



Investment Insights

Invesco Global Asset Allocation

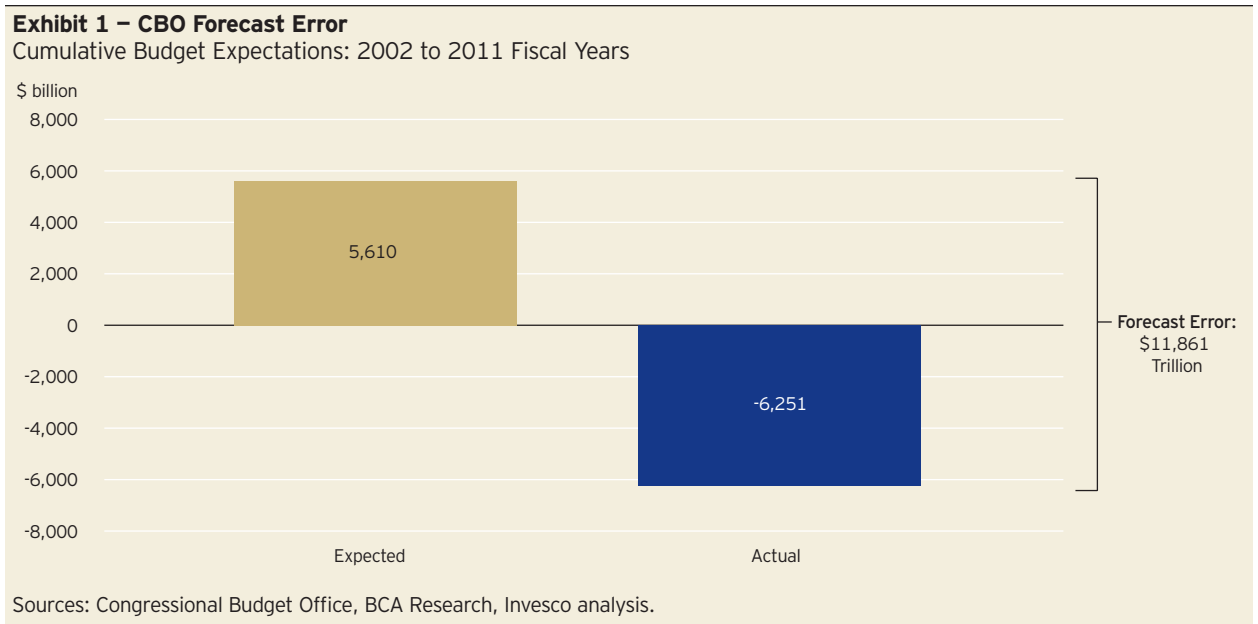
Global Asset Allocation Quarterly Update and Overview

The more complex the financial markets, the more complicated a forecast. Even institutions such as the U.S. Congressional Budget Office (CBO) have made heavy forecasting mistakes. But there is no way to manage a portfolio without any projections. Therefore, it is important to know their limits and to navigate around the most dangerous types of forecasting errors.

