Investment Insights
Chief Investment Office

AUGUST 2018

The Long Road Back: Portraits of the Financial Crisis 10 Years Later

Authored by:

Joseph P. Quinlan,
Head of CIO Market Strategy

Ehiwario Efeyini,
Senior Vice President and
Senior Market Strategy Analyst

September 2008 will hold a special place in financial infamy. It was the month the global financial plumbing blew up, laying waste to markets and economies all over the world. To this day, the scars are still fresh—just ask people in Greece, which only this month emerged from its post-crisis bailout program. To mark the 10-year anniversary of this cataclysmic event, and to remind readers of the road traveled over the past decade, we have compiled 20 charts that illuminate: 1) the seeds of the crisis, 2) the economic aftershocks, 3) the policy responses, 4) the long road back and 5) the top-performing asset classes in the subsequent decade.

The charts, of course, don't capture everything about the crisis. That task is for the historians. But here we provide a snapshot of history. The past is not always a prologue, but to understand where the markets are headed in the future, it helps to be grounded in the past. So we begin:

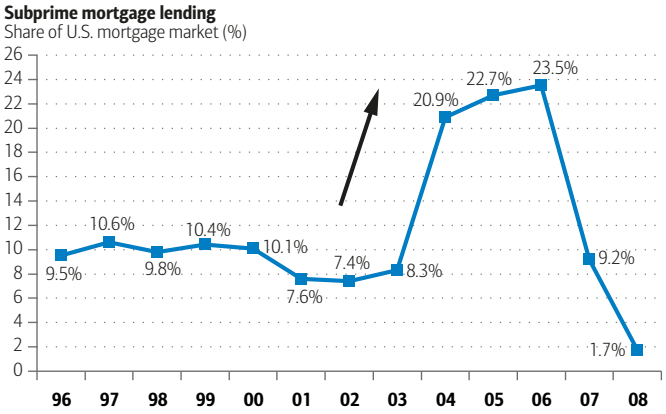
I. THE SEEDS OF FINANCIAL ARMAGEDDON

Summary: There were plenty of signs of stress before September 2008. U.S. home prices for instance peaked as early as 2006, and as the air came out of the housing boom, subprime and unconventional loans became securitized ticking time bombs. While securitization was supposed to spread the risk and prevent a systemic meltdown, history proved otherwise.

1. The boom in subprime lending

Following the bursting of the dot-com bubble and the aftershocks of 9/11, the Federal Reserve (Fed) dropped interest rates to 1%, igniting a binge of consumer borrowing and spending, as well as a new surge of financial engineering from both banks and non-banks. Mortgage financing morphed into more toxic forms of "unconventional lending" and new financial products. Most notably, this included collateralized debt obligations—pooled loans repackaged into opaque debt instruments and sold to investors around the world. Lending standards were loosened, credit ratings were eased, and between 2002 and 2006 the so-called subprime share of the U.S. mortgage market soared from 7.4% to nearly 25%, pumping even more air into U.S. housing. But as the Fed embarked on a two-year campaign of interest rate hikes from June 2004 to June 2006, adjustable-rate mortgages became more expensive to carry and home prices began to roll over, triggering a massive wave of defaults. The crisis was on.

Exhibit 1: The boom and bust in subprime lending



Source: "Crashed: How a Decade of Financial Crises Changed the World" (Adam Tooze, 2018).
Past performance is no guarantee of future results.

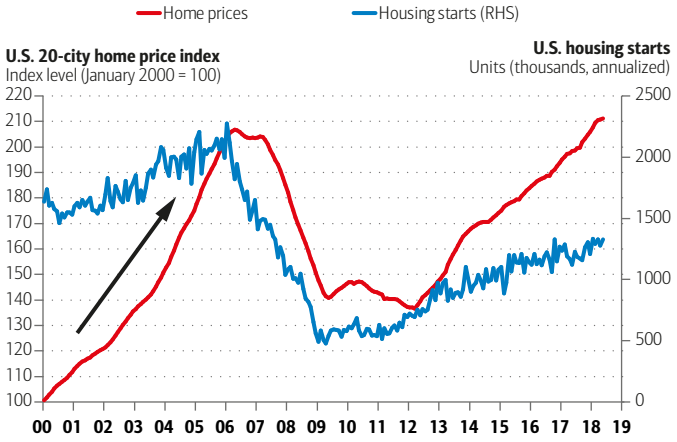
2. The boom and bust in U.S. real estate

The availability of subprime lending helped to lift U.S. home ownership to record highs in the early part of this century. The home ownership rate in the U.S. has averaged roughly

Note: The data stated in each section is supported by the charts and sources at the end of the section.

65% since 1965, but climbed to nearly 70% in the run-up to the housing crisis. Adding to the momentum: Over the 1990s, home ownership in lower-income and underserved communities became a priority of Congress, boosting lending and homeownership to an even greater level in this cohort of Americans. Adding more fuel to the fire was the surge in U.S. home prices over 2000-2006, which created even more demand for credit and more home buying, given the underlying belief that house prices only moved in one direction —up. Housing was a sure bet, until it wasn't.

Exhibit 2: The boom and bust in housing

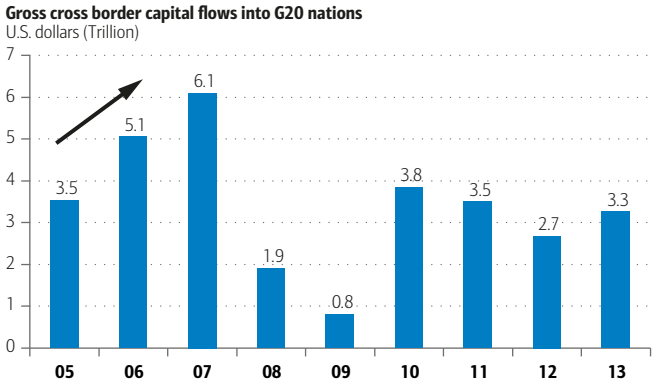


Source: S&P/Case-Shiller, Census Bureau, Bloomberg. Data as of May 2018.
Past performance is no guarantee of future results.

