

Economic Growth and Equity Returns

J. Bradford DeLong¹
U.C. Berkeley

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The Problem with the SSA's Projections

The Baker-Krugman position on economic growth and equity returns is that the combination of (a) low current dividend yields (1.7%), (b) low forecast future economic growth (1.9%, according to the SSA), and (c) relatively high future stock-market total returns (6.5%, according to the SSA) is inconsistent:² unless price-earnings multiples grow to absurd levels, either the stock market has to fall significantly from its current levels, future economic growth will be faster than SSA has projected, or future stock market returns will be lower than the SSA has projected.

The argument is simple:

$$(Returns) = (Net Payouts) + (Capital Gains)$$

$$(Net Payouts) = (Dividends) + (Stock Buybacks) - (IPOs)$$

$$(Capital Gains) = (Growth in Price-Earnings Ratios) + (Earnings Growth)$$

But we assume a stable price-earnings ratio, so:

$$(Returns) = (Dividends) + (Stock Buybacks) - (IPOs) + (Earnings Growth)$$

$$(Earnings Growth) = (Economic Growth)$$

So:

¹ I would like to thank Dean Baker, Barry Eichengreen, Paul Krugman, Tom Maguire, Peter Orszag, Robert Waldmann, and people who wish to remain off the record for helpful discussions and comments.

² Dean Baker points out that the 1.9% and 6.5% are measured on different bases: the 1.9% is relative to the GDP deflator, while the 6.5% is relative to the CPI. The difference between the two is 0.3% per year, and that is an additional wedge making it more difficult to reconcile the numbers—an additional wedge that is missing from this document.

$$(Returns) = (Dividends) + (Stock Buybacks) - (IPOs) + (Economic Growth)$$

With economic growth = 1.9% per year, dividends = 1.7% per year, stock buybacks = 0.9% per year, we have:

$$(Returns) = (1.7\%) + (0.9\%) - (IPOs) + (1.9\%)$$

$$(Returns) \leq (4.5\%)$$

QED.

The Bush Administration's Attempted Rebuttal

This is quite difficult because it is not written down anywhere in coherent form.

I believe that the Bush administration does not endorse SSA's projections. It accepts them. If the administration were making its own forecasts of long-run growth and returns, they would undoubtedly be somewhat different. It wants to confine its role to observing that SSA's assumptions are defensible.

I believe that the professional economists in the Bush administration think about the relationship between growth and returns in the following way:

In steady-state, economic growth is $n+g$: the sum of the labor force growth rate n and the efficiency of labor growth rate g . In steady-state, the rate of per-capita consumption growth is the same as the efficiency of labor growth rate g . Assuming that the economy has a representative agent with the utility function:

$$\left[\sum_{t=0}^{\infty} \left(\frac{1}{(1+\beta)^t} \right) \left(\frac{c_t^{1-\gamma}}{1-\gamma} \right) \right]$$

the Ramsey model tells us that the first-order condition that the return on capital r must satisfy is:

$$\frac{(1+r)c_{t+1}^{-\gamma}}{(1+\beta)} = c_t^{-\gamma}$$

which is:

$$\frac{(1+r)}{(1+\beta)} = \frac{c_{t+1}^{\gamma}}{c_t^{\gamma}} = (1+g)^{\gamma}$$

or in continuous time:

$$r = \beta + \gamma g$$

I believe that the Bush administration economists look at this equation and concludes that declines in forecast economic growth rates caused by declines in labor efficiency growth g should be accompanied by declines in forecast equity (and bond) returns, but that—because n does not appear in the above equation—declines in forecast growth rates caused by declines in labor force growth n should have no effect on forecast equity (and bond) returns. Hence—I believe the Bush administration economists think—the argument that the fall in forecast population growth carries with it a fall in equity returns is incorrect.

In response to the argument that current price-dividend ratios are too high to be arithmetically consistent with equity returns that will match those in the past, the counter is that dividend yields are determined by “lots of things,” are a choice variable, can change, and carry no information.

Looking More Closely at the Growth Model Framework

The counter within the Ramsey growth-model framework is to look not at dividends *per se* but at net payouts from capital. To make things simple, let’s strip the model down. Let’s make there be no costs to adjusting the capital stock. Let there be no depreciation—we’re doing everything on a net capital basis. And let’s make consumption perfectly substitutable across time. That give us a fixed return on capital r : neither changes in population growth n or labor efficiency growth g affect r . It also gives us a fixed capital-labor ratio: $K/Y = \alpha/r$ if we assume the production function:

$$Y_t = K_t^\alpha (E_t L_t)^{1-\alpha}$$

Now let’s look at net payouts—dividends plus stock buybacks minus stock issues (including IPOs). The total earnings of capital in this model are:

$$\alpha Y$$

The amount that must be invested is:

$$K(n + g)$$

Subtract investment from earnings to get payouts, and divide by the capital stock to get the net payout yield—the net payout per dollar of physical (and of

financial—remember, with no adjustment costs Tobin’s q always equals one) capital:

$$\frac{\alpha Y - K(n + g)}{K} = \frac{\alpha Y}{K} - (n + g) = r - (n + g)$$

This tells us that the net payout yield is equal to the rate of return r minus the economic growth rate $n+g$. If the economic growth rate falls then the payout yield must rise, if r is indeed fixed. The fact that the payout yield—dividends plus buybacks—is not higher than normal but lower than normal tells us that r must have fallen, or $n+g$ must be higher than the SSA is projecting.

