A Supply Model of the Equity Premium

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Grinold-Kroner-Siegel model

- Equity expected total return, *R*

$$R = \frac{D}{P} - \Delta S + i + g + \Delta PE$$

- ERP = R – Y (where Y is 10 year T-bond yield)

Let's fill in the blanks…

- Income = d/p (dividend yield) – ΔS (net new issues)

  d/p = 1.78% (current dividend yield of S&P 500)

  ΔS = net new issues

  = new issues (2% from Bernstein and Arnott "2% dilution")

  – share repurchases and takeovers (2.2% from next slide)

  = 0.2%

  Income = 1.78% + 0.2% = 1.98%

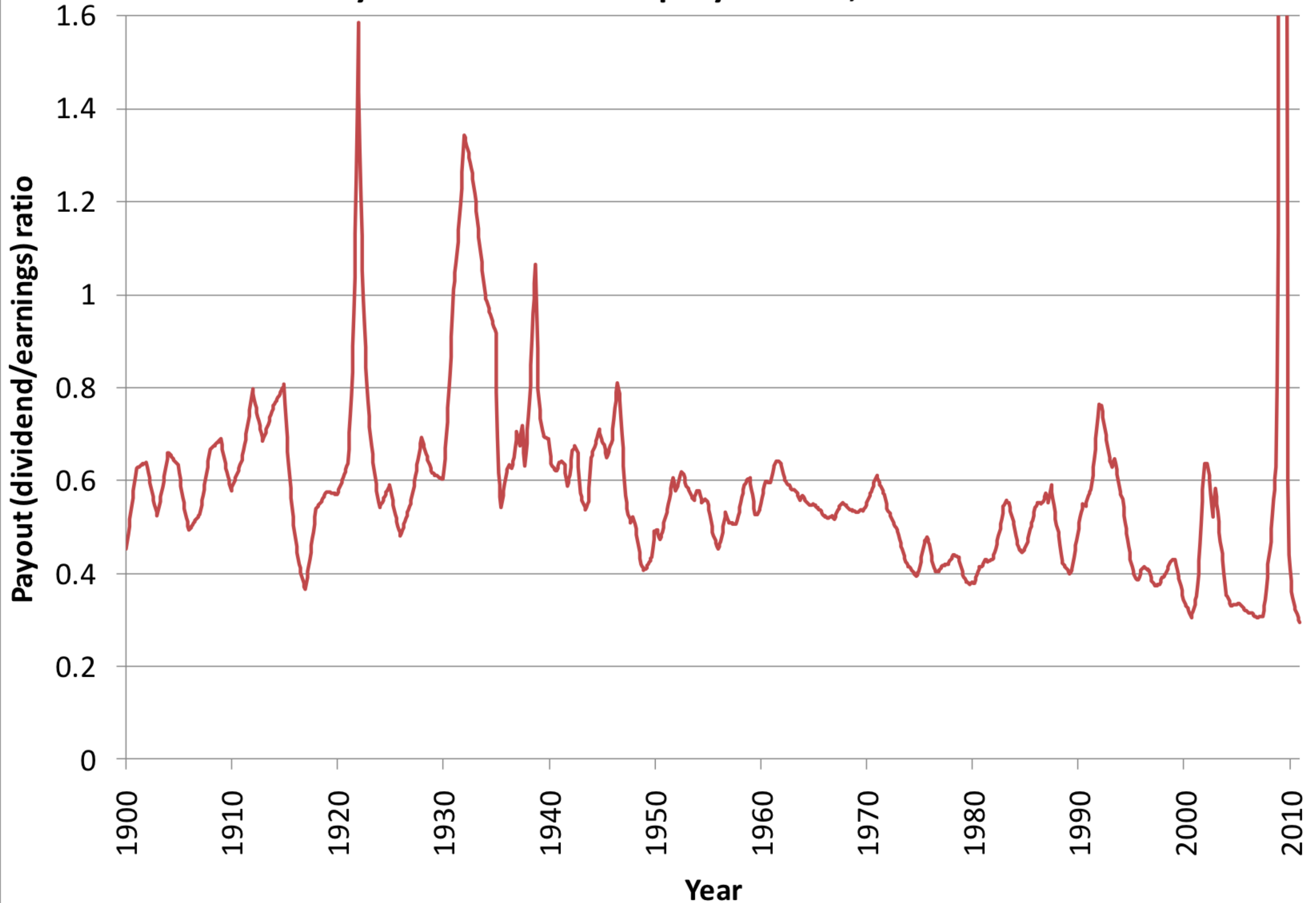
Repurchase return of the S&P 500 1998-2009

	Year-end market capitalization ($ billions)	Share repurchases during year ($ billions)	Share repurchase return
1998	9942.37	125	1.26%
1999	12314.99	142	1.15%
2000	11714.55	151	1.29%
2001	10463.39	132.21	1.26%
2002	8107.41	127.25	1.57%
2003	10285.83	131.05	1.27%
2004	11288.60	197.48	1.75%
2005	11254.54	349.22	3.10%
2006	12728.86	431.83	3.39%
2007	12867.85	589.12	4.58%
2008	7851.81	339.61	4.33%
2009	9927.56	137.60	1.39%
Average			2.20%

Source: Standard and Poor's.