3. The crisis goes global

America's credit boom at the start of this century was not confined to the United States. It was global—which meant that when the "music stopped" (or credit lines froze/seized) in the U.S., it stopped in Europe, Asia and around the world as well. Until 2008, capital flowed freely across borders, notably to Europe, whose banks assumed massive dollar-liabilities in the run up to the crisis. Liabilities priced in U.S. dollars had to be paid back in dollars, so when wholesale global lending froze in September 2008, many foreign banks (which had also gobbled up securitized U.S. financial products) were cut off from dollar funding. Panic spread globally. According to the Bank for International Settlements, global gross capital flows plunged by 90% between 2007 and 2008. The contagion persisted until the Fed, by providing cross-border liquidity swap lines, became the lender of last resort not only for U.S. banks but for the world.

Exhibit 3: Capital for all: the boom in global capital flows

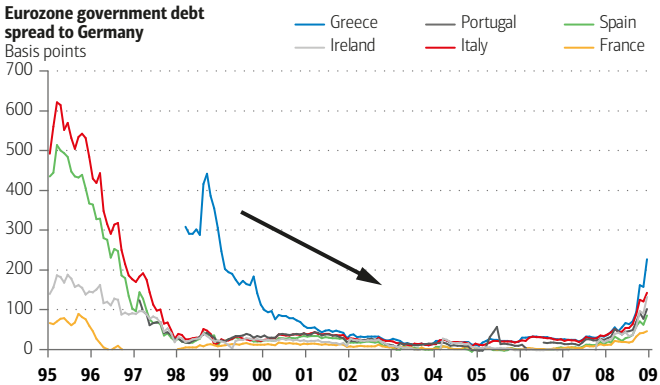


Source: "The Great Mismatch: Addressing Barriers to Global Capital Flows" (Wharton School of the University of Pennsylvania, June 2015). **Past performance is no guarantee of future results.**

4. Mispricing: convergence in Eurozone spreads

While the global financial crisis of 2008 was considered "Made in America," Europe had a hand in making its aftershocks even more damaging. With the introduction of the euro currency union and a single European central bank, risk became mispriced as investors fatally took the view that a single currency implied a single interest rate for all Eurozone members. Ergo, Greece, which had to offer higher rates to investors to attract lending throughout the 1990s, was borrowing on virtually the same terms as Germany by the mid-2000s. The credit party was on. Eurozone spreads converged, triggering a cross-border borrowing boom among the private and public sectors. Property prices in Spain and Ireland surged, as did demand and spending in Greece, Italy and other parts of Europe. However, when investors ultimately woke up to the fact that Eurozone risks were not homogenous but heterogeneous—that lending to Greece implied higher risks than lending to Germany, spreads widened, eventually triggering an economic slowdown and a double-dip recession across Europe.

Exhibit 4: Easy money: convergence in Eurozone government debt spreads



Source: Bloomberg. Data as of July 2018.
Past performance is no guarantee of future results.

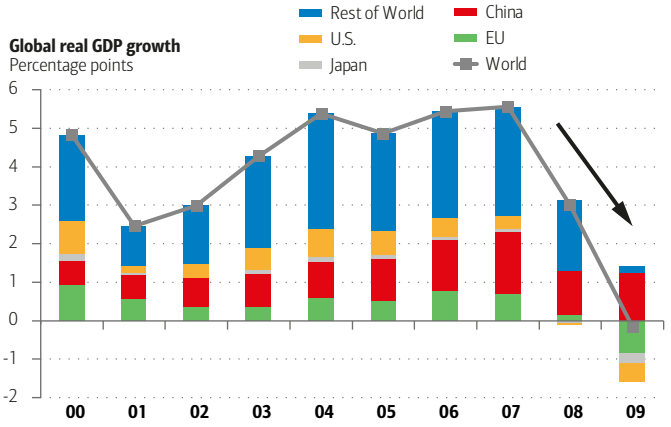
II. AFTERSHOCKS TO THE REAL ECONOMY

Summary: By late 2008, the U.S. economy had begun to crater amid what then-Fed Chairman Ben Bernanke would call "one of the worst financial crises in global history, including the Great Depression." The scale of destruction touched virtually every economy in the world and every investable asset class. None were left spared or untouched.

5. The great recession takes hold

Credit is the oxygen of the global economy; without it, nothing functions. Demand, investment, trade spending—the staples of any economy live and breathe on credit. Of the 104 nations tracked by the World Trade Organization, every one experienced a fall in both imports and exports between the second half of 2008 and the first half of 2009, according to International Monetary Fund data—such was the widespread pain of the financial crisis of 2008. Fifty-two out of 60 nations that supply gross domestic product (GDP) data to the International Monetary Fund on a quarterly basis registered a contraction in the second quarter of 2009. The global credit contraction lowered world real GDP growth to one of the lowest levels of the post-war era.

Exhibit 5: The music stops: plunge in real GDP by major economy

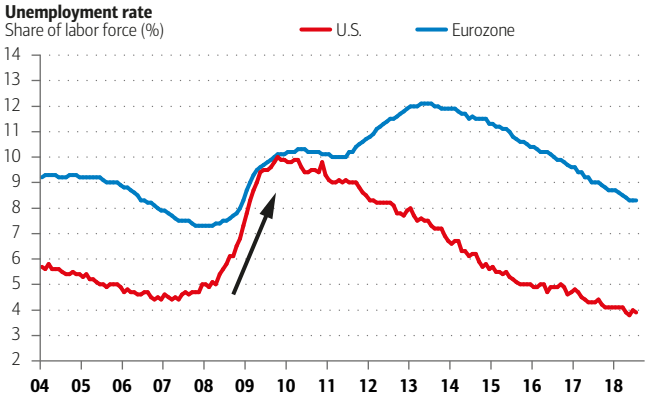


Source: International Monetary Fund. Data as of 2017.
Past performance is no guarantee of future results.

