

# The Power of Expectations: Aligning Asset Allocation with Macro Regime Changes

BNY Mellon Investment Strategy and Solutions Group<sup>1</sup>

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As institutional investors rethink their asset allocation approaches, research from BNY Mellon's Investment Strategy and Solutions Group (ISSG) has found that dynamically adjusting asset class exposures as growth and inflation expectations shift has the potential to improve risk-adjusted returns.

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## Executive Summary

As institutional investors rethink their asset allocation approaches, research from BNY Mellon's Investment Strategy and Solutions Group (ISSG) has found that dynamically adjusting asset class exposures as growth and inflation expectations shift has the potential to improve risk-adjusted returns.<sup>2</sup> Analyzing more than 40 years of historic economic and market performance data, the ISSG created an approach aimed at anticipating changes in macroeconomic regimes in order to adjust allocations accordingly. Their approach is based on revisions to growth and inflation expectations, rather than changes in levels, since the ISSG believes that it is expectations that drive asset prices. The ISSG found that their regime-based approach has the potential to provide not only higher long-term return, but also better downside protection during periods of market stress, such as the bursting of the tech bubble in the early 2000s and the global financial crisis of 2007-2009.

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The global financial crisis of 2007-2009 taught important lessons about the limits of traditional approaches to diversification and the need to achieve a deeper understanding of the macroeconomic influences on asset class performance. As institutional investors revisit their assumptions about asset allocation, diversification and asset class correlations, the ISSG has sought to help them integrate macroeconomic influences on asset class behaviors into their asset allocation approaches. The ISSG's belief is that an awareness of regimes might lead to better performance. In their view, an asset allocation structure that can dynamically overweight assets that have historically behaved well in certain macroeconomic regimes and underweight those that performed badly might lead to greater upside potential, while potentially protecting against significant drawdowns.

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<sup>1</sup> The Investment Strategy and Solutions Group is part of The Bank of New York Mellon, a principal banking subsidiary of BNY Mellon.

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The group's work highlights the potential benefits of moving away from static strategic asset allocation programs to more opportunistic approaches that incorporate macroeconomic indicators into asset class weightings. Unlike previous research on regime-based or risk-based asset allocation, the ISSG broke new ground on three levels. First, the team developed a more granular understanding of complicated patterns of macroeconomic regimes and their effects on asset prices, especially during transition periods. Second, they pointed to the importance of shifts in growth and inflation *expectations* rather than just levels for signaling regime changes. Finally, they used these insights to develop a proprietary approach to analyze growth and inflation expectations data with a view toward predicting the probability of regime changes and adjusting exposures accordingly.

#### Rethinking Asset Allocation Approaches

For many years, investors tended to hold equities, fixed income and cash according to their return requirements and risk tolerances. However, during the multi-decade bull market that began in the early 1980s, many investors began abandoning cash allocations as a "drag on performance." Cash allocations were increasingly replaced by a new category of uncorrelated assets lumped together as "alternatives," whether it was real estate, private equity, or hedge funds. Investors were drawn to alternatives' potential to deliver a higher expected rate of return within the same volatility target for the overall portfolio. This putative "free lunch" was based on the historical low correlation of alternatives to traditional asset classes. Notions of optimal diversification changed, as more investors turned to alternatives in lieu of cash allocations. A new asset allocation framework emerged based on three standard buckets consisting of stocks, bonds, and alternatives. The illiquidity of many alternative asset classes was generally regarded as acceptable compensation for institutional investors with long-term investment horizons.

The global financial crisis changed that view, as many investors learned painful lessons about liquidity and the limits of diversification when it is needed most. The crisis engendered a new respect for tail risk and prompted widespread soul-searching about liquidity, diversification and asset class correlations. It did not, however, significantly dampen the return expectations of many institutional investors confronted with ongoing pension fund deficits and other investment challenges.

Instead, investors seem to be increasingly interested in ways to improve their asset allocation approaches to address tail risk and the instability of asset class correlations, without sacrificing return expectations. The goal is to understand the underlying forces that drive asset class performance and risk in order to enhance return, minimize drawdown risk and avoid reverting to low-yielding cash allocations.

