Is Economic Growth Good for Investors?

Jay R. Ritter
University of Florida

What (modern day) country had the highest per capita income, in the following years?

1500

1650

1800

1870

1900

1920

It is widely believed that economic growth is good

But does economic growth benefit stockholders?

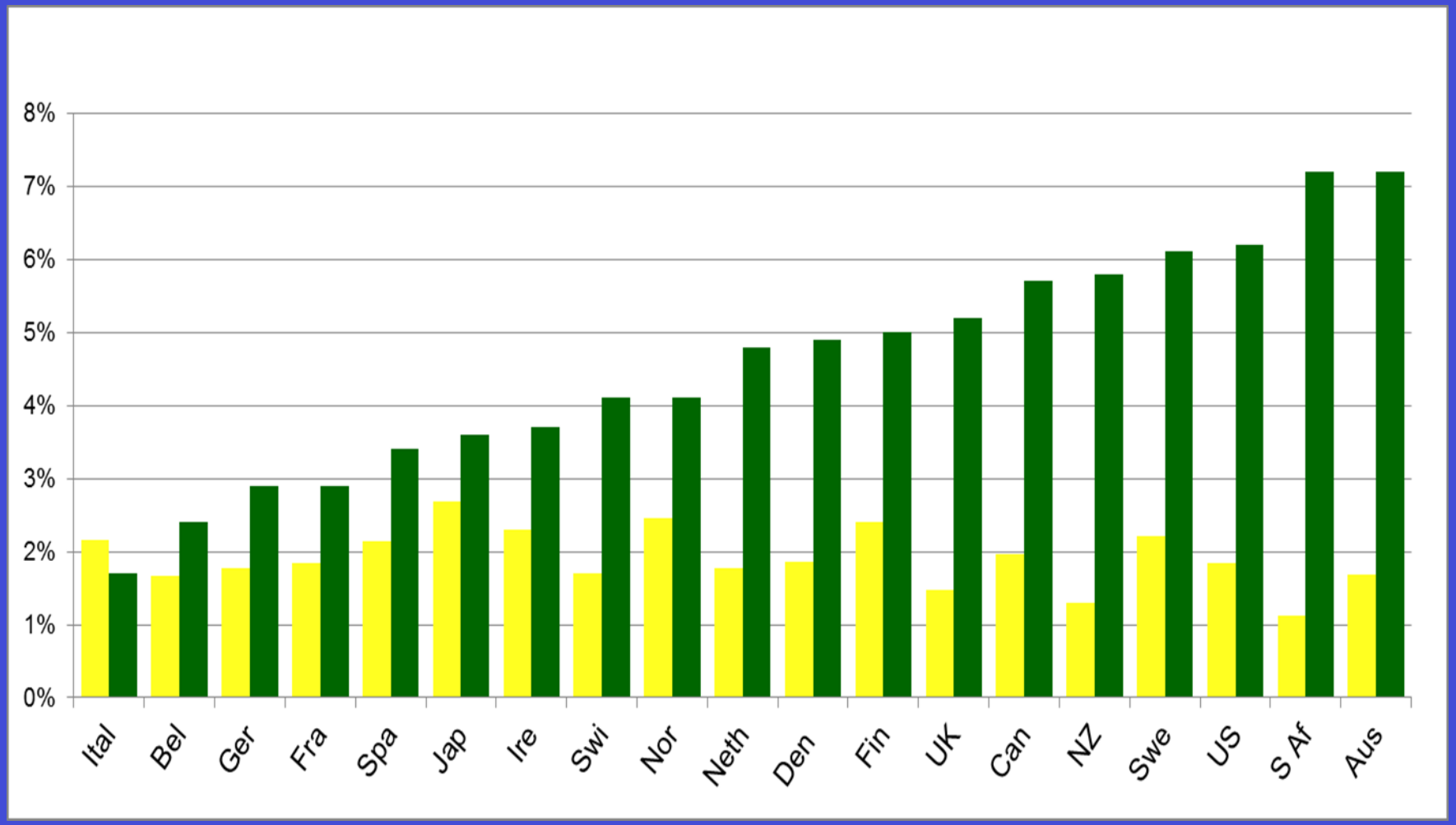
Levels of per capita GDP ($1990) and cumulative population growth

