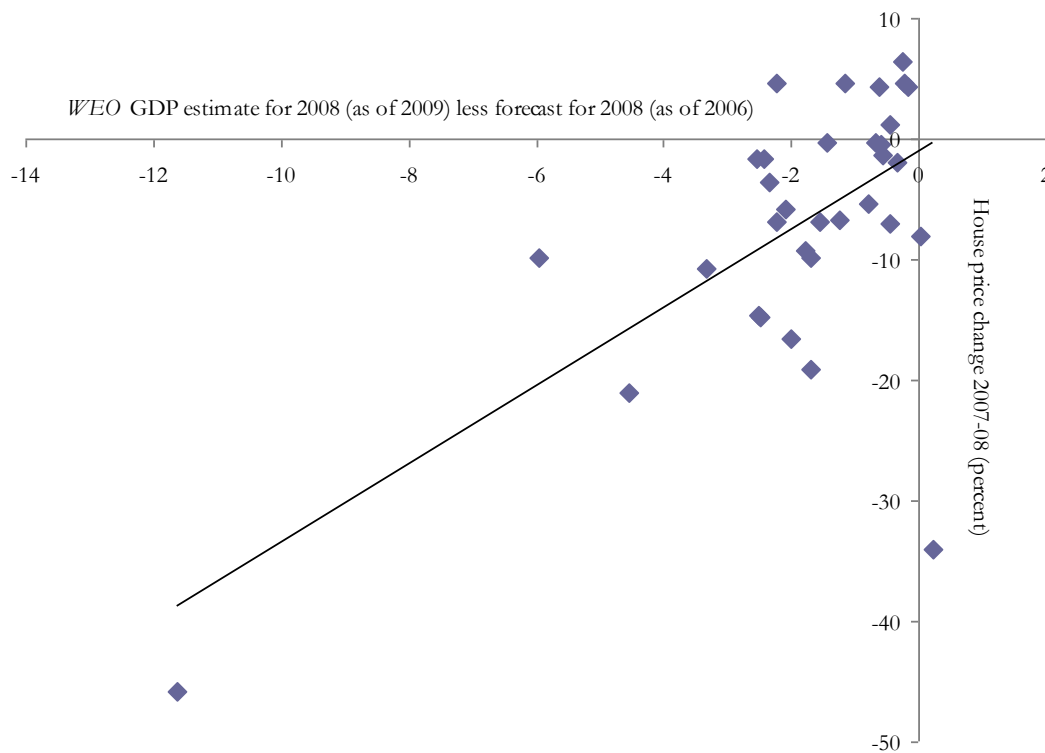
Source: Global House Price Registry

Figure 14 uses vintages of the International Monetary Funds' *World Economic Outlook* to assess the consequences of the reduction in home prices for individual countries. The vertical axis plots the change from the growth forecast for GDP in

2008 that was made at the end of 2006 compared to the most recent growth estimate for that year for these fifteen countries. That is, the axis measures how much the IMF staff marked down its forecast for growth over the past two-and-one-half years. The horizontal axis measures the average change in home prices from 2007 to 2008. As is evident, the more house prices have been marked down, the more so has the growth forecast.

Figure 14

House price changes and revisions to the GDP growth outlook

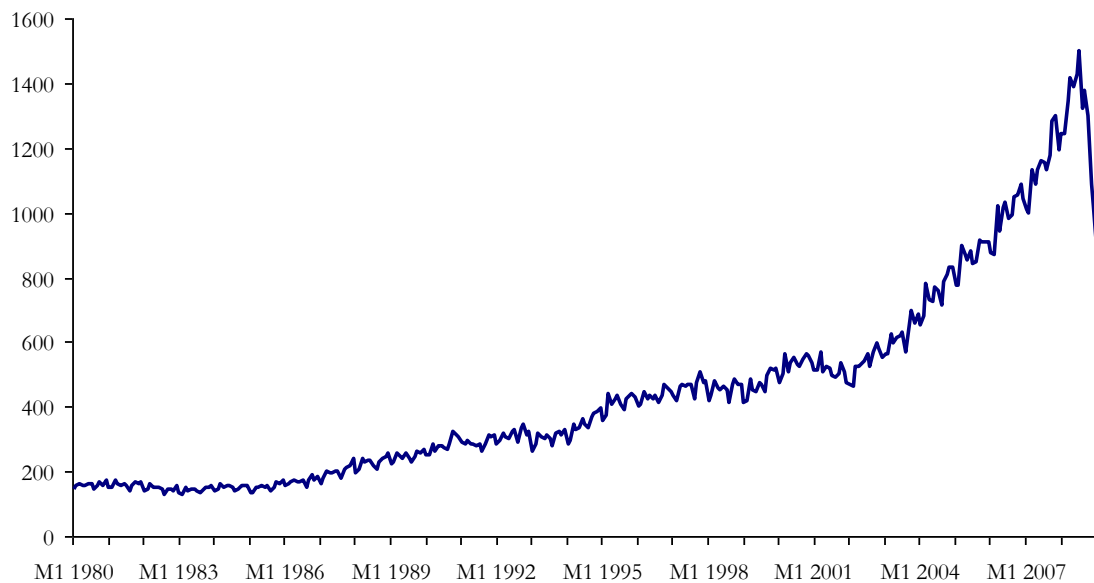


Source: International Monetary Fund, *World Economic Outlook*, and Global Property Registry

Transmission through trade and commodity prices. Contracting income in many countries has shrunk world export demand, reflected both in declines in exports volumes (as in Figure 15) and falling commodity prices. The decline in world exports

since its peak in July 2008 amounts to 35 percent, with some regions seeing their shipments fall by more than half.