6. The global unemployment crisis

Plunging global demand and output led to a corresponding surge in unemployment. For the United States, in the first quarter of 2009 average monthly job losses exceeded a stunning 700,000 workers as firms moved quickly to reset their operations by cashiering wide swaths of employees. By late-2009, the U.S. unemployment rate would reach 10% before beginning a gradual decline. Europe's peak in unemployment would come much later (in mid-2013), as the Eurozone crisis spread and caused a second recession on the continent. Globally, no economy was spared—even China was forced to confront the prospect of massive unemployment in the wake of the crisis.

Exhibit 6: Help not wanted: spike in global unemployment

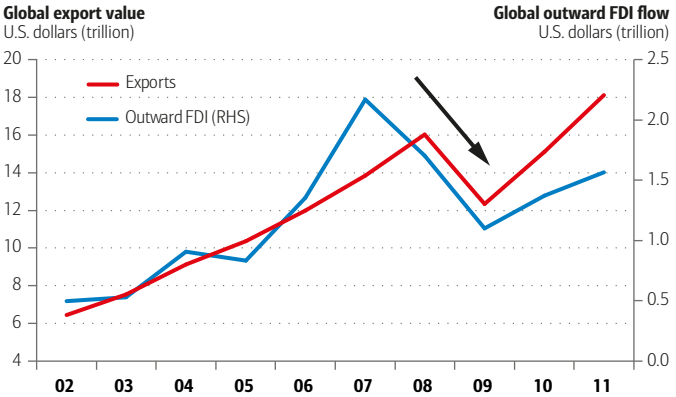


Source: Bureau of Labor Statistics, Eurostat, Bloomberg. Data as of July 2018.
Past performance is no guarantee of future results.

7. Trade and investment plummet

The plunge in global trade in the aftermath of the crisis was one of the steepest on record. The same holds true for cross-border investment, which dropped sharply in 2008-2009. Trading volumes contracted with the plunge in global demand. Both trade and investment shriveled on account of massive de-leveraging and cutbacks among households and companies. The more encouraging news: Notwithstanding the collapse of global trade and investment, global protectionism remained at a minimum (or at bay) during the crisis. The rise of global protectionism would come much later following years of wage stagnation and increased political frustration among voters in the U.S. and Europe. As the last section notes, the owners of capital would eventually fare very well in the aftermath of the crisis, but average workers would not.

Exhibit 7: Global commerce: plunge in global trade and FDI

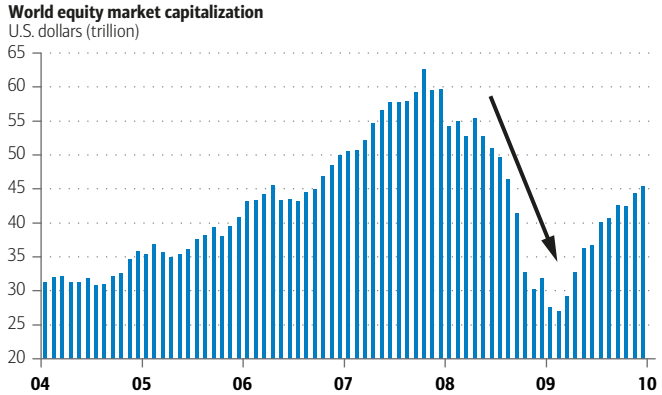


Source: United Nations Conference on Trade and Development, International Monetary Fund, Bloomberg. Data as of 2017. **Past performance is no guarantee of future results.**

8. The global wealth shock

Rarely has any financial crisis produced such enormous destruction in stock market wealth; global equity market capitalization plunged from a peak of $63 trillion in October 2007 to just $27 trillion by the end of February 2009. In turn, the negative wealth effect, not surprisingly, depressed global consumption, notably at the high end of a range of industries, and served to lift global saving rates. As a footnote, global equity market capitalization today stands at $80 trillion, up close to 200% from the deep trough of early 2009.

Exhibit 8: Reverse wealth effect: global equity wiped out



Source: Bloomberg. Data as of July 2018. **Past performance is no guarantee of future results.**

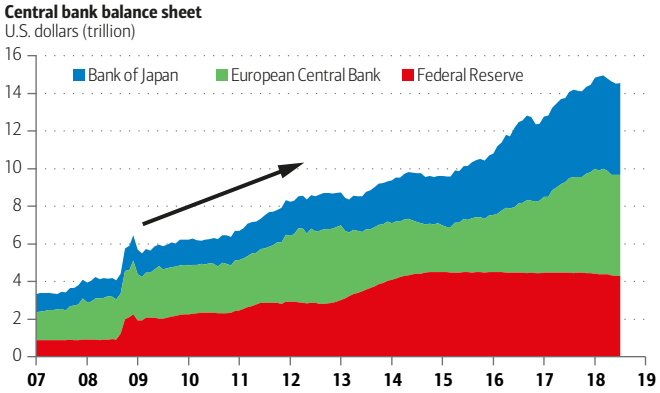
III. WHATEVER IT TAKES: THE POLICY RESPONSE

Summary: In a July 2012 policy speech, European Central Bank (ECB) President Mario Draghi made the now famous pledge to do "whatever it takes" to preserve the euro. But this was of course just one of the many bold measures taken by central bankers and national governments around the world to stabilize the global economy and financial system in the wake of the crisis. Policymakers were critical in containing the fallout, and their massive response played a pivotal role in kick-starting the recovery.

