

- 1 **Q. Coyne Evidence: In his forward DCF risk premium study he is using an**
2 **unadjusted analyst growth forecast of 10.02% for Canada in JMC-5 and 9.66% for**
3 **the US, whereas he uses a forecast GDP growth rate for Canada of 3.94% for**
4 **Canada and 4.55% for the US. Can Mr. Coyne explain:**
5
- 6 **a. Why the US firms are forecast to grow more slowly than Canadian firms**
7 **when the US economy is forecast to grow more rapidly?**
8
- 9 **b. What happens if these growth forecasts are unbiased and Canadian firm**
10 **earnings actually do grow at 10.02%, while GDP only grows at 3.94%? Is it**
11 **not a matter of arithmetic that all national income will eventually accrue to**
12 **corporate earnings leaving nothing as wages! If not please explain in detail**
13 **how earnings can grow at 6.0% more than GDP indefinitely to infinity.**
14
- 15 **A. a.** As stated in the response to Request for Information CA-NP-100, the purpose of
16 this analysis was to derive the market's expectations of overall stock market
17 returns based on observed stock prices, dividend yields and analyst growth rates.
18 In Mr. Coyne's view, the Constant Growth DCF model is the most appropriate
19 methodology for this purpose because the analyst growth rates cover a similar
20 time period (five years) as the forecasted risk-free rate (three years), and both
21 inputs correspond to the approximate time period that rates for Newfoundland
22 Power will be in effect.
23
- 24 **b.** See response to subpart (a). Also, please see Attachment A which is a white
25 paper that further discusses the relationship, or lack thereof, between equity
26 growth and GDP growth.

White Paper Discussion

August 2012



Reports of the Death of Equities Have Been Greatly Exaggerated: Explaining Equity Returns

Ben Inker



Where do equity returns come from? As questions go, it may not be quite as profound as “Why are we here?” or as embarrassingly baffling to most of us as “Why is the sky blue?”, but considering the number of people out there who spend their working lives dealing in the financial markets, it is a question asked less often, and usually answered less well, than it should be. This paper will not pretend to tell the whole story, but in a time when investors are questioning what role equities should have in their portfolios, it is worth understanding where the returns to equities come from, and why, after a 12-year period in which U.S. equity returns have been negative, we can still be confident that the returns will, after all, be there in the long run.

We will begin with a summary of our basic points:

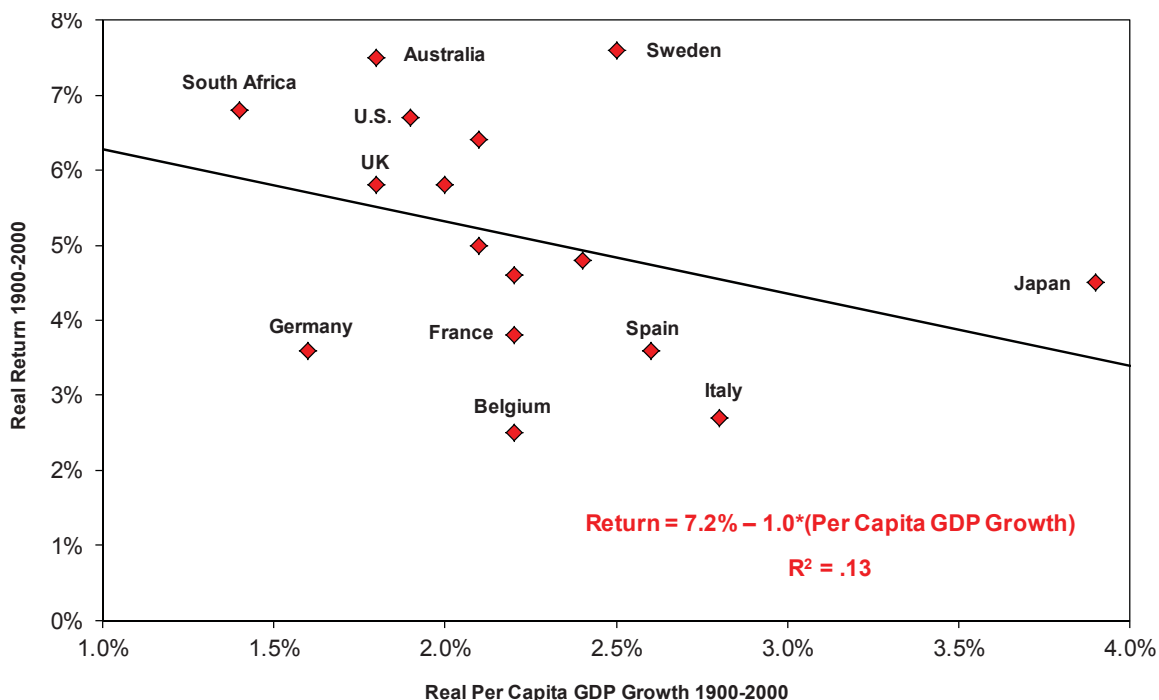
- 1) GDP growth and stock market returns do not have any particularly obvious relationship, either empirically or in theory.
- 2) Stock market returns can be significantly higher than GDP growth in perpetuity without leading to any economic absurdities.
- 3) The most plausible reason to expect a substantial equity risk premium going forward is the extremely inconvenient times that equity markets tend to lose investors’ money.
- 4) The only time it is rational to expect that equities will give their long-term risk premium is when the pricing of the stock market gives enough cash flow to shareholders to fund that return.
- 5) Disappointing returns from equity markets over a period of time should not be viewed as a signal of the “death of equities.” Such losses are necessary for overpriced equity markets to revert to sustainable levels, and are therefore a necessary condition for the long-term return to equities to be stable.

