

Market Sentiment and the Business Cycle

Identifying Macro Regimes Through Investor Risk Appetite

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“The stock market is the story of cycles and of the human behavior that is responsible for overreactions in both directions.”

–Seth Klarman

“Rule No. 1: Most things will prove to be cyclical.
Rule No. 2: Some of the greatest opportunities for gain and loss come when other people forget

Rule No. 1.”

–Howard Marks

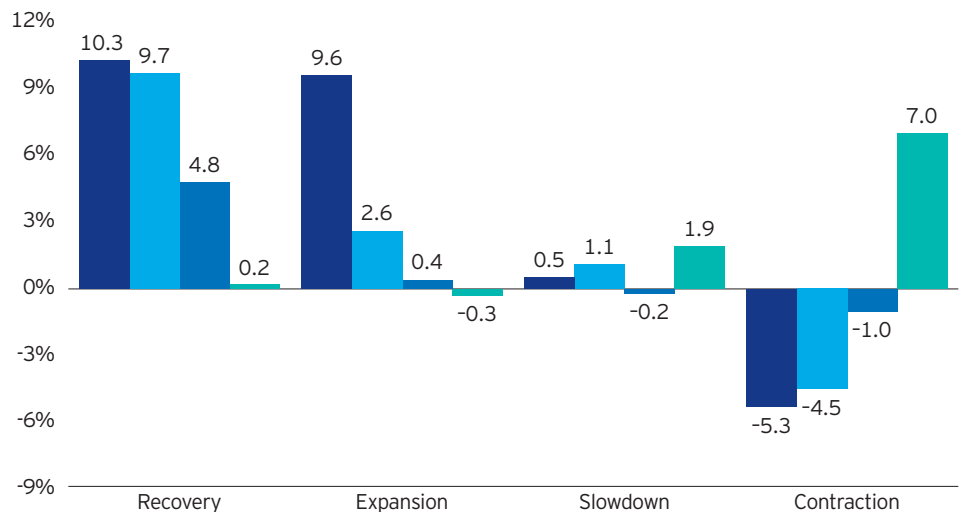
Executive Summary

- + Our market sentiment indicator is strongly correlated with the business cycle, leads turning points in economic activity, and has historically predicted the relative performance between major asset classes: equities, high-yield bonds, investment-grade bonds and government bonds.
- + Drawing an analogy with our macro market regimes based on market sentiment and analyze the performance of major asset classes during market cycles. Our results confirm the remarkable similarity between these two investment frameworks, illustrating how risk appetite can be used in conjunction with leading economic indicators to guide asset allocation decisions.
- + Despite their similarity, investor confidence and the economic cycle can depart from one another for prolonged periods of time. Understanding these divergences can be useful to gauge market exuberance or undue pessimism in the context of economic fundamentals.
- + Further, we show that market sentiment can be particularly useful in timing allocations to emerging markets (EM), where investor confidence in institutional/political progress and long-term convergence to developed markets is an important driver of returns.

Exhibit 1: IIS Global Market Sentiment Regimes: Investment Implications

■ Global Equity Premium ■ Global HY Premium
■ Global IG Premium ■ Global Duration Premium

Market sentiment regimes: average annualized returns
January 1973-June 2019



Sources: Bloomberg L.P., Invesco, 6/30/19.
Global Equity Premium = MSCI ACWI Total Return - Global Treasuries 10Y Total Return, Global HY Premium = Global HY Total Return - Global Investment Grade Corporate Total Return, Global IG Premium = Global Investment Grade Corporate Total Return - Global Treasuries 10Y Total Return, Global Duration Premium = Global Treasuries 10Y Total Return - Global 3M T-bills. See Exhibit 5 for full methodology and disclosures for index definitions. Indices are unmanaged and cannot be purchased directly by investors. **Past performance does not guarantee future results.**

In the past few years we have illustrated some of the macro building blocks of our investment process, which is grounded in extensive empirical analysis of the business and credit cycles. We have documented how these macro frameworks provide valuable insights into the economic drivers of financial markets and how we use them to guide our asset allocation decisions.

In this article, we share another important pillar of our process: a framework to analyze global asset prices and extract revealing information about the economic environment. Using historical market risks and returns, we have developed a global sentiment indicator to gauge investors' risk appetite and its relationship to the business cycle and future market returns. We illustrate how investor confidence is closely related to the growth cycle and how it may be used to anticipate turning points in economic activity.