Is earnings growth a reasonable proxy for dividend growth?

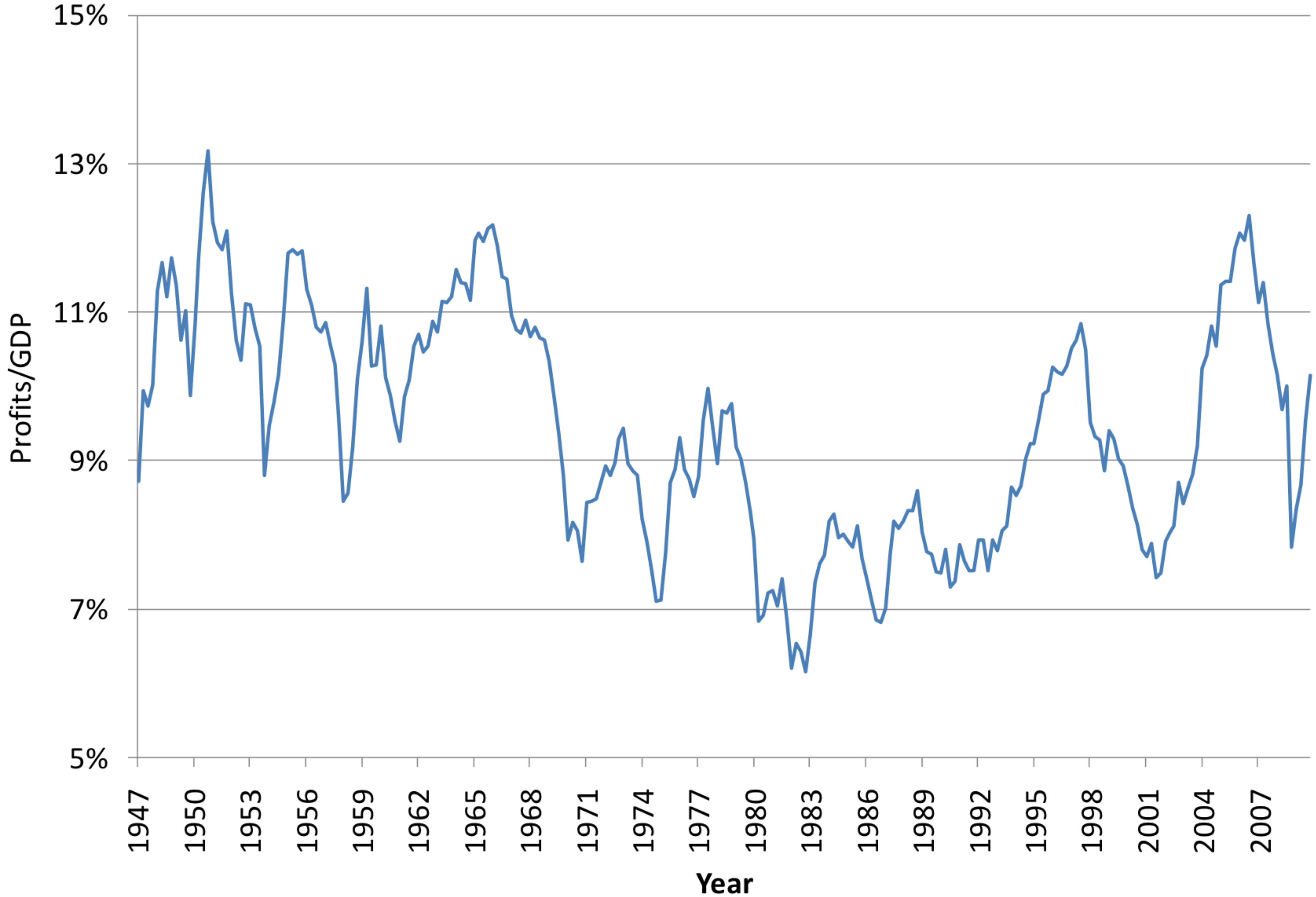
- Not usually; there's a spread or wedge
- At today's low payout ratios, it is (see next slide)