Perils of prediction

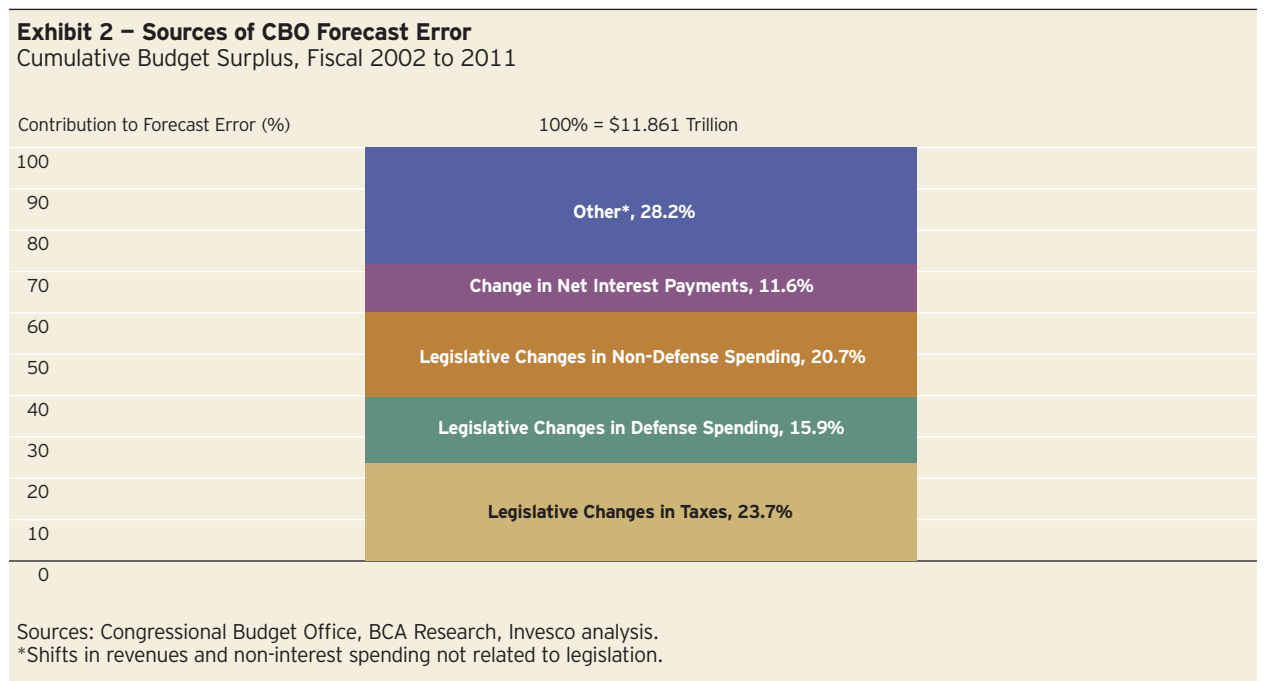
During the recent debt ceiling debacle in the U.S., one of the key actors operated in a distinctly behind-the-scenes manner: the Congressional Budget Office (CBO). The CBO has the responsibility of determining the probable budgetary impact of various proposals and it has a well-deserved reputation for objectivity and thoroughness. Its staff of approximately 250 includes economists and public policy analysts, three-quarters of whom hold advanced degrees. Several proposals foundered when the CBO's analysis showed much lower expected benefits than their advocates promised.

Given the level and quality of staffing along with the responsibility of the CBO, one would expect fairly accurate forecasts. Unfortunately, the CBO's record – on at least one limited measure – is representative of the extreme difficulty in forecasting highly uncertain variables such as economic growth and tax receipts. As shown in Exhibit 1, the cumulative forecast error in the CBO's 2001 10-year budget expectations was almost a staggering \$12 trillion, or roughly 100% of one year's nominal GDP.¹



Data as of September 30, 2011, unless otherwise stated.

No single source can claim responsibility for the error. As Exhibit 2 shows, the contribution from multiple sources indicates that the global economy simply took a radically different path than expected. To be fair, the decade following the CBO's 2001 forecast has been a volatile one: a major terrorist attack on U.S. soil, two wars, and a financial crisis have made forecasting particularly challenging. But this is precisely the challenge with medium- to long-term forecasts: unexpected events have a nasty habit of interfering with the smooth operation of the stylized world that we envision.



Indeed, forecasters have an undeniably poor record at forecasting complex, long-term events. Philip Tetlock, Professor of Organization Behavior at University of California at Berkeley and a leading authority on expert judgment, finds that experts barely beat random forecast generators (which Tetlock refers to as the statistical equivalent of a dart-throwing chimp).²

Investors have an abiding interest in finding and making good judgments, leading to the obvious questions of why humans fare so poorly in certain types of forecasts and how should we alter our actions as a result? This paper addresses each of these questions with a focus on general portfolio structures.

