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### Goldman Sachs - Effective Regulation: Part 1 Avoiding Another Meltdown

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# Effective Regulation: Part 1 Avoiding Another Meltdown

March 2009



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# Effective Regulation: Part 1

## Avoiding Another Meltdown



Global Markets  
Institute

### Fix the system, not just today's problems

This is the first in a series of papers addressing the topic of financial regulation. We analyze the build-up of global economic imbalances; how these imbalances led to housing bubbles in many countries; and how poorly-managed risk related to securitization, along with inconsistencies in the regulations that applied to different financial activities, helped to transform these imbalances into a global financial crisis.

### A "global savings glut" fed the housing bubble

Imbalances in the real economy in recent years forced the global financial system to absorb enormous excess liquidity. The problem was not the savings themselves, but the magnitude and speed of their accumulation. The resulting "global savings glut" overwhelmed domestic investment opportunities in emerging markets and instead flowed into developed-country asset markets, especially housing markets.

### Systemic firebreaks failed

Securitization – which historically had been useful in reducing risk at the firm level and the regional level – ultimately increased risk at the system-wide level. It reduced the effectiveness of systemic "firebreaks" by spreading what had traditionally been very local risks; this increased correlations across asset classes and regions. At the same time, the regulatory treatment of securitized loans reduced system-wide capital levels, impeding the financial system's ability to manage large shocks. Further damage was caused by the spread of complex financial holding companies. Because different arms of these entities were subject to different accounting rules and regulatory oversight, firms could exploit those differences to drive near-term profits higher while building and warehousing risks that only became apparent later.

### Looking ahead

We offer four principles for rebuilding the global financial system: (1) Capital gluts must be managed, and asset bubbles cannot simply be allowed to run their course. (2) Securitized loans should, in aggregate, face the same capital requirements as the underlying loans would if they were held on bank balance sheets. Securitization would then be driven by a desire to reduce hazardous concentrations of risk, rather than a desire for capital relief. (3) Lending institutions should be required to mark large loans to market at origination, forcing symmetry across the recognition of profit and risk. (4) Lending linked to investment banking activities should be consolidated into the investment banking arm and subjected to full mark-to-market discipline and all regulatory and accounting rules that apply to trading assets. This would eliminate the ability to exploit differences in regulation or accounting. Further, financial institutions involved in investment banking should be required to have an independent, appropriately staffed and fully-resourced control group to mark and manage the resulting risks.

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*Thanks to Richard Ramsden, Brian Foran, Michael Moran, Frederik Thomasen and Annie Chu.*

## Introduction: credit crisis retrospective and regulatory implications

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**This paper is the first in a series addressing the topic of financial market regulation. We analyze how imbalances in the global economy built up over the past decade, how these imbalances led to asset bubbles in housing markets around the world, and how securitization and the blurring of traditional lines between commercial and investment banking helped transform these imbalances into a global financial crisis. We offer some thoughts on implications for the regulatory reforms that should emerge from today's crisis.**

There is no shortage of proposals for strengthening the international financial system. Many focus on specific aspects of the current crisis – subprime lending, opacity in derivatives markets and unregulated over-the-counter markets, for example. It is easy to see how improved regulations and systems in these areas might have mitigated the contagion and made managing the damage easier. It is harder to see, however, how such measures could have prevented the build-up of underlying risk or checked its geographic and systemic spread.

A smaller number of proposals look at the financial system as whole in an attempt to identify and address the underlying, systemic causes of the crisis. The goal of legislation and regulation enacted in the wake of this crisis should be to remedy structural weaknesses in international finance, not just to allow for a more orderly unwinding the next time.

We would focus on two fundamental issues:

- The build-up of dangerously large global imbalances, and
- The ways in which financial innovation and regulation ultimately made the global financial system riskier, even as they appeared to reduce the level of risk.

**The build-up of dangerously large global imbalances.** Imbalances in the “real economy” that built up over the past decade forced the global financial system to absorb enormous amounts of excess liquidity. Two factors drove the “global savings glut:” the sharp rise in Asian foreign-exchange holdings in the wake of the 1997-1998 Asian crisis; and soaring oil prices that filled the coffers of the oil-exporting countries.

The problem was not the savings themselves, but the magnitude and speed of their accumulation, which overwhelmed efforts to allocate them efficiently. These excess savings vastly exceeded domestic investment opportunities in the emerging markets that were generating the capital. Accordingly, they flowed instead into the open markets of developed countries, particularly housing markets. Excess liquidity also found weaknesses in the regulatory system – weaknesses that did not become apparent until it was too late.

**Inadequate regulation allowed securitization to damage systemic firebreaks.** That major problems arose given the size of these capital flows is not, in retrospect, surprising. It is surprising, however, how widespread the damage has been throughout the global financial system – much like a forest fire that was unexpectedly found to have kindling in the firebreaks. Innovations that were intended to reduce risk – namely the spread of securitization, particularly in its application to low-quality assets, and the spread of complex financial holding companies – actually added fuel to the fire.

It is important to note that securitization, by itself, was not problematic. Indeed, **securitization did, for a time, reduce risk** at the firm level and free up capital for lending. Accordingly, regulators allowed individual institutions to enjoy higher leverage ratios and lower capital requirements. In aggregate, however, securitization allowed many financial firms to build positions in (what unexpectedly turned out to be) very risky assets, often employing leverage while enjoying reduced capital requirements. The spreading of risk

raised correlations across countries and across sectors of the financial industry, **essentially turning the financial system into one highly correlated shared risk pool**. At the same time, due in part to inadequate oversight of the credit rating agencies, securitization also lowered the total amount of capital in the financial system.

An added, though not nearly as important, part of the problem was the spread of the large multi-business financial holding company, which emerged full force in the last decade. These complex holding companies merged a wide variety of businesses, often with very different business models and operating cultures – most notably the mark-to-market culture of investment banks and the held-to-maturity culture of classic commercial banks. Mixing these models without centralized monitoring and sufficiently independent risk controls allowed firms to exploit differences (sometimes accidentally) in the rules applying to different parts of the same firm.

While some firms were clearly able to manage these complexities, others failed to develop the needed systems and infrastructure, or did not allow these systems to operate with sufficient independence.

**Risk will naturally flow to where it is least monitored and where capital requirements are lowest.** There is nothing sinister about this – it is the “invisible hand” of the market at work. It is extremely difficult for regulators to identify in advance all possible loopholes – and equally difficult to close them all.

Rather than focusing on the individual problems that the current crisis has brought to light, we think the most viable solution is to force as much symmetry and equality of treatment of assets across all parts of a firm as possible, thus eliminating odd incentives that encourage activities like poor lending.

**As we rebuild the financial system, four things are clear:**

1. **Capital gluts must be managed, and asset bubbles cannot simply be allowed to run their course.** Regulators have focused on managing risk at the level of institutions, and have sought to strengthen financial systems against small and local shocks. Major regulators have largely been successful in this – but in the process, they have unintentionally increased the system’s vulnerability to global and macro shocks. In the future, regulators should give stronger focus to macro-prudential supervision. This will entail greater international information-sharing and cooperation.
2. **Securitized loans should, in aggregate, face the same capital requirements as the underlying loans would if they were held on bank balance sheets.** Securitization would then be driven by a desire to reduce hazardous concentrations of risk, rather than a desire for capital relief. Regulators should also monitor the quality of the assets being securitized and the ratings assigned by rating agencies.
3. **Lending institutions should be required to mark large loans to market at origination, forcing symmetry across the recognition of profit and risk.** Banks should not be allowed to defer losses via their commercial banking lines while recognizing profits immediately in their investment banking units.
4. **Lending linked to investment banking activities should be consolidated into the investment banking arm and subjected to full mark-to-market discipline and all regulatory and accounting rules that apply to trading assets.** This would eliminate the ability to exploit differences in regulation or accounting. Further, financial institutions involved in investment banking should be required to have an independent, appropriately staffed and fully-resourced control group to mark and manage the resulting risks.

Despite their best efforts in the months ahead, it is unlikely that governments, regulators and market participants can build a regulatory system so flawless that it can perfectly manage another influx of capital like the one we have just seen. Accordingly, the best

solution will include finding ways to mitigate capital imbalances that may occur in the future, while simultaneously developing a stronger regulatory system that limits the spread of damage.

## The “global savings glut” and the shallow pool of investments

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It is now widely accepted that the world economy developed an excess of savings from the start of the decade to the onset of the credit crunch in mid-2007, an excess that has been dubbed the “global savings glut”.<sup>1</sup> An excess of savings seems like a good problem to have, but it has in fact proved to be very damaging. Thus, it is worth understanding how this “glut” came about, how the savings accumulated at a pace not seen before, and how this resulted in an asset bubble that ultimately imperiled the global financial system.

The savings glut had two principal drivers: the accumulation of Asian foreign-exchange reserves, and the savings arising from the skyrocketing price of oil. Although these two phenomena operated independently of each other, they did occur simultaneously – and quickly. Had they occurred separately, or more slowly, the world economy might have been able to absorb the excess liquidity without too much strain. Instead, the rapid build-up of savings swamped the available global investment opportunities.

### The “global savings glut” (I): Foreign exchange reserves

The first driver of the excess savings was the current account surpluses generated by many emerging market countries, especially in Asia. This was also one of the great anomalies of the global economy in this decade. Under a “normal” state of affairs, domestic savings in emerging markets are usually insufficient to fund the available investment opportunities. These countries will import capital and, in doing so, will run current account deficits. Developed countries, in which savings normally outstrip the attractive investment opportunities, will typically export capital to emerging markets and accordingly will run current account surpluses. A classic example of this occurred in the late 19<sup>th</sup> century, when the United Kingdom financed much of the rail and canal systems built as the United States expanded westward.

But in recent years this “normal” state of affairs has been turned on its head. Emerging economies responded to a string of financial crises – in Latin America, Asia and Russia – by generating large current account surpluses. Although each crisis differed in cause and severity, the common response was for emerging market economies to “self-insure” by building up large foreign exchange reserves. (See Exhibit 4 for background on the accumulation and role of foreign-exchange reserves.) These were intended to shield their currencies from another round of debt mismatches and currency devaluations.