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This has led to a number of asset allocation frameworks that define regimes in different ways. One approach is to categorize asset classes according to their behavior across different growth and inflation regimes. According to this taxonomy, assets are organized into risk buckets consisting of growth assets, inflation-sensitive assets, and deflation-sensitive assets. Subsets of traditional asset classes can fall into multiple risk buckets depending on the underlying instrument's sensitivity to growth and inflation. For example, some types of fixed income can be categorized as growth (high yield bonds), inflation-sensitive (Treasury Inflation Protected Securities), and deflation-sensitive (U.S. Treasuries) assets. Generally speaking, these three risk buckets correspond to macroeconomic regimes that can be described much like Goldilocks' three bowls of porridge: Too Hot (inflation), Too Cold (deflation), and Just Right (growth).

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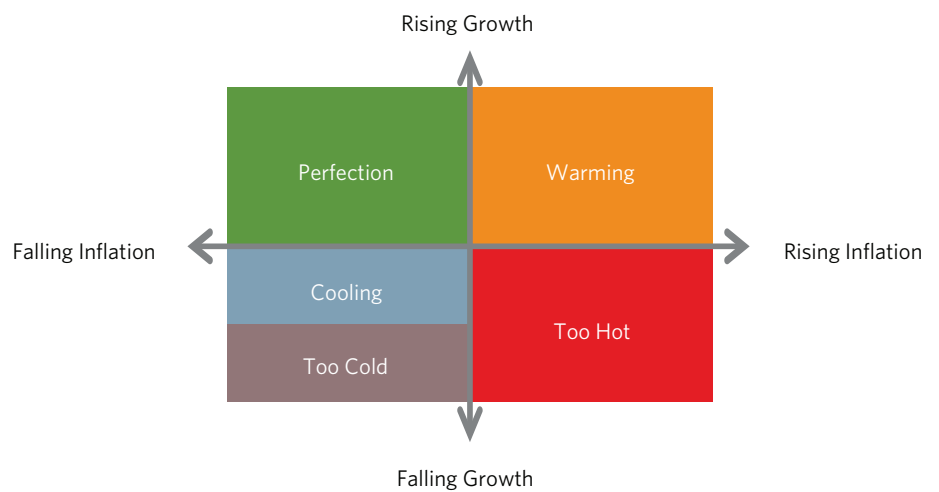
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### Mapping Regimes and Their Effects on Asset Prices

The ISSG believes the Goldilocks scenario of Too Hot (rising inflation choking off growth), Too Cold (falling inflation and falling growth), and Just Right (positive growth and low inflation, represented in Exhibit 1 by the Warming, Cooling and Perfection sections) regimes does not adequately capture all of the possible permutations given the two macroeconomic variables of inflation and growth. In the ISSG's view, there should be a minimum of four regimes to represent the possible combinations of growth and inflation scenarios (rising and falling growth, rising and falling inflation). While four regimes depict the four possible scenarios, they believe a new kind of Too Cold regime is needed to represent a special case of falling inflation and falling growth, when growth contracts sharply as in recessions (see Exhibit 1). While it would be possible to introduce ever more dissections of regimes, the ISSG believes that must be balanced with a practical need to decipher and identify regimes meaningfully.

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**Exhibit 1 - Refining Macroeconomic Regimes**



Source: ISSG

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As they investigated historical economic and performance data, the ISSG discovered a far more complex pattern of regime transitions than was generally understood.