9. The explosion of central bank balance sheets

The U.S. Federal Reserve was the first of the major central banks to respond to the early crisis warning signs. In September 2007, the Fed reacted to growing stress in credit markets with a 50 basis point interest rate cut—its first following the steady series of hikes between 2004 and 2006. By the end of 2008, the Fed had slashed its policy rate to just a quarter of one percent—a remarkable 500 basis points (bps) of cuts in the space of just 15 months. But the swift action of the central bank was not limited to conventional monetary policy. Throughout the course of 2008, the Fed would launch a series of targeted liquidity programs to address funding challenges across a range of individual markets followed by three rounds of quantitative easing. Both the ECB and the Bank of Japan (BoJ) were slower to act in response to the unfolding crisis. Indeed the ECB continued to hike rates as late as July of 2008. But both central banks ultimately moved to a zero interest rate policy stance, and both implemented programs of large-scale asset purchases. By the time the Fed ended its asset purchase program in 2014, its balance sheet had risen to $4.5 trillion (25% of GDP), a staggering $3.6 trillion more than in 2008. The ECB and BoJ continue to purchase assets to this day, with the balance sheets of the two central banks currently standing at 41% and 99% of GDP respectively.

Exhibit 9: Unprecedented response: the explosion in central bank balance sheets

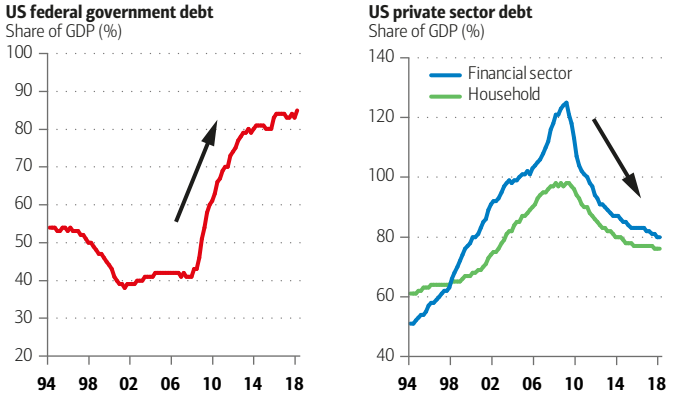


Source: Federal Reserve, European Central Bank, Bank of Japan, Bloomberg. Data as of July 2018. **Past performance is no guarantee of future results.**

10. The surge in U.S. federal government debt

On top of the massive response of the monetary authorities to the financial crisis, the U.S. government also moved quickly to offset deleveraging in the private sector. The Troubled Asset Relief Program was launched in October 2008 to allow the U.S. Treasury to purchase or insure up to $700 billion of impaired securities held by financial institutions. Then in 2009, the incoming Obama administration enacted the American Recovery and Reinvestment Act (ARRA), a $787 billion stimulus program designed to boost demand. On the back of both the special crisis response programs and automatic stabilizers like higher unemployment insurance, the federal government debt ultimately increased by $4.4 trillion between the end of 2007 and the end of 2010, rising from 41% of GDP to 69% of GDP. Over the same period, deleveraging in the private sector (primarily among households and financial institutions) saw private debt levels fall by $2.8 trillion.

Exhibit 10: Whatever it takes: surge in U.S. federal government debt

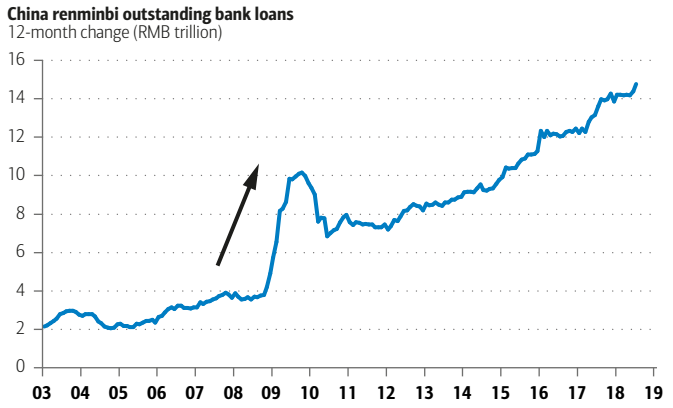


Source: Federal Reserve, Bureau of Economic Analysis, Bloomberg. Data as of Q1 2018.
Past performance is no guarantee of future results.

11. China's historic policy response

Alongside the U.S., the government of the world's second-largest economy, China, also unleashed a massive fiscal stimulus package in response to the crisis. Indeed at four trillion yuan ($586 billion), the China stimulus announced in November 2008 was even larger as a share of its GDP than that of the U.S. Channeled mainly through its banking sector, the plan focused on transportation infrastructure spending and regional construction via loans to state-owned enterprises and local governments. The policy led to a surge in bank lending, causing the annual change in outstanding renminbi bank loans to roughly double from 4.9 trillion yuan for 2008 to 9.6 trillion yuan for 2009. Though China was not affected as directly by the crisis as the major Western economies, the Communist Party acted aggressively to protect employment and avoid social instability, helping to cushion the fall in global activity in the process.

Exhibit 11: Whatever it takes: China's historic policy response

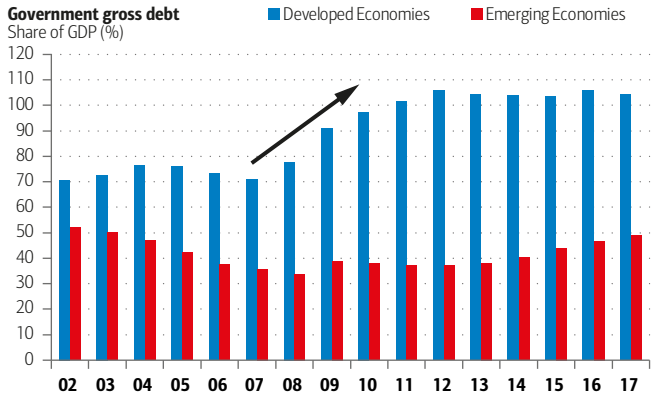


Source: People's Bank of China, Bloomberg. Data as of July 2018.
Past performance is no guarantee of future results.

