Market Timing Approaches: Mean Reversion and Macro Fundamentals
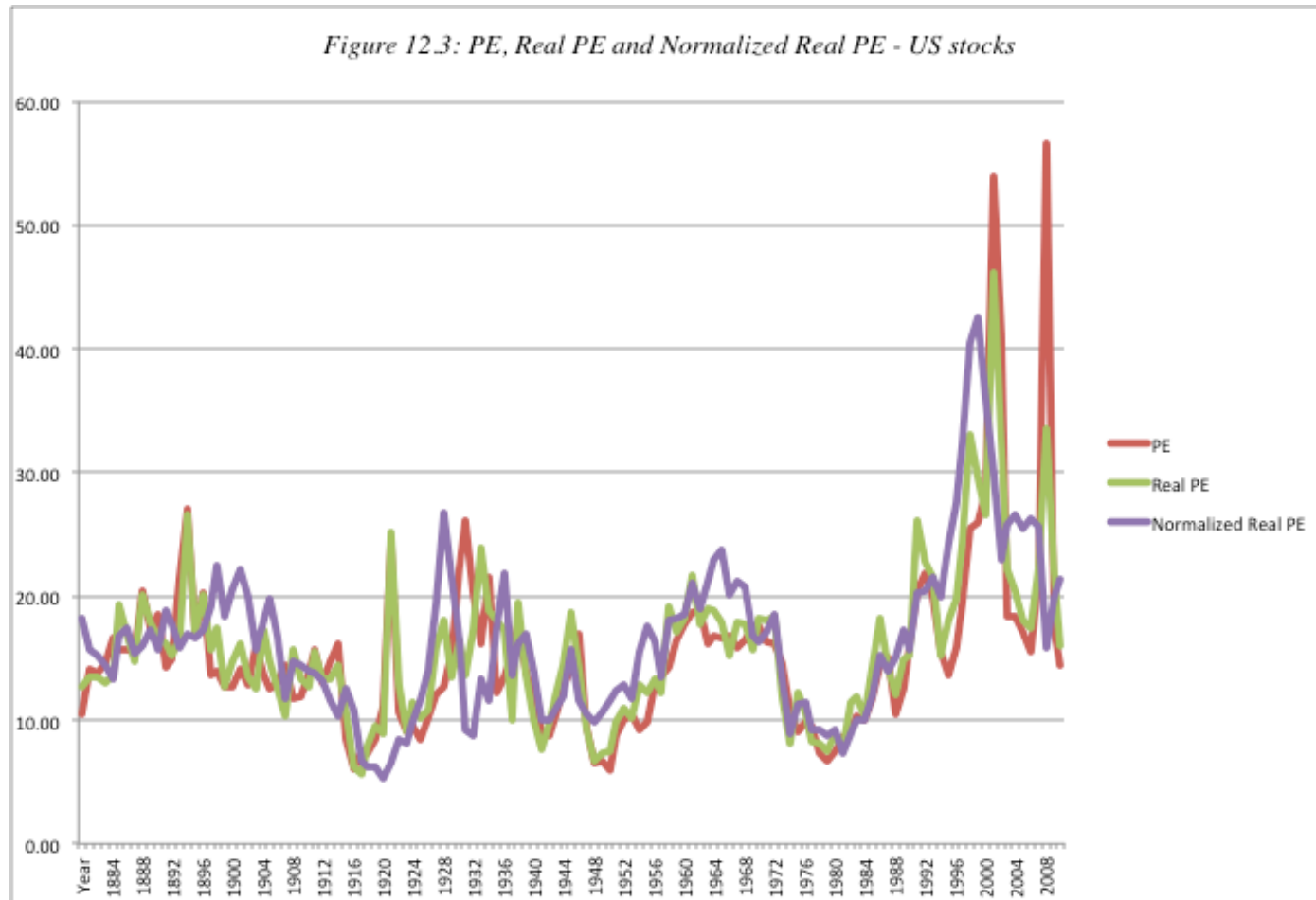
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I. Mean Reversion Measures

- These approaches are based upon the assumption that assets have a normal range that they trade at, and that any deviation from the normal range is an indication that assets are mispriced.

- With stocks, the normal range is defined in terms of PE ratios.

- With bonds, the normal range is defined in terms of interest rates.