Dart throwing chimps

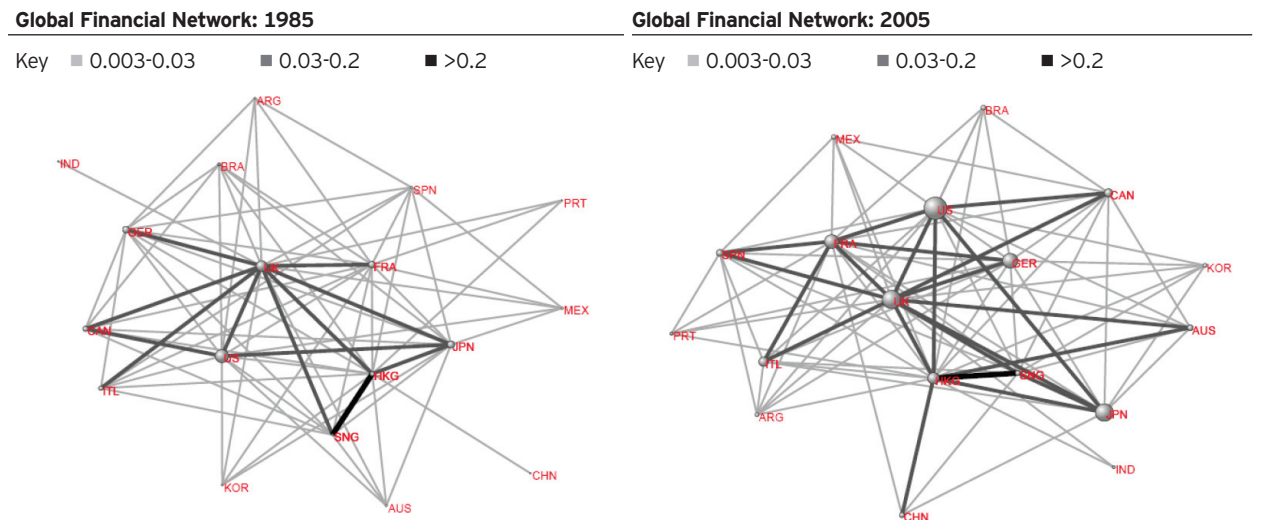
Humans' judgment is not universally poor. Certain types of situations lend themselves to sound judgments - especially by experts. The left column of Exhibit 3 describes such circumstances. However, when an area requiring judgment is better defined by the right column, humans begin to make a variety of errors.

Exhibit 3 – Dimensions of Difficulty	
Simple	Complex
Static	Dynamic
Discrete	Continuous
Separable, Independent Processes	Interactive, Interdependent Processes
Homogeneous	Heterogeneous
Easily Represented by a Single Framework	Multiple Representations Required to Convey Meaning
Mechanical, Simple Causation	Organic, Systemwide Functions
Linear	Non-Linear
Universal Principles Hold	Conditional Application of Principles
Regular, Repeatable Patterns	Irregularity, Asymmetry
Surface-Level Knowledge Sufficient for Understanding	Deep Knowledge Required for Appropriate Action

Sources: "Keeping It Too Simple: How the Reductive Tendency Affects Cognitive Engineering."³ *Think Twice*⁴.

The modern financial system fits well within the descriptions on the right. The economy and markets are increasingly viewed as complex adaptive systems. Andy Haldane, the Bank of England's Executive Director for Financial Stability, points out in a 2008⁵ paper how much more interconnected the financial system has become. Exhibit 4 depicts the deepened relationships and increased concentration within financial firms. The size of the bubbles reflects the size of various countries' financial systems while the number and width of the lines represents inter-relationships. The change from 1985 to 2005 is striking.

Exhibit 4 – Increased Complexity of the Global Financial Network



Source: "Rethinking the Financial Network", Haldane. Nodes are scaled by (Total External Assets + Total External Liabilities) for each node, and links between nodes i and j by (Total External Assets_i + Total External Liabilities_j)/(GDP_i + GDP_j).

This type of change has profound implications. As Haldane reports in a subsequent paper⁶, when modeling the financial system as a complex system one can easily see the characteristics we have witnessed over the past several years such as the existence of tipping points within the structure. Major shifts can build almost imperceptibly and then accelerate suddenly.

The inherent challenges of forecasting within this type of scenario are obvious. However, our innate reactions to such types of complexity make it an even more daunting task. In particular, when faced with a complex situation we often try to apply a simple framework and – worse – fail to update our beliefs when confronted with information that conflicts with our mental model.²

Some paths forward

None of this means that forecasting has to simply be a fool's errand. As investors, we have little choice but to use some sort of forecast – implicitly or explicitly – when making any investment or even when setting investment policy. Prudence does require us to understand the types of snares described above and to avoid them through good design. We see three main properties of well-designed systems: 1) structural resilience; 2) frequent, controlled allocation shifts; 3) continuous review. We discuss each in detail below.

Structural resilience

Structural resilience refers to portfolios that have some protection against the negative effects of “fat tail” events – extreme events that occur with higher frequency than standard models would predict. If the rarity of these events makes them easy to overlook, the magnitude of the outcome demands attention. As Peter Bernstein notes, “Consequences are more important than probabilities.”

Creating structural resilience requires thinking beyond traditional asset class definitions and into risk exposures. For example, adding high yield bonds to an equity portfolio does little to improve diversification because both assets will struggle during recessions. However, long-duration treasury bonds have historically done well in such periods, making them a more interesting complement to equities. The presence of diversifying assets is a necessary but not sufficient condition for structural resilience. The assets must have a high enough weight in the portfolio to have a meaningful impact when their presence is most needed. This can be estimated by simple scenario analysis or through more stringent quantitative methods.