Robust trade and managed currencies generated large current account surpluses. China’s surplus spiraled from less than 2% of GDP in the early part of this decade to a whopping 11% in 2007 – a remarkable position for a major emerging economy. In part by managing their currencies to keep them weak relative to the US Dollar, Asian exporters generated substantial foreign exchange reserves. China is the most obvious example – its foreign exchange reserves have reached nearly \$2 trillion (see Exhibit 2) – while South Korea, Taiwan and India also saw significant run-ups in their own reserves. There is no clear rule of thumb to say how much is “too much”, but we estimate that developing Asian

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<sup>1</sup> The “global savings glut” was first dubbed as such by current Federal Reserve chair Ben Bernanke in 2005. His speech, “The Global Saving Glut and the U.S. Current Account Deficit,” is available at [www.federalreserve.gov/boarddocs/speeches/2005/200503102/default.htm](http://www.federalreserve.gov/boarddocs/speeches/2005/200503102/default.htm).



economies together accumulated several hundred billion dollars above and beyond what prudential macroeconomic management would suggest.

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**Exhibit 1: What is the current account balance, and why does it matter?**

*The current account is the combined balances on international trade of goods and services (exports and imports) along with income flows (remittances, dividends and interest) and net unilateral transfers. What is of interest is not the current account itself but the current account balance – whether it is in deficit or in surplus.*

*The current account balance can be defined in two ways:*

- **The gap between imports and exports:** *If a country spends more on imports and other payments to foreigners (such as remittances, dividends and interest) than it takes in through exports (and other payments), it runs a current account deficit. If exports exceed imports, it runs a surplus.*
- **The gap between savings and investment:** *Countries that invest more than they save must borrow from international capital markets to finance this investment (and consumption); this yields a current account deficit. Countries that save more than they invest, and lend this excess overseas, run a current account surplus.*

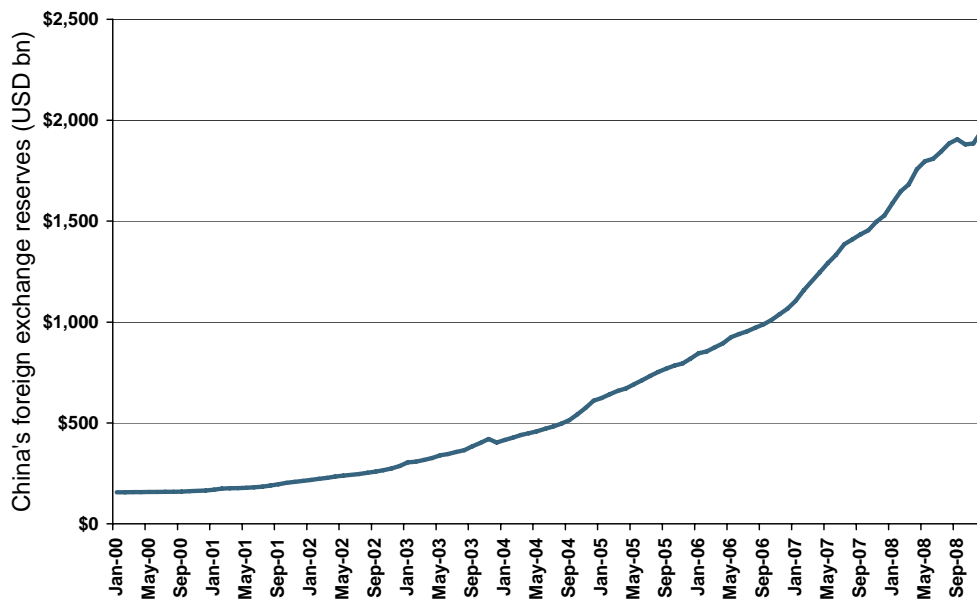
*At least in theory, developing countries should run current account deficits. They will have more investment opportunities than they can self-finance, and their populations are typically relatively young, with low savings (China, with its rapidly aging population is a key exception). They should be net importers of capital from developed countries, where fewer and lower-yielding investment opportunities and aging populations should together produce a surplus. This has not been the case for much of the past decade, as we discuss in the main text.*

*Running a current account deficit is not an inherently dangerous position, even for developed economies. But when the deficit reaches about 3% of GDP, and when a high deficit persists for many years, it puts the economy at risk of a disorderly unwinding. If foreign appetite for financing excess spending and saving suddenly disappears, or if the return expected on these investments falls, the country in deficit may face a nasty transition: an abrupt currency collapse and sharply higher domestic interest rates, along with the need to curb spending, reduce imports and increase exports. For countries in deficit, the IMF describes the current account as “the point at which international economics collides with political reality.”*

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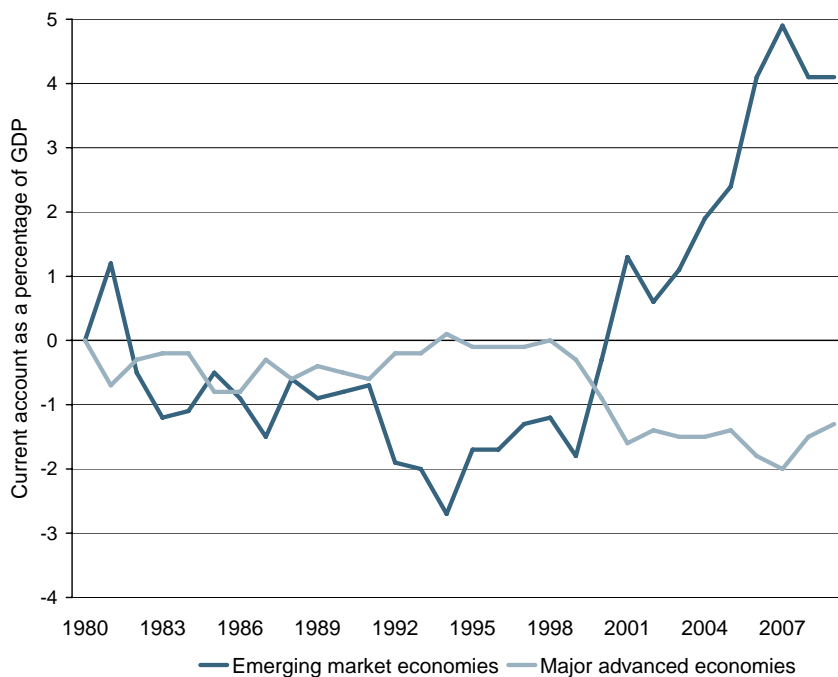
*Source: Goldman Sachs Global Investment Research.*

**Exhibit 2: China's foreign exchange reserves have soared since 2000**



Source: International Monetary Fund, Goldman Sachs Global Investment Research.

**Exhibit 3: Current account as a percentage of GDP in major emerging and advanced economies**



Source: International Monetary Fund, Goldman Sachs Global Investment Research.

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**Exhibit 4: Foreign exchange reserves: what, how, why and why not?**

*Foreign exchange (FX) reserves have played an important role in macroeconomic policy management and global bond markets in recent years. Below is a brief guide to the what, how, why and why not of FX reserves:*

**What:** *FX reserves are the deposits and bonds, denominated in foreign currencies, held by central banks or other monetary authorities. From a balance sheet perspective, these reserves are assets, which the central bank can use to purchase domestic currency (which is a liability).*

**How:** *Governments and/or financial institutions deposit their foreign exchange at the central bank in exchange for domestic currency. They are usually funded by foreign currency inflows generated by trade or by a fixed exchange-rate policy. Typically, FX reserves are 'sterilized' to offset the inflationary impact of an increase in the domestic money supply, with the central bank mopping up liquidity by issuing an offsetting amount of domestic bonds. FX reserves are managed to achieve one or more goals: liquidity management, return and capital preservation. The importance of each factor varies by country and over time.*

**Why:** *There are two principal reasons why a country would want to accumulate FX reserves. First is the desire for a 'war chest' to guard against financial crises. By ensuring that the country has ample foreign currency with which to defend its exchange rate, repay its international borrowing and fund imports, a high stock of reserves tends to lessen the risks of a debt or currency crisis, and to limit the impact if one does begin. This has been the motivation for the tremendous buildup in reserves in Asia since the late 1990s. Second is the desire to maintain a fixed exchange rate (or a looser version of this, often called a 'managed' rate or a 'dirty float'). FX reserves are the by-product of central bank intervention in currency markets, though typically not the principal goal in this case.*

**Why not:** *There are risks to accumulating and holding high FX reserves. First, and obviously, there is foreign exchange risk itself; appreciation of the local currency can hurt the central bank's balance sheet. Second, there are opportunity costs: the funds could otherwise be used for purposes with higher yields, including external debt repayment and public investment. Given that a substantial share of international reserves are held in very low-yielding US Treasuries, this cost can be significant. And third, there can be sterilization costs, if the rate that the central bank must pay out on domestic sterilization bonds is higher than the rate it receives on its foreign exchange reserves.*

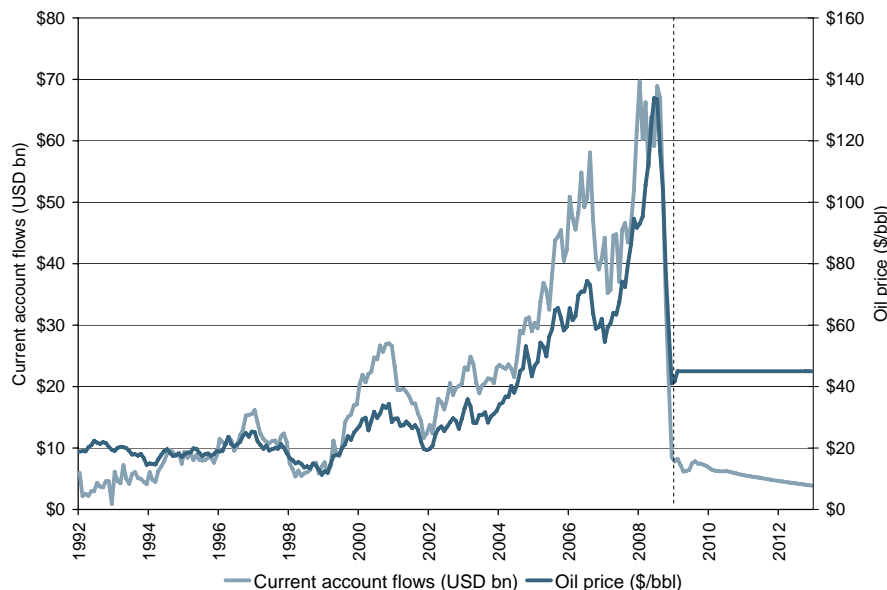
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Source: Goldman Sachs Global Investment Research.

