

McKinsey Global Institute



January 2010

# Debt and deleveraging: The global credit bubble and its economic consequences



## **McKinsey Global Institute**

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## Executive summary

The recent bursting of the great global credit bubble not only led to the first worldwide recession since the 1930s, but also left an enormous burden of debt that now weighs on the prospects for recovery. Today, government and business leaders are facing the twin questions of how to prevent similar crises in the future and how to guide their economies through the looming and lengthy process of debt reduction, or deleveraging.

To help address these questions, the McKinsey Global Institute launched a research effort to understand the growth of debt and leverage before the crisis in different countries, the economic consequences of deleveraging, and the practical implications for policy makers, financial regulators, and business executives. In the course of the research, we created an extensive fact base on debt and leverage<sup>1</sup> in each sector of ten mature economies and four emerging economies.<sup>2</sup> In addition, we analyzed 45 historic episodes of deleveraging, in which an economy significantly reduced its total debt-to-GDP ratio, that have occurred since 1930.

This analysis adds new details to the picture of how leverage grew around the world before the crisis, and how the process of reducing it could unfold. We find that:

- Leverage levels are still very high in some sectors of several countries—and this is a global problem, not just a US one.
- To assess the sustainability of leverage, one must take a granular view using multiple sector-specific metrics. Our analysis has identified ten sectors within five economies that have a high likelihood of deleveraging.
- Empirically, a long period of deleveraging nearly always follows a major financial crisis.
- Historic deleveraging episodes have been painful, on average lasting six to seven years and reducing the ratio of debt to GDP by 25 percent. GDP typically contracts during the first several years and then recovers.
- If history is a guide, we would expect many years of debt reduction in specific sectors of some of the world's largest economies, and this process will exert a significant drag on GDP growth.

Our findings hold several important implications for policy makers, regulators, and business leaders as they seek to navigate these unprecedented economic conditions and ensure greater financial stability and prosperity for the future.

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1 Throughout this paper, we use “debt” to refer to the outstanding amount of debt, comparing across countries by measuring it relative to GDP. “Leverage” refers to debt relative to assets or income and is measured differently, and often in multiple ways, for each sector. See *Appendix A: Technical notes* for more detail.

2 The mature economies we examined are Canada, France, Germany, Italy, Japan, South Korea, Spain, Switzerland, the United Kingdom, and the United States. The emerging economies we examined are Brazil, China, India, and Russia.

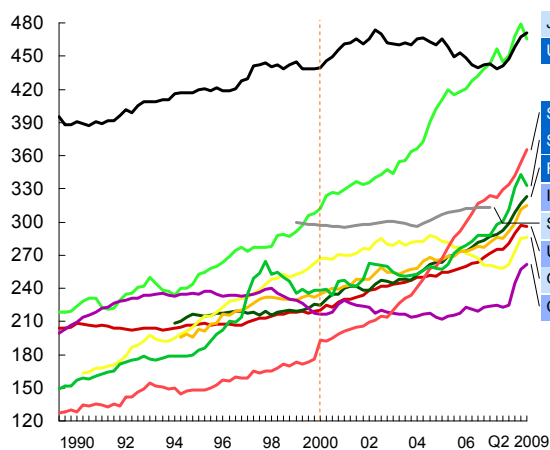
## THE GROWTH OF DEBT AND LEVERAGE BEFORE THE CRISIS WAS A GLOBAL EVENT

Most analyses of the crisis have focused on the roles played by US mortgage lending and financial sector leverage. But our analysis shows that this view misses a large part of the picture. Enabled by the globalization of banking and a period of unusually low interest rates and risk spreads, debt grew rapidly after 2000 in most mature economies. By 2008, several countries—including the United Kingdom, Spain, South Korea, and France—had higher levels of debt as a percentage of GDP than the United States (Exhibit 1). But this crude metric is insufficient for judging whether current levels of leverage are sustainable.