12. The blowout in global government debt

Outside the U.S. and China, official crisis intervention was concentrated largely within the developed world, and Western European governments were among the most active. European Union (EU) countries expanded their government budgets to stabilize their domestic economies by lowering tax rates, raising social spending and injecting capital into their banks, while pooled European stability funds were used between 2010 and 2012 to offer bailouts to peripheral governments in Greece, Ireland and Portugal as their borrowing costs began to shoot higher. Government debt to GDP jumped by 10 percentage points across the euro area from 2008 to 2009, with Ireland and Greece seeing the largest share increases among the member states. Healthier banking sectors and less severe economic downturns in most emerging economies meant that less public intervention was needed. Just as most emerging market central banks were not forced to introduce zero interest rate policies and quantitative easing, the fiscal responses from emerging market governments were generally more muted.

Exhibit 12: Whatever it takes: blowout in global government debt



Source: International Monetary Fund. Data as of 2017.
Past performance is no guarantee of future results.

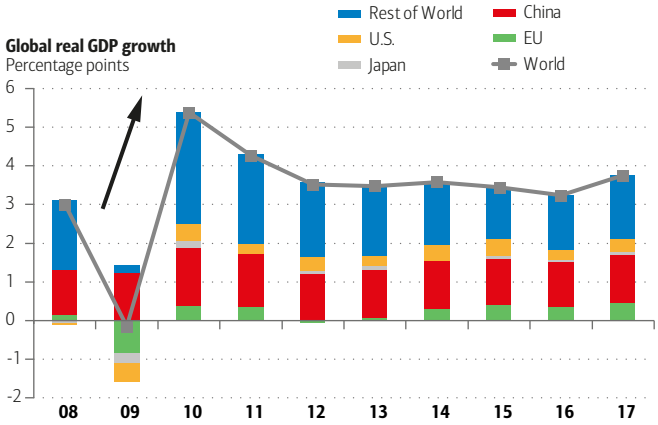
IV. THE LONG ROAD BACK

Summary: Those that lived through the worst days of 2008 and 2009 will recall the panic that gripped investors and policymakers around the world. But despite the severe declines in global economic activity and asset prices, the cycle of crisis, policy response and stabilization would ultimately give way to green shoots of recovery and one of the longest economic expansions in post-war history—an expansion that remains in place to this day.

13. The broad-based rebound in global growth

The trough in global economic activity came in mid-2009, with growth rebounding strongly in 2010. While 47% of countries globally had registered full-year contraction in 2009, only 10% remained in recession in 2010, with global growth reaching 5.4%. China's massive fiscal stimulus had helped to limit the extent of the global downturn, and by the trough in global activity in the middle of 2009, China's economy had already begun to accelerate to a year-on-year growth rate of 8.0%. Other major economies including those of India, Brazil and Japan had also seen year-on-year growth re-acceleration by mid-2009, while in the U.S. and the Eurozone, year-on-year growth moved back above zero in the first quarter of 2010. The 2010 rebound was the strongest of the recovery so far. China expanded at over 10%, with the EU, the U.S. and Japan also strong contributors to global growth. These four economies combined accounted for close to 50% of global growth during that year. Growth decelerated from the post-crisis bounce in 2011 and 2012, but has since remained stable at between 3% and 4%. And last year's growth pickup was the most broad-based of the recovery so far, with 74% of countries expanding at rates of 2% or more and just 7% contracting.

Exhibit 13: Global healing: rebound in global growth

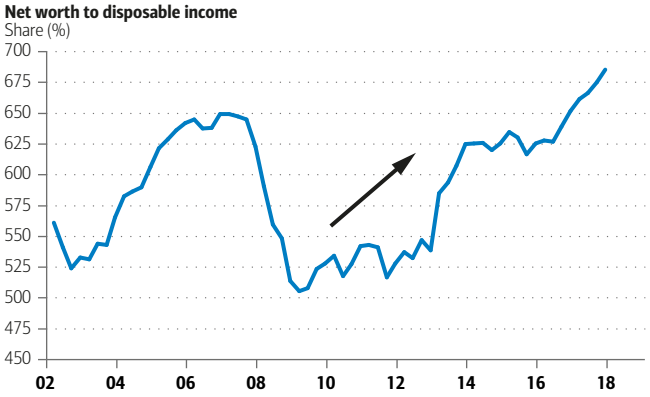


Source: International Monetary Fund. Data as of 2017.
Past performance is no guarantee of future results.

14. The rebound in U.S. household wealth

At its 2005-2006 peak, U.S. home equity had risen to over 20% of total household net worth, making it a significant component of household wealth. Alongside the plunge in the global stock market, the fall in house prices had therefore been a major contributor to the $12.8 trillion plunge in U.S. household net worth between 2007 and 2009. But since bottoming at $54.9 trillion in the first quarter of 2009, net worth has now risen by over 80% to reach a level of more than $100 trillion in the most recent reading for 2018. Over the past 10 years, household wealth has been rebuilt through the post-crisis run-up in stock prices, as well as the more gradual recovery in home values. But while house prices are now back to their pre-crisis peaks, home equity as a share of net worth has only climbed back to its long-run average level of around 15%—well below the pre-crisis (and all-time) high of 21.4%. As a share of disposable income, aggregate household net worth—a key support for consumer confidence and spending—now stands at 683%, above both the housing boom peak of 649% and the 2000 dot-com peak of 614%.