The first point to understand about stock returns is their relationship with GDP growth. In short, there isn’t one. Stock returns do not require a particular level of GDP growth, nor does a particular level of GDP growth imply anything about stock market returns. This has been true empirically, as the Dimson-Marsh-Staunton data from 1900-2000 shows. Many investors are utterly convinced that strong GDP growth is the primary reason why one country’s stock market will outperform another. As we can see in Exhibit 1, this was certainly not the case in the 20th century.

The trouble with picking stock markets on the basis of expectations of GDP growth is not that GDP growth is hard to predict (although it is harder than many people assume), it’s that even if you could predict it with perfect accuracy, it wouldn’t do you any good picking stock markets. As Exhibit 2 shows, this has also held true over the more recent time periods (in this case 1980-2010) and as Exhibit 3 shows, it has held true for emerging countries as well as developed ones.

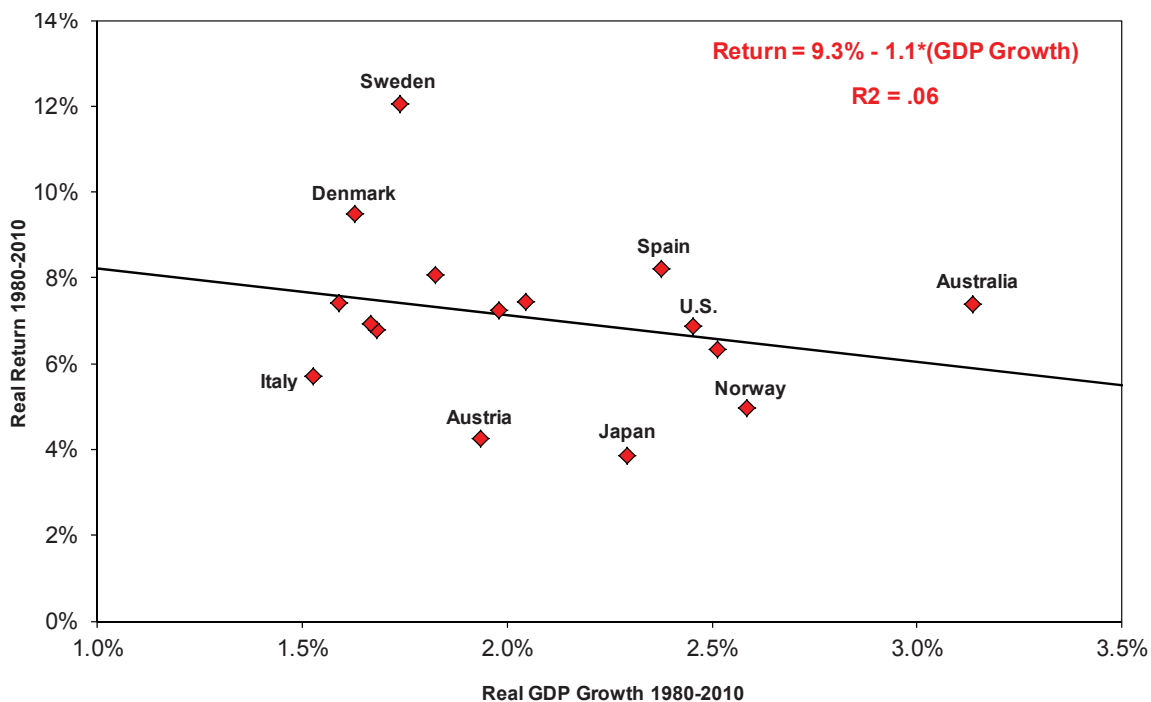
Insofar as there is any relationship here, it’s a perverse one. All else equal, higher GDP growth seems to be associated with lower stock markets returns. How could this possibly be? Don’t earnings grow with GDP and stock prices with earnings? Aggregate corporate profits should indeed be expected to grow with GDP. And overall market capitalization of the stock market should be expected to grow along with aggregate earnings, as can be seen in the U.S. (Exhibit 4).