## **The “global savings glut” (II): Petrodollar flows**

The second major source of surplus capital was the oil exporters (and to a lesser extent, commodity exporters more broadly). With oil prices skyrocketing from about \$25/barrel in 2000 to a peak of nearly \$150/barrel in mid-2008, “petrodollars” accumulated rapidly in oil-producing countries, most notably the Persian Gulf states, Russia, Nigeria and Venezuela. Oil-exporters’ current account inflows exceeded \$65 billion per month in recent years (see Exhibit 5) and over \$2.5 trillion from 2001-2007. Russia provides one of the most striking examples of capital accumulation. Foreign exchange reserves soared from -\$5 billion in the wake of the country’s debt default in 1998 to nearly \$487 billion at the end of 2007, thanks in large part to oil and gas revenues.

**Exhibit 5: Global savings was driven primarily by a record increase in oil prices**



Countries included in the current account flows are Algeria, China, the Gulf Cooperation Council states (including Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates), Indonesia, Japan, Libya, Mexico, Nigeria, Norway, Russia and Venezuela.

Source: Haver Analytics, Goldman Sachs Global Investment Research.

**The shallow pool of investments**

The domestic economies and domestic capital markets of the Asian reserve-holders and the oil-exporters could not absorb these enormous savings surpluses. In a “normal” world, these countries would have invested much of these excess savings at home, particularly in areas like infrastructure, education and healthcare – investments that would have strengthened their long-term growth prospects. But the speed at which these savings accumulated made them difficult to absorb. This was compounded by the fact that the legal and institutional infrastructure of emerging domestic capital markets could not efficiently channel these flows.

In the case of many energy and commodity producers, there was a further constraint on capital absorption – political constraints on investment. We detail some of these restrictions in Exhibit 6. With strong global economic growth fuelling demand for energy and other commodities, the world should have seen significant investments designed to increase supply. It did not, however, because the governments of many commodity-producing nations enacted policy constraints on the free flow of capital, labor and technology.<sup>2</sup> This problem was particularly acute in the energy sector, where even wealthy oil producers needed foreign expertise (and thus foreign capital) to support the technically-demanding infrastructure build-out.

<sup>2</sup> See “The revenge of the old ‘political’ economy”; Goldman Sachs Commodities Research; March 14, 2008.

**Exhibit 6: Restrictions on investment in commodities infrastructure among major producing countries**

<b>Country/Region</b>	<b>Capital, labor and technology controls</b>
<b>Middle East</b>	<p><b>UAE:</b> Foreign companies cannot own more than 48% of an operation outside the Free Zones.</p> <p><b>Iran:</b> Foreign investment is banned in defense, oil and gas.</p> <p><b>Iraq:</b> Part of the oil fields are under government control and not open for foreign investment.</p> <p><b>Saudi Arabia:</b> Foreign investment projects require a license from the government, and most are joint ventures.</p>
<b>Africa</b>	<p><b>Nigeria:</b> Complete foreign ownership of enterprises is not allowed in oil projects. Investment in mining and gas is subject to additional regulation.</p> <p><b>Algeria:</b> The government mandates that the state energy company, Sonatrach, controls at least 51% of most hydrocarbon projects.</p>
<b>South America</b>	<p><b>Venezuela:</b> All foreign companies have had to convert their contracts into joint ventures with the state's company, Petroleos de Venezuela SA (PDVSA), giving PDVSA at least a 50% participation interest. All production is acquired by PDVSA.</p> <p><b>Bolivia:</b> The 2005 hydrocarbons law, enforced since 2006, nationalized Bolivia's oil and gas industry, increasing exploration risk and reducing returns to foreign investors.</p>
<b>Russia</b>	Foreign investment in the oil and gas sectors is subject to changes in the government's willingness to allow foreign capital to be invested in Russian oil and gas reserves. Foreign ownership of land was prohibited after land sales were liberalized in 2002; foreigners can only lease land for 49 years.
<b>Norway</b>	The government restricts investments in sectors in which it has a monopoly, such as mining and hydropower.

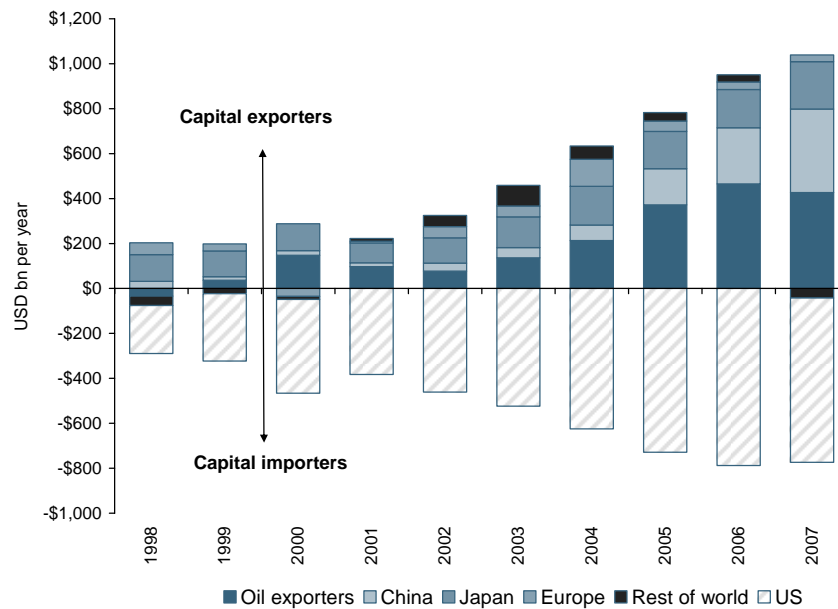
Source: Goldman Sachs Commodities Research.

### Global savings flowed to developed economies

Given these two constraints on investment – protectionist policies in commodity-producing countries, along with the scarcity of sizeable domestic investment opportunities in countries with immature capital markets – capital flowed instead to the open markets of developed economies. As a result, current account deficits of developed nations rose. This, in turn, allowed real interest rates to remain surprisingly low.

**Current account deficits rose in developed economies.** The flow of capital to developed economies is visible in the deepening of these countries' current account deficits since the start of the decade. For example, the US current account has been in deficit for much of the past four decades, but its structural decline began to accelerate in the late 1990s, falling to a remarkable -6% of GDP in 2006 (before rebounding more recently in the face of stronger US exports and declining imports). Elsewhere in the developed economies, Australia, New Zealand, Spain and the United Kingdom also saw a dramatic worsening of their own current account deficits.

**Exhibit 7: Global capital inflows by region: the United States is the world's largest importer of capital**



Source: International Monetary Fund, Goldman Sachs Global Investment Research.

**Real interest rates remained surprisingly low.** Simple supply-and-demand analysis suggests that we would see lower global real interest rates in response to the surge in global savings. This is exactly the pattern that was observed during the early part of the decade. But even when the Federal Reserve began to raise short-term interest rates, US long-term interest rates remained low. The Fed raised short-term rates from 1% to 5.25% between mid-2004 and mid-2006, but the yield on 10-year Treasuries actually fell over the same period, from 4.7% to 4.5%. This unusual and unexpected situation saw the yield curve flatten and ultimately invert, in what was ultimately dubbed “the bond conundrum”.<sup>3</sup> See Exhibit 8.

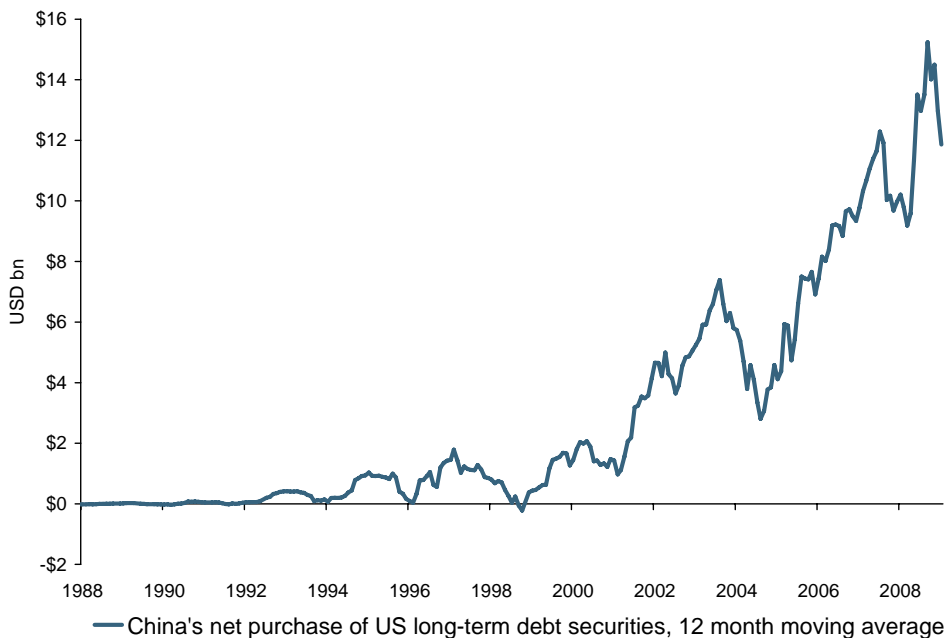
<sup>3</sup> The term “bond conundrum” was first used by then-Federal Reserve Chairman Alan Greenspan to describe the disconnect between long-term rates and the Federal Funds rate. See “Testimony of Chairman Alan Greenspan: Federal Reserve Board’s Semiannual Monetary Policy Report to the Congress.” February 16, 2005. <http://www.federalreserve.gov/Boarddocs/hh/2005/february/testimony.htm>

**Exhibit 8: The “bond conundrum”: 10-year US treasury rates remained low even as the Federal Funds rate rose**



Source: Federal Reserve Board, US Department of the Treasury, Goldman Sachs Global Investment Research.

**Exhibit 9: China has been a major purchaser of US long-term securities**  
12-month moving average



Source: US Department of the Treasury, Goldman Sachs Global Investment Research.

Market observers developed a variety of explanations for the “bond conundrum”. Those who focused on the demand side of capital markets argued that pension funds and insurance companies had increased their demand for long-duration US securities following the bursting of the equity bubble. This was viewed partly as a response to regulation and partly as a consequence of their desire to better match assets to long-term liabilities by reducing the share of equities in their portfolios.