Figure 15
World exports
 Billions of U.S. dollars



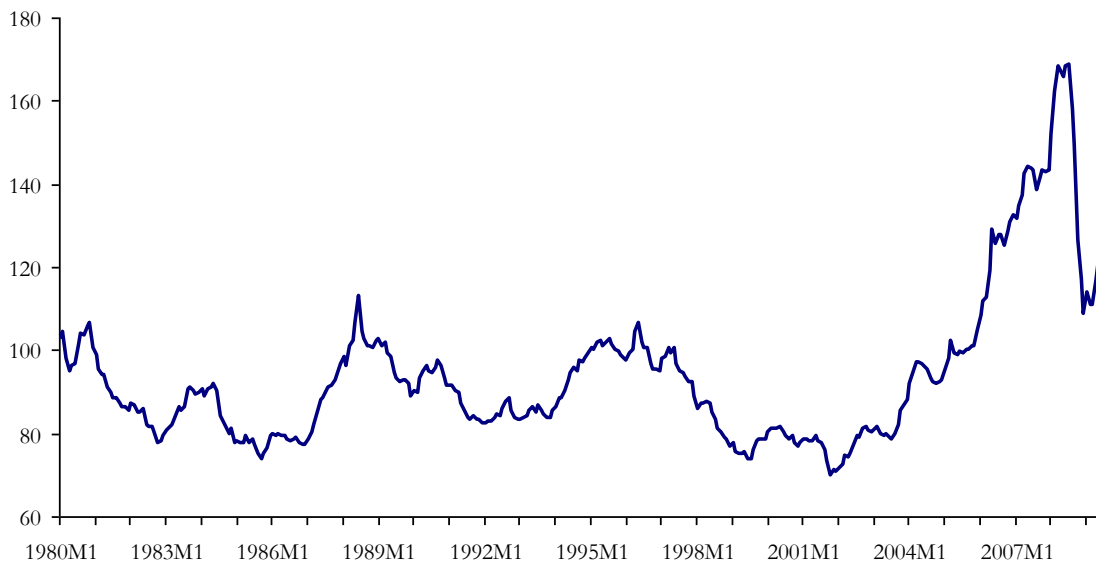
	<i>Month of Peak</i>	<i>Last observation</i>	<i>Decline from peak, percent</i>
World	July-08	Mar-09	-35%
Emerging and Developing Economies	July-08	Jan-09	-45%
Africa	July-08	Sep-08	-18%
CIS and Mongolia	July-08	Apr-09	-55%
Central and Eastern Europe	July-08	Mar-09	-35%
Developing Asia	July-08	Jan-09	-37%
Western Hemisphere	July-08	Apr-09	-37%
Europe	July-08	Apr-09	-48%

Source: International Monetary Fund, International Financial Statistics

As Figure 16 shows, commodity prices similarly peaked in July 2008, and in aggregate declined about 35 percent by their trough in summer 2009. Included in

that total were declines of 44 percent for primary metals and 30 percent for food. Not included in that non-fuel aggregate was the fall-off in energy prices, which amounted to about 65 percent for crude oil. The decline in commodity prices has reversed about half of the run-up since 2001. This directly fed into the decline in export values for commodity producers and also exposed weaknesses in fiscal accounts for those countries where their leaders had thought the boom owed importantly to their own efforts and would last forever. This is a repeated error, as booms turn into busts (as explained in Boughton, 1991, and Cuddington, 1989). In many ways, the error was similar to that made in the early 1990s, a prior boomlet in capital flows analyzed by Calvo, Leiderman, and Reinhart (1993).