Exhibit 1
Stock Market Returns and GDP Growth, 1900-2000



Source: Dimson, Marsh, and Staunton, *Triumph of the Optimists*

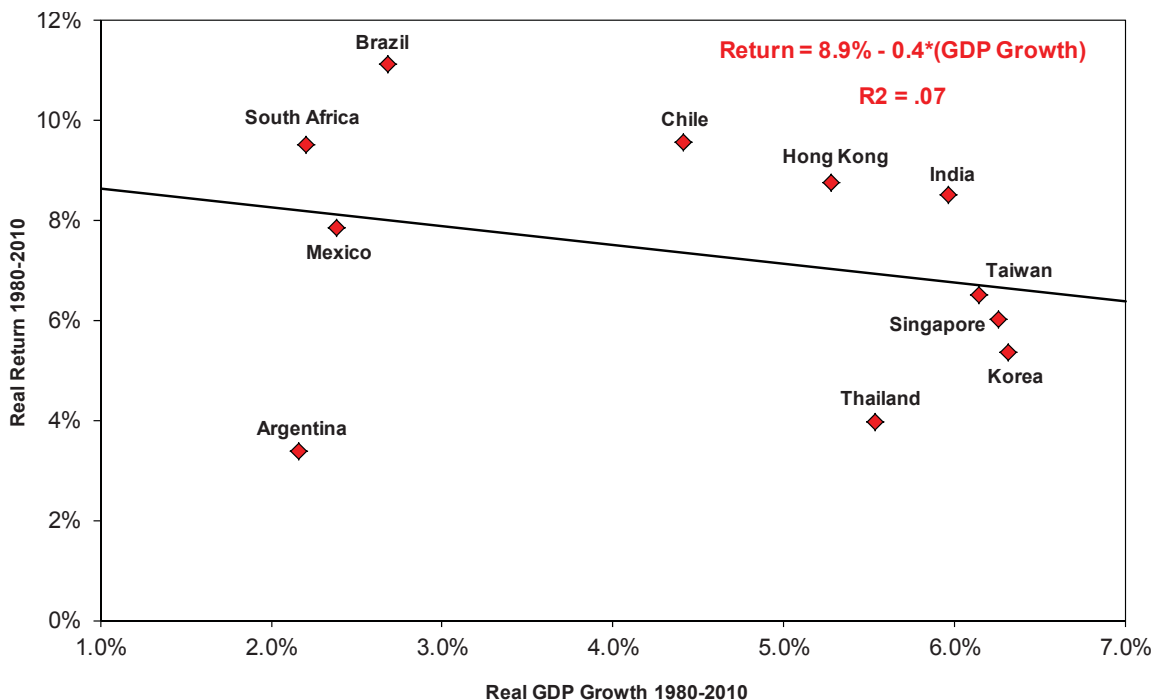
Exhibit 2
Stock Market Returns and GDP Growth for Developed Markets, 1980-2010



Source: MSCI, S&P, Datastream As of 12/31/10

Exhibit 3

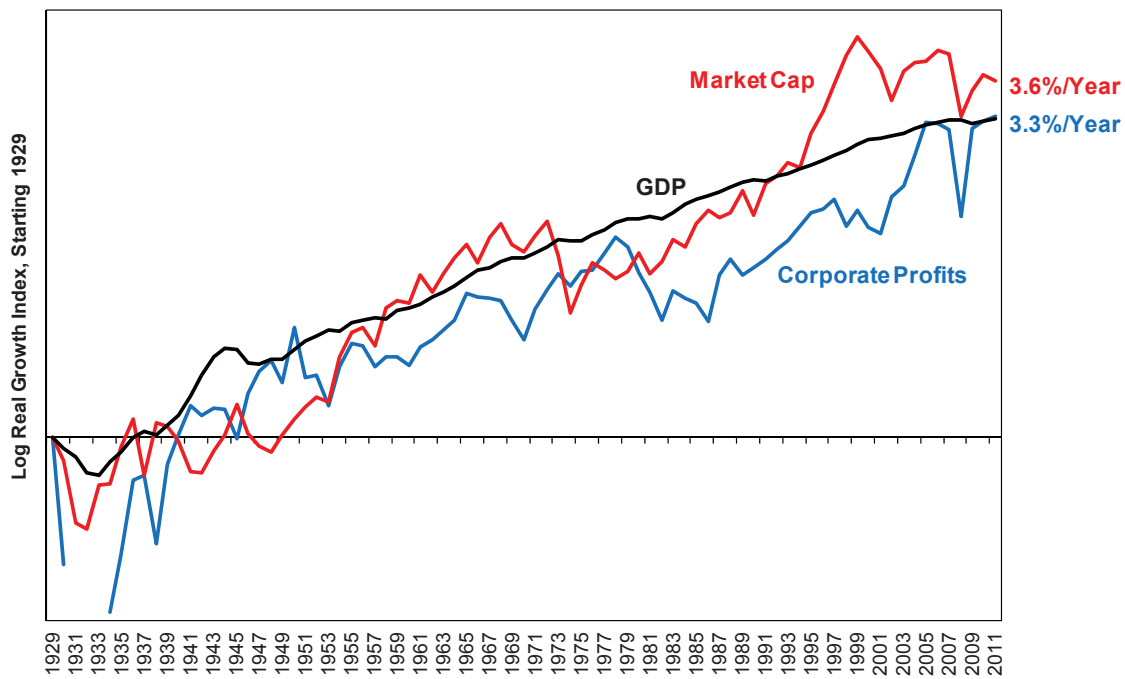
Stock Market Returns and GDP Growth for Emerging Markets, 1980-2010