Exhibit 1

### Debt grew in most mature economies

Domestic private and public sector debt<sup>1</sup> by country  
% of GDP



■ Rapid growth  
■ Moderate growth  
■ Slow/negative growth

CAGR<sup>2</sup>, %      Change, p.p.  
1990-00    2000-08    2000-08

|                 |     |     |     |
|-----------------|-----|-----|-----|
| Japan           | 1.2 | 0.5 | 19  |
| UK <sup>3</sup> | 3.3 | 5.2 | 157 |
| Spain           | 4.1 | 7.4 | 150 |
| S. Korea        | 4.3 | 4.2 | 93  |
| France          | 1.2 | 3.9 | 83  |
| Italy           | 2.9 | 3.1 | 64  |
| Switzerland     | N/A | 0.8 | 17  |
| US              | 0.6 | 3.5 | 70  |
| Germany         | 5.6 | 0.3 | 7   |
| Canada          | 0.3 | 1.5 | 28  |

1 "Debt" is defined as all credit market borrowing including loans and fixed-income securities.

2 Compound annual growth rate. Where data are unavailable, the longest possible period is used.

3 Even after removing foreign lending by UK banks, UK debt/GDP remains higher than every country except Japan.

SOURCE: Central banks; Haver Analytics; McKinsey Global Institute

Taking a more granular view of leverage within sectors of the economy, we find that households increased their borrowing substantially, particularly through home mortgages. Rising housing prices meant that the ratio of household debt to assets appeared stable in the years prior to the crisis. But household debt compared with disposable income increased significantly, which should have raised a red flag long before the crisis hit. The nonfinancial business sector in most countries entered the crisis with lower leverage, measured as the ratio of debt over book equity, than at the start of the decade. The exceptions were the commercial real estate sector and companies bought through leveraged buyouts. Government debt prior to the crisis was flat or even declining in most countries—a fortunate state, given the current amount of crisis-related public spending.

Within the financial sector, the growth of leverage varied greatly across different institutions and countries. The evidence shows that bank leverage in aggregate increased modestly relative to historic levels in most countries.<sup>3</sup> Only specific pockets of the financial sector—such as US broker dealers and certain European banks—experienced a substantial increase in leverage prior to the crisis. Just as importantly, many banks also had a marked deterioration in the quality of their capital,

3 This is true for many different measures of leverage. In this report, we use both gross leverage, or total assets to equity, as well as tangible assets to tangible common equity.

as they substituted hybrid forms of capital for common equity. The crisis has shown, however, that common equity was the only form of capital that absorbed losses. Given the broad array of incentives for banks to substitute debt for equity, our analysis supports actions already taken by regulators to improve the quality of capital by raising the amount of common equity that banks must hold.<sup>4</sup>

### DELEVERAGING HAS ONLY JUST BEGUN

While the crisis abruptly halted the growth of credit in many economies, the process of deleveraging is just starting. As of the second quarter of 2009, we find that total debt relative to GDP had fallen, and only slightly, in just a handful of countries, including the United States, the United Kingdom, and South Korea. One reason for the small overall deleveraging to date has been the increase in government debt, which has offset declines in household sector debt. The current projections for rising government debt in some countries, such as the United Kingdom and the United States, may preclude any significant deleveraging of the total economy over the next few years.

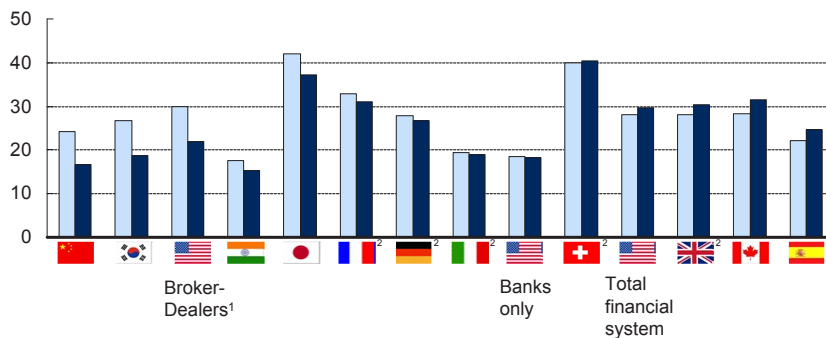
Financial sector leverage, in contrast, has already fallen to the average historic levels prior to the crisis (Exhibit 2). We find that in most countries, by the second quarter of 2009, the banking system had deleveraged to the point at which capital levels were at or above the average levels of the 15 years preceding the crisis. Whether more capital is needed in addition to what banks have now accumulated remains unknown. And given the possibility of economy-wide deleveraging going forward, any such measures to boost capital requirements should be phased in very cautiously over time to minimize the reduction of credit provision.