Frequent, controlled allocation shifts

With structural resilience in place, investors can then turn their attention to the supplementary task of determining which type of asset class – the hedging assets described above or more equity-like assets – should receive additional emphasis. The process used to support this activity should conform to types of judgments most likely succeed. Returning to Tetlock's research, the most successful forecasts came from people with expertise in their topic area, making judgments on near-term outcomes, with a broad, flexible perspective (“foxes” in Tetlock's work as opposed to the inflexible ideologues that he terms “hedgehogs”).⁷

Investors can incorporate these principles in a variety of ways. We endorse a disciplined approach that makes short-term forecasts based on a framework that incorporates a wide variety of inputs that have a high sensitivity to market-based signals. We also impose constraints on our ability to shift too far away from the structurally resilient core portfolio. In other words, we are never so dogmatic in our views to fully eliminate the hedges in the portfolio.

Continuous review

Perhaps the most important element in all of this is the need for an ongoing search for process vulnerabilities and opportunities. We find that a formal, regular review of the process creates the best platform for this. As in most endeavors, a degree of competition increases the effectiveness of the review. Accordingly, we assign a sub-set of our investment team to consider “challenger” approaches to the incumbent one. The broader team can then effectively weigh the potential benefits and risks of enhancements with reduced exposure to a variety of known behavioral biases.

Summary

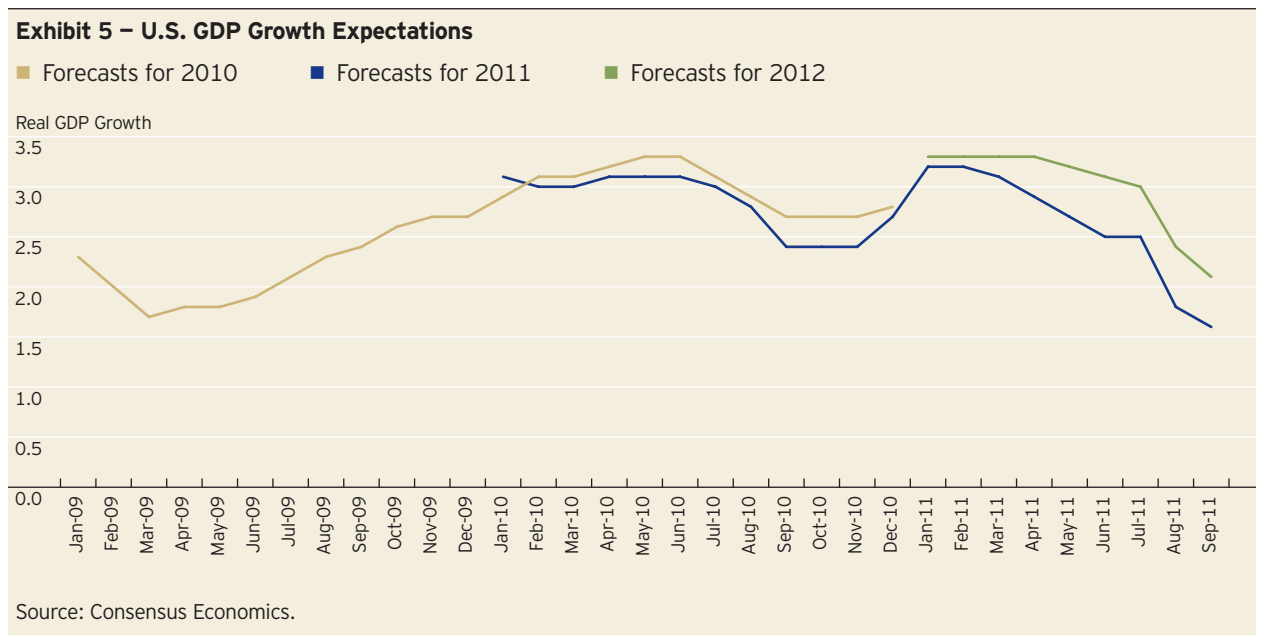
Forecasting is a necessary but challenging exercise in investing. Even those who deny the presence of forecasts within their process have, by definition, some implicit expectations for how the world does and will work – in short, a forecast. Typical human responses to complex situations exacerbate the natural difficulty of forecasting. Investors must therefore face the task of developing a process that avoids the worst of the obvious errors, has hedges in place, and is constantly reviewed for sufficient robustness.