Source: MSCI, S&P, Datastream As of 12/31/10

Exhibit 4

U.S. Profits and Market Cap vs. GDP



Source: BEA, Global Financial Data, Compustat As of 12/31/11

Since 1929,¹ market capitalization has grown at 3.6% real, while corporate profits and GDP have grown slightly more slowly at 3.3%. The trouble is that none of this tells us much of anything about what the return will be to an actual equity investor.

Total corporate profits and total stock market capitalization have very little to do with earnings per share or the compound return to shareholders because new companies, stock issuance by current companies, stock buybacks, and merger and acquisition activity can all place a wedge between the aggregate numbers and per share numbers.

To see why that wedge is so important, we should look at how GDP growth happens. GDP growth comes from a combination of two factors: population growth and labor productivity growth.

In thinking about the two, let's use a simple example of a factory in which 1 worker with 1 machine can output 1 widget per day. You are the factory owner, currently outputting 10 widgets per day with 10 workers and 10 machines. To achieve a 10% growth, you either need to hire another worker and buy another machine, or you need to improve or replace your machines such that they can output 1.1 widgets per day when manned by one worker. The first method increases output but not output per head, the second increases output as well as output per head. From your perspective as the owner, your choice between the two is going to be driven by the cost of improving or replacing the machines relative to the cost of paying another worker and buying another machine identical to your current ones. Both scenarios involve an investment on your part, though, so while the output of your factory has risen by 10%, we do not have enough information to determine your return on investment. It would only be 10% by the oddest of coincidences. You might have a unique widget creation technology such that your machines were twice as productive as any other, giving you a huge return on the investment. Widget production might be an utterly cutthroat competitive business, such that your return on investment is barely greater than your cost of capital (or, if you've screwed up your analysis, less than your cost of capital). Output is up 10%, and assuming no change to the price of widgets, your aggregate output and gross profits should be up 10% as well, if we don't take into account the cost of capital. But you as the owner had to invest to achieve that higher profit, and to do that, you either forwent a dividend you could have otherwise paid yourself out of profits, or had to raise the capital from someone else. The faster you want to grow, the more you will need to invest, but this investment must either come from retained earnings (forgone dividends) or dilution of shareholders.² In practice, companies in fast-growing countries generally exhibit both low dividend payout ratios and high rates of dilution of shareholders, both of which hurt shareholder returns enough to more than counteract the higher aggregate profit growth associated with fast growth.

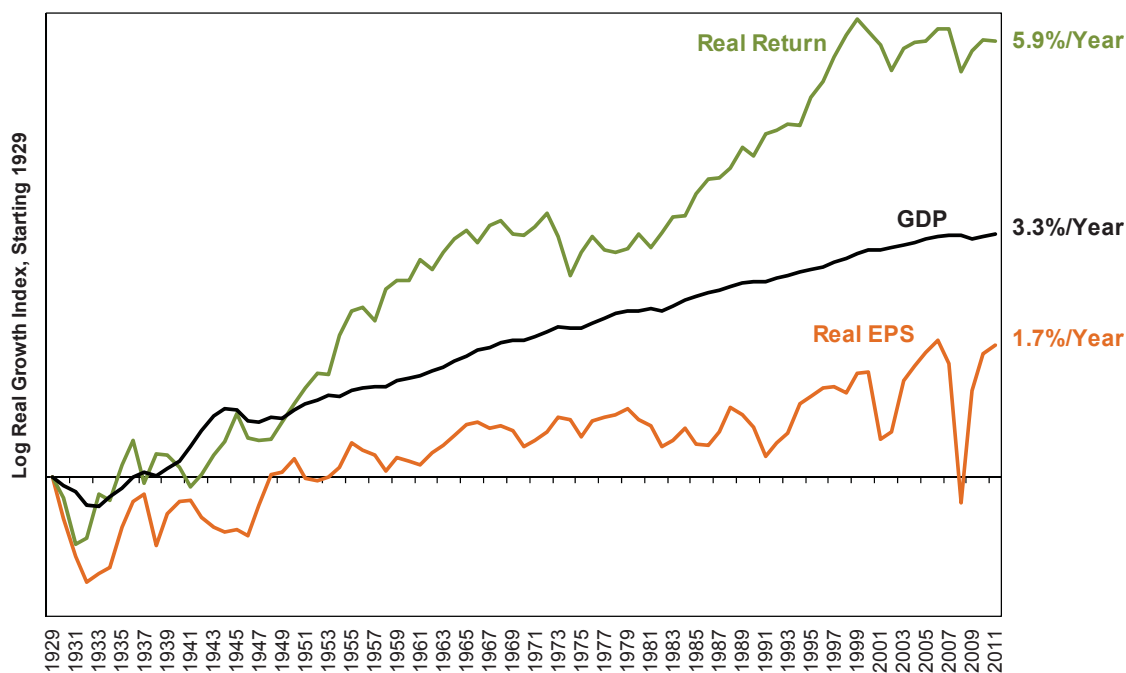
When we look at stock market returns, dividends have a very large impact on the total, providing the bulk of equity investor returns for most of history. Exhibit 5 shows the compound growth of real returns and real earnings per share against real GDP. Unlike aggregate profits and market capitalization, it is fairly clear that neither returns nor EPS grow in line with GDP.