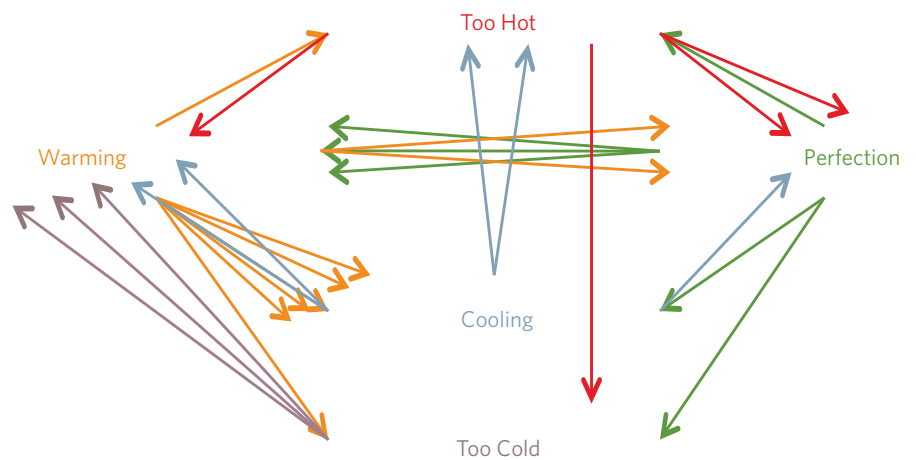
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A more nuanced five-bucket framework has profound implications for understanding asset class behavior. For example, investors using the basic three-bucket framework might be inclined to allocate away from equities and other growth assets as growth expectations begin to decline. But historical data show that growth-sensitive assets can still have positive real returns even as growth expectations are declining (or Cooling) on average.

As they investigated historical economic and performance data, the ISSG discovered a far more complex pattern of regime transitions than was generally understood. It is common to think of the economy as ebbing and flowing in a neat, sequential pattern of heating and cooling. The typical picture is of an economy with predictable cycles of Warming up, getting Too Hot, and then Cooling until the point of Too Cold. While this image is easy to understand, it does not typically correspond to actual experience. Instead, given the complexity of the U.S. economy and the many internal and external factors that affect it, the transitions are far more complicated and the regimes are of varying lengths (see Exhibit 2).

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**Exhibit 2 - Complex Transitioning Across Macroeconomic Regimes**



Source: ISSG

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Regime-based asset allocation is not focused on adjusting weightings on a short-term, potentially even daily, basis according to market volatility.

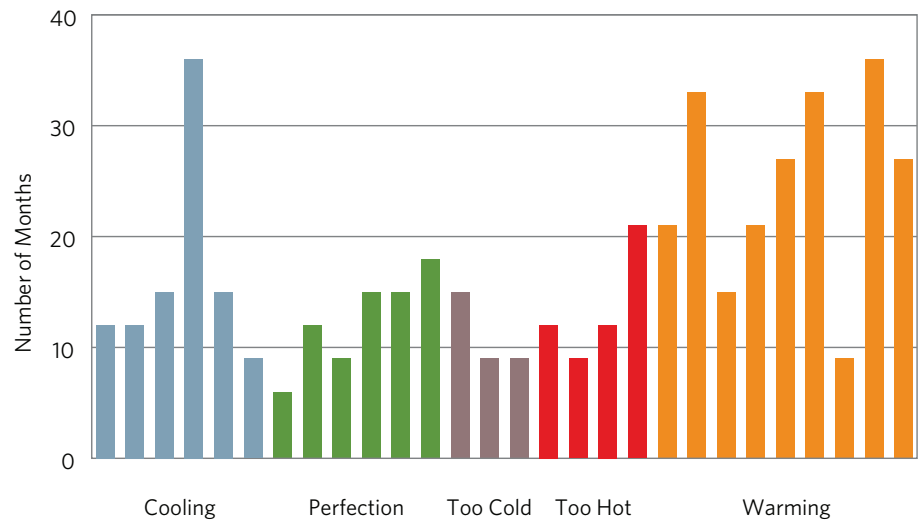
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The ISSG found that the Warming and Cooling environments (typically fairly benign) tend to last longer on average, but also exhibit a higher variance in length, while the extremes (Perfection, Too Hot and Too Cold) tend to be shorter and have more consistent duration. For example, Warming regimes averaged a length of 25 months but ranged from 9 months to 36 months. In contrast, the Too Cold regimes had an average length of 11 months and had a tighter range of 9 months to 15 months. The Too Cold regime length was the shortest on average, likely reflecting the Fed's interceding to counter dramatically decreasing growth expectations (see Exhibit 3).

