

THE ENIGMA OF ECONOMIC GROWTH AND STOCK MARKET RETURNS

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Investors spend enormous time and resources monitoring, analyzing and forecasting gross domestic product (GDP) growth. Many are hyper-focused on the Federal Reserve's tea leaves for indications of economic conditions and likely Fed policy, based on the premise that GDP growth drives capital market returns. Intuitively, higher GDP growth should translate to higher company earnings, which should result in higher equity returns. But is this relationship true?

THE DMS GROWTH PUZZLE

Dimson, Marsh and Staunton (DMS) studied the relationship between long-term stock market returns and long-term GDP growth.¹ Their sample included a cross-section of 21 countries with equity return and GDP growth data from 1900 to 2013. Fifteen of the 21 countries were in Europe, so the sample largely represented a similar economic history.

The DMS researchers found a modest negative correlation between real (inflation-adjusted) equity returns and per capita GDP growth, and they found a modest positive correlation between real equity returns and aggregate GDP growth. The results were mixed and the evidence linking equity returns to GDP growth was weak, surprising many investors and economists.

REVISITING THE GROWTH PUZZLE

We take a closer look at the relationship between GDP growth and equity returns by studying a broader and more contemporary sample of countries. Our sample begins with the MSCI All Country World Index (ACWI), a standard proxy for the global equity market. It includes 23 developed-market and 23

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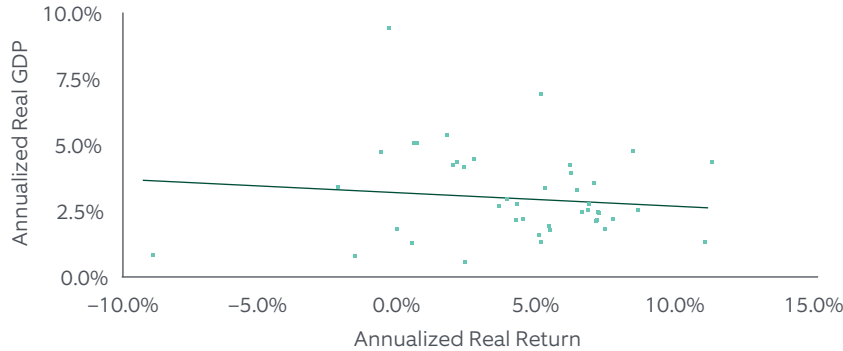
¹ See Dimson, Marsh and Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press (2002) and *Credit Suisse Global Investment Returns Yearbook* (2014).

emerging-market countries as of 2016. After eliminating countries for which either equity returns or GDP growth information is not available, we are left with a final sample of 43 countries with equity returns and GDP growth covering 1995 to 2015.²

We first repeat the DMS test comparing long-term real equity returns and long-term real aggregate GDP growth, but use our broader and more contemporary sample. The scatter plot in Exhibit 1 shows no relationship between long-term real equity returns and real GDP growth. The explained variation (R^2) is effectively zero. Even relative to the DMS finding, this is strong evidence that no clear relationship exists between long-term GDP growth and long-term equity returns.

EXHIBIT 1 – LONG-TERM REAL EQUITY RETURNS AND LONG-TERM AGGREGATE REAL GDP GROWTH

1995 – 2015



Sources: Northern Trust Research, Morningstar Direct and World Bank.

Although economists are interested in the long-term relationship (or lack thereof) between GDP growth and equity returns, investors are often more focused on year-to-year changes in GDP growth and that relationship to year-to-year changes in equity returns. We employ advanced regression techniques that can handle pooled time series and cross sectional data to answer this question (see Exhibit 2). We find an R^2 that is effectively zero, indicating no relationship between annual changes in real GDP growth and annual changes in real equity returns.