Figure 16
Nonfuel primary commodity prices
Index, 2005 = 100

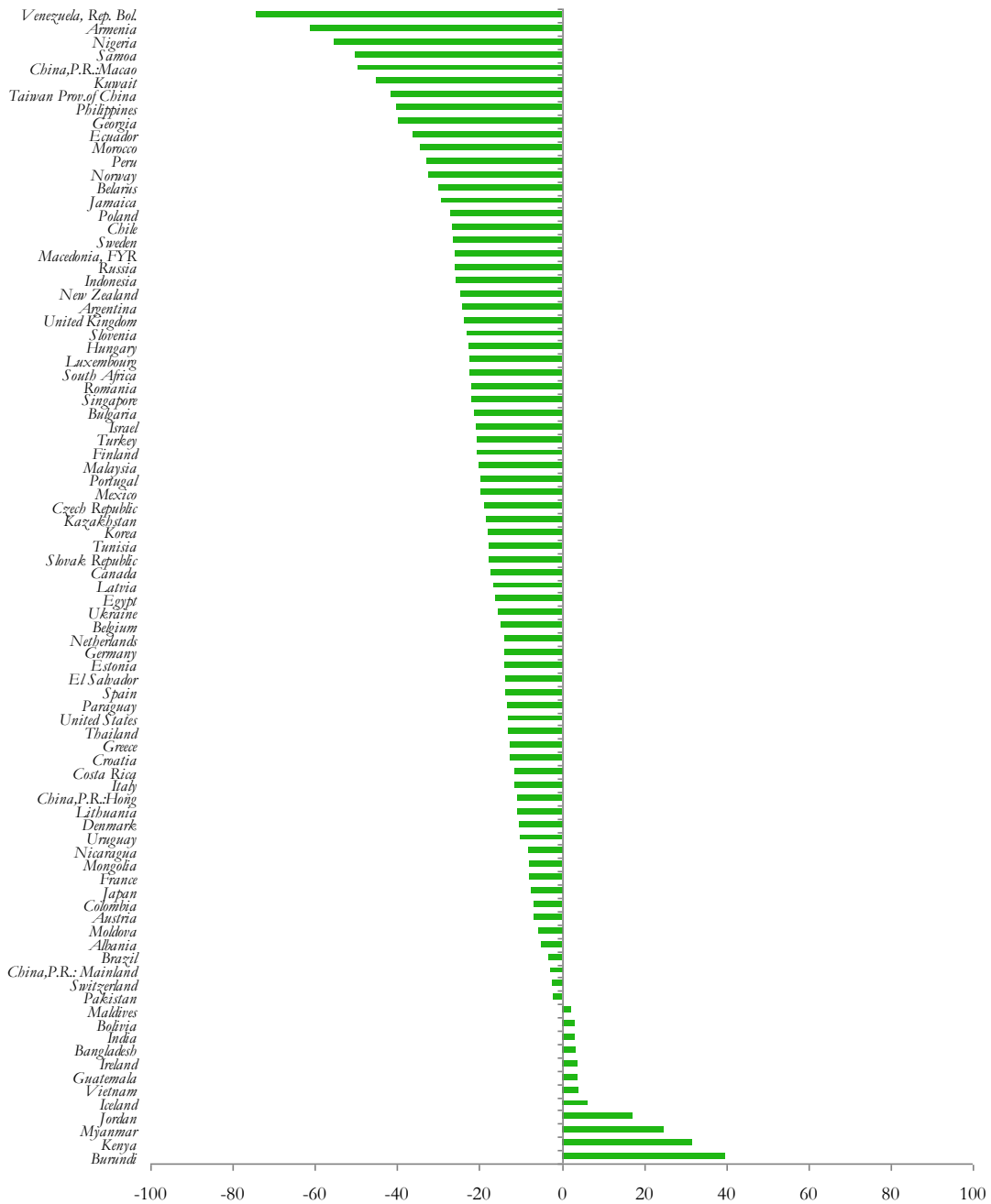


Source: International Monetary Fund

As a recent report from the Inter American Development Bank (2008) pointed out, fiscal and external accounts in emerging market economies are not as healthy as they appeared on the surface, once accounting for the commodity price boom.

A country-by-country depiction of the change in export values shows how crushing was the force of restraint for some nations. Figure 17 plots the twelve month change in the value of exports ending in December 2008 for 87 countries. Fully one-quarter of that set registered declines at least as great as 25 percent, with many of those including oil exporters. Only twelve countries in the sample showed an increase in exports over the course of 2008.

Figure 17
Exports values
 Change from 2007:12 to 2008:12, percent



Source: International Monetary Fund, *International Financial Statistics*

Sudden stops in lending. No doubt, many excesses developed during the economic expansion. In the contraction that has followed, some of them have been revealed. When capital gains turn into capital losses, human frailties become more evident.

Declines in the value of U.S. mortgage-related securities and equities directly lowered the wealth of investors. Readjusting relative portfolio shares given those losses would lead them to sell other assets, exacerbating the downward pressures in other markets. Investors that are less wealthy are probably also more risk averse and prone to extrapolate the risk to all the national markets where they participate. This strained local financial markets, which crowded out domestic borrowers with good initial prospects.

For countries initially untouched by the U.S. seizure, this sudden stop in lending, as in Calvo (1998), was the leading edge of restraint.¹⁴ In current circumstances, large firms headquartered in Brazil, Colombia, and Mexico, to name a few, could no longer borrow on international markets or from multinational financial institutions. Shut out abroad, those firms returned home, where domestic financial institutions found them to be attractive and credit-worthy prospects. To some extent, domestic banks funded additional lending by attracting more deposits, exactly in the manner predicted by Kashyap, Rajan, and Stein (2002) that makes those institutions unique. But deposit creation lagged behind lending to big firms, so new lending to small-and-medium-sized enterprises shrank. What followed was a silent credit crunch as domestic bank credit appeared to be robust even as net credit to the private sector

¹⁴ See also Calvo, Izquierdo, and Mejia (2004).

(domestic plus foreign) contracted. The latter was more important to activity than the former, much to the chagrin of local officials who initially mistook strong domestic lending as evidence of “decoupling” with advanced economies.¹⁵

4. The record of policy intervention

The tabulation of human frailty should not stop at the private sector. Actions by financial officials added to the losses, especially in 2008. This section analyzes those three sets of policies, financial, fiscal, and monetary, with an emphasis on their international dimension and historical precedent.¹⁶

Financial policies. The financial crisis first broke in the summer 2007 when two hedge funds sponsored by Bear Stearn’s ran aground. U.S. officials first sought private sector solutions, consistent with the interpretation that there had been a massive withdrawal of liquidity from the market. That is, the prevailing view was that investors had become both extremely conscious and intolerant of risk.