An alternative explanation, first discussed in detail by Ben Bernanke, now Chairman of the Federal Reserve, was that a “global savings glut” was fueling demand for assets in the developed economies. More specifically, some countries – most notably China – channeled their rapid savings build-up into US Treasury and agency securities (see Exhibit 9), and this is what caused long-term rates to remain stubbornly low. Strong demand for corporate bonds and other fixed-income instruments also narrowed the spreads that these securities yielded over Treasuries, compressing the yield premium here. While it is difficult to isolate the demand and supply side effects on long-term rates, we think this supply-side argument more accurately explains the lasting downward pressure on bond yields.

### The challenges of controlling capital gluts

Historically, there has been little consensus on how to best deal with global imbalances. In fact, there has never even been agreement on whether they *should* be addressed at all. This lack of consensus arises in part from pronounced differences in the self-interest of individual countries, which make it very challenging to agree on a multilateral approach. It is also unclear how a single central bank could address these global imbalances in isolation – or if monetary policy is even able to address them.

It is unlikely that these problems will be resolved easily, if at all. We suggest that, at a minimum, regulators pay more attention to monitoring global capital flows and governments pay more attention to the restrictions on real investment that created the savings glut in the first place. While energy policy is clearly outside the scope of this paper, had policies been enacted that allowed for larger streams of real investment in commodities, the size of the global imbalances would have been reduced, and sustainable growth would have been supported. Although dampening the savings glut by raising interest rates will never be particularly attractive politically, creating new real investment opportunities to absorb excess savings is better for long-term growth and better politics.

## Global savings found a home

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The excess liquidity flowing out of Asia and the petrodollar states found an outlet in the housing markets of many developed economies – not just the United States. These savings might have flowed into other assets, so it is helpful to understand why they were so disproportionately channeled into housing. It is also helpful to understand how the dynamics of the housing market itself fuelled the asset bubble.

### Why housing?

Several factors made developed-country housing markets an attractive outlet for excess savings:

- **Size.** First, and importantly, developed-economy housing markets are large enough to absorb a significant amount of capital without causing the formation of an instantaneous asset bubble. The value of outstanding residential mortgages in the



United States alone was more than \$11 trillion at the end of 2008. For comparison, US GDP that year was \$14.3 trillion.

- **Supply growth.** Second, it is easy to expand housing supply beyond underlying demand. Sustainable increases in housing supply should roughly keep pace with population growth, household formation and, to a lesser extent, rising income. These normal dynamics certainly did not constrain growth in the United States during the recent housing boom.<sup>4</sup> In fact, it appears that the only limit imposed on housing supply in the US was the availability of construction machinery, labor and materials. Even land was not in short supply (though it was in other countries that experienced housing bubbles, notably the United Kingdom).
- **Lack of investment discipline.** Third, households often do not impose a high level of investment discipline on themselves. Companies need to earn a rate of return on their investments – and justify them beforehand with plausible assumptions about these returns. This does not guarantee that all investments will succeed as planned, but it does impose an assessment framework and open investment decisions to scrutiny. This is in contrast to households, which do not need to earn a rate of return and which may feel justified in paying for non-cash returns on their housing investments – such as the quality of life to be had in a nicer house or a better neighborhood.

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#### **Exhibit 10: Why didn't companies over-lever during the global savings glut?**

*To convincingly conclude that the global savings glut was the most important fundamental driver of the mortgage-fueled and housing boom requires that we explain why the corporate sector was not similarly vulnerable to over-leveraging. In contrast to the household sector, the corporate sector's financing position had improved notably in many countries since the start of the decade. European firms, particularly in Germany and the United Kingdom, swung from net borrowing in 2000 to net savings. Firms in the United States, which had started the period on much sounder footing, also improved their financing positions.*

*One explanation is for the accumulation of large cash balances on corporate balance sheets -- the opposite of adding leverage -- is that companies, scarred by their experiences with outsized debt burdens after the bursting of the technology bubble, turned more conservative. Having spent the first part of this decade repairing their own balance sheets, companies were hesitant to repeat their previous errors. With corporate profits near record highs, self-financing became the principal source of corporate funding.*

*Secondly, internal monitoring and public scrutiny probably played a role in keeping the corporate debt burden to reasonable levels. As we noted in the main text, companies need to earn a rate of return on their investments -- and justify them beforehand with plausible assumptions about these returns. This is in contrast to households, which do not need to earn a rate of return and which may not mind paying for non-cash returns on their housing investments (such as the quality of life to be had in a nicer house or better neighborhood).*

*A third answer lies with the lenders behind the global savings glut, who sought low-risk fixed-income assets. They viewed mortgage assets as a close substitute for government debt, especially given the implicit US guarantee for Fannie Mae and Freddie Mac debt.*

*Of course, corporate financing was not entirely immune to the global savings glut. Arguably, the LBO boom that peaked in early 2007 was an attempt by private equity sponsors to arbitrage the relative cheapness of credit. Corporate CFOs might have been tempted to take on more leverage themselves, had it not been for the fact that corporate profits were growing so robustly. Share buybacks rose accordingly, but even so, corporate treasuries filled to overflowing.*

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Source: Goldman Sachs Global Investment Research.

<sup>4</sup> See Bank for International Settlements Working Paper Number 259; "The housing meltdown: Why did it happen in the United States?" by Luci Ellis; September 2008.

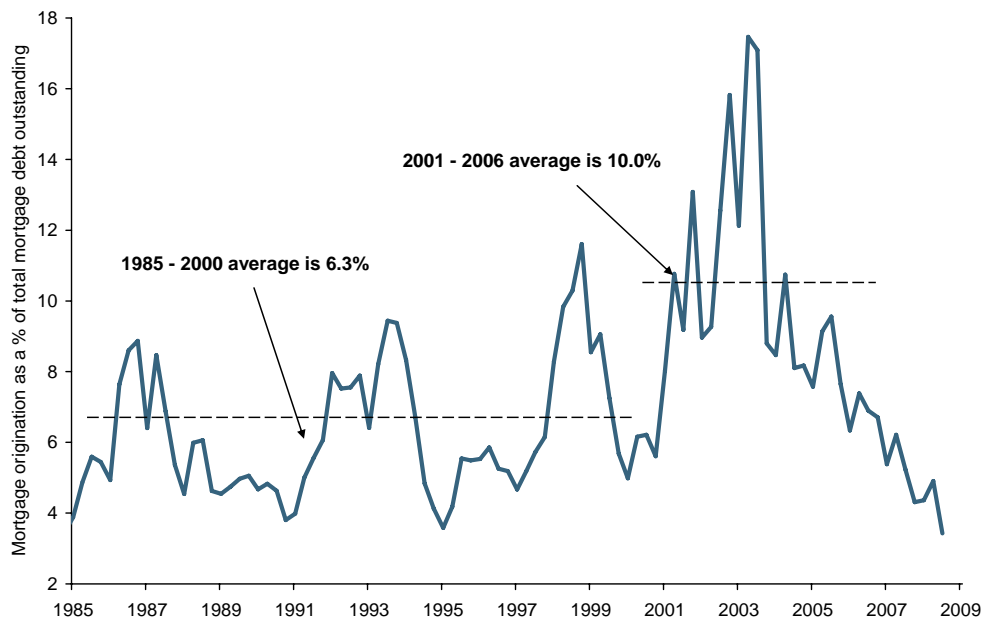
- Housing market regulations.** Mortgage market regulation, at least in the United States, also played an important role. Widespread home ownership has long been a public-policy objective, and the United States has enacted multiple incentives to support home ownership, including the tax-deductibility of mortgage interest; the government sponsored enterprises (GSEs); and reductions in capital gains taxes on home sales. Partially as a result of these incentives, there was a deep and widely shared belief that a nation-wide decline in home prices was impossible – a view that has clearly been proved wrong in recent months.
- Cheap credit.** Low real interest rates (a result of the global savings glut) made mortgage credit “cheap”, and this drove a surge in mortgage originations. While the availability of cheap credit cannot entirely explain why the housing market absorbed so much excess liquidity, as many other forms of credit were also cheap and easily available, it was a significant contributing factor.

### The global housing boom

The impact of this influx of capital on global housing markets is easily seen in the significant growth in mortgage originations, the subsequent erosion of lending standards, and the widespread nature of the increases in home prices.

- Mortgage originations soared.** Mortgage financing expanded dramatically during the first half of the decade. In the United States, for example, mortgage origination as a percentage of total mortgage debt outstanding surged to an average rate of 10.0% from 2001-2006 (see Exhibit 11), up significantly from the average rate of 6.3% from 1985-2000.

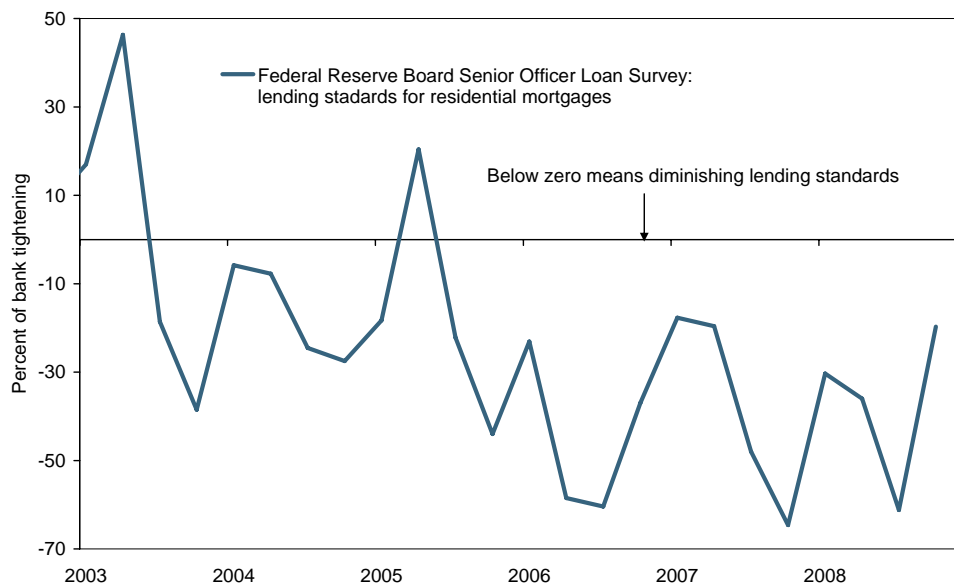
**Exhibit 11: Mortgage origination surged – mortgage origination as a percentage of total mortgage debt outstanding**