Economic outlook

The third quarter certainly offered a compelling example of the need for structurally resilient portfolios. As shown in Exhibit 8 (page 8), the majority of risky assets - equities, commodities, and fixed income spread product - faced heavy selling pressure. Government bonds were virtually alone in their ability to provide attractive returns in this environment.

The rout in risky assets can be traced to several underlying causes: a slowdown in the U.S. and other Western economies, the escalation of the European debt crisis, and concerns about a potential hard landing for Chinese economic growth. These issues have been present since the beginning of the year or longer, but each accelerated in the last three months.

Exhibit 5 demonstrates the acceleration of U.S. economic weakness. Over the course of the quarter, 2011 growth expectations fell from over 2.5% to just over 1%. In Europe, the decline in expectations was just as dramatic, even within the previously strong core countries such as Germany and France. For example, the IFO expectations index fell from 111 to 98, a level historically consistent with recession. A technical recession may still be avoided in some countries, but growth is slow enough to make for a volatile investing environment.

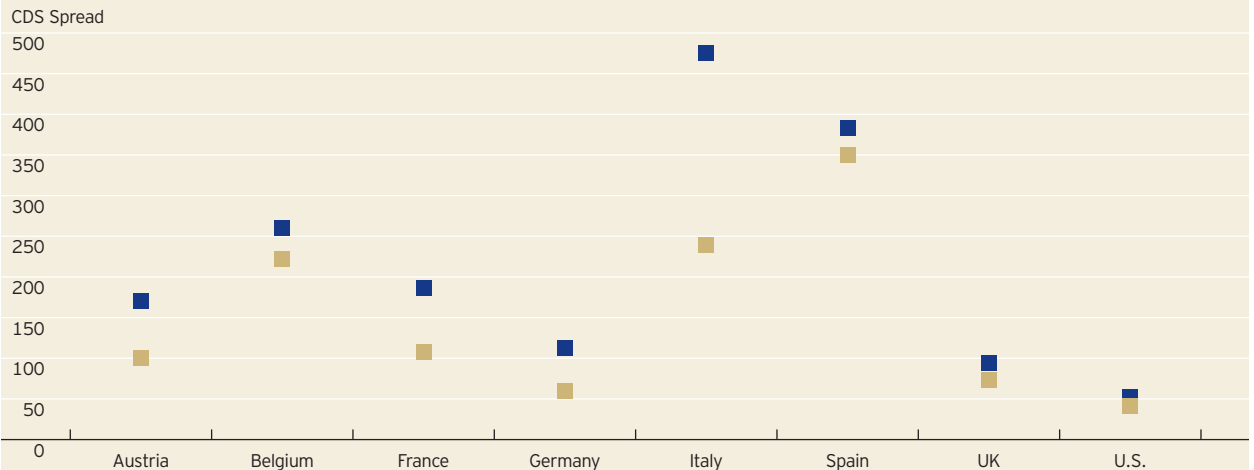


The Eurozone crisis has given little indication of receding. The crisis has clearly spread and now infects several core countries. Although the process is far from linear, it involves exposure of core country banks to the troubled peripheral markets, the banks' inability to raise funds on economic terms, and ultimately the negative impact on core market credit ratings from back-stopping bank losses.

Credit Default Swap spreads (CDS) provide one indication of country risk. Exhibit 6 shows the general rise in CDS spreads for European markets as well as the U.S. for added context. The rise in German spreads may come as some surprise, but it reflects the likelihood that Germany will assume greater responsibility for the debts of other European countries.