As 2008 unfolded, officials still seemed wedded to that interpretation. As a result, policy interventions by the Treasury and the Federal Reserve were ambiguous as to the scale and scope of the protections offered. This created incentives for creditors and short sellers to test the limits of intervention. For the private sector, it lessened pressure on management to raise capital and address balance sheet problems. More generally it lessened counterparty discipline, as lenders correctly anticipated their obligations might be assumed by the U.S. government. Those government

¹⁵ Mendoza and Terrones (2008) provide macro and micro evidence on the importance of a credit channel in emerging market economies.

¹⁶ Swagel (2009) gives the Treasury interpretation of this sequence of events.

actions opened important Federal agencies to political pressure and tilted the political playing field toward intervention generally.

The possibility of intervention led investors to delay capital investments. That is, it deepened the capital hole. If the private sector became unwilling to fill the hole, the government would have to do so. Moreover, just as Treasury Secretary Paulson and Federal Reserve Chairman Bernanke were encouraging the Congress to pass the troubled asset relief program legislation and justifying their takeover of the American International Group, confidence cratered. This is a problem inherent in brinkmanship of bailouts. Political salesmanship does not always align with economic stewardship.

In 2009, U.S. authorities have acted more consistently, but in a way that has encouraged financial institutions to delay the recognition of losses. The history of banking crises, as reviewed in Kaminsky and Reinhart (1999) and Frydl (1999), suggests that there are three stages in dealing with troubled financial institutions:

When to recognize loss, or when financial institutions write down the value of legacy assets sufficiently to reflect the bursting of the bubble;

Who assumes loss, or the combination of private and public sector support to fill holes on financial balance sheets associated with the recognition of loss; and

What protections are given to investors, or the assurances offered to the main holders of financial institutions' debt—depositors in the case of banks and share holders in the case of mutual funds—so that they do not flee the financial system.

The timing of when, who, and what varies with each incident. By way of example, Table 4 lists a few prominent examples and our subjective interpretations of the steps to resolve the crisis.

Table 4
Responses to Banking Crises

	When to recognize loss?	Who assumes loss?	What protections are offered?
Hoover-Depression 1929-32	Quick	Private	None
Roosevelt-Depression 1933-37	--	Private/ Government	Government guarantee
Latin American Debt Crisis 1981-1989	Delayed	Private/ Government	Government swap of principal
U.S. Thrift Crisis 1984-91	Delayed	Private/ Government	Government guarantee
Japanese Banking Crisis 1981-89	Delayed	Private/ Government	Government guarantee
Nordic Banking Crisis 1987-91	Quick	Private/ Government	Government guarantee

The relatively laissez-faire approach of the Hoover Administration in the initial stages of the Great Depression in the United States dictated that private losses be borne by the entities that had taken those exposures.¹⁷ The problem, as was formalized by Diamond and Dybvig (1983) a half-century later, was that the private assumption of loss led depositors operating without a safety net to predict being early

¹⁷ That President Hoover was willing to drift from these principles is a theme of Shlaes (2007).

in the queue to withdraw had a decided advantage. When everyone does so, a run ensues. The resolution to that risk, found shortly after Franklin Roosevelt became president, was to insure deposits at a sufficiently high limit.

This solution, of course, has to balance protection from runs against augmentation of moral hazard, a problem that has bedeviled policymakers since 1933.¹⁸ That they do not always strike the right balance was seen in the long lines snaked around the branches of the U.K. mortgage institution Northern Rock in 2007.¹⁹ As is wont at a time of crisis, the pendulum subsequently swung to the other side to raise coverage significantly.²⁰

The regulatory apparatus for financial institutions and impediments to international capital flows put in place during the Great Depression virtually eliminated financial crises for four decades, a startling fact documented in Reinhart and Rogoff (2009). As those controls were gradually lifted or circumvented, crises recurred. Policymakers, however, retained a lingering distaste for the private recognition of losses. Thus, when U.S. money-center banks became technically insolvent, when Latin American countries began defaulting in 1981, when U.S. thrifts went underwater following the bust in a regional real estate bubble in the mid-1980s, and when Japanese banks imploded in the 1990s, banks were allowed to delay the

¹⁸ Kane (1985) addresses these costs and benefits.

¹⁹ The long queue seems rationale in that at the time the United Kingdom covered only 100 percent of the first £2,000 and 90 percent of the next £33,000 of deposits.

²⁰ The sequence sheds light on the difficulties in conducting policy with open capital markets. The government of Ireland first offered virtually unlimited coverage as its international banks faced the possibility of a run. But the allure of that insurance, even if given by a small country relative to the size of its obligations, threatened a tsunami of deposit flows away from other European Union countries to the protected locale. Other countries followed suit in an example of policy emulation, not policy coordination.

recognition of losses. This policy of forbearance, the argument runs, allows banks time to repair their balance sheets and lessens their need to tap markets for funding at a time when they are in disfavor.

Experience suggests otherwise. Forbearance permits bankers to delay adjustment, on the hope that the market for the troubled asset will recover. As a result of a regulatory decision, the stock of legacy assets at banks becomes more valuable sitting on the balance sheet than if resold. However, as Coase (1972) pointed out, the market-clearing price for a durable good depends on expectations of future as well as present sales. Trading in that asset class freezes.

By revealed preference, policymakers seem to have been willing to tolerate the cost of a dysfunctional market for the benefit of maintaining the perception that banks are still solvent on a regulatory-reporting basis. Economic performance mostly suffered.