Country	Real per capita GDP 1900	Real per capita GDP 2011	Population growth 1900-2011
United Kingdom	4,492	22,866	65%
New Zealand	4,298	18,000	357%
United States	4,091	30,755	309%
Australia	4,013	25,406	467%
Switzerland	3,833	24,985	124%
Belgium	3,731	23,309	79%
Netherlands	3,424	24,131	197%
Denmark	3,017	23,377	157%
Germany	2,985	21,175	46%
Canada	2,911	25,104	527%
France	2,876	21,891	54%
Ireland	2,736	25,304	3%
Sweden	2,209	24,941	83%
Norway	1,877	27,560	123%
Spain	1,786	18,808	123%
Italy	1,785	18,940	84%
Finland	1,668	23,449	103%
South Africa	1,602	4,830	907%
Japan	1,180	22,333	205%

1900 - 2011

Country	Real dividend per share growth	Dividend yield	Real per capita GDP growth	Mean real geometric return
Australia	0.99%	5.70%	1.68%	7.20%
South Africa	1.05%	5.80%	1.13%	7.20%
United States	1.31%	4.20%	1.85%	6.20%
Sweden	1.80%	4.00%	2.21%	6.10%
New Zealand	1.17%	5.40%	1.30%	5.80%
Canada	0.67%	4.40%	1.96%	5.70%
United Kingdom	0.45%	4.60%	1.48%	5.20%
Finland	0.23%	4.80%	2.41%	5.00%
Denmark	-0.96%	4.60%	1.86%	4.90%
Netherlands	-0.61%	4.90%	1.78%	4.80%
Switzerland	0.47%	3.50%	1.70%	4.10%
Norway	-0.07%	4.00%	2.45%	4.10%
Ireland	-1.29%	4.50%	2.30%	3.70%
Japan	-2.36%	5.20%	2.69%	3.60%
Spain	-0.58%	4.20%	2.14%	3.40%
France	-0.75%	3.80%	1.85%	2.90%
Germany	-1.27%	3.70%	1.78%	2.90%
Belgium	-1.48%	3.70%	1.66%	2.40%
Italy	-2.21%	4.00%	2.15%	1.70%