Exhibit 14: The long road back: rebound in U.S. household wealth



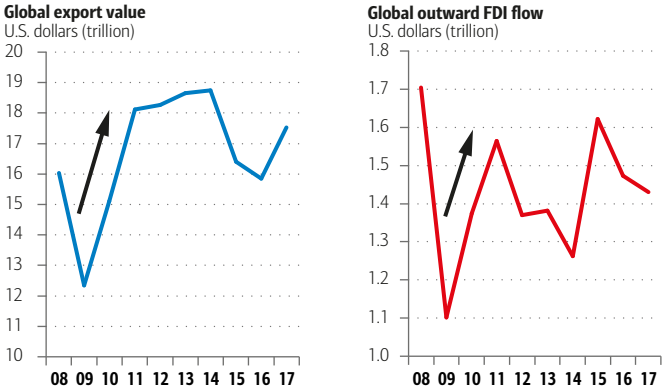
Source: Federal Reserve, Bloomberg. Data as of Q4 2017.
Past performance is no guarantee of future results.

15. The recovery in global trade and investment

The rebound in global economic activity was helped by a recovery in cross-border trade and investment. As a share of global GDP, the value of world exports in 2010 recovered roughly half of what had been lost in 2009, climbing by 22% to $15.1 trillion. Global exports then rose by a further 20% in 2011, surpassing their pre-crisis absolute peaks. The return of global demand after the sudden stop in 2008 was the main driver of the trade recovery. And the improvement in activity and bottoming in asset prices led global capital to begin seeking risk once again, allowing international portfolio investment flows, cross-border bank lending and foreign direct investment (FDI) to pick up from their lows of 2009. Global outward FDI rose by 25% in 2010, climbing a further 14% to $1.6 trillion in the following year. Though trade rhetoric and trade practices have turned increasingly protectionist more

recently, trade volume continues to grow and global export value as a share of world GDP remains broadly stable at over 20%.

Exhibit 15: Global healing: recovery in global trade and FDI

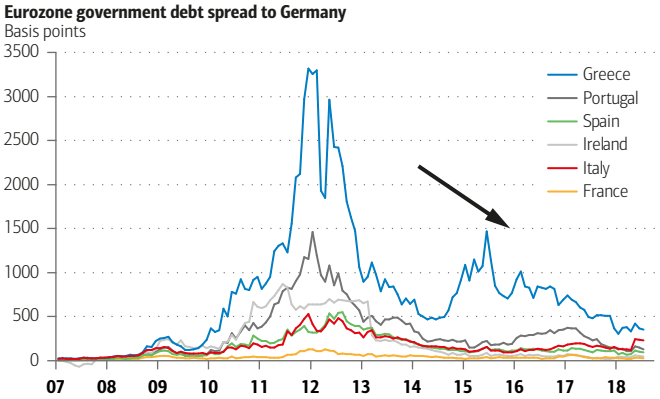


Source: United Nations Conference on Trade and Development, International Monetary Fund, Bloomberg. Data as of 2017. **Past performance is no guarantee of future results.**

16. The recovery in Eurozone debt spreads

After aggressive interest rate cuts, fiscal stimulus and troika bailouts for Greece, Ireland and Portugal in the few years following the 2008 crash, a key turning point in the Eurozone debt crisis finally came in the summer of 2012. One week after delivering his pledge to do "whatever it takes" to preserve the euro, ECB President Mario Draghi launched the so-called Outright Monetary Transactions (OMT) program—a contingent mechanism that would purchase the bonds of distressed Eurozone members in unlimited amounts should assistance be requested. Though Eurozone economic growth would not bottom until 2013, the announcement of the program gave way to a steady contraction in spreads across peripheral markets. The improvement was briefly interrupted in 2015 following the election of the far-left Syriza government in Greece in January of that year and fears of a Greek exit from the euro. Ireland and Portugal left their troika programs in 2013 and 2014 respectively, with Greece emerging from its final bailout in August 2018. Eurozone debt spreads have not returned to their pre-crisis tights, but have now reversed most of the widening that took place between 2008 and 2012.

Exhibit 16: Easing in Europe: recovery in Eurozone debt spreads



Source: Bloomberg. Data as of July 2018.
Past performance is no guarantee of future results.

V. INVESTMENT SUMMARY: THROUGH THE DEPTHS

The 10 years of recovery from the financial wreckage of 2008 have been a boom period for global markets. Performance has varied across asset classes, countries and sectors, but the combination of compressed starting valuations, a massive policy response, a bottoming in economic activity and the subsequent decade of uninterrupted growth has been the ideal backdrop for investment returns. In general, those who remained invested through the depths of 2008 and 2009 have been rewarded.

17. The performance of global asset classes

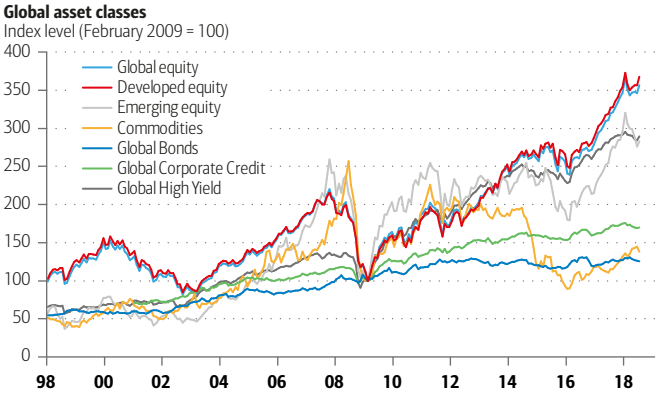
Risk assets have been the big winners of the post-crisis period. In the nine-and-a-half years between the end of February 2009 and the end of July 2018, the global equity benchmark has more than tripled, delivering a total return of 257% in U.S. dollar terms, or 14.5% annualized. Equity market gains have been led by developed markets. The MSCI World Developed Market Index has risen by 268%, beating the 183% MSCI Emerging Market Index return. Within each of the two groups, performance differences have also been wide on a regional basis. On the developed market side, the U.S. has returned more than double an index of international developed markets in common currency. And within emerging markets, Asia has outpaced Latin America and emerging Europe by an equally wide margin.