Exhibit 2

#### Financial sector leverage has fallen below the historic average in most countries

■ Historic average (1993-2007)  
■ Q2 2009

Cross-country comparisons of financial sector leverage, Tangible assets/tangible common equity



|                                  |     |     |     |     |     |    |    |    |    |   |   |   |    |    |
|----------------------------------|-----|-----|-----|-----|-----|----|----|----|----|---|---|---|----|----|
| <b>2009 vs. historic average</b> | -31 | -30 | -27 | -13 | -11 | -6 | -4 | -2 | -1 | 1 | 5 | 8 | 11 | 11 |
| %                                |     |     |     |     |     |    |    |    |    |   |   |   |    |    |

1 Includes Morgan Stanley, Goldman Sachs, and Merrill Lynch as of Q4 2008.  
2 Leverage based on an estimate of GAAP assets (converted from IFRS).

SOURCE: SNL Financial; Compustat; Bloomberg; national financial regulators; McKinsey Global Institute

4 Regulators have proposed increasing the ratio of Core Tier 1 capital to risk-weighted assets. Core Tier 1 capital includes common stock, reserves created out of retained earnings or surpluses related to share issuance, and minority interest in consolidated subsidiaries.

## GOING FORWARD, SPECIFIC SECTORS OF FIVE ECONOMIES HAVE THE HIGHEST LIKELIHOOD OF DELEVERAGING

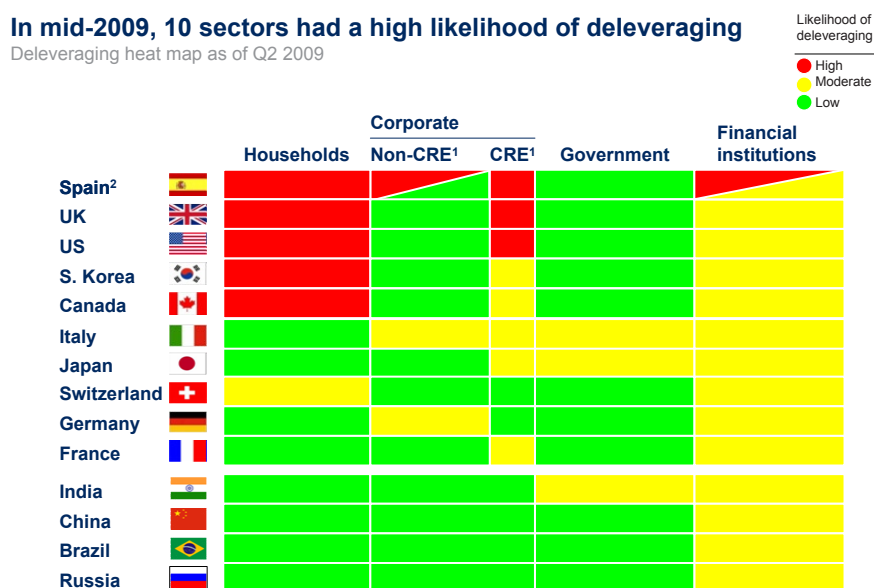
Our analysis finds that aggregate measures of leverage in an economy, such as the ratio of total debt to GDP, are in and of themselves not a reliable guide to the sustainability of debt or the likely speed or extent of deleveraging. Our historic case studies include economies that have gone through painful and significant deleveraging with relatively low debt-to-GDP levels, as well as countries that have maintained very high levels for many years. To assess the likelihood of deleveraging going forward, one needs to take a very granular approach and look at individual sectors. Even within sectors, one must use multiple lenses to assess the sustainability of debt, including the rate of growth of leverage, debt servicing capacity, and the borrowers' vulnerability to income interruptions or sharp increases in interest rates.

