

# Playing on profits cycle?

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## Abstract

In the article it is shown that year-to-year change of the S&P 500 does not depend on profits cycle. On the other hand, year-to-year change of earnings multiple P/E tends to anticorrelate with profits cycle. It shows sluggishness of market response in relation to profits cycle. It is shown that there is one important condition for development of new long-term bull trend. It is presence of phase of earnings accumulation. Such accumulation is possible only during periods of significant outstripping of earnings growth over the market growth. Now there is no phase of earnings accumulation, because market returned to 8% long-term growth rate, which outstrips the 5.5% long-term earnings growth rate. Such conditions can support only sideways market at best.

## 1. Introduction

Statements that the renewed earnings growth must be very favorably reflected in stock's prices sound frequently now. So, according to Standard & Poor's data for the second quarter of 2003 the trailing four-quarter earnings has grown more than 30% in comparison with the second quarter of 2002. Such data look very impressive and create comfortable feelings among market participants. Really, if the earnings growth looks so good why market should not grow? At the first glance investor's investment decision should be very simple to buy stock while earnings is growing.

Nevertheless, it is necessary to remember that market is a complex system. Short-term year-to-year earnings growth (profits cycle) is only one of system parameters. In order to understand the performance of a complex system it is necessary to use a few of key factors. So, for example in [1] the importance of dynamics of the commodities' prices (CRB Spot Index) for all financial market is shown.

However, earnings growth is one of the most frequently used expressions by both financial analysts and market practitioners.

In order to operate correctly with concepts "long-term earnings growth" and "short-term earnings growth" (or profits cycle) it is important to understand influence of each of the specified parameters on dynamics of market prices.

## 2. Discussion

In Figure 1 profits cycle (year-to-year percent change in trailing four-quarter earnings) since March 1950 till March 2003 is shown.

I have checked up whether there is any correlation between year-to-year change of the earnings and respective change of the S&P 500. Analysis was done for the period since March 1872 till July 2002.

The following procedure was used for analysis. The year-to-year change of the earnings and the year-to-year change of S&P 500 for the same quarters were compared. The statistical

processing of a data set for the chosen historical period was carried out. I found that the correlation coefficient R-squared between one-year change in S&P 500 and the similar change in trailing four-quarter earnings is only 6%. In other words, one-year change in trailing four-quarter earnings can predict only about 6% of the variability of the S&P 500's four-quarter returns.

There were compared the year-to-year change of the earnings for the certain quarter and year-to-year change of S&P 500 for the next quarter. The above procedure was done not only for the next quarter but also for one-quarter shift, two-quarter shift and in four-quarter shift. I found that values of correlation coefficients R-squared are less than 1% in these cases.

The received results testify that year-to-year change of the S&P 500 does not depend on profits cycle (i.e. year-to-year change in trailing four-quarter earnings). Therefore, for example, during the period of cyclical earnings growth the market can move both upwards and downwards.

What parameters of the market can correlate with profits cycle? In Figure 2 the dynamics of profits cycle and 1-year P/E change is shown.

It was shown that correlation coefficient R-squared between year-to-year P/E change and the profits cycle is equal to 38.9 % (adj. R-squared 38.8 %) for the period since March 1872 till July 2002. Correlation coefficient appears negative (see Table 1)

Table 1

Regression Summary for Dependent Variable:

1 year P/E change

R= -0.62 R-sq = 0.389 Adj R-sq = 0.388

F(1,518)=329.51 p<0.0000 Std. Error of estimate: 20.138

	BETA	St. Err. of BETA	B	St. Err. of B	t(518)
Intercept			7.86	0.910	8.64
1 year earnings change	-0.62	0.034	-0.72	0.040	-18.15

The similar analysis was carried out for the period since March 1950 till March 2003. It showed that correlation coefficient R-squared appeared 52.8 % (adj. R-squared 52.6 %), Table 2 and Figure 3.