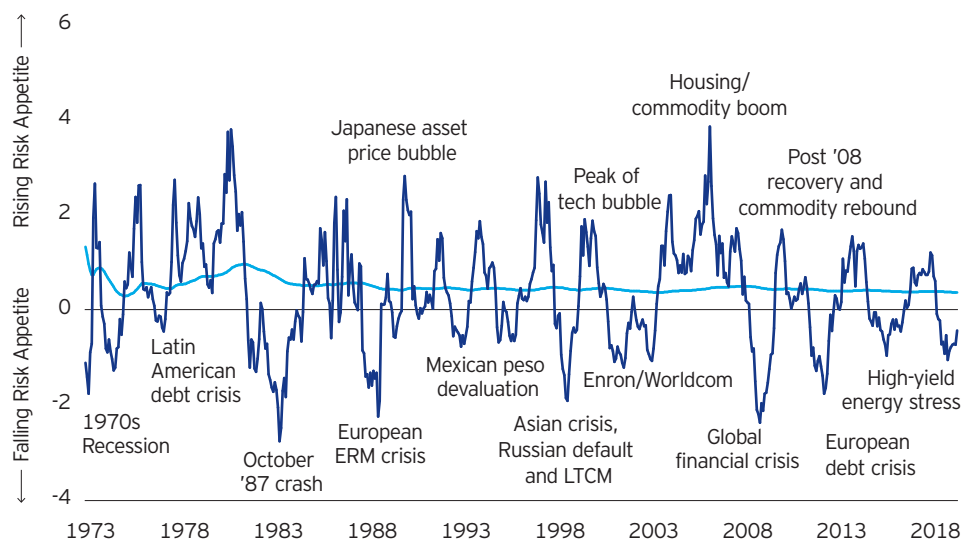
IIS Global Market Sentiment Indicator

Our global market sentiment indicator provides a measure of relative risk-adjusted performance between riskier and safer asset classes (e.g., equities vs. government bonds). Specifically, it measures how much investors have been rewarded on average, for taking an incremental unit of risk in global financial markets on a trailing medium-term basis. Constructed using a broad universe of country-level total return indices across fixed income, credit and equity markets, the market sentiment indicator combines information from both developed and emerging markets and has a long history going back to the early 1970s. A rising index value signals improving market sentiment (i.e., rising risk appetite). Conversely, a falling index value signals deteriorating market sentiment (i.e., falling risk appetite) **Exhibit 2**.

Exhibit 2: IIS Global Market Sentiment Indicator

■ IIS Market Sentiment Indicator ■ Long-Term Average (right)

Cyclical fluctuations between exuberance and pessimism
January 1973–June 2019



The indicator has several important features worth noting. First, its long-term average has been positive at around 0.35%, confirming that investing in riskier asset classes has historically produced positive excess returns over safer assets in the long term. However, there are significant and frequent departures from this long-term average, as illustrated by many episodes of overexuberance or excessive pessimism during which investors have been, respectively, overcompensated or over penalized for taking more risk. All major peaks and troughs in our indicator can be associated with well-known boom and bust cycles in financial markets, such as the Asian crisis and the Russian default of the late 1990s, the peak of the tech bubble in 2000, the global financial crisis of 2008, and the European debt crisis of 2011 to 2012. In other words, investor confidence has historically exhibited a very cyclical pattern, with a tendency to reach extreme levels on the bullish and bearish sides, before reverting back to “normal” levels.

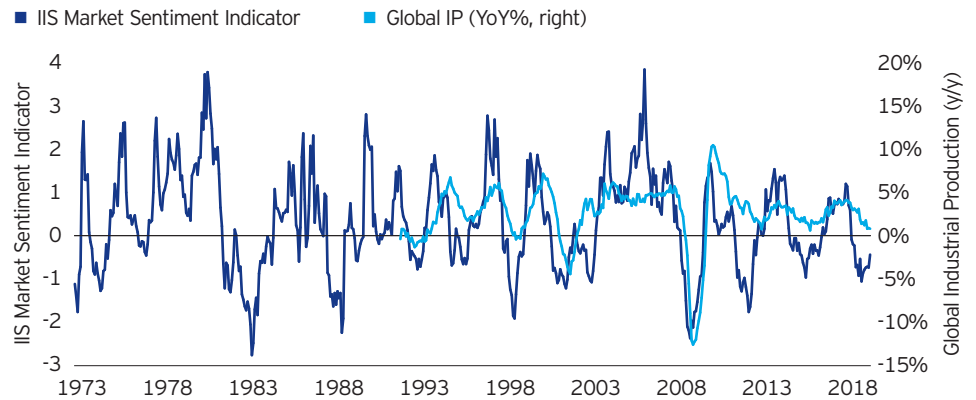
Market Sentiment as a Real-Time Proxy of the Business Cycle

Despite its tendency to swing to extreme levels, investor confidence does not exist in a vacuum and is usually driven by the global economic cycle, among other things.

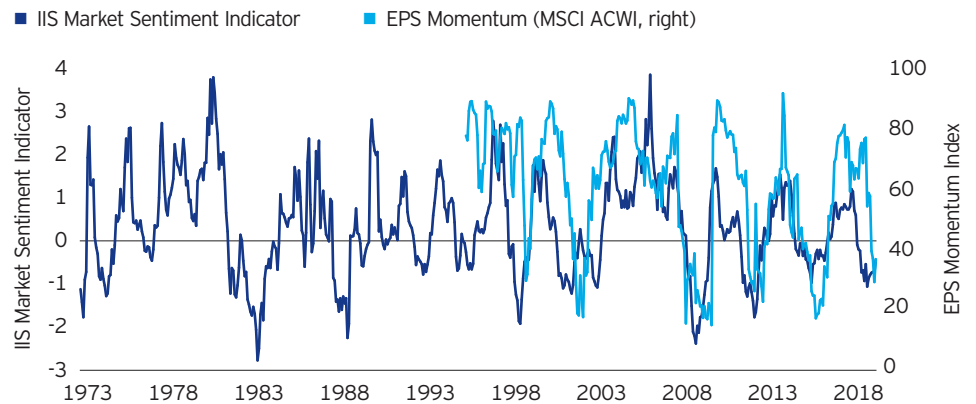
As illustrated in **Exhibit 3**, there is a strong positive correlation between our sentiment indicator and several proxy measures of the business cycle such as industrial production, earnings per share (EPS) momentum and our global leading economic indicator (LEI).¹ In other words, fluctuations in market sentiment have typically coincided with underlying cycles in economic activity and corporate profitability. Furthermore, statistical analysis shown in **Exhibit 4** confirms that these correlations are meaningful and statistically significant, and that sentiment tends to lead the business cycle by a few months. In fact, reversals in risk appetite can occur ahead of the actual turn in the macro data when driven by developments that foreshadow changes in economic growth, such as monetary and fiscal policy announcements or financial and political shocks.