Table 5 compares real GDP growth in major episodes of regulatory forbearance, listing real GDP growth in particular countries or regions relative to the world average, as is available in the IMF's *World Economic Outlook*. As is evident, Latin America (the Western Hemisphere in the IMF nomenclature) and Japan both had lost decades. They expanded about 1-3/4 percentage points slower than the world average during those stretches. The cumulative growth shortfall aggregated to 17 percent for the Western Hemisphere and 32 percent for Japan. The cost to the United States appeared smaller during the thrift crisis, but there were many other engines of recovery at that time.

Table 5
Real GDP growth relative to the world, 1980 to 2008

Percentage points	Western Hemisphere	Japan	United States	Norway	Sweden
"Lost" years	1981 to 1990	1992 to 2005	1984 to 1991	1987 to 1989	1991
Growth differential in lost years					
Average	-1.7	-2.2	-0.1	-3.1	-2.6
Cumulative	-17.1	-31.5	-0.5	-9.3	-2.6
Growth differential in all other years	0.3	0.0	-0.6	-0.1	-1.0

Source: IMF, *World Economic Outlook*, April 2009

An exception to this pattern was the handling of the Nordic banking crises in the 1990s. Sweden and Norway forced a more immediate recognition of losses and, by nationalizing institutions, the government assumed part of the cost. The output loss was considerable, but short lived. Of course, these small open economies had the benefit of a downturn asynchronous with the rest of the world and could rely more on exchange-rate depreciation as an engine of recovery.

U.S. officials have opted for a policy of forbearance once again. The stress tests required of the leading nineteen firms emphasized opportunities for flow profits rather than recognition of legacy losses.²¹ Those financial institutions look better on the surface described by regulatory accounting, but some of the assets they hold remain frozen on their balance sheets. Moreover, the United States is not a small

²¹ A description of the “Supervisory Capital Assessment Program” can be found at <http://www.treas.gov/press/releases/tg121.htm>

open economy as are the Nordic economies, and one-sided flexibility in exchange rates does not always provide an effective safety valve. Against a backdrop of continued purchase of dollar assets by foreign official entities, discussed earlier, and a flight to safety, the U.S. dollar mostly appreciated through the early stages of the crisis.²²

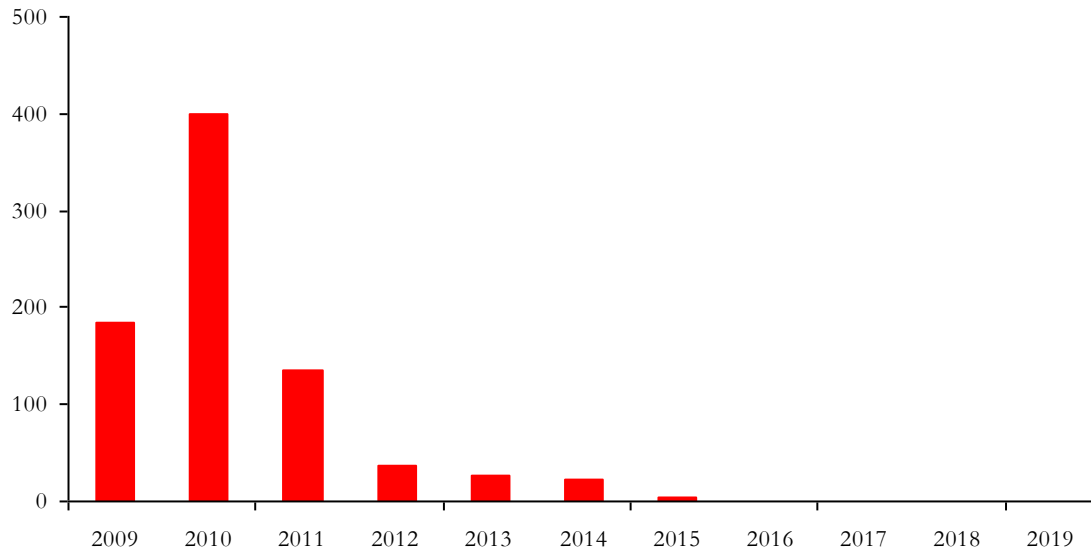
Fiscal policy What began as the subprime crisis in the United States during the summer of 2007 and morphed into a global financial crisis in the other advanced economies of the “North” has led to unprecedented fiscal stimulus efforts worldwide. The “North,” including the United States, Ireland, the United Kingdom, Spain, Switzerland, and Japan, needed stimulus because banking crises are usually accompanied by severe and protracted recessions and rising unemployment. The “South” sought to stimulate domestic demand by fiscal means in the face of collapsing exports, as available financing from global capital markets dried up in a “sudden stop” as predicted by Guillermo Calvo (1998).

The U.S. Congressional Budget Office (2009) tallied up the spending, taxation, and entitlement changes encompassed in the American Recovery and Reinvestment Act of 2009, repeated as Figure 18.²³ Noteworthy in that profile is the relatively slow spend-out rate. The government deficit widens a bit less than \$200 billion in fiscal year (FY) 2009 and then more than twice that in FY 2010. The “temporary” impetus tails off through 2015.

²² Reinhart and Reinhart (2008c) discuss this flight to safety.