Real stock returns (green) and per capita GDP growth (yellow) 1900-2011



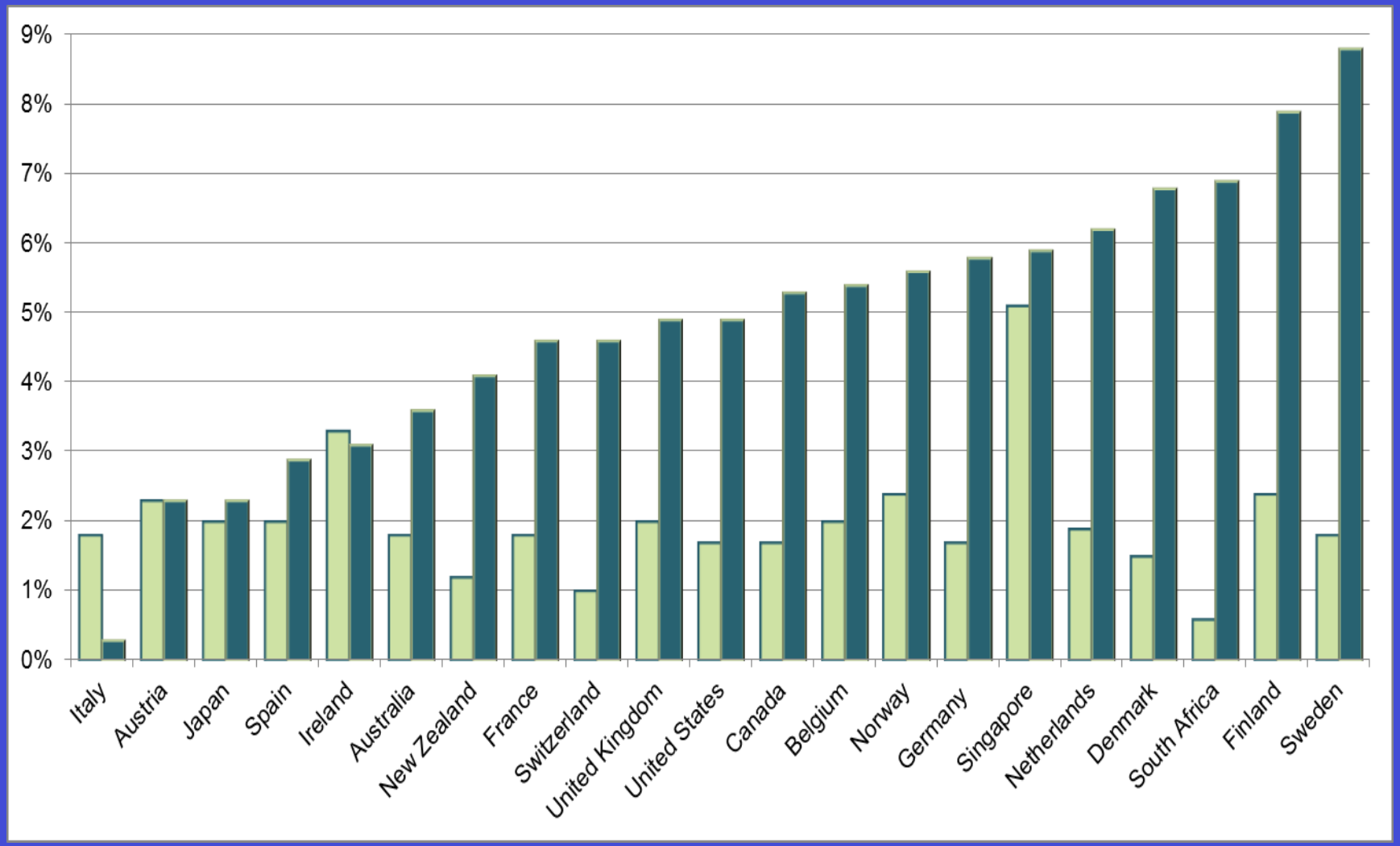
The cross-sectional correlation between real stock returns and real per capita GDP over 1900-2011 for 19 countries that Dimson, Marsh, and Staunton (2012) study is -0.39 (p=0.10) in local currencies and -0.32 (p=0.18) in US dollars

For these 19 countries, plus 2 more, over 1970-2011 the correlation is –0.04 in local currencies and +0.01 in US dollars

Mean real stock returns and per capita GDP growth for 21 countries , 1970-2011

Country	Mean geometric real return		GDP growth per capita
	Local currency	US dollars	
Australia	3.6%	4.7%	1.8%
Austria	2.3%	3.5%	2.3%
Belgium	5.4%	6.2%	2.0%
Canada	5.3%	5.4%	1.7%
Denmark	6.8%	8.0%	1.5%
Finland	7.9%	8.5%	2.4%
France	4.6%	5.1%	1.8%
Germany	5.8%	4.9%	1.7%
Ireland	3.1%	4.2%	3.3%
Italy	0.3%	0.7%	1.8%
Japan	2.3%	4.6%	2.0%
Netherlands	6.2%	7.2%	1.9%
New Zealand	4.1%	4.9%	1.2%
Norway	5.6%	6.7%	2.4%
Singapore	5.9%	6.6%	5.1%
South Africa	6.9%	6.3%	0.6%
Spain	2.9%	4.5%	2.0%
Sweden	8.8%	8.8%	1.8%
Switzerland	4.6%	6.7%	1.0%
United Kingdom	4.9%	5.6%	2.0%
United States	4.9%	4.9%	1.7%