Exhibit 3: Strong Correlation Between Investor Confidence and the Global Business Cycle

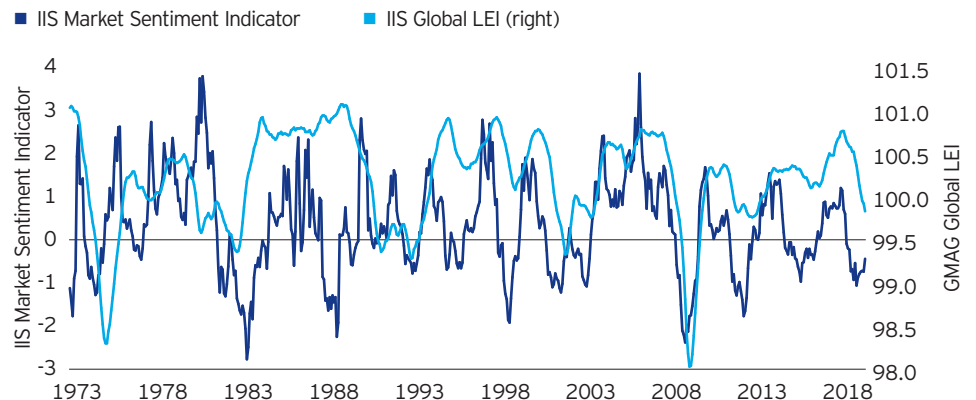
Leads global industrial production (IP) by 3 months (January 1973-June 2019)



Leads EPS momentum by 4 months (January 1973-June 2019)



Leads IIS Global Leading Economic Indicator (LEI) by 2 months (January 1973-June 2019)



Sources: Bloomberg L.P., MSCI, Citi, Barclays, JPMorgan, Invesco research and calculations, 6/30/19. Global IP is a measure of economic activity that refers to the global output of industrial establishments and covers sectors such as mining, manufacturing and public utilities (electricity, gas and water). EPS momentum is calculated by comparing the relative magnitude of average EPS increases and decreases over the past six months. The IIS LEI is a proprietary economic indicator designed to anticipate turning points in economic activity. **Past performance does not guarantee future results.**

Exhibit 4: IIS Market Sentiment Indicator: A Leading Indicator of the Business Cycle

Correlations and lead times over cyclical economic indicators
Sample January 1998-June 2019

	Correlation	T-Stat*	Lead Time
GMAG Global LEI	0.74	17.53	2 Months
Global PMI Manufacturing	0.75	17.90	2 Months
Global PMI Employment	0.71	15.98	3 Months
Global Industrial Production (y/y %)	0.70	15.49	3 Months
MSCI ACWI EPS momentum	0.60	11.77	4 Months

*All variables significant at 99% confidence level.

Sources: Bloomberg L.P., Markit, JPMorgan, MSCI. Invesco calculations, 6/30/19. EPS momentum is calculated by comparing the relative magnitude of average EPS increases and decreases over the past six months. **Past performance does not guarantee future results.**

Given the availability of real-time market data, investor sentiment can be monitored in a timely manner to support the identification of macro regimes in conjunction with our leading economic indicators which are, by and large, based on information available only on a monthly basis. Given the strong correlation between market sentiment and the business cycle, we can draw a natural parallel between the definition of macro regimes using our LEIs and “analogous” regimes based on investors’ risk appetite.

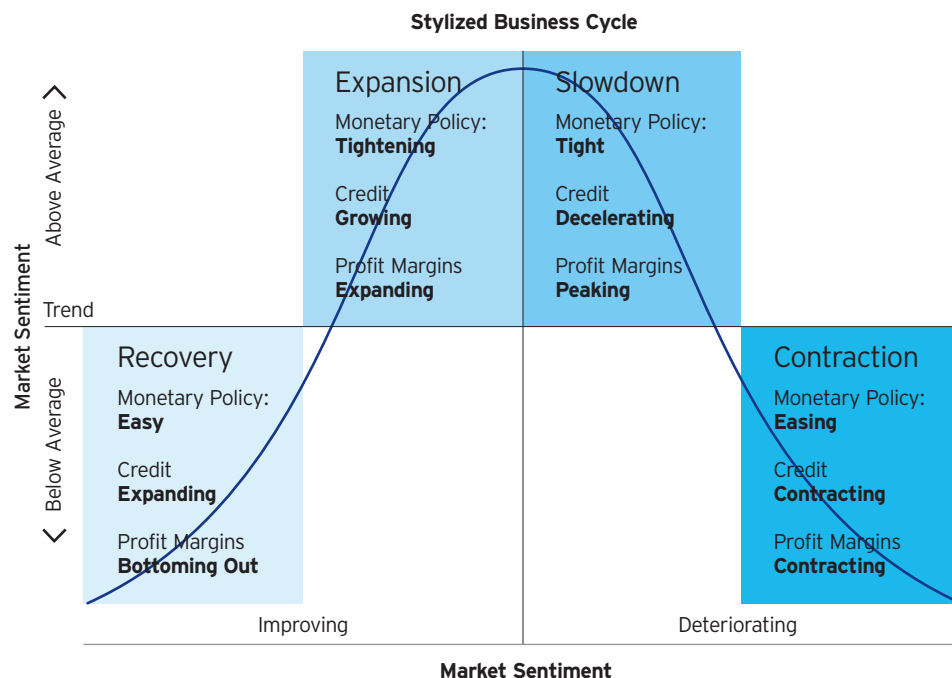
As per our existing macro framework, we define the four regimes in market sentiment as follows: **Exhibit 5**

- + Recovery: Market sentiment is below average and rising
- + Expansion: Market sentiment is above average and rising
- + Slowdown: Market sentiment is above average and falling
- + Contraction: Market sentiment is below average and falling

To reiterate this important point, we deliberately create this perfect analogy between macro regimes and market regimes, applying the same definitions used with our leading economic indicators.² In other words, we are indirectly “extracting” macro regimes from the behavior of global financial markets, as captured by our sentiment indicator.