²³ See Congressional Budget Office, Letter to Senate Majority Leader Harry Reid, February 11, 2009, <http://www.cbo.gov/ftpdocs/99xx/doc9984/hr1senatepassed.pdf>

Figure 18
Effect of the stimulus plan on the U.S. federal budget deficit
Billions of dollars



Source: Congressional Budget Office

Assessing the effects of this policy stimulus is, to understate matters, contentious. The empirical record is much more checkered than the standard multiplier exercises of textbooks (as discussed in Blanchard and Perotti, 2002). Two aspects of the 2009 stimulus package run counter to making the bang-for-buck particularly high. First, as shown in Table 6, support to state and local governments falls initially on areas where resources are already mostly utilized—health care and education. In such circumstances, additional demand falls more on the prices of those services rather than the quantities delivered. Second, many of the changes are programmatic and therefore unlikely to be rolled back when the temporary program ends. Thus, market participants are more likely to view them as permanent additions to the baseline for federal involvement in the economy. As a result, capital markets

are likely to price in higher borrowing rates in the future. As Blanchard (1981) showed, such “expectational” crowding out lessens the immediate efficacy of the policy.

Table 6

Composition of State and Local Government Recovery Act Funding

Share of the total, percent

	FY 2009	FY 2012
Health	64	1
Education and training	18	19
Transportation	8	30
Income security	6	17
Community development	6	16
Energy and environment	1	17

Source: Government Accountability Office, "Recovery Act," April 2009, <http://www.recovery.gov/sites/default/files/GAO-09-580+Recovery+Act.pdf>

If the adverse shock to the North had been a short-lived reduction in financing, as many observers believed at the time, emerging markets would have been well-placed to cope with the shock. A combination of currency depreciation (now possible owing to more flexible exchange rate arrangements) and some international reserve losses would seem to fit the bill. In addition, a short-lived fiscal response that entailed increasing government expenditures for a limited period of time did not seem to carry substantive risks to debt sustainability.

Fiscal stimulus packages in various guises and magnitudes found favor in both advanced and emerging economies. By January 2009, the *Global Economic Monitor*, published by Institute for International Finance, detailed the packages either adopted or planned in about 20 advanced and emerging market economies, including China, Korea, Mexico, and Saudi Arabia. Less than two months later, the list of countries

had expanded to include Russia and Turkey, among others.²⁴ The International Monetary Fund, both famous and infamous for advocating fiscal austerity packages in response to financial crises around the globe since its inception in 1945, began to advocate a “possible strategy whereby fiscal policy can foster the resumption of normal economic growth while maintaining public sector solvency.”²⁵

To be sure, avoiding the acute fiscal policy procyclicality that has plagued most emerging markets for decades is, indeed, progress. As Kaminsky, Reinhart, and Vegh (2003) document, during 1965-2003 the most prevalent pattern in emerging markets during recessions (in contrast to their OECD counterparts) was sharp reductions in real discretionary fiscal spending. It is difficult to imagine that this would not help account for the greater volatility evident in emerging market output.

Fashions are hard to resist, and it is now fashionable in much of the North to rely on a fiscal engine of growth. As for emerging markets, however, boosting spending at a time in which revenues are contracting or, in many cases, collapsing for an uncertain period of time is a more complicated matter.²⁶ Four main risks arise.

Uncertainty about fiscal multipliers. Although there is little consensus in academic and policy circles as to point estimates, the discussion of fiscal multipliers in most OECD countries is at least informed by existing analytical and empirical studies. For emerging markets as a whole, however, it is fair to state that a comparable literature does not exist. Obviously, one can anticipate from the few reliable case studies that

²⁴ See Prasad and Sorkin (2009).

²⁵ See Cotarelli in the IMF’s March 2009 *Finance and Development* issue.

²⁶ This is not intended to underestimate the difficulty and (usually) controversy of undertaking any kind of change in fiscal policy in the advanced economies.

are available that the cross-country variation is bound to be substantial. Thus, any statement about fiscal multipliers for emerging markets (and developing countries) as a class has to be interpreted with care.

In the regard, there has been especially timely recent work by Ilzetzki, Mendoza, and Vegh (2009), who calculate such multipliers for advanced high-income economies, emerging markets (middle income) and developing countries (low income) using quarterly data. Their analysis suggests that: (i) the fiscal multiplier on impact is larger for developing and emerging market countries than for the advanced high-income countries; (ii) the opposite is true for the peak multiplier; (iii) and the cumulative multipliers are far smaller for emerging markets than for advanced economies, as the positive impact of fiscal spending on GDP dies out fairly quickly.

Crowding out. Governments in advanced countries have put increased demands on available resources. As shown in Table 7, government debt has increased in many major economies, including, when scaled to nominal GDP, an 8 percentage point increase in the United Kingdom and 4 percentage point increase in the United States. Both advanced economies are at the lead, but they are not alone. Government debt as a share of GDP has increased 3 percentage points in the Euro area. Still, those increases as yet fall short of the pattern found in Reinhart and Rogoff (2009). In a sample of twentieth-century financial crises in advanced and emerging-market economies, they found that the public debt increased 86 percent, on average, by the third year after the crisis. The direct costs of financial rescue, sluggish revenue

associated with a poorly performing economy, and fiscal stimulus packages combine to put considerably higher demands on available saving.

This crowding out should mostly have consequences for the composition of aggregate demand, with relatively more coming from the government and less from the private sector. On net, as long as policy multipliers are positive in the short- to medium-run, economic activity should not have been set back as a consequence of an increased role for the government.