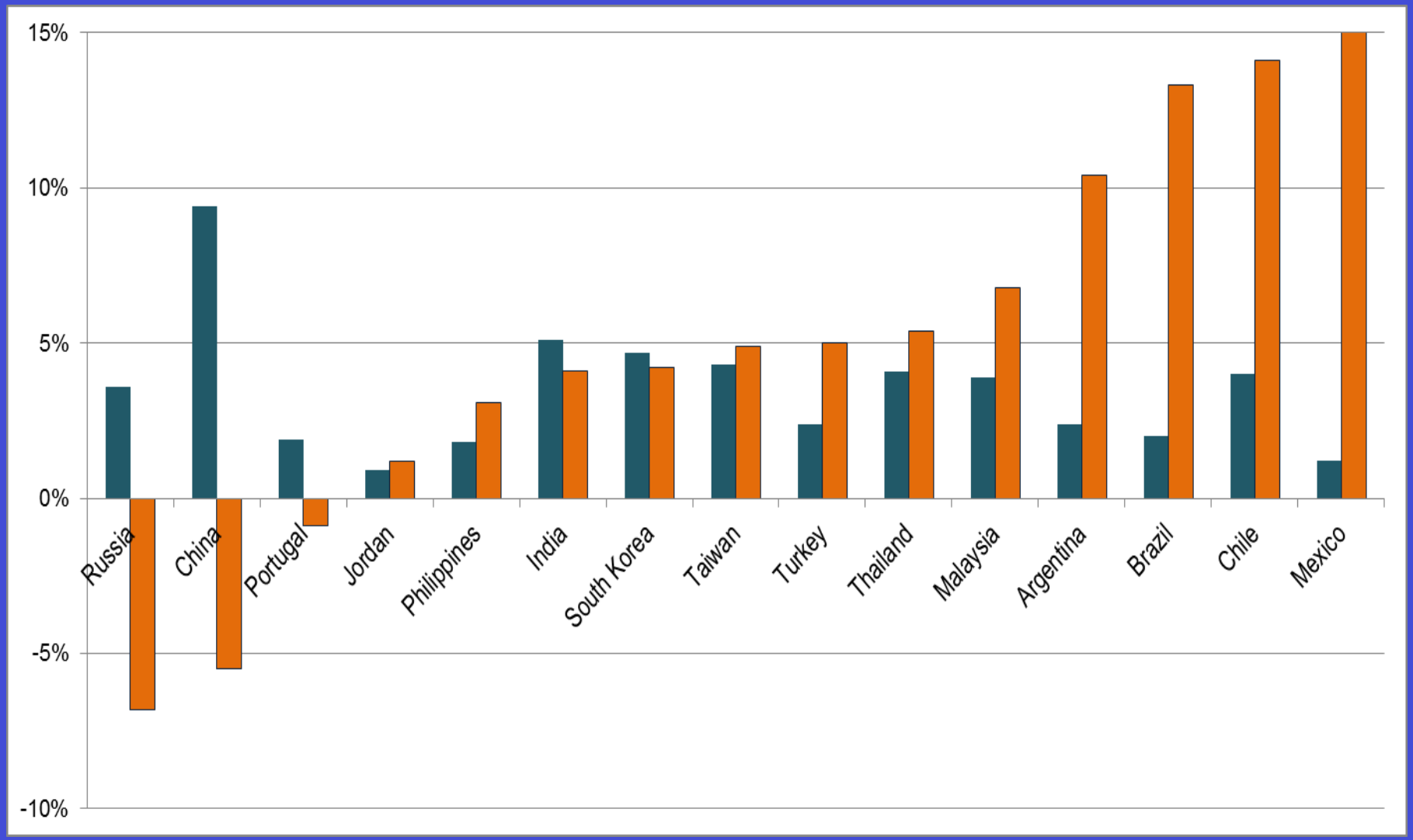
Real stock returns (dark green) and per capita GDP growth (light green), 1970-2011



Mean real stock returns and per capita GDP growth for 15 countries for 24 years, 1988-2011