We have developed a set of such sector-specific metrics that are comparable across countries and constructed a preliminary "debt and deleveraging heat map" (Exhibit 3). It color codes each sector according to its likelihood of deleveraging: red is high; yellow is moderate; green is low. The map shows that ten sectors in five economies have the highest likelihood of deleveraging. These are the household sectors in five mature economies (the United Kingdom, the United States, Spain, and to a lesser extent Canada and South Korea), the commercial real estate sectors in three of these economies (the United Kingdom, the United States, and Spain), and the corporate sector and parts of the financial sector in Spain.<sup>5</sup> But the publicly available data are imperfect, inconsistent, and not sufficiently granular for robust policy making. A natural role for the institutions charged with maintaining national and international financial stability (such as the International Monetary Fund or Financial Stability Board) would be to develop and maintain this type of monitoring system and take it to the next level of detail.

### Exhibit 3

#### In mid-2009, 10 sectors had a high likelihood of deleveraging

Deleveraging heat map as of Q2 2009



1 CRE = Commercial real estate subsector; includes public and private real estate investment vehicles.

2 A split box indicates some portion of a sector, not necessarily 50 percent.

SOURCE: McKinsey Global Institute

5 Spain's banks had not deleveraged as much as those in the United Kingdom, the United States, or Switzerland by the second quarter of 2009 because a higher proportion of loans are held on balance sheet and therefore not marked to market. There is a distinct difference, however, between Spain's largest banks and the smaller, regional ones: the latter have a high likelihood of deleveraging.

## FINANCIAL CRISES ARE TYPICALLY FOLLOWED BY DELEVERAGING EPISODES THAT SLOW GDP GROWTH

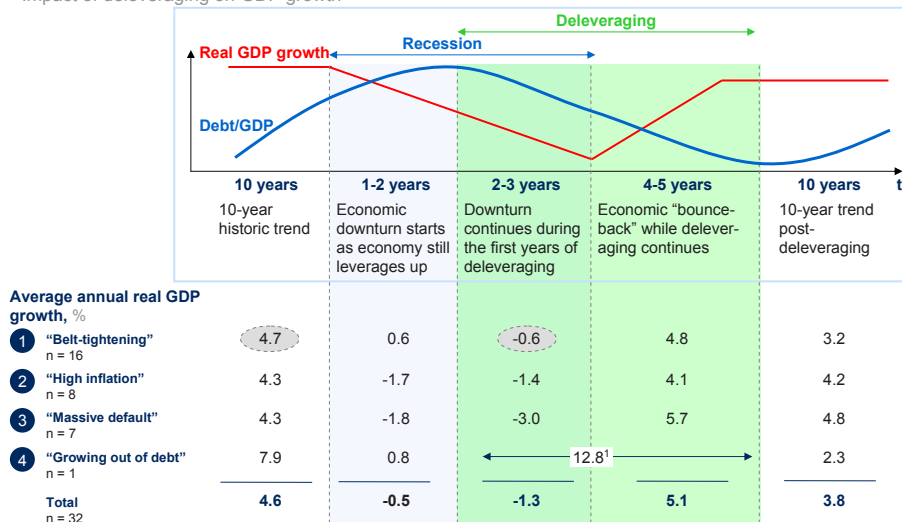
While we cannot say for certain that deleveraging will occur today, we do know empirically that deleveraging has followed nearly every major financial crisis in the past half-century. We find 45 episodes of deleveraging since the Great Depression in which the ratio of total debt relative to GDP declined, and 32 of them followed a financial crisis. These include some instances in which deleveraging occurred only in the public sector; others in which the private sector deleveraged; and some in which both the public and private sectors deleveraged simultaneously (See Appendix B: *Historical episodes of deleveraging*). The historic episodes of deleveraging fit into one of four archetypes: 1) austerity (or “belt-tightening”), in which credit growth lags behind GDP growth for many years; 2) massive defaults; 3) high inflation; or 4) growing out of debt through very rapid real GDP growth caused by a war effort, a “peace dividend” following war, or an oil boom.