After global equity, global high yield has been the second-best-performing major asset class over the past decade, posting a total return of 189%. Spreads have narrowed significantly

from a peak of 1,800 bps in late 2008 to around 400 bps today, while yield levels have fallen from more than 21% at the crisis high to around 6.5% over the same period. Returns on global government bonds have been the weakest of the major asset classes, while corporate credit returns have come in between high yield and bonds. As with high yield, major spread compression from crisis extremes has boosted prices for corporates, while investment grade yields today still stand at roughly 100 bps above equivalent maturity Treasuries.

Led by industrial metals and trailed by agriculture, commodities have delivered meager price returns of around just 40% this cycle as measured by the S&P GSCI Index. Post-crisis price gains had kept up with global equities and high yield in the early stages of the economic recovery. But prices peaked with global growth in 2010-2011 before beginning a five-year downtrend. Driven by energy, the cumulative post-crisis price return fell below corporate credit and global bonds in late 2014 and early 2015 as oil prices sank in the wake of Organization of the Petroleum Exporting Countries' (OPEC) decision to fill its production quota rather than reduce output. And after bottoming in early 2016 at levels below the 2009 trough, cumulative commodity price gains for the recovery as a whole only surpassed global bonds again at the end of last year.

Exhibit 17: Global asset classes: equities outperform



Source: Bloomberg. Data as of July 2018. Total return in USD.
Asset classes are represented by the following indexes:
Global equity: MSCI All Country World
Developed equity: MSCI World
Emerging equity: MSCI Emerging Markets
Commodities: S&P GSCI
Global bonds: Bloomberg Barclays Global Treasury
Global corporate credit: Bloomberg Barclays Global Aggregate Corporate
Global high yield: Bloomberg Barclays Global High Yield
Past performance is no guarantee of future results.

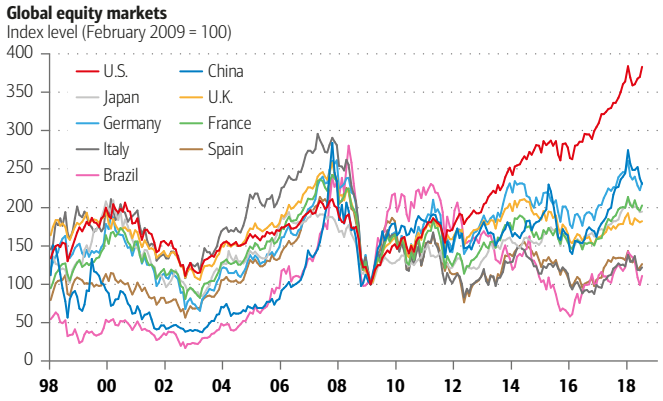
18. The performance of global equity markets

Among the major equity country benchmarks, the U.S. has been the star performer since the crisis with the S&P 500 returning 283% on a price basis between the end of February 2009 and the end of July 2018. China may have led the post-crisis economic recovery, but the U.S. has delivered by far the strongest market gains. Emerging Asia has been the second-best performer of the past decade, with China itself (the region's biggest equity market) rising by 131% in U.S. dollar terms over the period—far ahead of non-Asian emerging markets, but still a full 150 percentage points behind the U.S. Nevertheless, the rise of China's consumption, service and information technology economy in the post-crisis period has made for particularly strong gains across the consumer discretionary, consumer staples, technology and healthcare sectors within the Chinese market.

Among non-U.S. developed markets, Japan and the Eurozone have delivered almost identical U.S. dollar price returns at around 95% each, though exchange rate depreciation has been a larger hurdle for Japan. European markets have been bifurcated between stronger performance for the core and weaker returns in the periphery. Germany and France have both done better than the Eurozone in aggregate, with post-crisis gains of around 130% and 100%, respectively. While Spain and Italy have respectively returned just 20%-25% in U.S. dollar price terms from the 2009 lows. Having outperformed the Eurozone for most of the post-crisis period, the U.K. has lagged in the two years since the Brexit referendum decision to leave the EU.

The markets with the weakest economic fundamentals and the slowest growth have generally fared the worst over the past 10 years. Returns in Latin America have been comparable to those in the peripheral European markets of Spain and Italy since the crisis. The region's largest market Brazil has also delivered the lowest dollar price appreciation in Latin America—a paltry 11% since the end of February 2009. And for both Brazil-dominated Latin America and Russia-dominated emerging Europe, the bear market in commodities between 2011 and 2016 has been a further check on equity market performance in the post-crisis decade.

Exhibit 18: Global equity markets: the U.S. shines



Source: Bloomberg. Data as of July 2018. Price return in USD.
Past performance is no guarantee of future results.