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1a. A Normal Range of PE Ratios

Figure 12.2: PE ratio for S&P 500 - 1960 to 2010
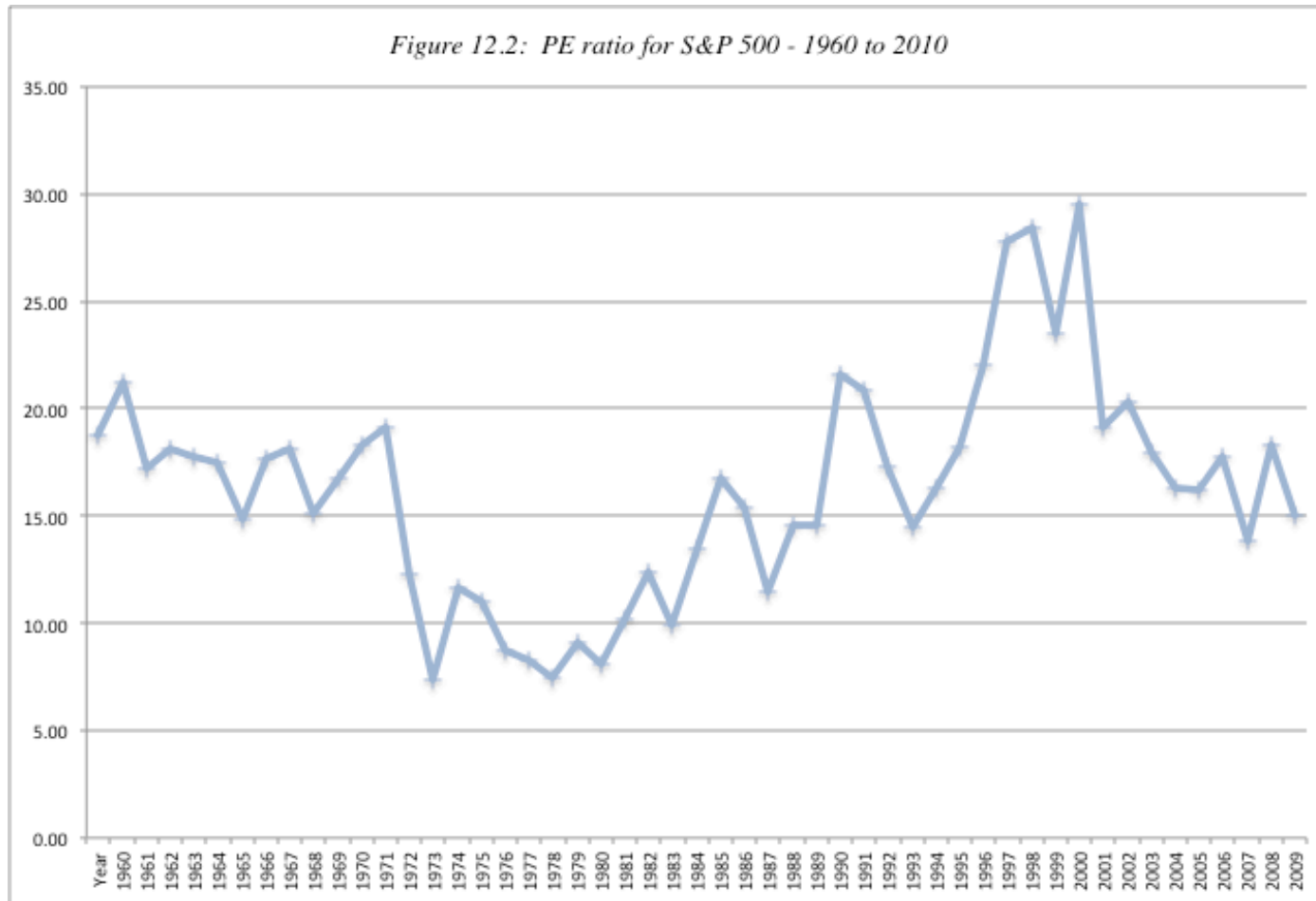
A "normalized earnings" version

Figure 12.3: PE, Real PE and Normalized Real PE - US stocks

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1b. A Normal Range of Interest Rates

Period	1-year T.Bill rate	Upward	Flat	Downward
	>4.40%	0	0	20
1900-1970	3.25-4.4%	10	10	5
	<3.25%	26	0	0
1971-2010	>8%	4	1	3
	<8%	20	10	2

- Using treasury bond rates from 1970 to 1995 and regressing the change in interest rates (Δ Interest Rate$_t$) in each year against the level of rates at the end of the prior year (Interest Rate $_{t-1}$), we arrive at the following results:

- Δ Interest Rate$_t$ = 0.0139 - 0.1456 Interest Rate $_{t-1}$ R^2=.0728

$$(1.29) \qquad (1.81)$$

- This regression suggests two things.
    - One is that the <u>change in interest rates in this period is negatively correlated with the level of rates at the end of the prior year</u>; if rates were high (low), they were more likely to decrease (increase).
    - Second, for every 1% increase in the level of current rates, the expected drop in interest rates in the next period increases by 0.1456%.

- The simplest way to use fundamentals is to focus on macroeconomic variables such as interest rates, inflation and GNP growth and devise investing rules based upon the levels or changes in macro economic variables.