This exercise reinforced the challenge investors face in accurately aligning their portfolio construction according to changes in regimes. Regime-based asset allocation is not focused on adjusting weightings on a short-term, potentially even daily, basis according to market volatility. However, regime-based approaches will likely adjust allocations more frequently than more static asset allocation frameworks.

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**Exhibit 3 - Regimes Vary in Length**



Source: ISSG

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## The Power of Expectations

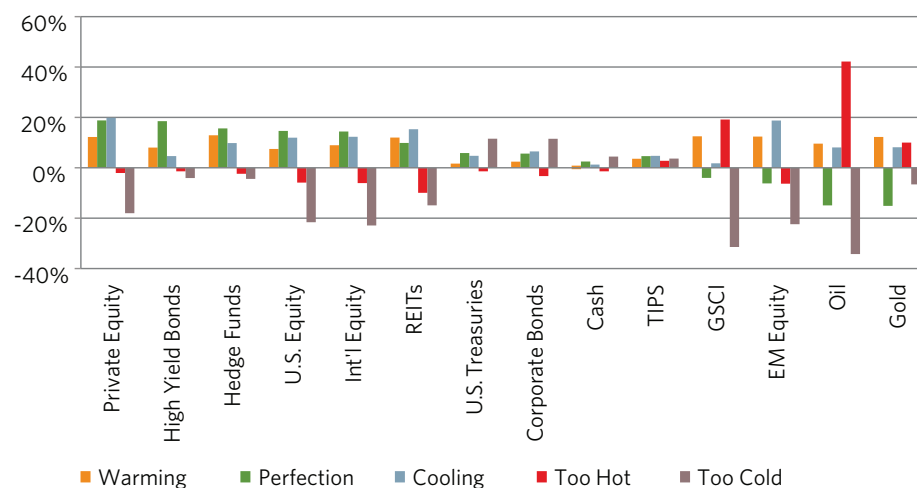
Having achieved a more detailed understanding of macroeconomic regime transitions and their varying durations, the ISSG was able to map historical asset class performance across these regimes (see Exhibit 4). In general, equities were found to perform well in periods of rising growth and falling inflation expectations. Not surprisingly, TIPS and other inflation-sensitive assets outperformed nominal bonds in periods marked by rising inflation expectations.

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As historical performance is not an indication of future performance, the ISSG was faced with the challenge of applying those historical insights to identify regimes in real time, so that investors might leverage a regime-based approach on a prospective basis.

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**Exhibit 4 - Asset Class Performance Across Regimes**



Source: Refer to Sources for Data within the appendix for time periods. Please see appendix for index descriptions.

As historical performance is not an indication of future performance, the ISSG was faced with the challenge of applying those historical insights to identify regimes in real time, so that investors might leverage a regime-based approach on a prospective basis. The goal was to create an approach that could help predict regime probabilities by processing new information about changing real GDP and inflation expectations and mapping that to what the ISSG already knew about the current macroeconomic regime.

That would allow for testing the probability of a certain regime, based on a set of possible variables for growth and inflation data. The ISSG used CPI and real GDP expectations data from the Survey of Professional Forecasters compiled and maintained by the Federal Reserve Bank of Philadelphia, which provide a long history of how real growth and inflation expectations have changed over time.

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Given the devastating losses suffered by many from the unexpected convergence of asset class correlations during the global financial crisis, the ISSG believes that regime-based asset allocation has the potential to become a powerful risk management tool during times of market stress.

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The ISSG found that their regime-based approach had the potential for achieving better returns and avoiding drawdowns by underweighting assets likely to underperform in a particular macroeconomic regime and overweighting assets likely to outperform. In particular, they found their approach had the potential to provide meaningful downside protection during periods of market stress. The ISSG believes the results of their analysis argue for an asset allocation approach that is mindful of and responsive to portfolio risk factors across regimes.