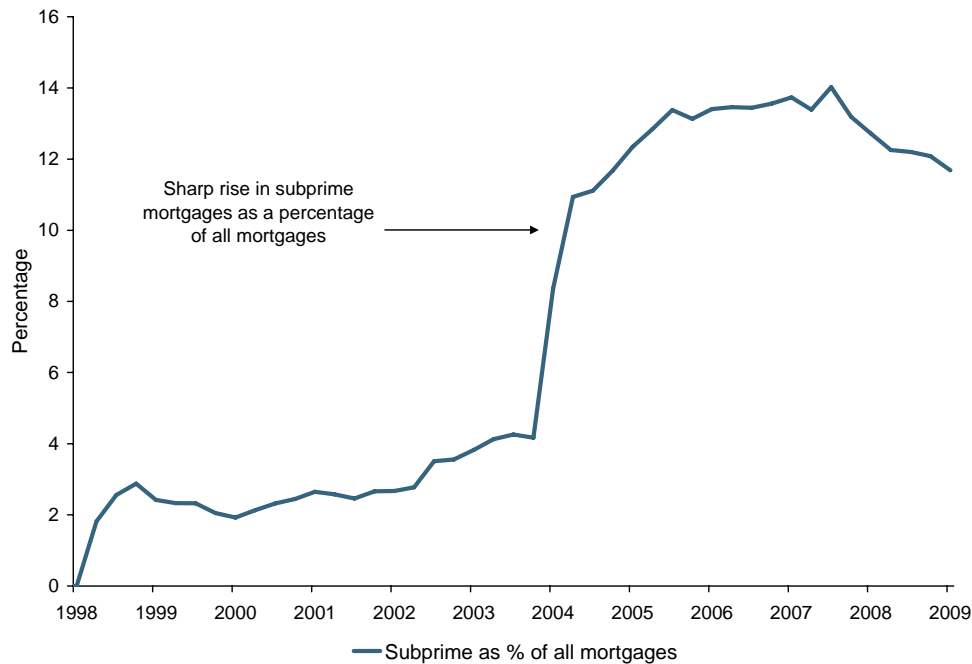
Source: Mortgage Bankers Association, Federal Reserve Board, Goldman Sachs Global Investment Research.

- Lending standards eroded sharply.** In the United States, the erosion of lending standards was visible in the increase in the number of subprime mortgages that were issued. The share of subprime mortgages rose from 2% to 14% of the total between 2000 and 2007. See Exhibits 12 and 13. It was also visible in lax standards for documentation of information like income and assets. Further, loan-to-valuation (LTV) ratios on new mortgages increased significantly, with the issuance of 100% financing (e.g. no down payment) mortgages increasing dramatically. In parts of the United States, even negative down payments were available! The increase in arrears that occurred even prior to the decline in house prices is yet another indicator of how loose lending standards had become during the boom.

**Exhibit 12: The surge in capital inflows eroded lending standards**



Source: Federal Reserve Board, Goldman Sachs Global Investment Research.

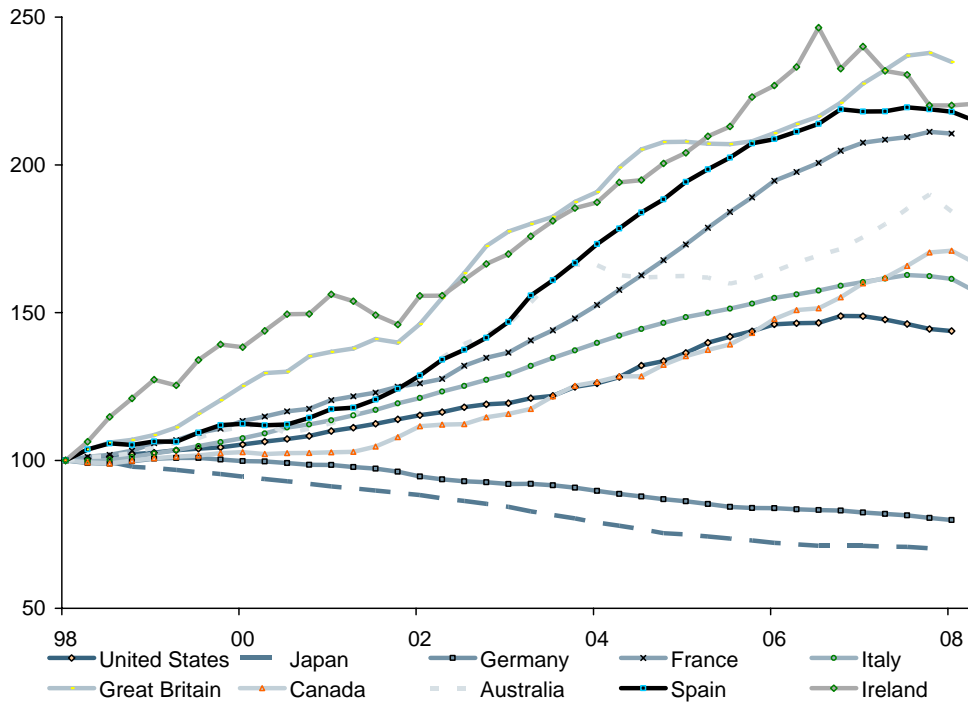
**Exhibit 13: The percentage of subprime mortgages soared to record levels**

Source: Mortgage Bankers Association, Goldman Sachs Global Investment Research.

- This erosion of lending standards only worsened when the “bond conundrum” finally ended.** As the yield curve began to flatten and subsequently to rise, demand for mortgages began to decline. In order to stimulate incremental demand, mortgage originators reduced their lending standards even further. This allowed less-qualified borrowers – individuals who might never have taken out a loan – to take out mortgages, and high risk ones at that.
- The housing bubble was not confined to the United States.** While much of our analysis thus far has focused on the US housing market, the myth that the housing bubble was isolated to the United States should be debunked entirely. The housing bubble was a common phenomenon across developed countries. From 1998 to 2006, real home prices increased rapidly in many countries, including Ireland, the United Kingdom, Australia, France and Spain (see Exhibit 14). In fact, home price appreciation in these countries far outpaced the 49% increase in home prices that occurred in the United States – in Ireland, for example, home price appreciation peaked at nearly 250% from 1998 to 2007.

**Exhibit 14: Appreciation in real home prices in developed economies 2001-2006**

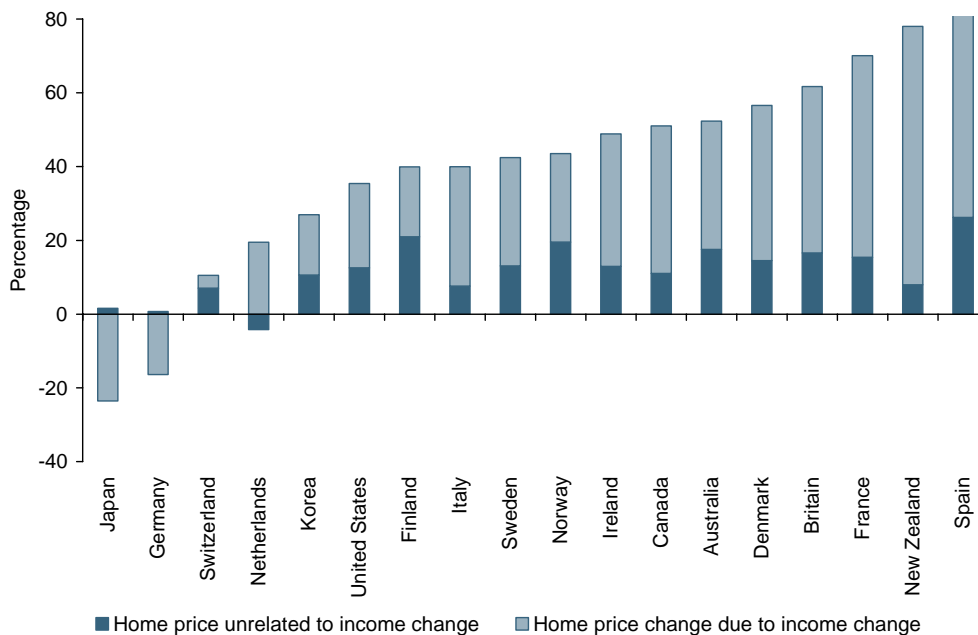
Real home price index; 1998 = 100



Source: OECD, Goldman Sachs Global Investment Research.

**Home price appreciation outpaced domestic income growth.** Growth in national home prices outstripped income growth between 2001 and 2006 in many countries. As we show in Exhibit 15, in many cases, income growth only drove about two-thirds of the increase in home prices. This sort of outsized growth eventually becomes unsustainable, as home prices inevitably reach a price that local buyers simply cannot afford. Importantly, however, foreign purchasers provided a further source of funds, and the countries that experienced the greatest inflow of foreign savings between 2001 and 2006 also experienced the greatest increase in home prices. Spain, France and the United Kingdom are excellent examples of this.

**Exhibit 15: Home price appreciation was driven by more than income growth**



Source: OECD, Goldman Sachs Global Investment Research.

## Securitizing sub-prime, and other mistakes

### The role of securitization

In a different world, these housing bubbles might have remained localized problems – as they had in the past – hurting many individual economies when they burst, but without threatening the entire global financial system. Understanding why they did in fact cause widespread damage is, in our eyes, critical to understanding what regulatory reforms will be most effective in averting another crisis.

Securitization has been one of the real success stories of risk management in the financial industry. It ultimately backfired, however, because the way it was applied to sub-prime and other low-quality assets, and the weakness of the ratings-agency assessments involved, actually lowered the total capital cushion in the financial system.

One of the most celebrated achievements of modern finance was the way in which securitization was able to spread risk across the financial system. Before securitization became widespread, banks had kept loans that they had made on their books and therefore “warehoused” risk. This made individual banks quite vulnerable to sector-specific or regional downturns – but the fact that risk was localized meant that another part of the financial system could always step in to clean up the problems. For example, regional banks filled the lending gap that emerged as a result of the 1990s savings and loan crisis in the United States, and foreign banks bought local banks or specific pools of bad loans in the wake of the 1997-1998 Asian crisis.

**The fundamental problem of securitization – one that was missed by regulators and bankers alike until the crisis actually hit – was that the combination of inadequate ratings oversight and the inclusion of poor-quality underlying assets (such as sub-**

**prime mortgages) allowed for a reduction in the global capital cushion without actually reducing the level of risk.** What had made sense on the level of individual institutions ultimately had extremely dangerous consequences when played out on a global scale – as we are now seeing in vivid detail.