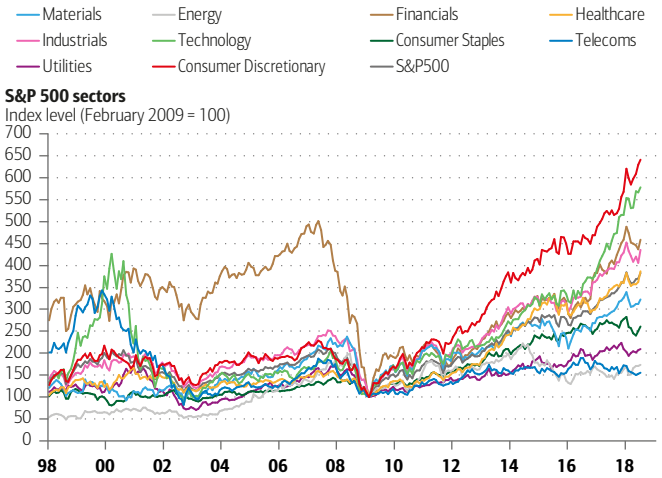
19. The performance of S&P 500 sectors

The surge in U.S. equities over the past 10 years has been led by four cyclical sectors: consumer discretionary, technology, financials and industrials. Consumer discretionary has been the top performer with a price return of 540% between February 2009 and July 2018. According to Bloomberg, within the sector, internet retail has been by far the strongest industry group delivering a whopping 2,690% over the period. In our view, the outperformance of this segment in large part reflects the growth in digital service consumption that has accelerated since the crisis, supported by the emergence of mobile connected devices. Information technology has been the second best-performing sector of the post-crisis period, and by a similar token we see the rise of the digital economy as the key driver of strength in industries such as application software and internet services.

Having suffered the steepest price decline during the crisis itself, financials led the initial stages of the rebound from the 2009 lows, though cumulative returns over the past decade have since slipped back to third place. Industrials meanwhile have also outperformed the broad market over the past 10 years, with major contributions from railroads, airlines and defense.

Commodity-related cyclicals, by contrast, have lagged well behind the S&P 500 since the crisis on the back of price weakness across the natural resource complex. Energy has been the second-worst performer across all sectors, delivering around 75% from the 2009 lows. And though materials have posted a much stronger return of over 200%, the sector has been led by chemical manufacturers, while commodity-linked industries such as metals and mining have been much weaker. Higher-yielding defensives have also been poor performers in the post-crisis period: Alongside the energy sector, telecommunications, utilities and consumer staples have been the lowest-returning groups in the S&P 500.

Exhibit 19: S&P 500 sectors: not all sectors are created equal

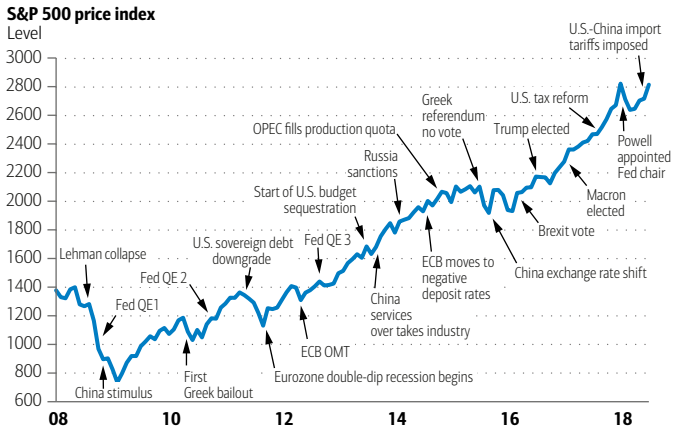


Source: Bloomberg. Data as of July 2018. Price return.
Past performance is no guarantee of future results.

20. The long road back for the equity market

Finally, the upward march of the S&P 500 has been nothing short of remarkable. The major index has not so much surmounted the classic Wall Street "wall of worry" as much as scaled various peaks of angst and ambivalence over the past decade. The current bull market is now the longest in history, but the road traveled has been anything but smooth—policy shocks, political surprises and regional crises have been a recurring feature of the past 10 years. But given what we consider the massive outperformance of U.S. equities over the past decade, one of the key takeaways from the global financial crisis has to be this: In the end, it rarely pays to bet against the U.S. corporate sector.

Exhibit 20: The long road back from 2008



Source: Chief Investment Office, Bloomberg. Data as of July 2018.
Past performance is no guarantee of future results.

INDEX DEFINITIONS

The **Bloomberg Barclays Global Aggregate Bond Index** (EUR Hedged) represents a close estimation of the performance that can be achieved by hedging the currency exposure of its parent index, the Bloomberg Barclays Global Aggregate Bond Index, to EUR.

The **Bloomberg Barclays Global Treasury Index** tracks fixed-rate, local currency government debt of investment grade countries, including both developed and emerging markets.

The **Barclays Global High Yield Index** is and unmanaged index that provides a broad-based measure of the global high-yield fixed income markets. The Global High-Yield Index represents that union of the US High-Yield, Pan-European High-Yield, US Emerging Markets High-Yield, CMBS High-Yield, and Pan-European Emerging Markets High-Yield Indices.

The **MSCI World Index** captures large and mid cap representation across 23 Developed Markets (DM) countries. With 1,643 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

The **MSCI Emerging Markets Index** captures large and mid cap representation across 23 Emerging Markets (EM) countries. With 832 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country. EM countries include: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, Qatar, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates.

The **S&P 500 Index** is widely regarded as the best single gauge of the U.S. equities market, includes a representative sample of 500 leading companies in leading industries of the U.S. economy. Although the index focuses on the large-cap segment of the market, with approximately 75% coverage of U.S. equities, it is also an ideal proxy for the total market.

The **S&P GSCI Index** is recognized as a leading measure of general price movements and inflation in the world economy.

The **MSCI ACWI Index** captures large and mid cap representation across 23 Developed Markets (DM) and 23 Emerging Markets (EM) countries. With 2,484 constituents, the index covers approximately 85% of the global investable equity opportunity set.

IMPORTANT DISCLOSURES

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It is not possible to invest directly in an index.

Asset allocation, diversification, dollar cost averaging and rebalancing do not ensure a profit or protect against loss in declining markets.

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Past performance is no guarantee of future results.

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