Given the devastating losses suffered by many from the unexpected convergence of asset class correlations during the global financial crisis, the ISSG believes that regime-based asset allocation has the potential to become a powerful risk management tool during times of market stress. At the very least, understanding how changes in growth and inflation can affect specific asset prices and correlations should enable investors to better recognize the potential risks in their portfolios. Amid general expectations of protracted market volatility and uncertainty as the global economy endures historic rebalancing, the ISSG believes traditional static approaches to strategic asset allocation with limited flexibility to adjust to regime shifts might be at a disadvantage. From their perspective, a new era in financial markets seems to suggest that a more opportunistic approach should be considered.

## Our Mission

The Investment Strategy and Solutions Group (ISSG) partners with clients to develop thoughtful and actionable solutions to the broad investment policy issues confronting corporate and public retirement plans, endowments and foundations, sovereign wealth funds and financial institutions and intermediaries. As the investment landscape grows more complex and uncertain, our seasoned investment professionals seek to satisfy client's appetite for trusted advisors who can help them think through their most difficult investment challenges. To that end, we engage in an ongoing dialogue with our institutional clients to achieve a deep understanding of their concerns and needs.

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## Appendix

### Sources for Data and Charts:

Asset Class Name	Index	Start	End
U.S. Equity	S&P 500 Index (Total Return)	12/31/1969	8/31/2011
International Equity	MSCI EAFE (Total Return)	12/31/1970	8/31/2011
Hedge Funds	HFRI Fund Weighted Composite	1/31/1990	8/31/2011
Private Equity	Cambridge Associates Private Equity Returns	3/31/1986	3/31/2011
High Yield Bonds	CSFB High Yield Index	12/31/1985	8/31/2011
REITs	FTSE EPRA/NAREIT U.S. Real Estate Equity Index (Total Return)	12/31/1971	8/31/2011
U.S. Treasuries	Barclay Capital US Aggregate Treasury Total Return Index	1/31/1973	8/31/2011
Corporate Bonds	Barclay Capital US Aggregate Investment Grade Corporate Total Return Index	1/31/1973	8/31/2011
Cash 1	Citigroup 3 Month Treasury Bill Local Currency Index	2/28/1978	8/31/2011
Cash 2	St. Louis Federal Reserve Bank 3-Month Treasury Bill: Secondary Market Rate	12/31/1971	2/28/1978
TIPS	ISSG TIPS Simulation	1/31/1972	8/31/2011
GSCI	S&P GSCI Total Return Index	1/31/1973	8/31/2011
EM Equity 1	MSCI Emerging Markets Index (Total Return)	12/31/1987	8/31/2011
EM Equity 2	S&P IFC Emerging Markets Data	1/31/1976	12/31/1987
EM Equity 3	Regression based on MSCI EAFE Index	2/28/1973	1/31/1976
Oil 1	Nymex Crude Futures	3/31/1983	08/31/2011
Oil 2	Spot Oil	12/31/1969	3/31/1983
Gold 1	Comex Gold Futures	1/31/1975	08/31/2011
Gold 2	Spot Gold	12/31/1969	01/31/1975
CPI	CPI Urban Consumers (seasonally adjusted)	12/31/1969	7/31/2011
(Real) GDP	US Real GDP (seasonally adjusted)	12/31/1969	6/30/2011
CPI Revisions	Survey of Professional Forecasters / Federal Reserve Bank of Philadelphia	12/31/1969	8/31/2011
GDP Revisions	Survey of Professional Forecasters / Federal Reserve Bank of Philadelphia	12/31/1969	8/31/2011

- S&P 500 Index is considered to be generally representative of the U.S. large capitalization stock market as a whole. It is an unmanaged capitalization-weighted index of 500 commonly traded stocks designed to measure performance of the broad domestic economy through changes in the aggregate market value of those stocks. The index assumes reinvestment of dividends.
- The MSCI EAFE index is widely accepted as a benchmark for international stock performance (excluding the United States and Canada), and measures the performance of the developed stock markets of Europe, Australia, and the Far East (EAFE). The index is an aggregate of 22 individual country indexes that collectively represent many of the major markets of the world. The index series includes only markets, companies, and share classes available to foreign investors. It is designed to maximize float and liquidity, minimize cross-ownership, and accurately reflect the market's total size, industry composition, and size of stock. The index is calculated on a total return with the percentage change in price plus actual coupon income making up the total return. The index is rebalanced monthly.