Exhibit 5: The Analogy Between the Market Cycle and Business Cycle

Extracting macro conditions from market sentiment



Next, we test the validity of this approach: Is the historical performance of asset prices in these four regimes similar to the one previously obtained using our LEIs?

Understanding Divergences Between Market Sentiment and the Economy

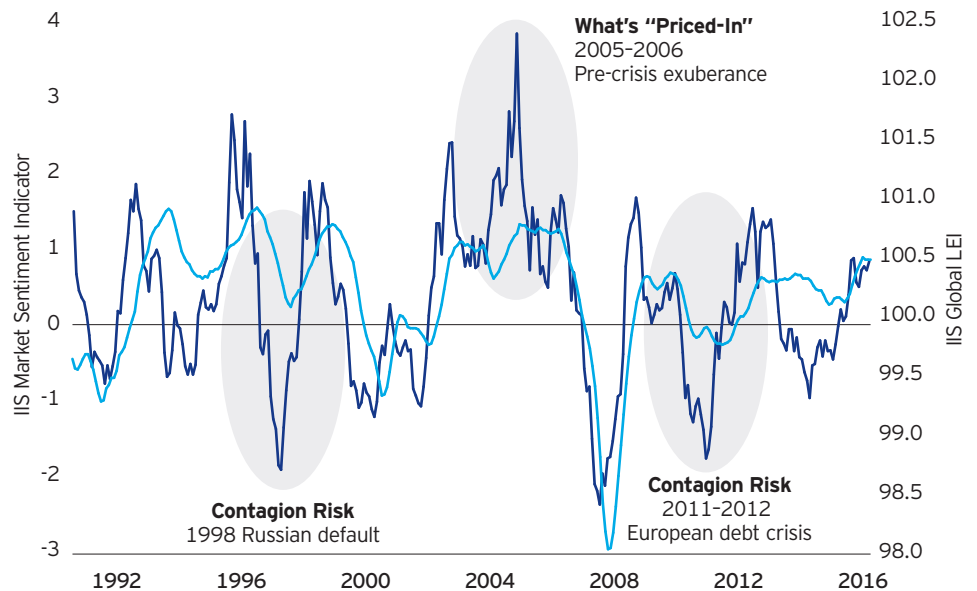
Notwithstanding its strong correlation with the growth cycle, market sentiment often diverges from economic fundamentals for short periods of time. Understanding why these departures occur is extremely important since the subsequent convergence can occur for different reasons, driven by idiosyncratic developments of the time. A closer inspection of **Exhibit 6** (detailed below) provides a few examples:

- + **Contagion risk:** The Russian default of 1998 or the European debt crisis of 2011-2012 drove our investor confidence index into deep negative territory, comparable to recessionary episodes. However, in both instances our global LEI did register a slowdown, but never confirmed such a recessionary reading, suggesting that the real economy, outside of Europe, was proving resilient to financial markets contagion.
- + **What's "priced-in":** In their process of anticipating and discounting future information, markets often run ahead of themselves, pricing-in too much good news. In these situations, despite a buoyant economic environment, we believe a comparison between market sentiment and macroeconomic data can reveal when markets are already "priced" for a given outcome. For example, in late 2005/early 2006, investor confidence had already reached extreme levels, well beyond what could be explained by the acceleration in global growth.

Exhibit 6 Detail: IIS Market Sentiment Indicator and IIS Global LEI

■ IIS Market Sentiment Indicator ■ IIS Global LEI (right)

Highlighting times of divergence
January 1973-September 2017



Historical Performance of Asset Classes in Different “Market/Macro” Regimes

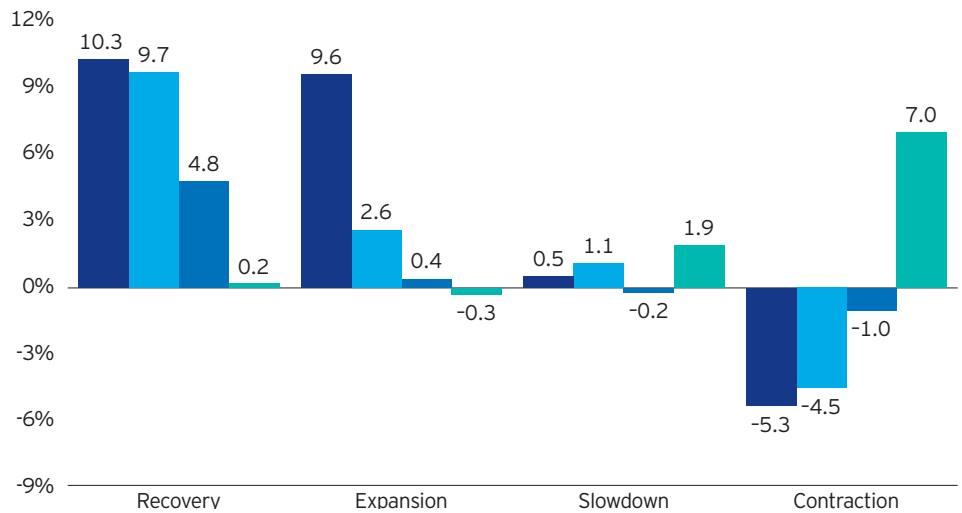
Using weekly historical data, we determine the current “market/macro” regime based on the level and momentum in our market sentiment indicator, relying only on information available at the time. Assuming we remain in the same regime over the following week, we measure the performance of traditional risk premia (e.g., the relative performance between major asset classes such as equities, high yield, investment grade, government bonds and cash).