Table 2

Regression Summary for Dependent Variable:

1 year P/E change

R= -0.7266 R-sq = .528 Adj R-sq = .526

F(1,211)=236.02 p<.00000 Std. Error of estimate: 15.47

	BETA	St. Err. of BETA	B	St. Err. of B	t(211)
Intercept			11.692	1.137	10.28
1 year earnings change	-0.7266	0.0472975	-1.057	0.069	-15.36

So, on the one hand year-to-year change of S&P 500 does not correlate with profits cycle. On the other hand year-to-year growth of earnings multiple P/E (one-year earnings multiple cycle) corresponds to negative profits cycle and vice versa.

These relations show sluggishness of market response in relation to profits cycle.

In Figure 4 the dynamics of P/E ratio (right scale) and S&P 500 profits cycle (left scale) are shown. Existence of long-term cycles of P/E was shown in [2]. From Figure 4 it can be seen that short-term cycles concerned with profits cycle also exist.

In accordance with analysts estimates from Thomson First Call the peak earnings growth of 61% is expected for the fourth quarter of 2003 [3].

What should be expected from the market thereupon?

For the last 60 years the most impressive positive profits cycle was observed since December 1946 till December 1949. In Figure 5 profits cycle (left scale) and nominal profits (right scale) are shown. Since June 1946 till June 1949 earnings grew on 186% (from 0.84 up to 2.4). The bottom point of previous negative profits cycle was as the start point of calculation. During two periods (see Figure 5) earnings growth exceeded 70%. At the same time (from June 1946 till June 1949) S&P 500 fell on 25 % (from 18.58 up to 13.97). As a result of so rash earnings growth and simultaneous fall of the market the P/E ratio was lowered from 22.12 (June 1946) up to 5.8 (June 1949). Thus, the positive profits cycle of the end of 40-th resulted in accumulation of the significant earnings by the market. Later such accumulation of earnings allowed developing the bull trends for both the earnings multiple and the equity market, which were prolonged to the beginning and end of 60s, respectively. In Figure 6 the dynamics of S&P 500, nominal earnings (left scale) and P/E ratio (right scale) are shown.

Next accumulation phase was in 70s when the market moved sideways. Since December 1970 till March 1980 earnings grew about three times (from 5.13 up to 15.29), see Figure 6. During this period P/E ratio was lowered from 17.55 up to 6.85.

It is necessary to note [2], that since 1872 up to 2002 the nominal earnings and dividend growth rate followed 1.5% per year growth curve. The market also grew in accordance with 1.5% per year growth curve. But the long-term earnings growth was accelerated in the second half of 20-th century and earnings followed 5.5 % per year growth curve since 1949 (see Figure 7).

The latest positive profits cycle began in September 2002. Earnings bottomed at the 24.7 level in December 2001. By estimations of Standard & Poor's, earnings run up to 44 by the end of the year, i.e. by 78 % in comparison with December 2001. As it is shown in Figure 7 now the earnings simply come back to 5.5 % long-term growth rate. By the end of 2003 meanings of earnings correspond to 5.5 % long-term growth rate should be equal to 42. At the same time, S&P 500 has returned to the 8% long-term growth rate (see Figure 8). As the consequence the divergence of earnings growth rate and market growth rate is still intact.

If S&P 500 is about 1000 and meaning of earnings is equal to 42 then the P/E ratio is 23.8. This value of P/E ratio does not look attractive from historical perspective.

Therefore now one should not talk about accumulation of earnings (it should be reflected in essential reduction of P/E value), Figure 9.

Such conditions can result in two scenarios.

First scenario supposes that market stays in sideways movement for years. In this case market would be waiting while it could accumulate essential earnings (like in 70s). According to [4] in conditions of low inflation and low interest rates in the absence of war the earnings multiple P/E can stay at the high level. It means that inertial nature of a human would hold him in opinion that favorable environment could last out for a long time. Really, at the end of 40s and during the 70s the inflation was higher than now. The 3-year CPI variability (see Figure 10, right scale) was more then 7% at the end of 40s and approximately 2.5% during the 70s. But it is necessary to note that the 3-year earnings variability (left scale) reaches now the high level observed only at the end of 40s, while inflation and interest rates are low now and there is no war. To calculate variability one should compare the meanings of trailing earnings and CPI for the required quarter with the appropriate meanings of the same quarter for the previous year. Then values for 12 quarters (or 3 years) are gathered and standard deviation for this set is calculated.