The gap between the 1.7% real earnings growth (about half the rate of GDP growth) and 5.9% real return (almost double the rate of GDP growth) is made up by dividends, which have averaged about 3.9% since 1929, and a bit of valuation shift (the P/E of the market is a couple of points higher today than it was in December of 1929). So if aggregate market capitalization has grown along with GDP and the compound return to equities has been much faster, what gives? Do those original shareholders control 8 times as much of economic output as they did 81 years ago? Of course they don't. Investors don't invest to simply accumulate wealth that is never to be spent. Workers invest to fund their retirements. Pension funds and insurance companies are obligated to service their required payouts. Endowments and foundations pay out 5% or so of their total value every year to fund the causes and organizations

¹ 1929 is not a brilliant year to start a series on market capitalization or corporate profits, as it was the height of the 1920's economic boom and stock market bubble, but Bureau of Economic Analysis data tends to start there, so it is at least convenient, and over an 82-year period the starting point does not bias things too much.

² For this purpose, I'm counting borrowing money as well as equity issuance as dilution of shareholders. Lenders may not officially have an ownership stake in the company, but they do have a right to some of its cash flow as well as having contingent rights under certain circumstances, i.e., bankruptcy or covenant breach.

Exhibit 5 S&P Total Return and EPS vs. GDP

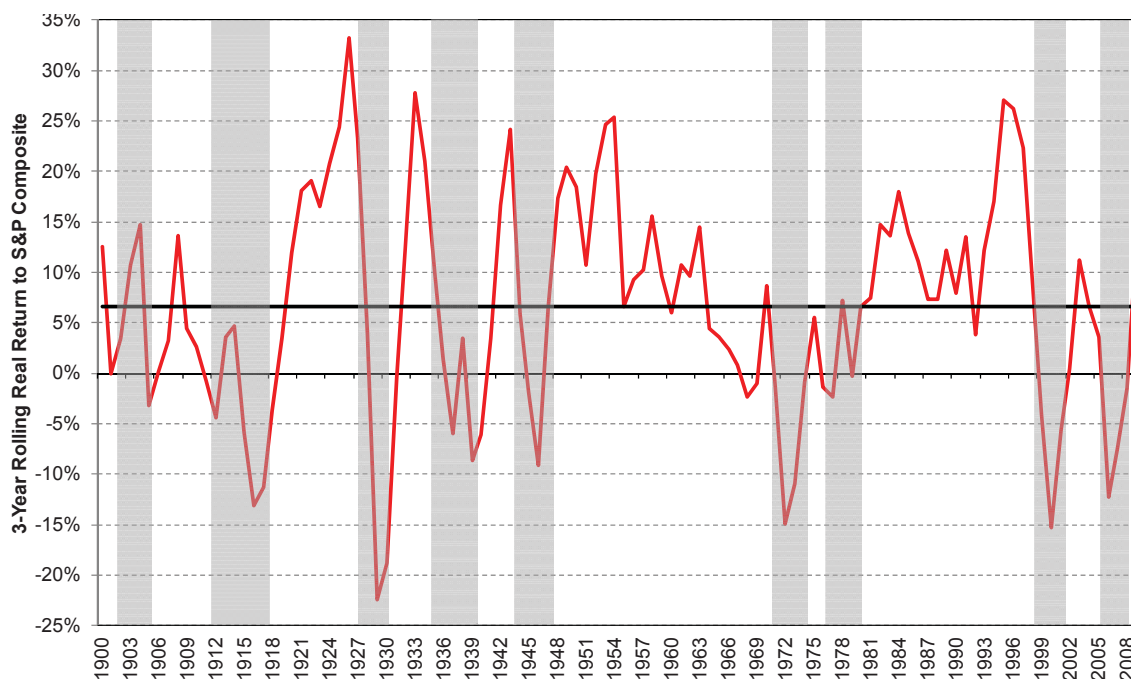


Source: BEA, Robert Shiller As of 12/31/11

they exist to support. Even the entrepreneurs who seem to be intent on maximizing their wealth splash out on the occasional mega-yacht or scoop up a small tropical island from time to time.