Table 7

Government Debt

As a share of nominal GDP, percent

	2007	2008
Euro area	66.2	69.2
France	63.9	68.1
Germany	65.1	66.0
Italy	103.5	106.0
United Kingdom	44.2	52.0
Mexico	22.3	26.2
United States	36.5	40.8
India	5.2	5.3
Russian Federation	7.3	6.5
South Africa	25.0	23.0

Source: International Monetary Fund

The illusory safety of domestic debt. The tilt in favor of domestic debt financing in recent years is by and large a welcome development as it may help foster a domestic capital market. However, as Reinhart and Rogoff (2008) argue, domestic debt is not new. Though less well documented than comparable external defaults, domestic defaults have been numerous through history. Including domestic debt in the calculus helps explain why governments default on foreign debts at seemingly low

levels of debt (see debt intolerance below) and why they resort to inflation as a means of reducing their debt burdens.

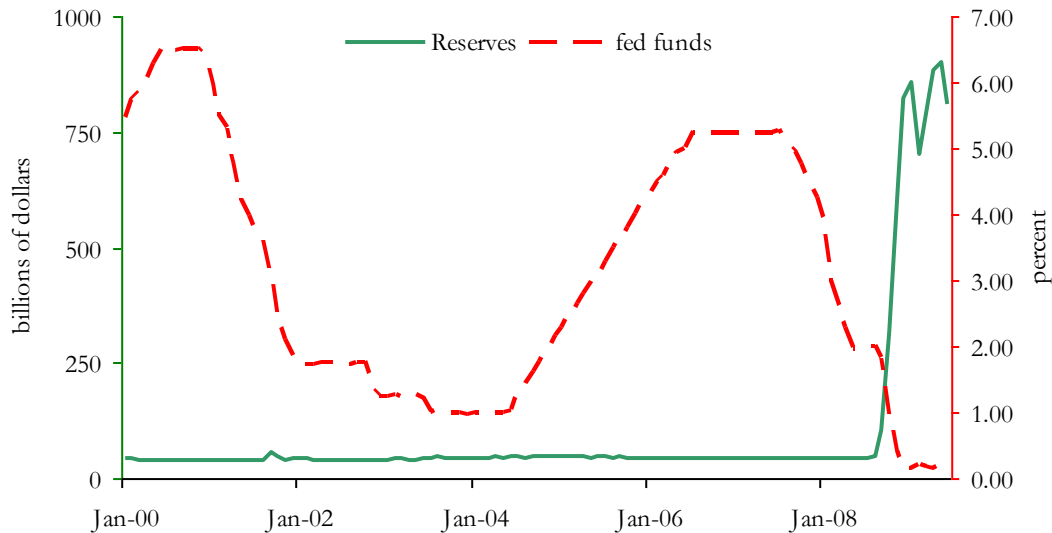
Debt intolerance. Historically, emerging market defaults have taken place at levels of debt that would appear to be safe and even conservative by advanced economy standards. The defaults of Mexico in 1982 and Argentina in 2001 were not exceptions. Real exchange rate depreciation typically accompanies a default of course, as locals and foreign investors flee the currency. The fiscal “space” to implement ambitious stimulus plans in emerging markets is far more limited than that of advanced economies—not that policymakers in the latter may underestimate these constraints as well.

Monetary policy. The Federal Reserve has been aggressive in lowering its policy rate, seen as the dashed line in Figure 19, over the course of 2008. The central bank significantly expanded the size of its balance sheet, as seen in the solid line, to more than two trillion dollars by October 2008. That provision of liquidity drove the funds rate effectively to zero, even as the official target was initially still 1 percent. Despite both the evidence in quantities and prices, officials seemed reluctant to describe their policy as quantitative easing.²⁷ The Fed did not formally embrace quantitative easing

²⁷ Note, for instance, that Chairman Bernanke’s testimony on monetary policy and the outlook on October 20, 2008 was silent on the level of reserves and the federal funds rate., at <http://www.federalreserve.gov/newsevents/testimony/bernanke20081020a.htm>

for macroeconomic reasons until mid-December, when the Federal Open Market Committee officially pushed its target rate to 0 to ¼ percent.²⁸

Figure 19
Total Reserves and the Federal Funds Rate



Source: Federal Reserve Bank of St. Louis, FRED

Quantitative easing, or Q.E., holds that the size and composition of the central bank's balance sheet influences financial markets and the economy over and beyond the level of the policy rate. One consequence of this definition is that policy does not necessarily run out of ammunition at the zero bound. That is, the central bank can still manipulate its balance sheet even as its policy rate is pinned at zero. This definition also implies that Q.E. is not just about the level of reserves. The level of reserves is one portion of a central bank's balance sheet, but other liabilities and the size and composition of its assets can also influence the macroeconomy. In addition,

²⁸ This is noted in the statement of the Federal Open Market Committee at the conclusion of its year-end meeting on December 16, 2008, at <http://www.federalreserve.gov/newsevents/press/monetary/20081216b.htm>

this definition implies that quantitative easing can be undertaken at a non-zero policy interest rate. This is relevant both for the central banks that have not already put the pedal fully to the metal, such as the European Central Bank, and for those who have but are now planning how to unwind policy stimulus.

Quantitative easing potentially works on both sides of a central bank's balance sheet in the manner described by Bernanke and Reinhart (2004).