So low inflation and low interest rates cannot provide adequate stability.

Moreover, the stock market does not exist independently. In [1] the model of the alternative investments is offered. This model establishes correlation between current real earnings yield (reciprocal of the P/E ratio)(CREY), 10-Y Treasury bond yield (TBY) and 10-year average for CRB Index yield (CRBY) (where CRB Index yield is the one-year change in the price of CRB Spot Index) in the following way:

$$CREY(pred) = 4.19 + 0.72 \cdot TBY + 0.54 \cdot CRBY_p,$$

$$CRBY_p = CRBY - TBY$$

As of October 17 the yield of 10-Y Treasury bond was 4.39%, the meanings of 10-year average for CRB Index yield was 1.02%. So, the prediction for CREY is 5.53%. It means that corresponding P/E ratio should be equal to 18.1.

Thus even in relative stable conditions the stock market's yield should be higher in order to compete with the yields of alternative investments.

Second scenario supposes that some shock could result in fast fall of equity prices.

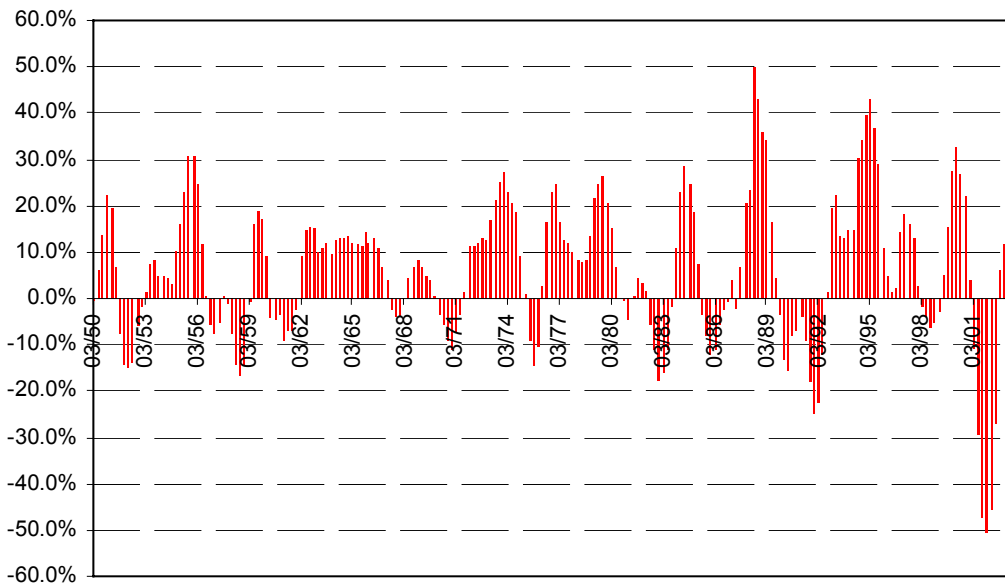
### 3. Conclusion

It was shown that there is no correlation between the year-to-year change of S&P 500 and profits cycle or "short term earnings growth". But one-year earnings multiple cycle tends to anticorrelate with profits cycle. This indicates sluggishness of market behavior with respect to profits cycle. In long-term outlook market prices have tendency to move along with the long-term earnings growth. The rise of long-term bull trend is possible only if during the periods of significant earnings growth market falls or moves sideways. The above-mentioned conditions must lead to the essential reduction of P/E ratio. So the earnings accumulation at the end of the 40s and during the 70s create basis for development of the following long-term bull trends for both the earnings multiple P/E and the stock market. Present situation indicates that market has returned to the 8% long-term growth rate, which outstrips the 5.5% long-term earnings growth rate. Therefore, we cannot speak about phase of earnings accumulation now. Such conditions can at best support only sideways market.