To put it more simply, investors invest to fund future spending of some sort. A return on investment higher than GDP growth leads to no logical impossibility because those returns are not simply hoarded and reinvested in perpetuity. If a slow-growing country invests as if it was fast-growing, it will have a dismal return on equity, as Japan has ably demonstrated for the past couple of decades. But slow-growing countries like South Africa and Australia had very strong stock market returns in the 20th century, having had both the good sense not to lose a major war as well as a decent combination of cheap stock markets and good return on equity. Those returns funded plenty of spending by the holders of those equities, leaving their descendants possibly fairly well off, but not the owners of 140% of local GDP.

So why have returns to equity holders been so good over time? Is it really necessary to give a return of almost 6% real to entice investors to buy stocks? No one seems to have come up with a precise, convincing answer as to what return investors should demand from equities, but common sense suggests it should be a considerable return. This is not simply because equities are volatile – after all, a short position in equities is every bit as volatile as a long position, and they cannot both offer a return above cash – but because equities cost you money at such an inconvenient time. The worst returns to equities come in recessions (bad), financial crises (very bad), depressions (very, very bad), and major wars (not good at all). If you'll forgive me for not filling in the titles of the various bad events, Exhibit 6 shows the rolling 3-year real return to the S&P 500, with shaded areas denoting the losses associated with events from the Panic of 1907 through World War I and its ensuing depression, the Great Depression, World War II, the 1970's Oil Shocks, and on to the Global Financial Crisis. While the average return to the S&P 500 over this period was a reassuring 6.6% real, at those times when you were most at risk of losing your job, your bank account, your house, or your life, you could rely on equities to be piling on the misery.

Exhibit 6**S&P 500 Returns and “Bad Events”**

Source: Robert Shiller, GMO As of 12/31/09

It is only rational for equity holders to demand a decent return for taking that very unfortunate return path. Furthermore, and just as crucially, we believe it is rational for companies to be willing to pay it. For corporations, equity is the safest capital they can raise. Unlike debt, there are no mandated payments associated with it, and no need to periodically refinance it. If a company is looking to finance investments with long durations and significant potential volatility to the cash flows generated, equity is the financing choice that minimizes the risk of the company going out of business. As a business owner, it is entirely rational to be willing to pay a higher expected rate of return to such “safe” capital.

The above statements do not actually specify what the required annual rate of return to equities must be. Here, we have to use some judgment. Our estimate for this return is 5.5-6.0% real, which is in line with the long-term returns to equities in the U.S. and elsewhere, about 3% higher than our estimate for high quality fixed income, and 4% above our long-term estimate for cash returns. We can't be entirely sure we are correct, but it would be decidedly odd if equities didn't offer a significantly higher return than high quality fixed income. It's not simply that equities are more volatile and have greater uncertainty than fixed income, but in recessions, depressions, and financial crises, high quality fixed income tends to go up rather than down.³ Furthermore, long-duration fixed income is a natural fit for a number of large investors who have long-duration liabilities they are looking to match. An insurer or pension fund may well be interested in owning fixed income at very low expected returns as a hedge, while no one (with the possible exception of bankruptcy lawyers) could view a long position in equities as a hedge.

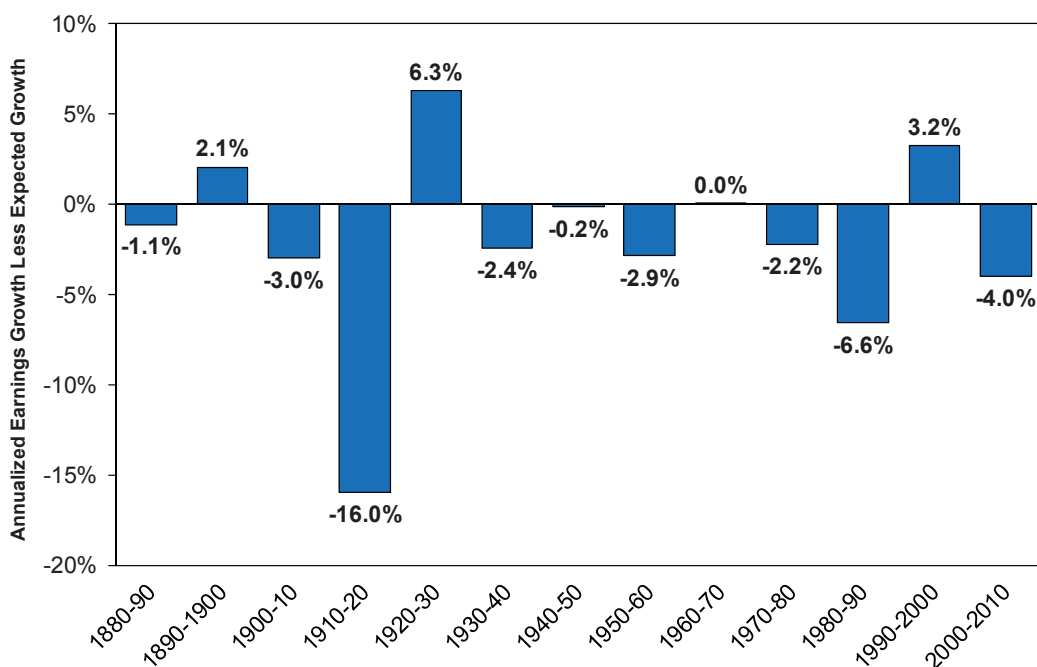
So while we can't specify the required return to equities with certainty, it makes sense that they should have a significantly higher required return than high quality fixed income. How can we go about forecasting this for the future? The utility functions of equity investors and issuers may be the determinant of long-term required returns to equities, but the only sustainable way to fund that return is out of corporate cash flow. If we stick with a corporate version of Hicksian income, where profit is the maximum amount a company could pay out to shareholders in a given