Exhibit 7 summarizes our backtest results for global assets. Performance aligns intuitively with the different market regimes, with riskier investments exhibiting pro-cyclical behavior. When risk appetite is rising (i.e., during recoveries and expansions), riskier assets tend to outperform their safer alternatives: Equities and credit outperform government bonds, while high yield outperforms investment grade. When risk appetite is falling (i.e., during slowdowns and contractions), riskier assets tend to underperform their safer alternatives: Equities and credit underperform government bonds, while high yield underperforms investment grade. As expected, the relative performance of government bonds over cash is counter-cyclical, with Treasuries underperforming when risk appetite is rising and outperforming when risk appetite is falling.

Exhibit 7: Different Risk Premia Have Outperformed in Different “Market” Regimes

■ Global Equity Premium ■ Global HY Premium
■ Global IG Premium ■ Global Duration Premium

Market sentiment regimes: average annualized returns
January 1973-June 2019



Sources: Bloomberg L.P., MSCI, Citi, Barclays, JPMorgan, Invesco research and calculations, 6/30/19. Global Equity Premium (MSCI ACWI Total Return - Global Treasuries 10Y Total Return) defined as MSCI All Country World (ACWI) Local Index minus Weighted Average of Citi Local Total Return 7-10Y World Government Bond Indices (backfilled with estimated 10Y total return indices using bond yields). Global High Yield Premium (Global HY Total Return - Global Investment Grade Corporate Total Return) defined as JPMorgan Global High Yield Index minus Bloomberg Barclays Global Agg Corporate TR Index Hedged (backfilled with Bloomberg Barclays US Corporate Total Return Index prior to 2000). Global Credit IG Premium (Global Investment Grade Corporate Total Return - Global Treasuries Total Return) defined as Bloomberg Barclays Global Agg Corporate Total Return Index Value Unhedged USD (backfilled with Bloomberg Barclays US Corporate Total Return Value Unhedged USD) minus Citi World Government Bond Indices unhedged, duration equivalent. Global Duration Premium (Global Treasuries 10Y Total Return - Global 3M T-bills) defined as Citi Local Total Return 7-10Y World Government Bond Indices (backfilled with estimated 10Y total return indices using bond yields) minus Weighted Average of Local T-bills. Indices are unmanaged and cannot be purchased directly by investors. Please see disclosures for index definitions. **Past performance does not guarantee future results.**

Exhibit 8 reproduces the same analysis using our global LEI. A comparison between Exhibit 7 and Exhibit 8 reveals the remarkable similarity in asset class performance between the two frameworks, confirming the strong correlation between global market sentiment and the business cycle. (See Appendix for risk-adjusted returns analysis.)

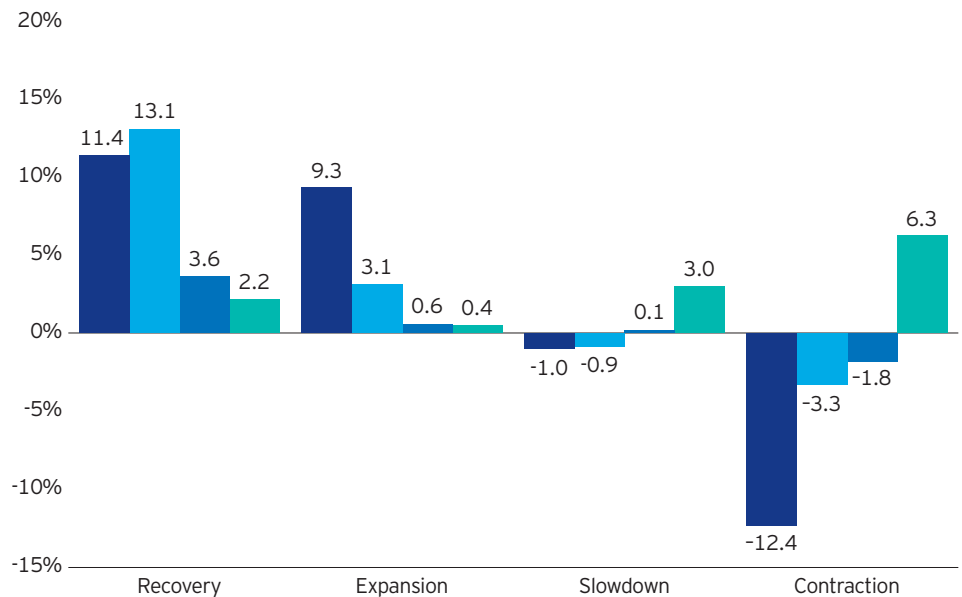
We also apply this analysis to US equity, credit and bond risk premia, comparing the performance of the sentiment indicator with our US LEI, again obtaining similar conclusions (See appendix).

These results confirm that market sentiment is a powerful tool that can be used in conjunction with leading economic indicators to support the more timely identification of macro regimes and inform asset allocation decisions.

Exhibit 8: Different Risk Premia Have Outperformed in Different Macro Regimes

■ Global Equity Premium ■ Global HY Premium
■ Global IG Premium ■ Global Duration Premium

Global LEI regimes: average annualized returns
January 1973-June 2019



The Importance of Combining Multiple Frameworks

Given its leading properties at inflection points in the cycle, is market sentiment a superior indicator to macroeconomic data? While it is certainly tentative to conclude so, relying too heavily on a single tool can be misleading, and it is important to incorporate a more diversified information set. Moreover, while strongly correlated, the two measures often behave differently, as investor confidence is also influenced by other factors not directly related to the economic cycle (See page 5).