Exhibit 6 – CDS Spreads for Selected Countries

■ 12/31/2010 ■ 09/30/2011



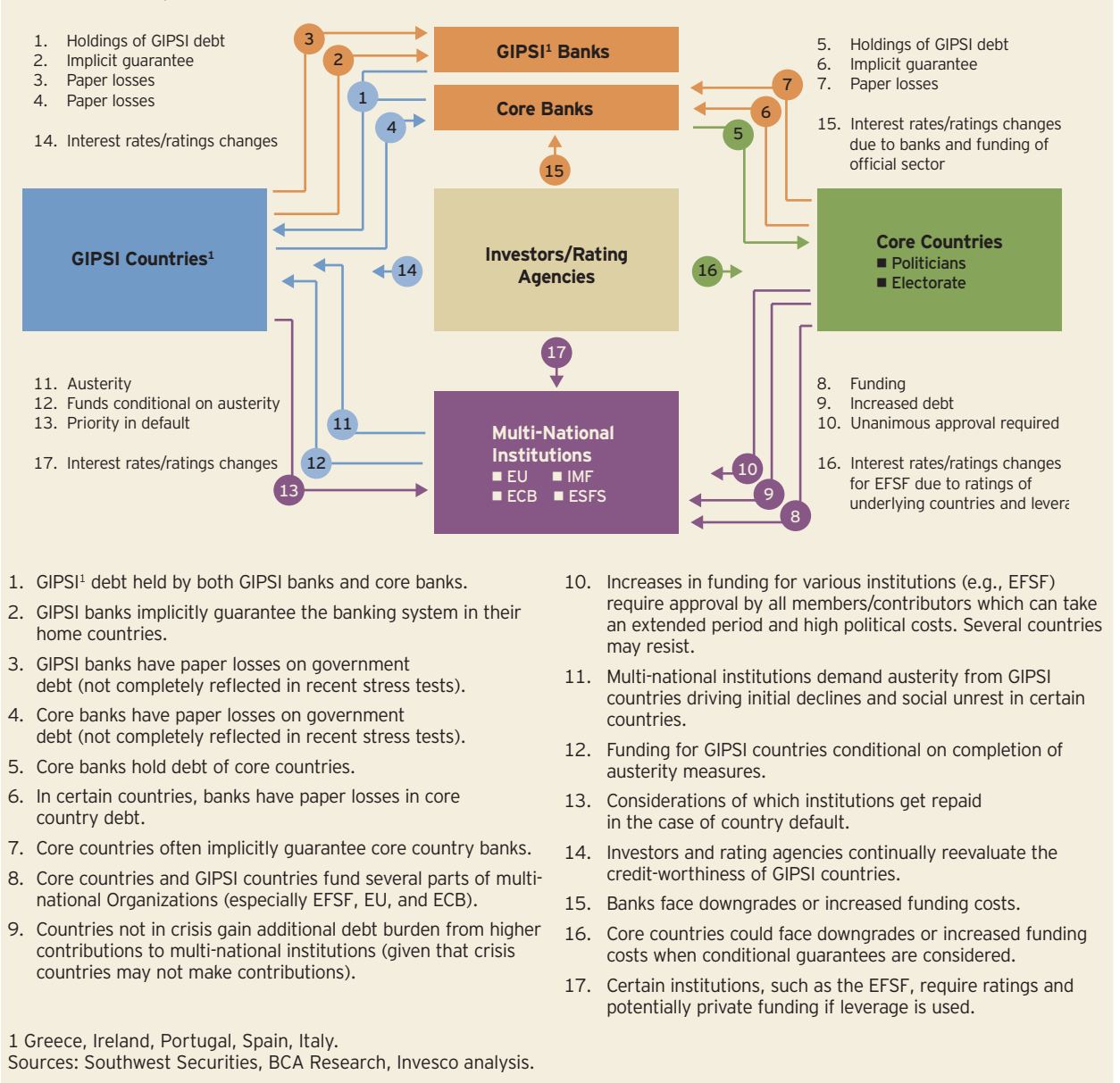
Sources: CMA, Bloomberg.

At time of writing, the resolution approach for French-Belgian bank Dexia had not yet been announced. Dexia's situation provides a useful example of what can go wrong on a broader scale. As pointed out by Southwest Securities, Dexia has a leverage ratio of about 74 times, so small losses can wipe out equity capital. It holds Greek sovereign debt along with other distressed assets that "can't be sold under current market conditions." Dexia's total assets of nearly \$700 billion represent about 150% of Belgium's GDP. Belgium will certainly not have to absorb all of those assets, but the risk to the country's finances is clear. Europe has a wide range of choices, but none offer an easy way out of the crisis (see illustration on next page, Exhibit 7).

China's challenges arise from the opposite direction: overly strong growth in the wake of the 2008 crisis has led to a higher-than-desirable inflation rate. China has tightened monetary conditions a number of times, yet monetary growth has continued at a brisk pace due to the presence of a "shadow banking system." The authorities' efforts can readily be seen in the performance of banks and housing-related stocks.

Tightening measures have had an impact on the broader economy as well, with leading indicators offering signs of a down-turn. Observers of periods of over-investment know that they seldom end well so the inevitable predictions of a hard landing abound. It seems premature to call for such an outcome but the situation bears watching, particularly with the weakness in the rest of the world.

