INSTITUTIONAL ADVISORY & SOLUTIONS

Executive Summary

WHAT CAN THE MARKETS TELL US ABOUT FUTURE ECONOMIC GROWTH?

Historical Predictive Power of the Bond, Stock and Real Estate Markets

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Investors often use their views of future GDP as an input when forecasting stock and bond market returns. It would seem reasonable, then, to turn this relationship around and argue that the bond, stock and real estate markets, which quickly incorporate investors' current expectations about the future, might contain useful signals regarding the economy's future direction.

How well, do bond, stock and real estate markets predict future GDP? Using market data since 1970, we evaluate several market signals and find that, in general, they have not been very helpful in predicting next year's GDP, or the change in next year's GDP versus last year.

There are reasonable arguments for why the bond, stock and real estate markets might contain useful information about future GDP. If strong GDP is anticipated, the demand today for bonds as an economic hedge might decline, leading to a rise in Treasury yields (i.e., low or negative bond returns). Also, the yield curve might steepen, reflecting an expectation of rising yields as the economy grows. For stocks, an anticipation of strong GDP is likely to increase stock prices due to a forecast of rising dividends. Similarly, if a strong economy is expected then real estate values are likely to appreciate today, which will tend to reduce capitalization rates. Despite these reasonable arguments, the quality of market signals as predictors for future GDP is an empirical issue.

We differentiate between a signal's explanatory power and its predictive power. To measure whether a signal can "explain" GDP, we use regression to measure the empirical fit between the signal and GDP over a given data period. However, to measure whether a signal can "predict" GDP, we use available market signal data as of a given time, construct a forecast of next year's GDP, and then assess whether the signal did a good job predicting GDP. A signal's predictive ability is ultimately what matters to investors.

It is possible for a signal to explain movements in GDP when looking over the entire period. So, if we fit the combined market signals to the full data period, the signals explained 48% of the variation in next year's GDP and 44% of the variation in the change of next year's GDP (Figure 1). However, this does not mean that the signal did a good job at predicting GDP because when forming a prediction, one cannot incorporate data unavailable at the time of making the prediction. The average prediction error (RMSE) for next year's GDP (2.05 GDP percentage points) and GDP change (2.45 percentage points) were very high.

Relative to other market signals, the Treasury yield curve slope, stock market returns and the change in cyclically adjusted price-to-earnings ratio (CAPE) have exhibited better predictive power. However, even their absolute predictive power has been relatively low, and this power has fluctuated over time.

Figure 1: Average In-Sample R^2 and Prediction RMSE for Full Regression and Stepwise Regression
1978:q2–2016:q1

	Full Regression		Stepwise Regression	
	Next year's GDP	GDP Change (Next Yr – Last Yr)	Next year's GDP	GDP Change (Next Yr – Last Yr)
avg in-sample (R^2)	0.83	0.38	0.48	0.44
out-of-sample (RMSE, %)	2.18	2.52	2.05	2.45

Note: Rolling regression uses rolling 10-year of market signal data to fit model and predict next year's GDP and GDP changes. Avg in-sample R^2 is the average of R^2 for all iterations of rolling regressions performed. Out-of-sample RMSE compares the rolling regression prediction versus actual GDP and GDP Change.
Source: Federal Reserve Bank of St. Louis, FRED; Professor Shiller's website; NCREIF; Datastream; and PGIM IAS

Conclusion

Overall, market signals are too volatile to provide much help to reliably predict future GDP.

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