The “belt-tightening” archetype was by far the most common of the four, accounting for roughly half of the deleveraging episodes. If today’s economies were to follow this path, they would experience six to seven years of deleveraging, in which the debt-to-GDP ratio declines by around 25 percent. Deleveraging would begin two years after the start of the crisis, and GDP would contract for the first two to three years of deleveraging, and then start growing again (Exhibit 4).

Exhibit 4

### Real GDP growth is significantly slower in the first 2-3 years of deleveraging

Impact of deleveraging on GDP growth



1 Deleveraging driven by off-trend growth is not linked to a recession.

SOURCE: International Monetary Fund; McKinsey Global Institute analysis

Several features of the crisis today, including its global nature and the large projected increases in government debt, could delay the start of deleveraging and result in a longer period of debt reduction than in the past. In past episodes, a significant increase in net exports often helped support GDP growth during deleveraging. But it is unlikely today that the most highly leveraged major economies could all simultaneously increase their net exports. Moreover, current projections of government debt in some countries, such as the United Kingdom, the United States, and Spain, may offset reductions in debt by households and commercial real estate sectors. We therefore see a risk that the mature economies may remain highly leveraged for a prolonged period, which would create a fragile and potentially

unstable economic outlook over the next five to ten years. They may then go through many years in which, all else being equal, GDP growth is slower than it would have been otherwise as debt is paid down.

### **POLICY MAKERS CAN TAKE SEVERAL STEPS TOWARD PREVENTING FUTURE CREDIT BUBBLES**

Our analysis has several implications for policy makers and regulators seeking to ease the deleveraging process and enhance future financial market stability.

First, history shows that policy makers can enable healthy deleveraging by supporting GDP growth through multiple channels. Many historic examples, from the United States in the 1930s to Japan in 1997, show the danger of withdrawing support of the economy too soon. However, faced with large increases in public debt, many governments face an acutely difficult decision on how long to provide support and when to curtail public spending.

Additionally, our analysis shows that the right tools could have identified the unsustainable buildup of leverage in pockets of several economies in the years leading up to the crisis. Policy makers should work toward developing a robust system for tracking leverage at a granular level across countries and over time. Ideally, an international body should be tasked with collecting the data from individual countries. These data can inform macroprudential policies, as well as provide inputs into the risk models of banks and nonfinancial corporations. A revised Basel II framework could require banks to adjust their internal risk weights to reflect levels of leverage in the relevant sector of the real economy. Central banks, too, could use this information: although it may be difficult to identify asset bubbles based on price movements, the growth and nature of leverage may serve as a good proxy and could inform monetary policy.

Finally, policy makers should revisit the numerous incentives for borrowing, especially in real estate markets. This includes tax breaks for mortgages, as the United States provides, and other policies as well, because we observed high levels of household debt in Canada and the United Kingdom, which lack such tax incentives. Many governments provide subsidies and other programs to encourage home ownership. And multiple policies provide tax advantages and other incentives that induce companies to issue debt rather than equity. Certainly, ample credit is needed for the growth of modern, developed economies. But excessive borrowing, especially combined with loose lending standards, can cause serious harm to individual households, companies, and the broader financial system. Therefore, as part of longer term reform of the global financial system, it would be valuable to reassess the incentives that may contribute to excessively high leverage.

Business executives also will face challenges during the deleveraging process. An environment of tighter and more costly credit will alter the viability of some business models and the attractiveness of certain types of investments. With the household sectors likely to deleverage in several countries, consumption will probably grow more slowly than before the crisis, causing spending patterns to shift. Business leaders will need flexibility to respond to such changes

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At this writing, the deleveraging process has barely begun. Each week brings news of another country straining under the burden of too much debt or impending



bank losses from over-indebted companies. The bursting of the great global credit bubble is not over yet. Just as worrisome is the fact that deleveraging is likely to be a significant component of the postcrisis recovery, which would dampen growth. Nevertheless, by learning lessons from historic experiences of deleveraging, today's policy makers may be better able to steer a course through these challenging waters.