³ The performance of bonds in the event of war depends a lot on whether your country is on the winning or losing side.

period and maintain the same real earnings power, we might expect that the long-term return to shareholders would be the earnings yield of the market. This is theoretically very simple and appealing. But when we do the math, it is difficult not to be a little disappointed on behalf of shareholders.

Since 1929, the average earnings yield on the S&P 500 has been 7.2%. The P/E of the market has also increased over the period from 13.8 to 15.8 on trailing net earnings. A naïve investor might therefore have expected to get a return of 7.4% above inflation, accounting for both the earnings yield and valuation shift. The actual return to the market since December 1929 has instead been 5.9% real. That's 1.5% worse than one might have expected. What gives? The short answer is that earnings growth has been 1.7% real since 1929, while retained earnings have averaged 3.3% of market cap. That 3.3% could have been paid out as dividends, and if our earnings were truly economic profit that maintained the companies' real earnings power, shareholders would have been able to pocket a dividend yield of 7.2% with flat real earnings. So, are corporations systematically flushing their retained earnings down the toilet? Possibly, but it's also quite possible that earnings are simply overstated. Earnings are calculated not by economists, but accountants, and our guess is that if corporations had indeed paid out 100% of stated earnings, real earnings per share would have fallen significantly over time. Estimating this "slippage" going forward is tricky, since it has not been consistent over time. If we compare earnings growth for the S&P 500 to what we would have expected given the level of retained earnings, we can see large disparities decade to decade, as shown in Exhibit 7.

Exhibit 7
Earnings Growth Slippage in the S&P 500



Source: S&P, Robert Shiller, GMO As of 12/31/10

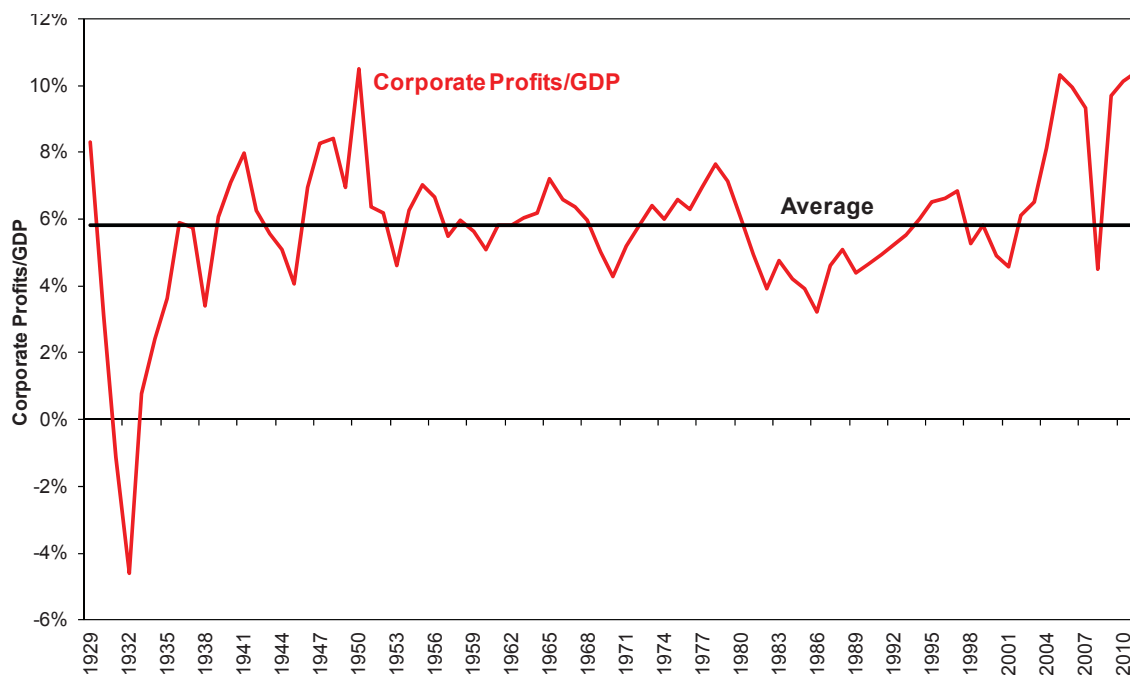
From 2000-2010, for example, the average earnings yield of the market was 5.2%, and the P/E of the market fell from 29 to 19. The P/E loss would have cost you 4.2% per year, but the compounding of that earnings yield should have allowed you to eke out 0.8% of real return over the period. The actual return was -3.2% real, which means to us that equity investors lost 4.0% relative to what they might have expected to achieve. Only in the 1920s and 1990s did investors do better than they should have had a right to expect given the earnings yield and P/E shift, and the average