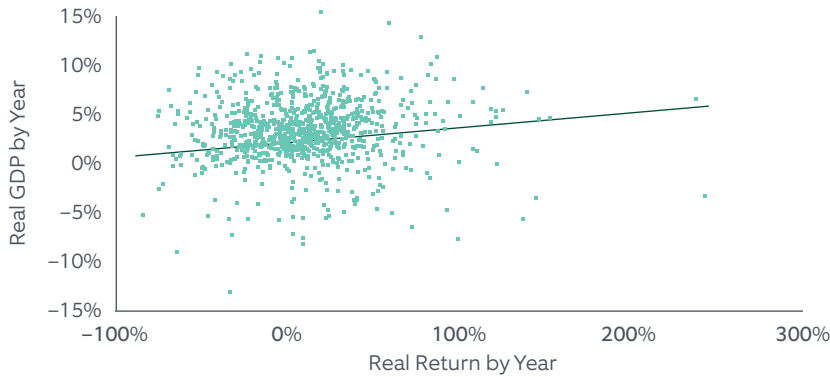
This is a profound empirical result, given the energy and resources spent on monitoring, analyzing and forecasting GDP growth for investment purposes. It suggests those efforts probably do not provide investors with relevant and actionable information.

But we are not quite ready to give up on solving the enigma of economic growth and stock market returns. If global stock markets are highly competitive and forward-looking, they should foresee future changes in GDP growth. Future GDP is not known or observable today, but competitive

² Qatar and United Arab Emirates were removed due to insufficient equity return data. Taiwan was removed due to insufficient GDP data from the World Bank. The final sample includes all 23 developed market countries and 20 of the 23 emerging market countries in the MSCI ACWI.

EXHIBIT 2 – REAL EQUITY RETURNS AND REAL GDP GROWTH (YEAR-TO-YEAR)

1995 – 2015



Sources: Northern Trust Research, Morningstar Direct and World Bank.

markets will discount the expected future state into current prices. When we rerun our test to align annual returns with the following year’s GDP growth (thus observing future GDP growth after the fact), we find an R^2 of 25%, indicating a moderate positive relationship that is statistically significant. This suggests that current stock market prices already contain information about future GDP growth.

If no meaningful relationship exists between stock market returns and long-term or contemporaneous GDP growth, and stock markets already incorporate future GDP growth into current prices, what drives stock market returns?

YOU ARE COMPENSATED FOR BEARING DIVERSIFIED RISK

Systematic risk factors are aggregate, diversified risks. Risk factors explain the compensated portion of a diversified portfolio’s return and risk. But not all risk is compensated with an associated positive average return. If a portfolio is insufficiently diversified, there may be considerable non-systematic (idiosyncratic) risk that is not compensated with a return. Researchers have found at least three systematic risk factors explain the majority of equity returns.³ These include a diversified portfolio’s sensitivity to the total stock market (market factor), to small cap stocks (size factor) and to value stocks (value factor). Additionally, there is evidence for an emerging markets risk factor.

When we test year-to-year changes in the returns of the systematic risk factors against year-to-year changes in country returns, we find a meaningful relationship between systematic risk and country return. The scatter plot in Exhibit 3 shows that about two-thirds of a country’s annual return variation is explained by these four global risk factors.

³ See Fama and French, “Common Risk Factors in the Returns on Stocks and Bonds,” *Journal of Financial Economics*, (1993). Fama and French add two more factors in “A Five-Factor Asset Pricing Model,” *Journal of Financial Economics*, (2015).

EXHIBIT 3 – COUNTRY RETURN AND RISK FACTOR RETURN BY YEAR
1995 – 2015



Sources: Northern Trust Research, Morningstar and Ken French Data Library

Among the returns of individual countries there is residual risk that is not explained by the four risk factors, but that idiosyncratic risk was not compensated with a true (i.e., non-random) return premium for any country – and it is diversifiable. For example, the risk (standard deviation) of the MSCI ACWI over the period was far lower than the average risk of the 43 individual countries, and it was modestly lower than the risk of the MSCI USA (the largest constituent in the MSCI ACWI). There is a reduction in idiosyncratic risk as the investor moves from owning individual countries to the diversified, systematic risk of a global equity portfolio.

If markets are forward-looking, they already price changes in expected future growth, including GDP growth. What is left is compensation for bearing the systematic risk (uncertainty) that the future will turn out to be materially different than what the market anticipates. You are compensated for bearing this risk within a well-diversified global equity portfolio.

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