- (1) The large provision of reserves may induce banks to make use of idle balances, which is the traditional **money-multiplier** effect. Even as the policy rate is pushed to zero, reserves can expand, potentially massively, providing banks the wherewithal to support deposit creation, if they are so inclined.
- (2) The over-provision of reserves also could help convince market participants that the policy interest rate will be low for a long time. This is known as the **policy duration** effect. This simply recognizes that the bigger is the balance sheet, the longer it will likely take to shrink (in the manner described by Obstfeld and Auerbach, 2004).
- (3) On the asset side, the accumulation of portfolio holdings might influence relative spreads and the function of markets, which is an **asset substitution** effect (in the manner of Tobin, 1970).
- (4) A central bank holding more assets, particularly those that have higher than typical returns, and importantly above the remuneration on deposits, should generate additional income. This central bank profit may encourage

the government to spend more or to cut taxes, which is known as **creating fiscal space**.

When considering the risks of quantitative easing, it is important to remember that the tools that allow the expansion of the central bank's balance sheet are not inherently asymmetric. Mechanically, the central bank can shrink its balance sheet just as fast as it was expanded. Rather, the question is about the willingness of the central bank to be symmetrically aggressive, not the ability. In that regard, quantitative easing is probably most effective when there is a well-defined exit strategy. The anchoring of inflation expectations in the long-run at an appropriate level gives policymakers leeway to be aggressive in the short run.

Some comfort can be taken from the fact that the Bank of Japan (BoJ) was able to unwind its balance sheet relatively quickly. In five remarkable months in 2006, the BoJ shrank total assets by about a fifth. The contraction came mostly from its portfolio of government securities. The short average maturity of that portfolio allowed the asset stock to contract by merely rolling off maturing obligations.

While this has been done before, there are reasons to be concerned about the Federal Reserve's willingness to head for the exit. There are four sources of concern. First, policymakers might be unwilling to test the resilience of markets. They might easily convince themselves that the improvement in markets and the economy is due to the massive size of the Federal Reserve balance sheet. While financial markets and the economy might be better, they might not be strong enough to withstand the removal of that accommodation. A regular tendency over time and across countries

is that policy rates move asymmetrically. Policy rates tend to decline quickly and increase slowly. This is referred to as going up by the escalator and down by the elevator.²⁹ If policy rates are asymmetric even though there is no obvious cost to adjustment, we should not be surprised to find that changes in the balance sheet are similarly asymmetric.

Second, some long-lived assets on the Federal Reserve balance sheet might no longer have markets when the time comes for the Fed to sell them. This mostly holds for the assets in the special purpose vehicles and the potential purchase of legacy securities as part of the Treasury's rescue plan.³⁰

Third, the Treasury has funded a portion of some Fed programs by providing a first loss-tranche. If the Treasury was present at the creation, does it also have to be amenable at the closure?

Fourth, political pressures might be intense. The Fed has been able to play a forceful role in affecting private credit markets. The Congress might view this as the purview of fiscal policy and be more willing to interfere with those decisions going forward.

There has been significant international cooperation, both in terms of providing central banks swap lines and providing support to financial institutions

²⁹ For example, Fed Vice Chairman Donald Kohn made this observation in a speech, "Monetary Policy over Fifty Years," at a conference to mark the fiftieth anniversary of the Deutsche Bundesbank," in Frankfurt, Germany on September 21, 2007 at

<http://www.federalreserve.gov/newsevents/speech/kohn20070921a.htm>

³⁰ In that regard, the Fed has already reached an accord with the Treasury for it to assume those special purpose vehicle assets when the time comes.

more generally. As shown in Table 8, for instance, the Federal Reserve's more than doubling of its balance sheet has been surpassed by the Bank of England. Significant increases have also been racked up in the Euro area up and some emerging market economies.

Table 8

Central Bank Assets				
Change over corresponding period of previous year, percent				
	2007	2008	2009Q1	2009Q2
Argentina	29	13	9	24
Australia	-14	82	33	3
Brazil	43	37	35	
Canada	10	47		
China, P.R.: Mainland	38	23	16	
Euro Area ¹	32	57	48	
India	32	11	8	
Indonesia	18	4	12	5
Japan	-2	8		
Korea, Republic of	5	2	15	
Mexico	11	34	28	
Russian Federation	48	37	37	
Saudi Arabia	36	45	18	
South Africa	22	36	16	3
Turkey	-5	38	28	17
United Kingdom	-19	147	220	
United States	5	147	132	

Source: International Monetary Fund

5. Conclusion

The exit from governmental entanglements of the past two years will be difficult. Many advanced economies have significant ownership positions in large financial firms. Indeed, it has found its way into significant nonfinancial firms as well; witness the ownership stake in the U.S. automakers. Such governmental ownership has inherent conflicts. Should officials be concerned about the financial health of the

firms they own, or the constituents those firms employ? The record from emerging-market economies is quite distinct. Governmental ownership implies governmental losses. Assets held by the government decline in value over time as the government looks to more than profit maximizing in running those firms.

The Federal Reserve has taken direct responsibility for the support of firms and markets in way that it had never done before. Moving back to the private assumption of loss and opportunity for profit may take some time. How quickly that's engineered will affect many aspects of private sector risk taking and economic growth. It is not evident that public sector protections are now in place to ease that transition.

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