Country	Mean geometric real return		Mean GDP
	Local currency	US dollars	growth per capita
Argentina	10.4%	12.9%	2.4%
Brazil	13.3%	10.7%	2.0%
Chile	14.1%	15.2%	4.0%
China	-5.5%	-5.7%	9.4%
India	4.1%	4.1%	5.1%
Jordan	1.2%	0.3%	0.9%
Malaysia	6.8%	5.9%	3.9%
Mexico	15.0%	17.1%	1.2%
Philippines	3.1%	4.3%	1.8%
Portugal	-0.9%	0.0%	1.9%
Russia	-6.8%	-2.2%	3.6%
South Korea	4.2%	4.1%	4.7%
Taiwan	4.9%	2.8%	4.3%
Thailand	5.4%	5.2%	4.1%
Turkey	5.0%	6.9%	2.4%

Real stock returns (orange) and per capita GDP growth (green), 1988-2011



For 15 mainly emerging markets, over 1988-2011 the correlation is -0.41 (p=0.13) in local currencies and -0.47 (p=0.08) in US dollars

Why aren't these numbers positive?

A country can grow rapidly by applying more capital and labor without economic profits necessarily being earned by the owners of capital

Technological change benefits consumers, rather than the owners of capital, unless there is monopoly power

If economic growth does not result in high stock returns, the correlation should be zero

A negative correlation reflects a value vs. growth effect

Survivorship bias

It is a problem

But probably not a big problem

Li and Xu (2002) argue that for survivorship bias to have a large effect, stocks must have been discounted in 1900

Dimson, Marsh, and Staunton (2012) estimate that their 19 countries represented 89% of world market cap in 1900

Survivorship bias is a problem for T-bill and especially bond returns, too

Paul Krugman's 1994 *Foreign Affairs* article

"The Myth of Asia's Economic Miracle"

> **Alwyn Young's empirical work shows that all of East Asia's rapid economic growth is due to increased labor and capital inputs**

High Soviet Union growth from 1925-65

High Japanese growth from 1950-80

Per capita income plateau's at a fraction of the U.S. level

Major industries in 1900

- Agriculture
- Banking and finance (7% of U.S. market cap)
- Railroads (63% of U.S. market cap)
- Steel

Major industries in 2000

- Airlines (0.2% of U.S. market cap)
- Automobiles
- Banking and finance (13% of U.S. market cap)
- Information Technology (23% of U.S. market cap)
- Oil (5% of U.S. market cap)
- Pharmaceuticals (11% of U.S. market cap)
- Telecommunications

Estimating future stock returns

Extrapolating the past

(Brealey-Myers-Allen, Ross-Westerfield-Jordan)

Theoretical models

Calibrated optimization (Mehra-Prescott 1985)

Gordon dividend growth model (Fama-French 2002)

Earnings yield (Siegel 1999 and Campbell-Shiller 2001)

Gordon dividend growth model:

E(r) = dividend yield + g

where the dividend yield = dividends/price and g is the growth rate of dividends per share

Over the 1900-2011 period, the average U.S. earnings yield has been just under 7% and the average dividend yield has been about 4.2% (total payout yield is over 4.5%)

This implies that the reinvestment rate has been about 2.5% of price

Dimson, Marsh, and Staunton (2012) report a real growth rate of U.S. dividends of 1.3% per share for 1900-2011

Why haven't real dividends grown faster than they have?

- Bias in S&P 500 index when firms are replaced

The earnings yield model of Jeremy Siegel (1999 and 2002):

$$E(r) = E^*/P$$

where E^* is normalized earnings per share (EPS smoothed to take out business cycle effects)– the Shiller earnings yield

Earnings are either paid out as dividends or in share repurchases, or reinvested

Three caveats to the earnings yield model

- Mean reversion (Campbell and Shiller (2001))
- Corporate governance
- Chance of catastrophic loss

Conclusion

- The cross-sectional correlation of real stock returns and real per capita income growth is not positive

- Historically, the correlation between stock returns and economic growth becomes more negative the longer the horizon

Historical returns are irrelevant for predicting future returns

Future economic growth is largely irrelevant, too

- Growth occurs due to increased inputs and technological change

- Increased inputs result in the creation of new firms
  Technological change doesn't necessarily produce profits