The growing gap between risk and capital can be best illustrated using specific examples:<sup>5</sup>

**Situation 1:** A bank made a sub-prime loan with a face value of \$100 and retained the loan as an asset on its books. Under international banking standards (Basel I),<sup>6</sup> the bank was required to hold a capital cushion consisting of two parts: first, the Tier 1 capital ratio of 8% of the face value,<sup>7</sup> adjusted for the risk weighting of the specific asset, which in this case was 50%; and second, minimum reserves of 1% of the face value. Thus the total “cushion” was  $(\$100 \times 8\% \times 50\%) + (\$100 \times 1\%)$ , or \$5. The details of this transaction are explained and shown graphically in Exhibit 17.

**Situation 2:** A bank made a sub-prime loan with a face value of \$100 and immediately packaged it, along with hundreds of similar sub-prime loans, into a residential-mortgage-backed security (RMBS). The bank received a fee for originating the loans and potentially another for structuring the RMBS, a point that will be important later.

The RMBS was sliced into tranches, each carrying different risk characteristics, generating different yields for investors and thus receiving different ratings from credit ratings agencies. As Exhibit 17 also shows, a typical RMBS securitization moved 75% of the loan into an AAA-rated debt tranche, 10% into an AA tranche, 8% into A, 5% into BBB and 2% into an equity or “first loss” tranche.

Securitization did not change the risk inherent in our single loan. But it did **concentrate** the risk into a single tranche, the “equity tranche,” which in our example was comprised of BB assets. Worth 2% of a typical RMBS, the equity tranche was expected to absorb any losses on the loans in aggregate.

Pooling, and the diversification effect it was thought to have brought, allowed regulators to vary capital requirements across tranches. Because most of the risk was held in the equity tranche, this slice bore the highest capital requirements. Specifically:

- The risk weighting for the AAA through BBB tranches – which made up 98% of the value of the RMBS – was roughly 25% on a weighted-average basis. This was just half the risk weight for the whole loan in Situation 1. Moreover, the bank was not required to hold any minimum reserves on the security (compared to the 1% reserve in Situation 1). Thus the capital charge for 98% of the value of the RMBS was  $(\$100 \times 8\% \times 25\%)$  or \$2.10.
- Regulators assumed that the “equity tranche” would absorb any losses, and so they imposed a much higher capital charge – 100% on this tranche. In our example, it was  $(\$100 \times 2\%)$  or \$2.
- Thus the total charge for our “typical” RMBS was just over \$4, about 20% lower than under Situation 1.

The fact that the capital requirement was concentrated in the equity tranche, and in the reserves against that tranche, created an arbitrage opportunity. The bank could find a willing buyer for the equity tranche in hedge funds, who were searching for levered

<sup>5</sup> The examples that follow are meant to be illustrative, and we stress that the details will differ across banks, products and securitization structures.

<sup>6</sup> Virtually all US banks currently use Basel I capital requirements, although banks elsewhere in the world have begun to shift to Basel II standards. We discuss the Basel standards further in Exhibit 21.

<sup>7</sup> The minimum Tier 1 capital requirement under Basel I is 6%. Banks more typically hold 7%-10% capital; we use 8% as a representative average.

exposure and who ultimately held some 25% of all the BBB- and BB-rated tranches (see Exhibit 16 for an example of the arbitrage opportunity). The key fact here is that hedge funds were not subject to Basel requirements. Their capital levels and their leverage were limited only by the amount of financing they could secure from lenders. Insurance funds, which were also not subject to Basel rules (though they were regulated by other institutions), held a further 25% of these lower-rated tranches. See Exhibit 16.

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**Exhibit 16: Securitization created an arbitrage opportunity between banks and hedge funds**


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**Capital arbitrage between hedge fund investors and banks for RMBS equity tranches - illustrative example**

 Par value of equity tranche (\$) (assumed) 

<b>Leverage (assumed)</b>	<b>Nil</b>	<b>2.0x</b>	<b>4.0x</b>	<b>6.0x</b>	<b>8.0x</b>	<b>10.0x</b>
Equity	100%	33%	20%	14%	11%	9%
Debt	0%	67%	80%	86%	89%	91%
Return on equity tranche (assumed)	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>
Cost of debt (assumed)	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>
Equity (\$)	100.0	33.3	20.0	14.3	11.1	9.1
Debt (\$)	0.0	66.7	80.0	85.7	88.9	90.9
Gross return (\$)	6.0	6.0	6.0	6.0	6.0	6.0
Interest expense (\$)	0.0	3.3	4.0	4.3	4.4	4.5
Net return (\$)	6.0	2.7	2.0	1.7	1.6	1.5
<b>ROE hedge fund investor (%)</b>	<b>6%</b>	<b>8%</b>	<b>10%</b>	<b>12%</b>	<b>14%</b>	<b>16%</b>
<b>ROE bank (%)</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>	<b>6%</b>

Source: Goldman Sachs Global Investment Research.

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**Exhibit 17: Securitization allows significant capital relief under Basel I**

**Basel I**

**Securitization reduces the capital cushion required**

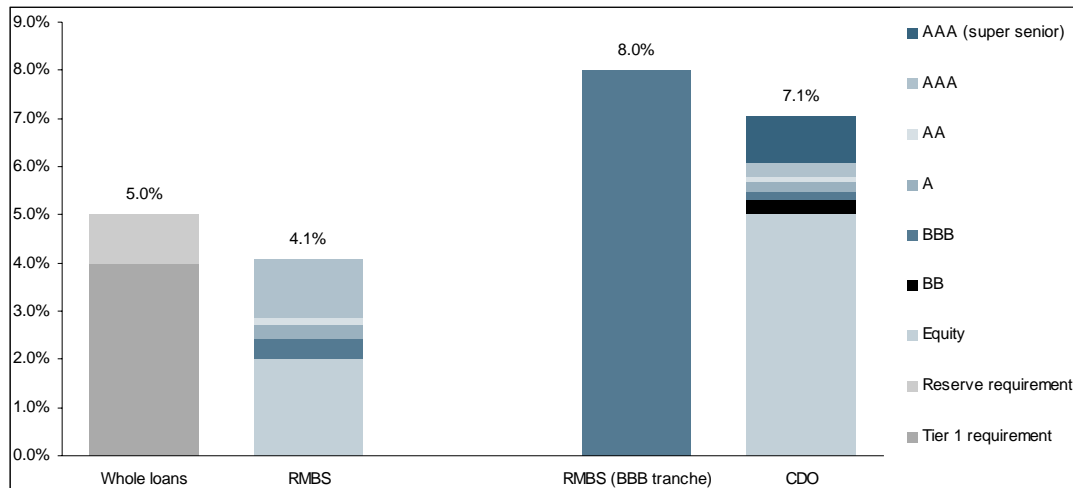
	(A) Reserve requirement	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (B * C)	(E) Total capital held (A + D)
Whole loans					
Pool of mortgage loans	1.00%	50%	8.0%	4.0%	5.0%
<b>Total</b>					<b>5.0%</b>

	(A) Split	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (of loans) (B * C)	(E) Tier 1 capital held (A * D)
RMBS					
AAA	75%	20%	8.0%	1.6%	1.2%
AA	10%	20%	8.0%	1.6%	0.2%
A	8%	50%	8.0%	4.0%	0.3%
BBB	5%	100%	8.0%	8.0%	0.4%
Equity	2%	1250%	8.0%	100.0%	2.0%
<b>Total</b>	<b>100%</b>				<b>4.1%</b>

**Transforming RMBS into CDOs also reduces the capital required**

	(A) Split	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (of loans) (B * C)	(E) Tier 1 capital held (A * D)
RMBS (BBB tranches)					
BBB	100%	100%	8.0%	8.0%	8.0%
<b>Total</b>	<b>100%</b>				<b>8.0%</b>

	(A) Split	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (of loans) (B * C)	(E) Tier 1 capital held (A * D)
CDO					
AAA (super senior)	60%	20%	8.0%	1.6%	1.0%
AAA	20%	20%	8.0%	1.6%	0.3%
AA	6%	20%	8.0%	1.6%	0.1%
A	5%	50%	8.0%	4.0%	0.2%
BBB	2%	100%	8.0%	8.0%	0.2%
BB	2%	200%	8.0%	16.0%	0.3%
Equity	5%	1250%	8.0%	100.0%	5.0%
<b>Total</b>	<b>100%</b>				<b>7.1%</b>



Source: Goldman Sachs Global Investment Research.

**Exhibit 18: Under Basel II, securitization further reduces the capital cushion required**

**Basel II**

**Securitization reduces the capital cushion required**

	(A) Reserve requirement	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (B * C)	(E) Total capital held (A + D)
Whole loans					
Pool of mortgage loans	1.00%	35%	8.0%	2.8%	3.8%
<b>Total</b>					<b>3.8%</b>

	(A) Split	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (of loans) (B * C)	(E) Tier 1 capital held (A * D)
RMBS					
AAA	75%	12%	8.0%	1.0%	0.7%
AA	10%	15%	8.0%	1.2%	0.1%
A	8%	24%	8.0%	1.9%	0.2%
BBB	5%	75%	8.0%	6.0%	0.3%
Equity	2%	1250%	8.0%	100.0%	2.0%
<b>Total</b>	<b>100%</b>				<b>3.3%</b>

**Transforming RMBS into CDOs also reduces the capital required**

	(A) Split	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (of loans) (B * C)	(E) Tier 1 capital held (A * D)
RMBS (BBB tranches)					
BBB	100%	75%	8%	6.0%	6.0%
<b>Total</b>	<b>100%</b>				<b>6.0%</b>

	(A) Split	(B) Risk weighting	(C) Minimum tier 1	(D) Tier 1 allocation (of loans) (B * C)	(E) Tier 1 capital held (A * D)
CDO					
AAA (super senior)	60%	12%	8.0%	1.0%	0.6%
AAA	20%	12%	8.0%	1.0%	0.2%
AA	6%	15%	8.0%	1.2%	0.1%
A	5%	24%	8.0%	1.9%	0.1%
BBB	2%	75%	8.0%	6.0%	0.1%
BB	2%	442%	8.0%	35.3%	0.7%
Equity	5%	1250%	8.0%	100.0%	5.0%
<b>Total</b>	<b>100%</b>				<b>6.8%</b>

Source: Goldman Sachs Global Investment Research.