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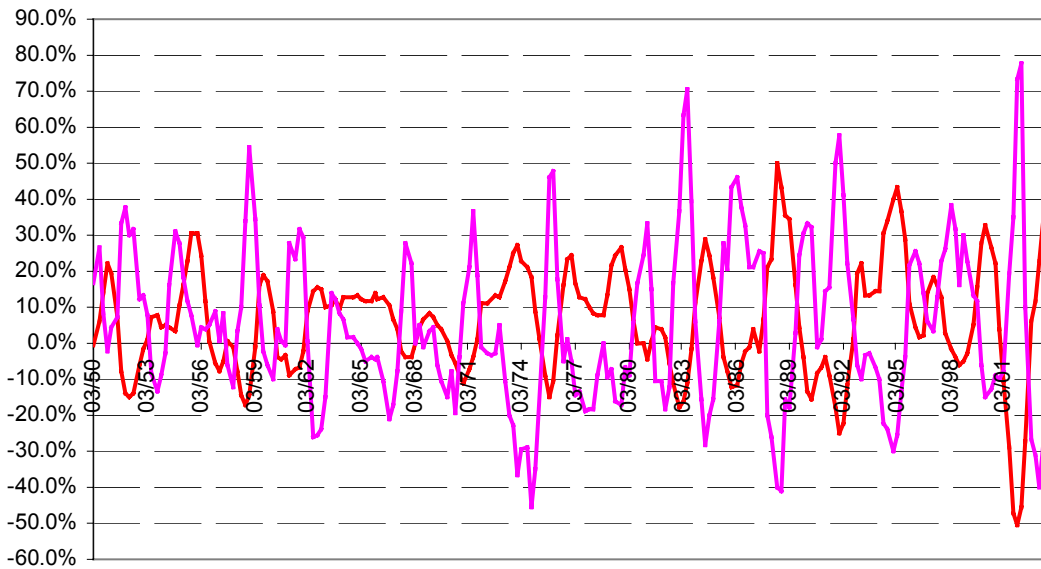
Figure 1