We believe our macro and market regime frameworks are most valuable when used in combination, as each provides different, complementary insights. For example, while our sentiment indicator provides a single global aggregate measure of investors' risk appetite, our LEIs offer additional insights into individual country fundamentals, flagging the potential for cyclical divergence and relative value opportunities between markets with similar risk profiles (e.g., US versus European assets).

Applying Market Sentiment in Emerging Markets

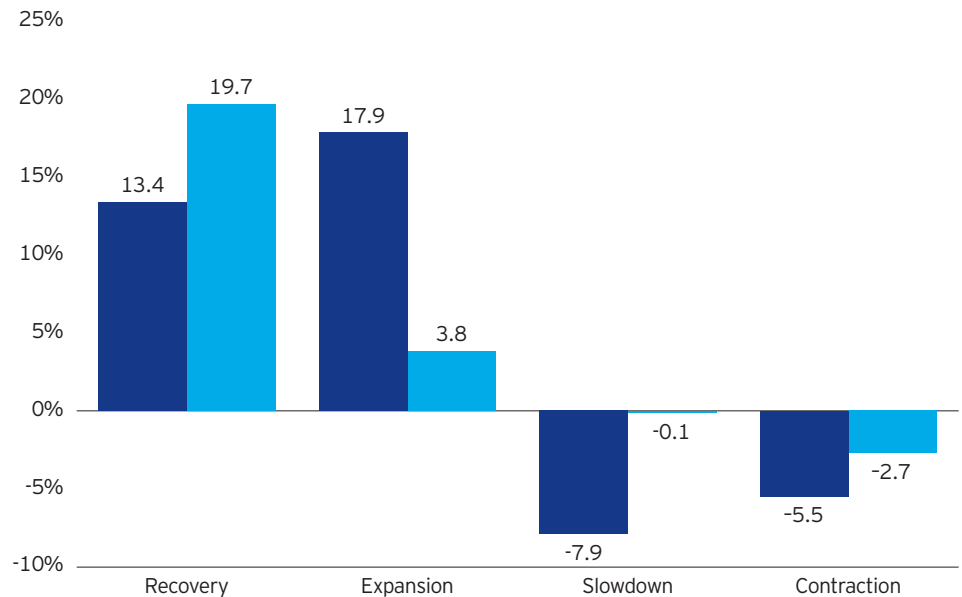
On the other hand, understanding market sentiment can be particularly beneficial when analyzing EM. Given the scarcity of economic data, both in terms of quantity and quality, market-based indicators provide supplementary information to gauge the temperature of the EM cycle. In addition, a key driver of investment flows in EM assets resides in the confidence that these markets are on a long-term convergence path toward developed countries in terms of institutional progress, structural reforms and political stability. This "confidence factor" tends to be better captured in the reaction of asset prices to policy announcements rather than actual economic data.

A quantification of this EM sentiment effect is illustrated in **Exhibit 9**, showing the performance of EM equities and sovereign credit relative to developed markets in the different stages of the market cycle. Intuitively, rising risk appetite has historically been a harbinger of outperformance in EM risk premia, and vice versa.

Exhibit 9: Market Sentiment Is an Important Driver of EM Risk Premia

■ EM Equity Premium ■ EM Sovereign Credit Premium

Market sentiment regimes: average annualized returns
January 1988-June 2019



Conclusions

Despite its tendency to swing from exuberance to excessive pessimism, investor confidence tends to revert toward a fundamental anchor that is largely represented by the economic cycle. Our empirical analysis confirms that market sentiment can be used in conjunction with leading economic indicators to support the identification of macro regimes and guide asset allocation decisions. The analytical tools presented in this article have been an integral part of our investment process for several years, and we believe they provide complementary information to the business and credit cycle frameworks we have introduced in the past.

Sources: Bloomberg L.P., MSCI, Citi, Barclays, JPMorgan, Invesco research and calculations, 6/30/19. EM Equity Premium (Emerging Market Equities Total Return - Developed Market Equities Total Return) defined as MSCI Emerging Markets Total Return Index, unhedged minus MSCI World (Developed Markets) Equities Total Return Index, unhedged. EM Sovereign Credit Premium (Emerging Markets US Dollar Debt TR - US Treasuries Total Return) defined as JPMorgan EMBI Global Diversified Composite Index minus JPMorgan US Treasuries Total Return Index, duration equivalent. Indices are unmanaged and cannot be purchased directly by investors. Please see disclosures for index definitions.

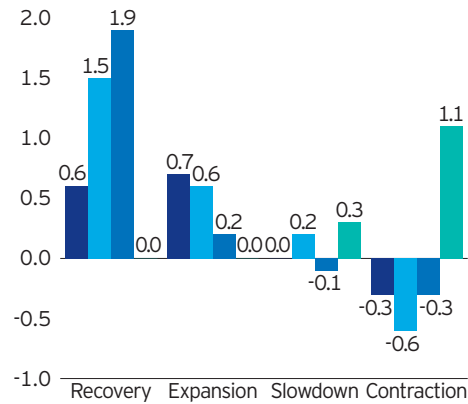
Past performance does not guarantee future results.