slippage since 1880 has been about 2.0% annually. Much of this loss came in the decade from 1910-1920, which, in addition to containing a world war and a depression, is also long enough ago that the data we have may well be somewhat suspect. If we toss out the data before the 1920s, the average slippage has been 1%.

As a result, we think equity investors should expect a real return less than the earnings yield. We build in a factor of 1% and hope it will be enough. As of June 2012, the earnings yield of the market is 6.3%, a little lower than is consistent with a return of 5.5-6.0% real. But we believe that this understates the expensiveness of equities, since profit margins today are more or less the best in history, at least on government data. Exhibit 8 shows corporate profits/GDP since 1929.

Exhibit 8

U.S. Corporate Profits vs. GDP



Source: BEA As of 12/31/11

We have written⁴ and spoken in the past about why we believe recent profit margins are unsustainable, so I will not repeat the arguments in detail here. Our basic view is that corporations have been the perhaps unintentional beneficiaries of the recent large deficits run by the U.S. and other governments. These deficits have allowed aggregate demand to hold up in a period in which corporations have been lowering wages and shedding jobs. The deficits are not sustainable, and we believe the profit margins they enable are not either. If we adjust profit margins down to a more normal level, our estimate is that the S&P 500 is priced to deliver not 5.5-6.0% real, but about 3.5%. This could possibly be the “new normal.” The TIPS market shows that investors are prepared to lend money at 0.4% real for the next 30 years, and real cash rates today are around -2%, so it isn’t an utterly absurd supposition that 3.5% is fair for equities. But we believe that the current economic environment, characterized by a strong desire for safety, a scramble for duration by pension funds and insurance companies, and, not least, a Federal Reserve actively working to suppress long-term fixed income yields in the explicit hopes of pushing up equity prices, will not persist indefinitely. If we’re right, equity investors will be in line for some capital loss as required returns wend their way back to 5.5-6.0%.

⁴ See “What Goes Up Must Come Down!” by James Montier (March 2012). This white paper is available at www.gmo.com with registration.

From current levels, we believe that this loss would be around 30% – enough to reduce the returns from the S&P 500 to around 0% real if we get back to fair value in 7 years.

The internet bubble of 2000 was the worst point of overvaluation for the S&P 500 in its history. Having averaged 16 times cyclically adjusted earnings since 1881, the market soared to 44 times, well over twice normal levels. The losses and forgone returns since then have caused many investors to question whether the long-term history of equity returns is relevant any more. While this is an understandable reaction, it is the wrong one. The last 12 years have been part of an essential healing process for U.S. equities, and have brought valuations down from 44 times normal earnings to 21 times. As we analyze equity returns, this means the healing process is not yet done, and the U.S. equity market is likely to continue disappointing investors for a few years longer.

But there is a difference between expecting low returns due to reversion to long-term normal valuations and expecting low returns because something has fundamentally changed about the return-generating process for equities. Whether GDP growth in the U.S. and other developed economies is going to be slower in the future is not, in and of itself, a reason to expect a lower return to equities. Likewise, the fact that historic equity returns have been higher than GDP does not mean that the equity market has been some sort of long-term Ponzi scheme. Equities are an ugly asset class – one that is more likely than almost any other to lose investors a significant amount of money at those times when they can least afford it. That is, in a way, their charm. It is why equity is such an appealing form of capital for companies. It is the reason why equities have been priced to deliver good returns historically. And it is the reason why we believe equities are very likely to be priced to deliver strong returns into the indefinite future.

Mr. Inker is the head of asset allocation.

Disclaimer: The views expressed herein are those of Ben Inker as of August 10, 2012 and are subject to change at any time based on market and other conditions. This is not an offer or solicitation for the purchase or sale of any security and should not be construed as such.

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