So while the sale of the equity tranche generated capital relief for the bank (at least under Basel I), it did not necessarily dispose of the risk embedded – and concentrated – in that tranche. The bank might ultimately retain the risk (whether it was aware of the fact or not), by selling to a special-purpose vehicle that ultimately did become the responsibility of the parent bank,<sup>8</sup> or by lending to a hedge fund and relying on the tranche as collateral. Either of these outcomes would have brought the risk back into the regulated financial system – but would have left the capital far beneath the fully-consolidated loan level.

<sup>8</sup> These special-purpose vehicles are the infamous SIVs, special investment vehicles, which allowed banks to move risk off their balance sheets to what were essentially captive buyers. When these SIVs encountered financial trouble beginning in 2007, banks came under pressure to bring these assets back onto their balance sheets, which weakened the parent bank’s capital position. The FASB has proposed new rules designed to eliminate this specific arbitrage, as we discuss later in this paper.

**The full danger to the financial system can be seen in the effective leverage ratios that securitization generated.** As Exhibit 19 shows, the equity tranche carried no implied leverage (i.e., the capital charge was equivalent to the value of the risk). Direct loans (Situation 1) were levered 20 times under Basel I (and 26 times under Basel II). Under Situation 2, the equity tranches were again not levered at all. But the implied leverage in the other tranches was nearly 50 times (and close to 80 times under Basel II!).

**Exhibit 19: Concentrating risk in the equity tranche leads to high implied leverage elsewhere**

Exposure to expected vs tail risk	RMBS Equity tranche	RMBS AAA-BB tranches	Direct loans
Implied leverage (Basel I)	1.0x	49.1x	20.0x
Implied leverage (Basel II)	1.0x	78.8x	26.3x

Source: Goldman Sachs Global Investment Research.

**Exhibit 20: Global financial institution exposure to CDOs**

Holders of CDOs			
	A and higher rated tranches	BBB and lower rated tranches	All tranches
Banks and investment banks	38%	33%	42%
Hedge funds / specialists	23%	46%	25%
Insurance companies	31%	4%	24%
Finance companies	5%	9%	5%
Mutual funds / pension funds	2%	8%	3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Goldman Sachs Global Investment Research.

**Situation 3.** This repeats the securitization story, with a twist. Banks could gain further capital relief by repackaging RMBS themselves into collateralized debt obligations (CDOs). See Exhibit 17. This second round was conceptually similar to the first: it took a pool of assets – in this example, the BBB tranches of several RMBS.<sup>9</sup> Within the CDO, this pool of assets was then sliced into tranches, with each assigned a rating according to its perceived riskiness. (The banks that structured the CDO also received a fee, as in Situation 2.)

The twist in this situation was that one tranche (typically 20%) of the CDO structure (which, remember, consisted of BBB-rated RMBS paper in this example) could be rated AAA, while another tranche (typically about 60% of the total) could be rated “super-senior” – higher than the ratings of many sovereign governments. As Exhibit 17 shows, the capital held against a CDO of BBB-rated tranches was lower than the capital required for the BBB tranches held separately: \$7.10 for the CDO compared to \$8.00 for the BBB tranches on a standalone basis. This reflected the assumption that the diversification inherent in the CDO,

<sup>9</sup> Again, this BBB example is illustrative. Residential real estate CDOs were typically made up of RMBS tranches rated from AA to BB.

along with a relatively large equity tranche (5% in the CDO compared to 2% in the RMBS), protected the senior debt holders and thus enabled ratings agencies to assign AAA ratings to some 80% of the total CDO.

**This pattern of risk holding is particularly problematic when the underlying assets for securitizations are poor-quality loans such as subprime mortgages,** as we have used in our examples. The hedge fund in our example is holding the first loss (the equity tranche) while the banks hold the later losses. With high-quality assets, including prime jumbo mortgage loans, student loans, auto loans and others, this is likely to remain a stable risk formulation.<sup>10</sup> But with poor quality assets, the likelihood of an extremely large shock – in which the risk pool becomes highly correlated and the valuation models fail – rises substantially. If that occurs, the banks are left holding levered risk and inadequate capital. Securitization can only spread risk more efficiently – it cannot make bad lending into good lending.

Since the crisis hit, new rules have been proposed that would force lending banks potentially to consolidate many of their off-balance-sheet entities.<sup>11</sup> There are concerns that the change in accounting treatment would affect capital-adequacy requirements, given the magnitude of the potential transfer. In particular, there are concerns that banks might need to hold the full capital charge for the equity tranche of an RMBS or CDO even if they sold it to an independent investor. These changes to the accounting rules have not yet been implemented, in part because of these concerns.

For now, at least, these proposals have effectively eliminated the appeal of securitization – the potential capital relief – and the market remains essentially closed. We expect that these rules will be weakened over time if regulators want the securitization market to reopen. Alternatively, the banks themselves may find ways of restructuring their off-balance-sheet entities in ways that reduce the new capital burden.

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<sup>10</sup> Higher-quality assets could also be securitized. CDOs consisting of these securities typically had a larger proportion of higher-rated tranches, and thinner equity tranches, reflecting their lower perceived riskiness. These CDOs did not cause nearly as much trouble as did the sub-prime CDOs, which we attribute to the fact that these assets were of higher quality.

<sup>11</sup> In 2008 the Financial Accounting Standards Board (FASB), the US standards-setter, proposed revisions to current standards governing the transfer of assets and the consolidation of special-purpose entities (FAS 140 and FIN 46(R)). The change to FAS 140 would eliminate the concept of a “qualifying special purpose entity,” which had been critical to securitization. This would apply not only to future QSPEs but also to all existing ones, forcing banks to consolidate many formerly off-balance-sheet entities back onto their balance sheets, and thus potentially raising their capital requirements.

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**Exhibit 21: Understanding the Basel Accords**

*The Basel Accords are the closest thing the world has to a global financial regulatory regime. Since the 1970s, the Basel Committee on Banking Supervision has pursued two goals: to provide a framework for strengthening the soundness and stability of the international banking system; and to reduce competitive inequality among international banks. Its first major regulatory framework, the 1988 Basel Accord (commonly known as Basel I), focuses on capital adequacy rules, tying minimum regulatory capital requirements to the credit risks assumed. Basel I was effective in most major markets by the early 1990s.*

*As the limitations of Basel I became increasingly clear, the regulations were judged inadequate for large international banks involved in a complex range of businesses. In response, the Committee (along with broadening the original standards to address market risk) developed Basel II, launched in 2004, which called for a closer link between bank-specific risks and capital requirements. Basel II distinguishes among credit risk, operational risk and market risk and varies capital charges according to perceived bank-specific risk more rigorously than the earlier system did. It relies significantly on banks' own internal risk-management systems, and was designed this way in order to drive firms to improve their risk-management systems, while reflecting the variation in business models and loan portfolios across institutions.*

*Virtually all US banks currently use Basel I, though the United States is expected to move to Basel II in the next few years. Most European countries have already implemented Basel II, and many others have indicated their intention to do so. But the ongoing crisis has underscored the importance of controlling systemic risk in addition to monitoring individual institutions. The reliance on banks' own internal risk models, along with reduced risk-weightings and capital requirements for many assets, have also raised concerns about the rigor and appropriateness of Basel II, casting its future into some doubt.*

*Applying Basel II standards to our examples would further reduce capital levels both within individual banks and across the global financial system. As Exhibit 18 shows, direct mortgage loans would incur a \$3.80 capital charge; securitization into our "typical" RMBS would reduce this further to \$3.30 (compared to \$5.00 and \$4.10 under Basel I). Repackaging RMBS into CDOs would also yield lower capital requirements than under Basel I (\$6.00 on a standalone basis and \$6.80 for a CDO, compared to \$8.00 and \$7.10 under Basel I). Assuming the same facts as before, selling off the equity tranche would allow banks to reduce the capital cushion to just \$1.30 for the RMBS and \$1.80 for the CDO (vs. \$2.10 for both the RMBS and the CDO under Basel I).*

*Interestingly, applying Basel II standards to our example would actually increase the capital requirement as BBB RMBS tranches were further repackaged into CDOs (from \$6.00 to \$6.80). However, although this second round did not allow banks to release capital under Basel II, it was nevertheless an attractive option from a risk management perspective: it allowed institutions to off-load relatively high-risk assets with relatively little capital backing. Specifically, RMBS BBB tranches were implicitly levered 16 times under Basel II, but were typically affected by any losses in excess of 2%.*

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*Source: Goldman Sachs Global Investment Research.*

## **Replace, don't repair**

Rather than continue to patch holes by adding layers of regulatory and organization complexity – which has not worked well – we think it would be more effective to:

- Simplify banks' organizational structure, namely their reporting and capital requirements.
- Ensure neutrality of treatment, under which a security would be subject to one set of capital, reporting and accounting treatments, regardless of what type of financial entity or which arm of a firm held it. Any tranches held outside the regulated system would need to be either (1) held on an unlevered basis, or (2) backed by equivalent capital at the level of the lender to the outside holder.
- Require capital cushions to sum to the same levels, regardless of the form or the holder of the underlying assets.

More broadly, as we discuss in the next section, genuine equivalent treatment is the only realistic way of preventing innovation from finding, and exploiting, new stress points in the financial system.

**It needs to be said that financial innovation is the result of the natural functioning of markets:** finding the most economically efficient way of allocating credit. The “invisible hand” of the market is in this case also the “invisible inventor.” Unless regulators impose true neutrality as to form and holder, simple economics will dictate that innovation search out the disparities and find the weak points. But if the accounting and regulatory treatments are harmonized, innovation will shift to finding true risk reduction and other forms of value creation.

## Financial holding companies and too many sets of rules

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The 1990s saw the spread of highly complex financial holding companies that replaced the classic separation of investment bank, commercial bank and insurance company. This was driven by many causes, both regulatory and economic. **While little has occurred to suggest that this mixing of traditionally distinct activities was in itself problematic, the governance of and regulatory oversight over many of these complex organizations has proven problematic at best.**

Strict rules exist to prevent banks from creating profits simply by shifting an asset from one part of the firm to another. **But arbitrage is rarely so easily defeated.** As an example of the problem, using “mixed accounting” allows banks to enjoy the best of both worlds. Below we outline a classic example (see Exhibit 22 for specific accounting details):

- A bank could generate immediate revenues in its mark-to-market entity (its investment bank) by originating loans for a fee (Situation 2).
- The bank could earn separate underwriting fees by bundling these loans into a security (for example an RMBS) and/or repackaging them into a CDO, as in Situations 2 and 3).
- The bank could then sell all or part of this RMBS or CDO to an off-balance-sheet special-purpose vehicle, which would value and hold the asset at par, often relying on ratings-agency ratings as the basis for the pricing. Under “available-for-sale” accounting, losses would be reflected in the balance sheet, but would not flow through the income statement.