Appendix

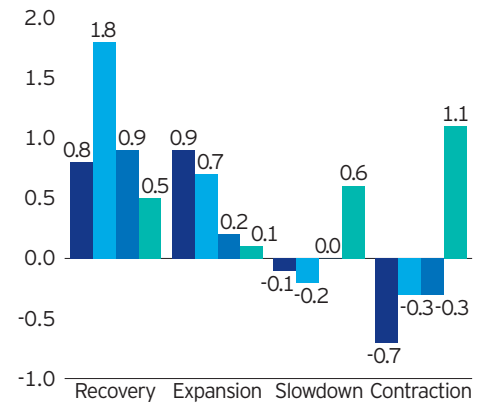
Exhibit 10: Different Risk Premia Have Outperformed in Risk-Adjusted Terms in Different Market and Macro Regimes

■ Global Equity Premium ■ Global HY Premium
■ Global IG Premium ■ Global Duration Premium

Market sentiment regimes:
risk-adjusted returns
January 1973-June 2019



Global LEI regimes:
risk-adjusted returns
January 1973-June 2019

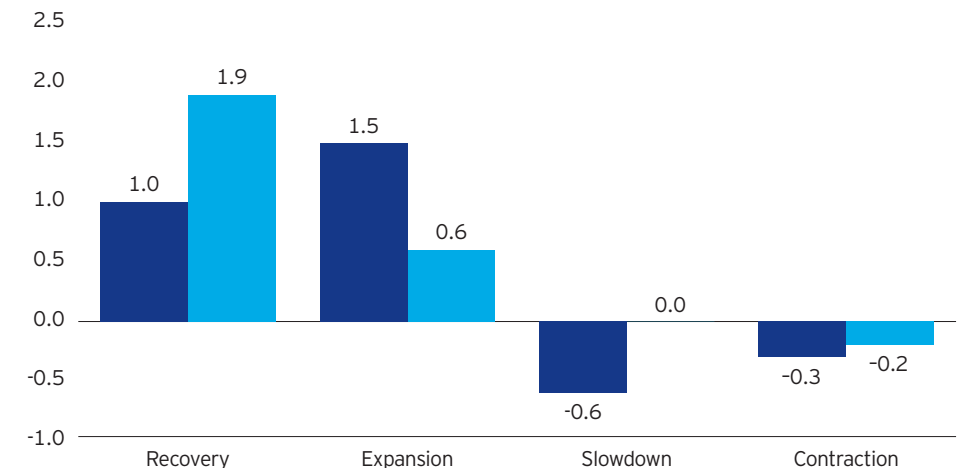


Sources: Bloomberg L.P., MSCI, Citi, Barclays, JPMorgan, Invesco research and calculations, 6/30/19. Global Equity Premium (MSCI ACWI Total Return - Global Treasuries 10Y Total Return) defined as MSCI All Country World (ACWI) Local Index minus Weighted Average of Citi Local Total Return 7-10Y World Government Bond Indices (backfilled with estimated 10Y total return indices using bond yields). Global High Yield Premium (Global HY Total Return - Global Investment Grade Corporate Total Return) defined as JPMorgan Global High Yield Index minus Bloomberg Barclays Global Agg Corporate TR Index Hedged (backfilled with Bloomberg Barclays US Corporate Total Return Index prior to 2000). Global Credit IG Premium (Global Investment Grade Corporate Total Return - Global Treasuries Total Return) defined as Bloomberg Barclays Global Agg Corporate Total Return Index Value Unhedged USD (backfilled with Bloomberg Barclays US Corporate Total Return Value Unhedged USD) minus Citi World Government Bond Indices unhedged, duration equivalent. Global Duration Premium (Global Treasuries 10Y Total Return - Global 3M T-bills) defined as Citi Local Total Return 7-10Y World Government Bond Indices (backfilled with estimated 10Y total return indices using bond yields) minus Weighted Average of Local T-bills. Indices are unmanaged and cannot be purchased directly by investors. Please see disclosures for index definitions. **Past performance does not guarantee future results.**

Exhibit 11: Market Sentiment Is an Important Driver of EM Risk Premia

■ EM Equity Premium ■ EM Sovereign Credit Premium

Market sentiment regimes: risk-adjusted returns in emerging markets
January 1988-June 2019



Sources: Bloomberg L.P., MSCI, Citi, Barclays, JPMorgan, Invesco research and calculations, 6/30/19. EM Equity Premium (Emerging Market Equities Total Return - Developed Market Equities Total Return) defined as MSCI Emerging Markets Total Return Index, unhedged minus MSCI World (Developed Markets) Equities Total Return Index, unhedged. EM Sovereign Credit Premium (Emerging Markets US Dollar Debt TR - US Treasuries Total Return) defined as JPMorgan EMBI Global Diversified Composite Index minus JPMorgan US Treasuries Total Return Index, duration equivalent. Indices are unmanaged and cannot be purchased directly by investors. Please see disclosures for index definitions. **Past performance does not guarantee future results.**

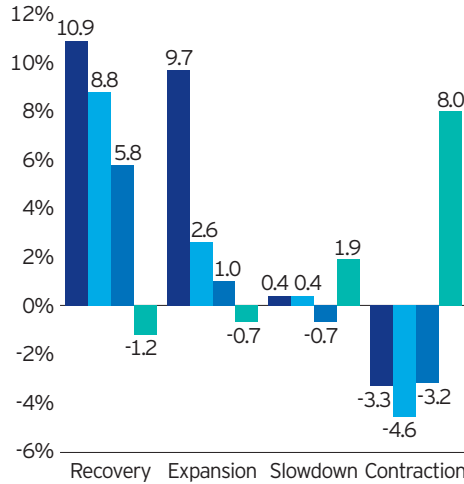
Appendix (continued)

The only difference worth noting is the performance of US and Global duration between recovery regimes, (e.g., positive under the macro framework, but negative under the risk appetite framework). We believe this difference is somewhat consistent with the slightly different nature of the two regimes, where a recovery in investor confidence is typically accompanied by underperformance in Treasuries, while a recovery in the economic cycle is often characterized by easy monetary policy and falling inflation. For more context, refer to our earlier publications on macro regimes.