- There are two keys to using this approach:
  - Get a handle on how markets react as macro economic fundamentals change
  - Get good predictions of changes in macro economic fundamentals.

Macroeconomic Variables

- Over time, a number of rules of thumb have been devised that relate stock returns to the level of interest rates or the strength of the economy.

- For instance, we are often told that it is best to buy stocks when
  - Treasury bill rates are low
 - Treasury bond rates have dropped
  - GNP growth is strong

1. Treasury Bill Rates: Should you buy stocks when the T.Bill rate is low?

Change in T.Bill rate	Number of years	Stock returns in following year	
		% of up years	Average Annual returns
Drop by more than 1%	12	66.67%	9.65%
Drop between 0 and 1%	28	75.00%	12.90%
Increase between 0 and 1%	28	71.43%	12.37%
Incrase more than 1%	15	66.67%	11.78%

More on interest rates and stock prices...

- A 1989 study by Breen, Glosten and Jagannathan evaluated a strategy of switching from stock to cash and vice versa, depending upon the level of the treasury bill rate and conclude that such a strategy would have added about 2% in excess returns to an actively managed portfolio.
- In a 2002 study that does raise cautionary notes about this strategy, Abhyankar and Davies examine the correlation between treasury bill rates and stock market returns in sub-periods from 1929 to 2000.