This structure allowed the bank to bypass true mark-to-market discipline while still realizing profits. It deferred losses while at the same time retaining risk. Our banking-sector analysts estimate that commercial and investment banks together held more than 40% of all CDOs, including one-third of the riskiest tranches (see Exhibit 20). Much of this was held in SIVS that were intended to be off-balance-sheet but that ultimately did become liabilities of the parent bank.

This particular arbitrage is now likely to become impossible if the proposed FASB rules discussed above do force banks to bring off-balance-sheet assets back onto their balance sheets. But this is not likely to be the end of the problem. As long as different parts of a financial holding company have different views as to the value of a single asset, and as long as these different units operate under different regulatory or accounting rules for that asset, arbitrage opportunities will exist.

**Risk will naturally flow to where it is least monitored and where capital requirements are lowest. That is the nature of markets.** While it is not possible to identify today what gaps will emerge in the proposed rules, it is highly likely that innovation will eventually find them.

The only sure way to shut down these arbitrage activities is, as with capital adequacy, to replace the rules rather than continue to patch them. Complex firms should be required to treat similar assets using one consistent set of valuation and accounting conventions, and facing one set of regulatory and capital requirements, across the firm, regardless of the name given to the business unit.<sup>12</sup>

An added problem with complex holding companies, in retrospect, is that not all of them had sufficient operational expertise to deal with the complexity of the risk they were holding. The ability to consolidate positions across related businesses, to mark assets correctly, and to assess total risk correctly is essential. **Without holding-company-wide consolidation of risk management and pricing, bad assets can move to areas of the firm that have weaker risk systems and provide more favorable marks.** This has often led to poor decisions and rapid increases in risk levels. Even with the reforms we are talking about, it is essential that the holding companies themselves can monitor risk in line with the rules. Thus the need to have risk systems that are staffed and empowered – by the organization itself – to monitor risk appropriately relative to the business being done.

This principle of equal treatment will also help to prevent other, similar types of arbitrage, and help to strengthen the financial system against future crises. Mortgages are not the only sector in which the mixed structure has allowed arbitrage opportunities. Similar dynamics were on display in the levered-loan market in 2008, involving problem loans tied to banks' involvement in investment banking transactions. The issue here, much discussed over the years, is that of tying "relationship lending" to fee-based investment-banking business. Although it is illegal for banks to demand formal ties, even so, corporations often link their own willingness to assign investment banking business to (both previous and anticipated) access to funding.

From the banking perspective, the problem is again one of "profits first, losses later." Banks can immediately book profits on investment banking fees, but can defer recognizing losses on loans until they fail to perform. This timing mismatch creates tremendous incentives to lend at below-market rates and to lend in excess, in an effort to generate fee income.

"Profits now and losses later" is always a bad recipe for financial control. Over the past two decades, it has allowed financial institutions with inadequate controls to build up large amounts of under-capitalized risk. Regulatory and accounting controls have sought to block these arbitrage opportunities. In many cases, however, they have had the effect of encouraging complexity (in the form of structuring, like our RMBS and CDO examples), without actually preventing banks from finding the most favorable treatment.

Part of the problem is that regulatory and corporate governance systems develop by trial and error. Gaps in these systems are not often obvious based on first principles, and are often only understood over time as problems emerge. This is why we say that, while we do not know today what gaps will emerge from the proposed FASB rules, we are certain that some will.

The only truly effective way to keep these arbitrage opportunities from running out of control is to limit the mix. This could be done in three inter-related ways:

- Forcing financial institutions to collect linked activities into the same arm of the organization, and to treat **all** linked activities according to the same rules—for capital, accounting, recognition of profit and loss, etc.;

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<sup>12</sup> An equally valid approach would be to require banks to consolidate all of their activities on their balance sheets. This point is argued in an excellent review of the crisis and proposals for reforms issued by the Group of 30 in January 2009. See Financial Reform: A Framework for Financial Stability, <http://www.group30.org/pubs/reformreport.pdf>. See also The Road to Reform, issued by CPRMG III in August 2008, <http://www.crpmgroup.org/docs/CRMPG-III.pdf>.

- Requiring banks to have strong and independent valuation and reporting functions that operate at the firm-wide level, in order to monitor these risks in the aggregate; and
- Requiring these risk-control entities to screen internal transfers, to ensure that firms cannot change the value of assets simply by moving them to units with more favorable local marks, regulatory or accounting treatments.

Among other things, this would indicate that:

- All activities associated with investment banking activities, including lending, should be consolidated within the investment banking unit. This would subject them to the full discipline of mark-to-market, as well as the capital, leverage and other regulatory restrictions that apply to "investment banking."
- Lending institutions that engage in both investment banking and lending with a single client should be required to mark large loans to market as soon as they are originated. This would erase the timing arbitrage that currently exists, by forcing banks to recognize losses from below-market loans at the same time that they recognize associated fee income. This in turn should reduce the incentives for poor lending practices.
- Securitized assets should have to remain in the investment bank unless sold outside the holding company entirely.

Whatever the specific form of future regulations, the intent should be to force companies to treat transactions consistently, regardless of how they are handled, and to impose a consistent valuation and timing of recognition of profits, losses and risks, regardless of where the assets are held or how they are structured.



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**Exhibit 22: Accounting for securitizing RMBS and structuring CDOs**

**Situation 1:** *The entity (which we will refer to as a bank) accounts for the loan as "held for investment." This entails carrying the loan on the bank's balance sheet at amortized cost. Any net origination fee associated with the issuance of the loan is deferred and recognized over the life of the loan as an adjustment to the yield. The bank will reserve for loan losses as appropriate, and may impair the loan in accordance with applicable accounting standards (FAS 5/FAS 114) when it is likely that amounts due will not be collected according to the terms of the agreement. Under this scenario, revenue from interest income and amortization of any origination fee are recognized over the life of the loan. Loan losses would be recognized if and when the loan fails to perform.*

**Situation 2:** *The accounting associated with this situation would look very different from Situation 1. Consider that the bank transfers the loans into a qualifying special purpose entity (QSPE) that it sponsored, allowing it to derecognize the loans from its balance sheet and avoid consolidation of the QSPE.<sup>(1)</sup>*

- *First, the origination fee, which was deferred in situation one, would be recognized at the time the loan is sold.*
- *Second, the entity would record an underwriting fee for its role in packaging the loan with similar instruments to create the new security. This fee is recognized when all significant items relating to the underwriting cycle have been completed.*
- *Third, the entity may be able to record a gain on the sale of the loan to the QSPE.*

*Revenue recognition in Situation 2 is front-end loaded, as all amounts are recognized when the loan is packaged into an RMBS shortly after its origination. As part of the securitization, the bank will likely have a residual interest that is likely classified as "available for sale." This allows the bank to carry the security at fair value, but with gains and losses on such securities not running through the income statement. If the loans underlying the RMBS fail to perform, the bank may have to record an other-than-temporary impairment loss. Such decisions involve a substantial amount of professional judgment, which may allow for a further delay in the bank's recognition of losses.<sup>(2)</sup>*

**Situation 3.** *This builds on Situation 2, in which the bank has the ability to record revenue associated with the issuance and securitization of the loan immediately, but also to delay recognition of any losses associated with non-performance of the underlying loan over a much longer period of time. Situation 3 builds on this by adding another round of repackaging to the process. This allows the bank to record yet another fee for the transaction, again recognized immediately, while holding a residual interest likely in "available for sale" classification.*

<sup>(1)</sup>*The Financial Accounting Standards Board (FASB) has a project underway that would amend FAS 140 and FIN 46(R), the current standards governing the transfer of assets and the consolidation of special purpose entities, respectively.*

<sup>(2)</sup>*The Financial Accounting Standards Board (FASB) has a project underway that would change the accounting for other-than-temporary impairments.*

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Source: Goldman Sachs Global Investment Research.

## Conclusions

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### As we rebuild the financial system, four things are clear:

1. **Capital gluts must be managed, and asset bubbles cannot simply be allowed to run their course.** Regulators have focused on managing risk at the level of institutions, and have sought to strengthen financial systems against small and local shocks. Major regulators have largely been successful in this – but in the process, they have unintentionally increased the system’s vulnerability to global and macro shocks. In the future, regulators should give stronger focus to macro-prudential supervision. This will entail greater international information-sharing and cooperation.
2. **Securitized loans should, in aggregate, face the same capital requirements as the underlying loans would if they were held on bank balance sheets.** Securitization would then be driven by a desire to reduce hazardous concentrations of risk, rather than a desire for capital relief. Regulators should also monitor the quality of the assets being securitized and the ratings assigned by rating agencies.
3. **Lending institutions should be required to mark large loans to market at origination, forcing symmetry across the recognition of profit and risk.** Banks should not be allowed to defer losses via their commercial banking lines while recognizing profits immediately in their investment banking units.
4. **Lending linked to investment banking activities should be consolidated into the investment banking arm and subjected to full mark-to-market discipline and all regulatory and accounting rules that apply to trading assets.** This would eliminate the ability to exploit differences in regulation or accounting. Further, financial institutions involved in investment banking should be required to have an independent, appropriately staffed and fully-resourced control group to mark and manage the resulting risks.

Accordingly:

- All activities associated with investment banking activities, including lending, should be consolidated within the investment banking unit. This would subject them to the full discipline of mark-to-market, as well as the capital, leverage and other regulatory restrictions that apply to “investment banking.”
- Lending institutions that engage in both investment banking and lending with a single client should be required to mark large loans to market as soon as they are originated. This would erase the timing arbitrage that currently exists, by forcing banks to recognize the losses from below-market loans at the same time that they recognize the associated fee income. This in turn should reduce the incentives for poor lending practices.
- Securitized assets should have to remain in the investment bank unless sold outside the holding company entirely.

Whatever the specific form of future regulations, the intent should be to force companies to treat transactions consistently, regardless of how they are handled, and to impose a consistent valuation and timing of recognition of profits, losses and risks, regardless of where the assets are held or how they are structured.

Despite their best efforts in the months ahead, it is unlikely that governments, regulators and market participants can build a regulatory system so flawless that it can perfectly manage another influx of capital like the one we have just seen. Accordingly, the best solution will include finding ways to offset capital imbalances that may occur in the future, while simultaneously developing a stronger regulatory system that limits the spread of the damage.

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