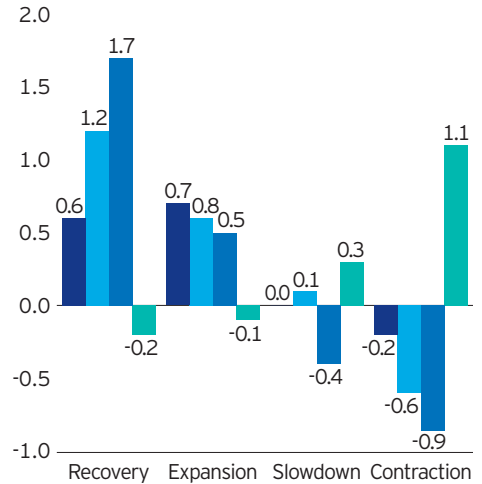
Exhibit 12: Different Risk Premia Have Outperformed in Risk-Adjusted Terms in Different Market and Macro Regimes

- US Equity Premium
- US HY Premium
- US IG Premium
- US Duration Premium

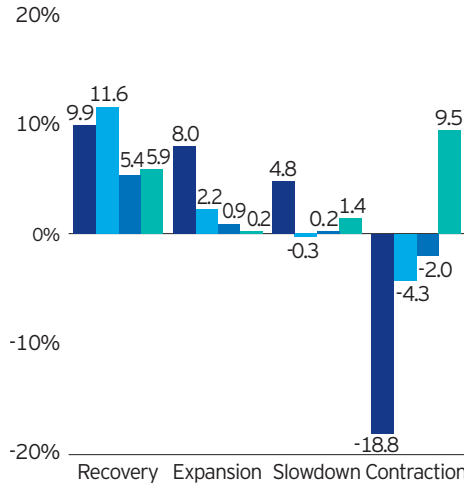
Market sentiment regimes:
average annualized returns
January 1973-June 2019



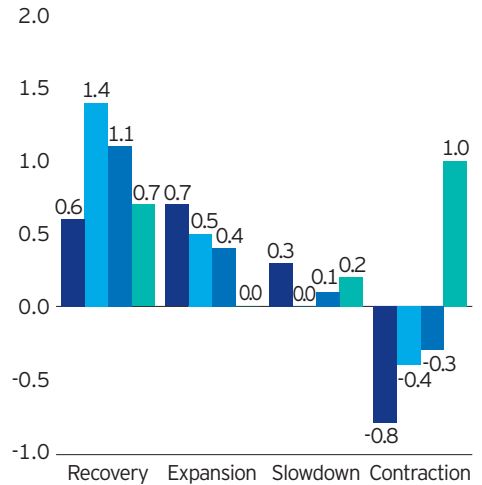
Market sentiment regimes:
risk-adjusted returns
January 1973-June 2019



GMAG US LEI regimes:
average annualized returns
January 1973-June 2019



GMAG US LEI regimes:
risk-adjusted returns
January 1973-June 2019



Sources: Bloomberg L.P., MSCI, Citi, Barclays, JPMorgan, Invesco research and calculations, 6/30/19. US Equity Premium = MSCI Total Return Index - US Treasuries 10-Yr. US High Yield Premium = US High Yield - US Investment Grade Credit, using the Credit Suisse US High Yield Index and the Bloomberg Barclays US Aggregate Credit Index. US Credit Premium = US Investment Grade - US Treasuries, using the Bloomberg Barclays US Aggregate Credit Excess Return Index from 1988 onward. Prior to 1988, we backfill the excess returns using the Bloomberg Barclays US Aggregate Credit Total Return Index minus estimated duration-equivalent US Treasury total returns. Duration Premium = US Treasuries 10-Yr - US T-Bills 3-Month. For the 10-Yr Treasuries, Citigroup 10-Year Treasury Benchmark On-the-Run Total Return Index is used from 1980 onward. Prior to 1980, history is backfilled with estimated total returns using 10-Yr yields from Bloomberg L.P. between 1970 and 1980. Indices are unmanaged and cannot be purchased directly by investors. Please see disclosures for index definitions. **Past performance does not guarantee future results.**



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Alessio de Longis, CFA, is a Senior Portfolio Manager for the Invesco Investment Solutions team, which provides customized multi-asset investment strategies for institutional and retail clients. Mr. de Longis serves as Portfolio Manager for Invesco Oppenheimer Global Allocation Fund. He is primarily focused on global macro tactical asset allocation, factor strategies, and currency overlay.

Prior to joining Invesco, Mr. de Longis was a portfolio manager at OppenheimerFunds and team leader of the global multi-asset group (GMAG). Between 2004 and 2013, Mr. de Longis was a member of the OppenheimerFunds global debt team where he served as portfolio manager and quantitative FX strategist.



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Dianne Ellis is a Research Analyst for the Invesco Investment Solutions team. Prior to joining Invesco, Ms. Ellis was an intermediate research analyst for the global multi-asset group (GMAG) at OppenheimerFunds. Previously, she was a summer intern on the OppenheimerFunds GMAG team and also worked as an equity derivatives sales trader at Phatra Securities Plc in Bangkok, Thailand.

- 1 Our global LEI is constructed as a weighted average of leading indicators for 23 countries (both developed and emerging), covering approximately 90% of world GDP.
- 2 For a more comprehensive discussion of the underlying economic fundamentals and characteristics of each macro regime, please refer to our publication "Dynamic Asset Allocation Through the Business Cycle: A Macro Regime Approach."

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