  - They find that almost all of the predictability of stock market returns comes from the 1950-1975 time period, and that short term rates have had almost no predictive power since 1975.
  - They also conclude that short rates have more predictive power with the durable goods sector and with smaller companies than they do with the entire market.
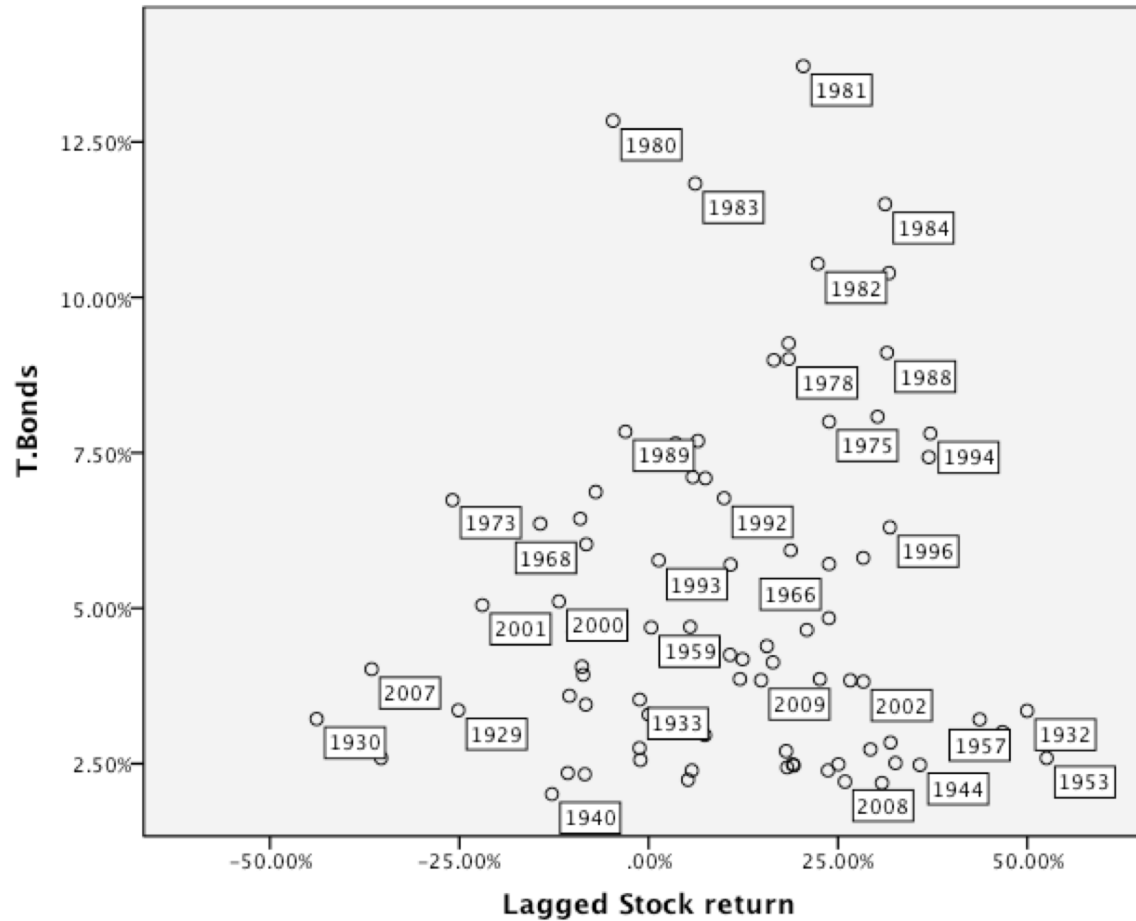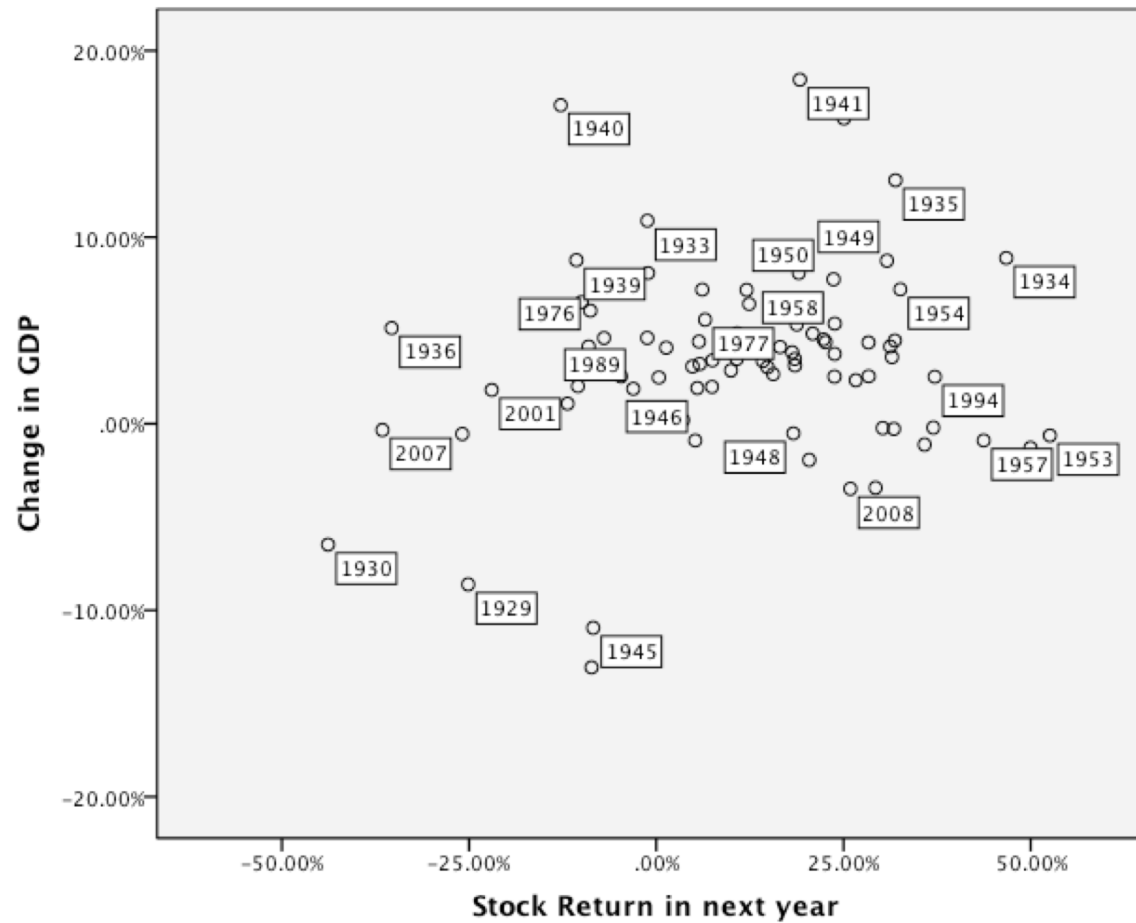
Buy when the earnings yield is high, relative to the T.Bond rate..

Earnings yield - T.Bond Rate	Number of years	Stock Returns			
		Average	Standard Deviation	Maximum	Minimum
> 2%	10	11.91%	15.56%	31.55%	-11.81%
1 -2%	11	1.72%	20.44%	26.38%	-38.49%
0-1%	3	16.14%	6.21%	20.26%	8.99%
-1-0%	6	11.21%	12.93%	27.25%	-11.36%
-2-1%	16	7.74%	18.69%	34.11%	-23.37%
< -2%	5	3.04%	8.40%	12.40%	-10.14%

Real GDP growth and Stock Returns

GDP Annual Growth	Number of years	Stock Returns in Next Year			
		Average Return	Standard deviation in returns	Best Year	Worst Year
>5%	23	10.04%	19.42%	46.74%	-35.34%
3.5%-5%	25	13.38%	12.26%	31.86%	-9.03%
2-3.5%	9	14.08%	16.41%	37.20%	-10.46%
0-2%	7	-3.40%	11.50%	7.44%	-21.97%
<0%	17	15.11%	29.84%	52.56%	-43.84%
All years	82	11.16%	20.02%	52.56%	-43.84%