Exhibit 7 – European Debt Crisis



Market review and outlook

Equities

The third quarter proved to be a wretched one for equities, with declines reminiscent of 2008. We discussed the key drivers above and, given the challenges posed to global growth and the European financial system, it is no surprise the worst performing markets were either European or sensitive to global growth (e.g., Emerging Markets). Financial stocks fared particularly poorly in most markets as investors, concerned about contagion, demanded higher compensation for their continued funding.

Our strategies took an underweight stance toward equities at the end of the second quarter and remain cautious. However, the attractiveness of valuations has led us to decrease underweights in general and even to move to neutral positions in a couple of markets (Exhibit 9). Price trends, our Excess Volatility factor, and, to a lesser degree, our Recession Risk indicator argue against overweight positions for now.

Bonds

Government bond yields plunged to depths that few investors dared to imagine just a few months ago. The direction of bond yields should come as no surprise given bonds' historic performance during periods of rising risk aversion; it was the magnitude that was so shocking.

We had an overweight position to bonds throughout the quarter but have started to reduce exposures more recently given valuations that fall well below our range of fair value. In addition, yield curves in many markets have begun to flatten, reducing the carry return (i.e., the income from the bonds relative to Treasury Bills). Our Risk Aversion and Price Trend indicators still favor bonds.

Commodities

Although the quarterly returns to commodities look similar to equities, their path was quite different. Precious metals and agriculture posted reasonable returns until September when most assets fell 15-20%. Along with the tumultuous financial market conditions, investors also had to contend with several increases in margin requirements, which often stimulate the liquidation of levered positions.

Our position in commodities was mixed during the month, spanning an overweight of gold to an underweight of oil. We are now positioned more cautiously primarily due to the impact of Price Trend, though we maintain our overweight to gold given loose monetary conditions - conditions that the Federal Reserve has indicated will remain in place until at least 2013.