Surrebuttal I

I genuinely believe that the Bush administration has not thought this far. There are, however, three possibilities:

1. Payout yields haven’t risen to keep expected stock returns at 6.5% per year, but they are about to do so: the stock market is overvalued, is likely to decline significantly in the next few years, and that will push dividend yields and buybacks up to where they should be.
2. Payout yields haven’t risen to keep expected stock returns at 6.5% per year, but they are about to do so: a continued low-inflation low-pressure slow employment-growth economy will continue to shrink the labor share of income, dividends will rise, and this rise in dividend yields will justify the combination of today’s high prices and expected stock returns at 6.5% per year.³
3. Payout yields haven’t risen to keep expected stock returns at 6.5% per year, but they are about to do so: earnings are massively understated, and we will see either firms raise dividends or massively raise buybacks in the near future without thereby finding themselves short of funds to expand capacity at the rate of economic growth.

But rather than follow any of these three paths, the Bush administration appears to follow a fourth one:

Surrebuttal II

³ As Dean Baker points out, this is inconsistent with SSA projections, which assume constant labor and capital shares of income. Tom Maguire of <http://justoneminute.typepad.com> advocates this position.

The economy is not closed. Just because the growth of labor income in Delaware over the next two generations is likely to be low doesn't mean that stock returns will be low for companies headquartered in Delaware.

The International Dimension

But this argument is quantitatively implausible. To see why, return to the growth model, but alter it to allow Americans to own capital abroad and foreigners to own capital here at home.

Returns are still given by:

$$(Returns) = (Net\ Payouts) + (Capital\ Gains)$$

and net payouts are still:

$$(Net\ Payouts) = (Dividends) + (Stock\ Buybacks) - (IPOs)$$

And capital gains are still, if price-earnings ratios are constant:

$$(Capital\ Gains) = (Earnings\ Growth)$$

But earnings growth becomes more complicated. It is no longer the case that

$$(Earnings\ Growth) = (Domestic\ Economic\ Growth)$$

Instead:⁴

$$(Earnings\ Growth) = (Domestic\ Economic\ Growth) + (Increase\ in\ Foreign\ Assets)/(Total\ Assets) - (Increased\ in\ Foreign-Owned\ Domestic\ Assets)/(Total\ Assets)$$

Or in other words:

⁴ Could this calculation be too pessimistic because investments outside the United States yield supernormal returns, and so create surplus that way? No. U.S. firms and investors aren't stupid. If outside the U.S. investments yield supernormal risk-adjusted returns, then U.S. investors and firms will bid up the price of making such investments until they once again yield only the world rate of return on equity, and there is no gap between risk-adjusted U.S. and world returns. If investments outside the U.S. promise higher returns as compensation for extra risk, we're back where we started: we always knew that we could get any expected return we wanted by setting up a portfolio that took on enough risk.

$$(Earnings\ Growth) = (Domestic\ Economic\ Growth) + (Trade\ Surplus)/(Total\ Assets)$$

which is equal to:

$$(Earnings\ Growth) = (Domestic\ Economic\ Growth) + (Trade\ Surplus)/(Total\ Assets)$$

So our return is:

$$(Returns) = (Dividends) + (Stock\ Buybacks) - (IPOs) + (Domestic\ Economic\ Growth) + (Trade\ Surplus)/(Total\ Assets)$$

Thus the answer is “Yes.” The international dimension can indeed make a difference. Plugging in our numbers once again, with economic growth = 1.9% per year, dividends = 1.7% per year, stock buybacks = 0.9% per year:

$$(Returns) = (1.7\%) + (0.9\%) - (IPOs) + (1.9\%) + (Trade\ Surplus)/(Total\ Assets)$$

$$(Returns) = (4.5\%) - (IPOs) + (Trade\ Surplus)/(Total\ Assets)$$

Let’s set IPOs at zero, and see what we would have to do to get stock returns up to 6.5% per year. We need to know that total assets—the total capital stock—is roughly three times a year’s national income, so that if we measure the trade surplus as a share of GDP then we have to divide it by 3:

$$(6.5\%) = (4.5\%) + (Trade\ Surplus)/3$$

$$(6.0\%) = (Trade\ Surplus)$$

The answer is that we can reconcile current price-dividend and price-earnings ratios, a 1.9% average future economic growth rate, and forecast equity returns of 6.5% per year *if* we rapidly start running a trade surplus that averages 6% of GDP year in and year out.

Conclusion

The claim that 1.9% forecast long-run real GDP growth is consistent with 6.5% per year forecast equity returns requires one of these four things:

1. A substantial decline in the stock market in the near future to push dividend yields back up to the levels they need to be.
2. Stagnant wages and a permanent jump in the profit share to push dividend yields up to the levels they need to be.
3. A large jump in firm payouts, supported by the fact that accounting earnings are massively understated.
4. A long-run trade surplus of 6% of GDP.

Now none of these are *impossible* exactly. But only the first is at all likely.