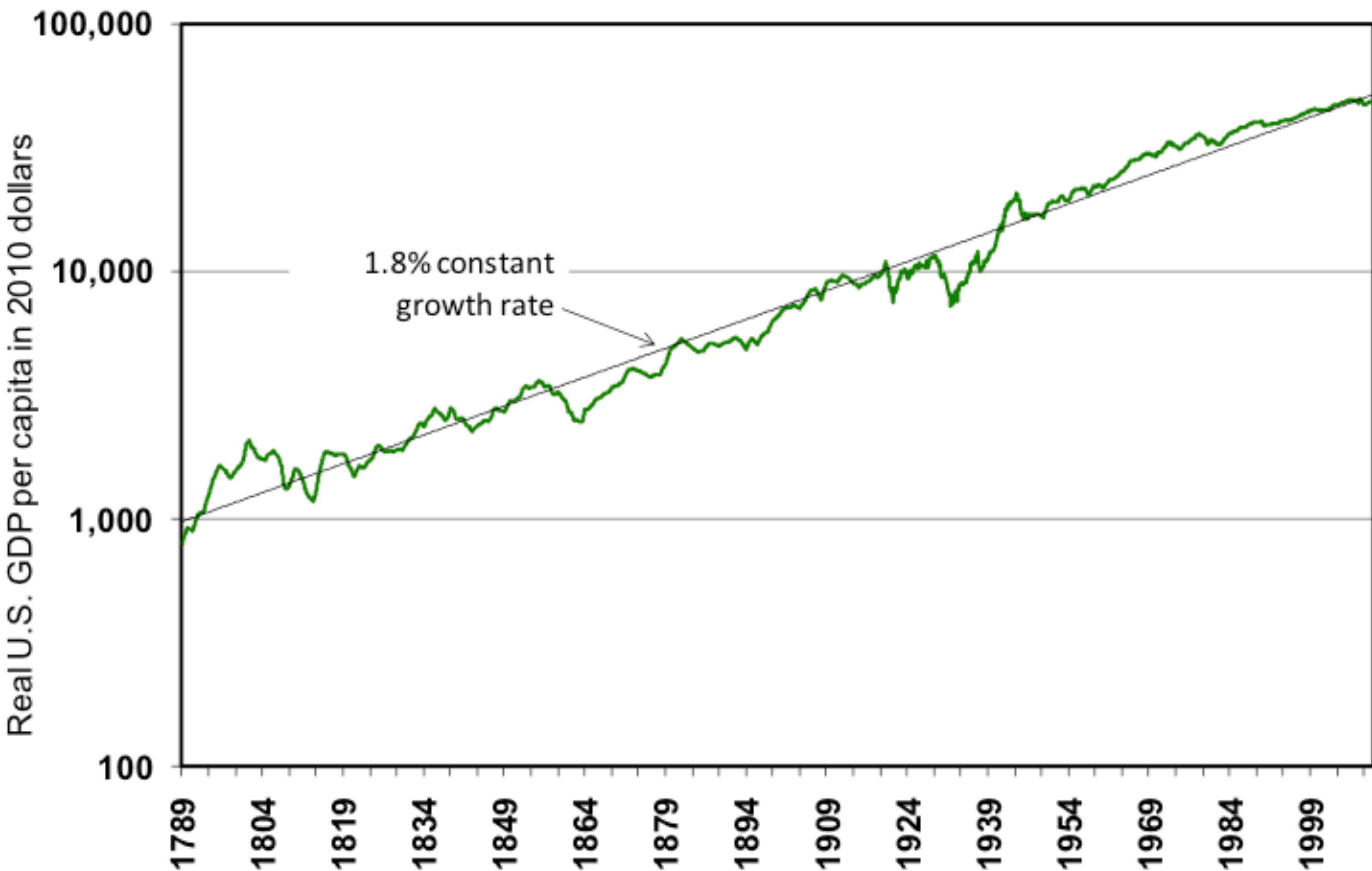
Payout ratio of U.S. equity market, 1900-2010
Payout (dividend/earnings) ratio
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year

Forecasting earnings growth

- Corporate profits are roughly constant share of GDP
- Current level is toward middle of historical range
- Earnings growth = real per capita earnings growth + population growth + inflation
- Real per capita earnings growth projected to equal historical average of 1.8%
- 10-year projected population growth = 0.85%
- Inflation from TIPS/Treasuries breakeven analysis = 2.4%
- Expected nominal earnings and dividend growth = 1.8% + 2.4% + 0.85% = 5.05%