- HFRI Fund Weighted Composite Index is an equally weighted performance index of fund of hedge funds selected by HFR. The index includes both onshore and offshore fund of funds, which invest across the spectrum of hedge fund strategies. There are no minimum asset sizes or operating history constraints. All underlying funds report returns net of fees and in US dollars. HFR, as a business practice, does not reveal of the names of participant funds.
- Cambridge Associates Private Equity Returns- Please refer to the Proprietary Benchmarks page of the Cambridge Associates website at [www.cambridgeassociates.com](http://www.cambridgeassociates.com) for additional information.
- The CSFB High Yield Index, compiled by Credit Suisse First Boston, measures high-yield debt securities, which are often referred to as “junk bonds.”
- The FTSE EPRA/NAREIT U.S. Real Estate Equity Index Series is designed to provide the most comprehensive assessment of overall industry performance, and includes all tax-qualified real estate investment trusts (REITs) that are listed on the New York Stock Exchange, the American Stock Exchange and the NASDAQ National Market List. The index constituents span the commercial real estate space across the US economy and provide investors with exposure to all investment and property sectors.
- Barclay Capital US Aggregate Treasury Total Return Index is a broad-based benchmark that measures the performance of US Treasury Securities with greater than one year to maturity. The index was launched on January 1, 1973.
- Barclay Capital US Aggregate Investment Grade Corporate Total Return Index is a broad-based benchmark that measures the investment grade, fixed-rate, taxable, corporate bond market. It includes USD-denominated securities publicly issued by U.S. and non-U.S. industrial, utility, and financial issuers that meet specified maturity, liquidity, and quality requirements. Securities in the index roll up to the U.S. Credit and U.S. Aggregate Indices. The index was launched on January 1, 1973.
- The Citigroup 3 Month Treasury Bill Local Currency Index is designed to track the returns of 3 month U.S. Treasury securities
- The St. Louis Federal Reserve Bank 3-Month Treasury Bill: Secondary Market Rate comes from the Board of Governors of the Federal Reserve System’s Selected Interest Rates - H.15 report. The value for each month is the average daily rate on 3-Month Treasury Bills for that month.
- ISSG TIPS returns were simulated by the ISSG using breakeven inflation rates from the United Kingdom, Ten-Year Treasury Yields, and Survey of Professional Forecasters data from the Federal Reserve Bank of Philadelphia. They are intended to represent hypothetical returns for a constant maturity 10 year TIPS total return index.
- S&P GSCI index is a composite index of commodity sector returns representing an unleveraged, long-only investment in commodity futures that is broadly diversified across the spectrum of commodities. The returns are calculated on a fully collateralized basis with full reinvestment.
- MSCI Emerging Markets Index (EM) is a capitalization-weighted benchmark designed to measure global emerging equity market performance and is calculated on a total return basis with dividends reinvested.
- S&P IFC Emerging Market indices are broad market indicators that measure the widest possible opportunity set of investable stocks in each emerging market.

- NYMEX Oil is an index blend of several U.S. domestic streams of light sweet crude oil with physical delivery.
- COMEX Gold is an index of 100 troy ounces of gold with physical delivery.
- CPI Urban Consumers (seasonally adjusted) –All Urban program produces monthly data on changes in the prices paid by urban consumers for a representative basket of goods and services.
- US Real GDP measures the final value of goods and services produced in the US economy on a quarterly basis. Chain weighted (Real) GDP measures the value of goods and services at constant dollar prices. This date is compiled by the Bureau of Economic Analysis.
- The Federal Reserve Bank of St. Louis is one of the 12 regional reserve banks in the Fed System.
- The Survey of Professional Forecasters is the oldest quarterly survey of macroeconomic forecasts in the United States. The survey began in 1968 and was conducted by the American Statistical Association and the National Bureau of Economic Research. The Federal Reserve Bank of Philadelphia took over the survey in 1990. The forecasted annual CPI inflation and GDP growth are an aggregation of the forecasted values for each of the next four quarters.
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