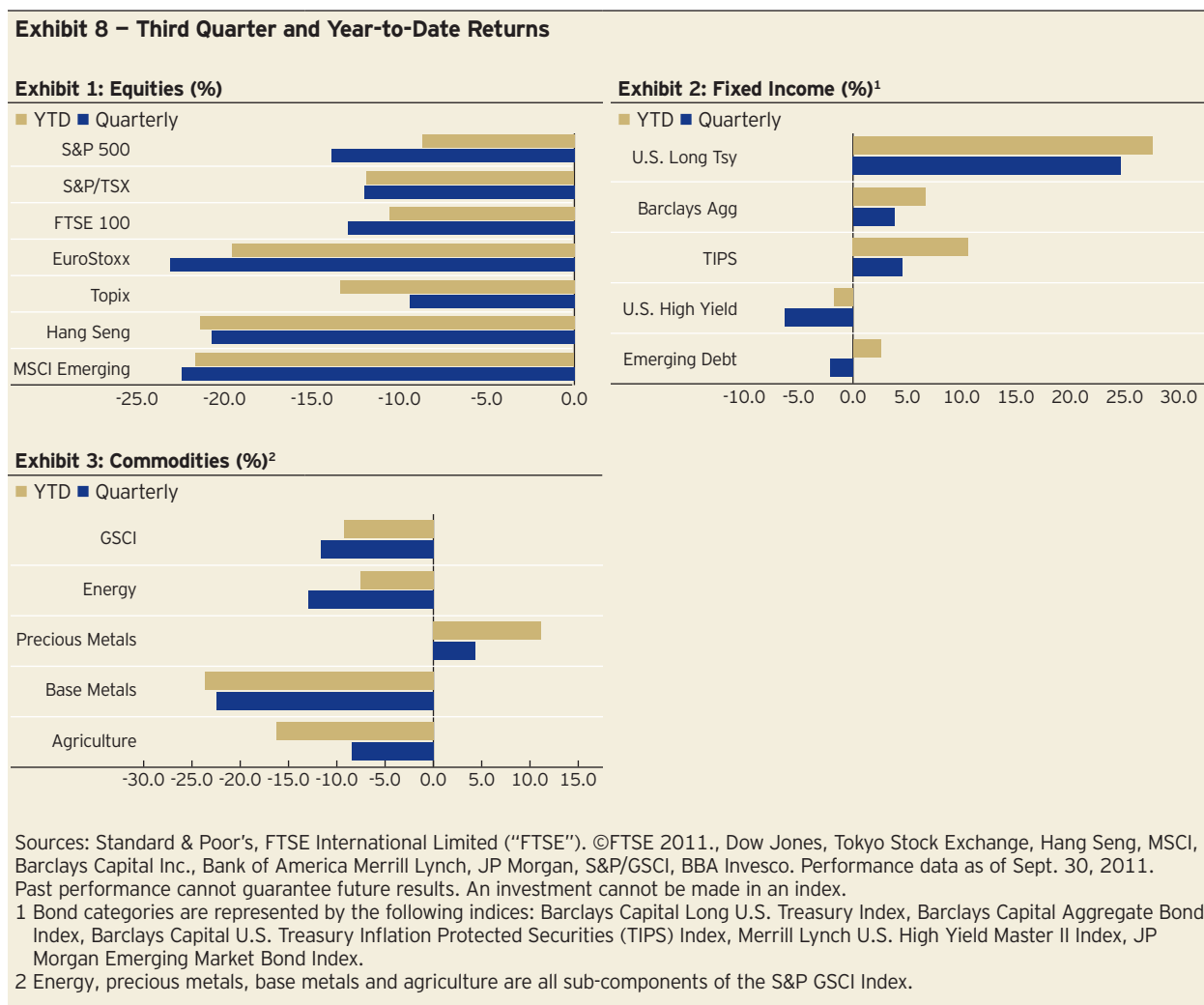


Exhibit 9 – Representative Positions¹ as of September 30, 2011

▲ Overweight N Neutral ▼ Underweight

Equities		Commodities	
Market	Position	Market	Position
U.S. Large Cap	N	Energy	▼
U.S. Small Cap	N	Precious Metals	▲
UK	▼	Industrial Metals	▼
Europe ex-UK	▼	Agriculture	▼
Japan	▼		
Hong Kong	N		

Fixed Income	
Market	Position
U.S. Treasury	▲
UK Gilts	▲
German Bunds	▲
Canadian Bonds	▲
Australian Bonds	▲
Japanese Govt Bonds	▲

1 The Global Asset Allocation team has a view on a wider range of assets than shown here but these are the assets most frequently asked about by clients. Positions are revised on a monthly basis.

The representative positions are based on our experiences in managing the Invesco Premia Plus strategy.

1 Barnes, Martin H. "More Thoughts on the U.S. Fiscal Outlook" BCA Research, August 19, 2011.

2 Schurenberg, Eric. "Why the Experts Missed the Crash." CNN Money. Online. Updated February 18, 2009.

3 Feltovich, Paul J, Robert Hoffman, Axel Roesler, and David Woods. "Keeping it Too Simple: How the Reductive Tendency Affects Cognitive Engineering." IEEE Intelligent Systems. May/June 2004: 90-94. Online.

4 Mauboussin, Michael J. Think Twice: Harnessing the Power of Counterintuition. Boston, Mass: Harvard Business Press, 2009. Kindle Edition.

5 Haldane, Andrew G. "Rethinking the Financial Network." Speech at Financial Student Association, Amsterdam. Apr 2009. <http://www.bankofengland.co.uk/publications/speeches/2009/speech386.pdf>.

6 Gai, Prasana, Andrew Haldane, and Sujit Kapadia. "Complexity, Concentration, and Contagion." Journal of Monetary Economics. May 2011.

7 Tetlock, Philip. Expert political judgment: how good is it? how can we know?. Princeton University Press. 2005. Kindle edition, location 1441 of 6675.

For U.S. Institutional Investor Use Only.

The opinions expressed are those of the author, are based on current market conditions and are subject to change without notice. These opinions may differ from those of other Invesco investment professionals. Past performance cannot guarantee comparable future results.

This document is issued in Australia for information purposes only, by Invesco Australia Limited (Invesco) ABN 48 001 693 232, AFS License number 239916. This document has been prepared only for those persons to whom Invesco has provided it. It should not be relied upon by anyone else and must not be distributed to retail clients in Australia. Information contained in this document may not have been prepared or tailored for an Australian audience. You may only reproduce, circulate and use this document (or any part of it) with the consent of Invesco.

You should note that this information:

- May contain references to dollar amounts which are not Australian dollars;
- May contain financial information which is not prepared in accordance with Australian law or practices;
- May not address risks associated with investment in foreign currency denominated investments;
- May not address Australian tax issues.

This document contains general information only and does not take into account your individual objectives, taxation position, financial situation or needs. You should assess whether the information is appropriate for you and consider obtaining independent taxation, legal, financial or other professional advice before making an investment decision.