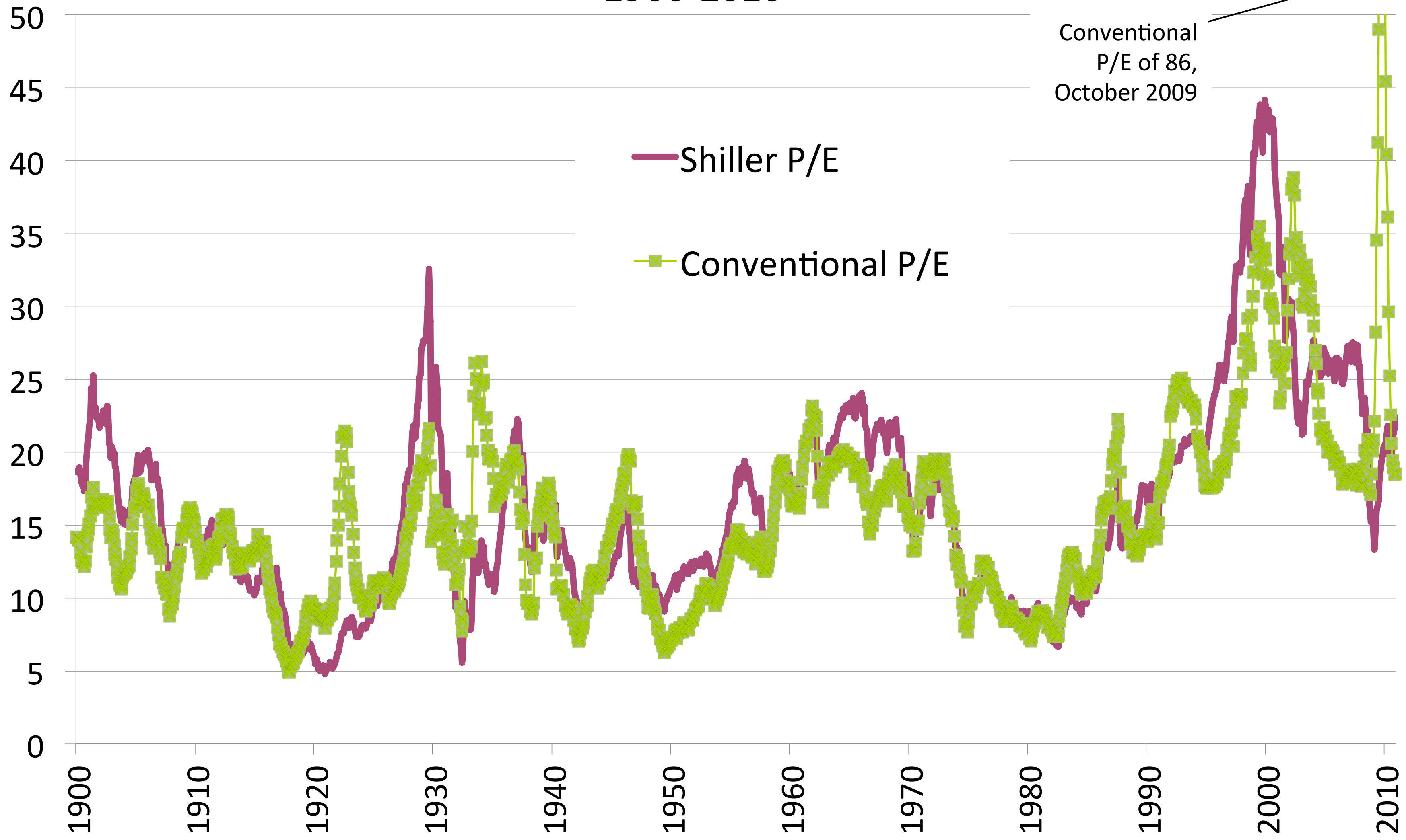

U.S. corporate profits as percentage of GDP, quarterly, 1947-2010
15%
13%
11%
9%
7%
5%
Profits/GDP
1947
1950
1953
1956
1959
1962
1965
1968
1971
1974
1977
1980
1983
1986
1989
1992
1995
1998
2001
2004
2007
Year

Real U.S. GDP per capita, 1789-2012



Repricing

- At market extremes, it's prudent to build in a repricing (change in PE ratio) term
- We are not at an extreme
- PE is near its historical average


Conventional and Shiller P/E ratios of the U.S. equity market, 1900-2010
Conventional P/E of 86, October 2009
Shiller P/E
Conventional P/E
50
45
40
35
30
25
20
15
10
5
0
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010

Bringing it all together

Income return,
= 1.78% dividend yield – (-0.2% repurchase yield net of dilution)
= 1.98%

Capital gain,
= 2.4% inflation + 1.8% real per capita GDP growth + 0.85% population growth
= 5.05%

Total expected equity return
= 1.98% + 5.05%
= 7.03% (rounding, 7%)

– 10-year Treasury bond on April 22, 2011: 3.40%
= Expected ERP over 10-year Treasuries: 3.6%