Source: Robert Shiller Data, Standard & Poor's

■ 1 Year Earnings Change

Figure 2



Source: Robert Shiller Data, Standard & Poor's

— 1 Year Earnings Change

— 1 Year P/E Change

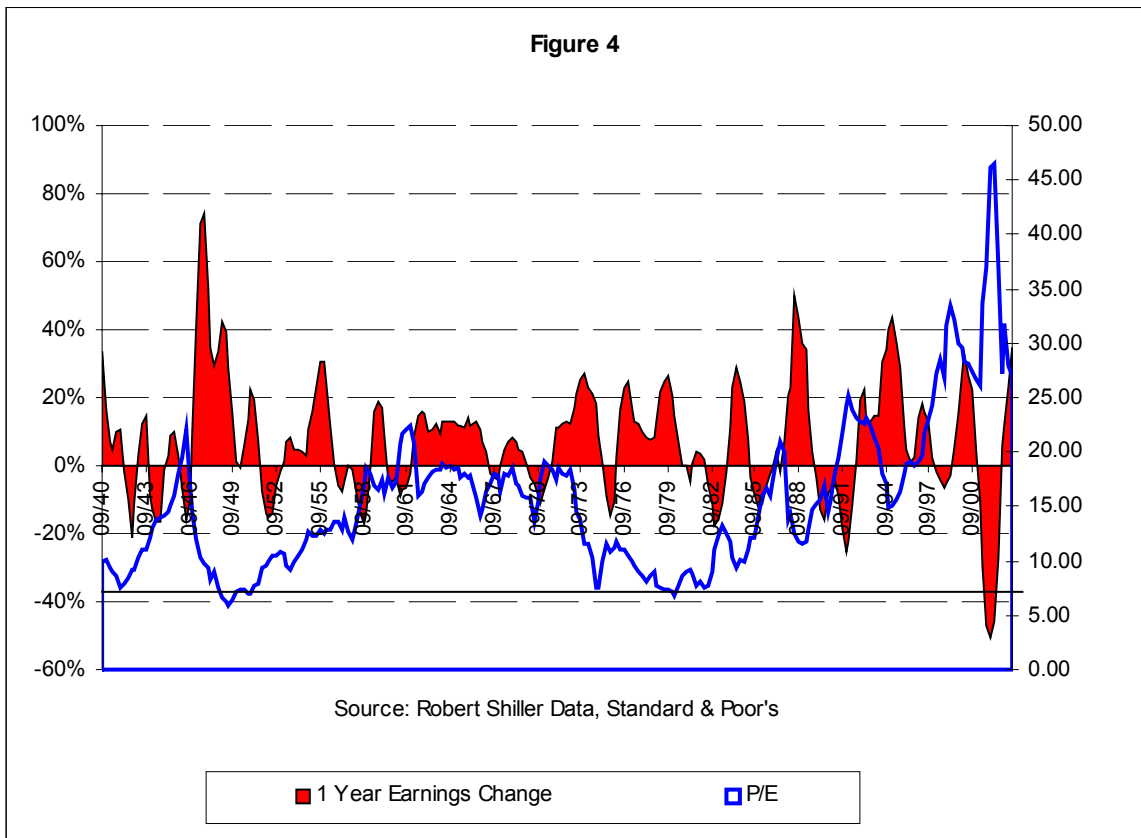
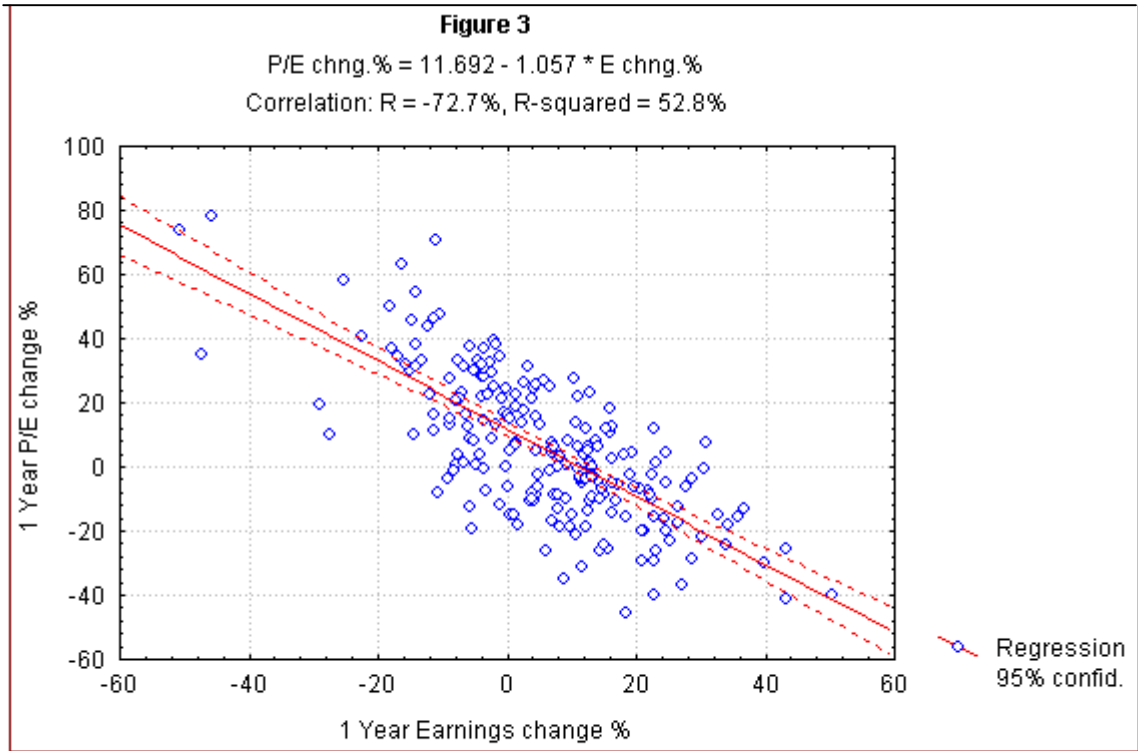
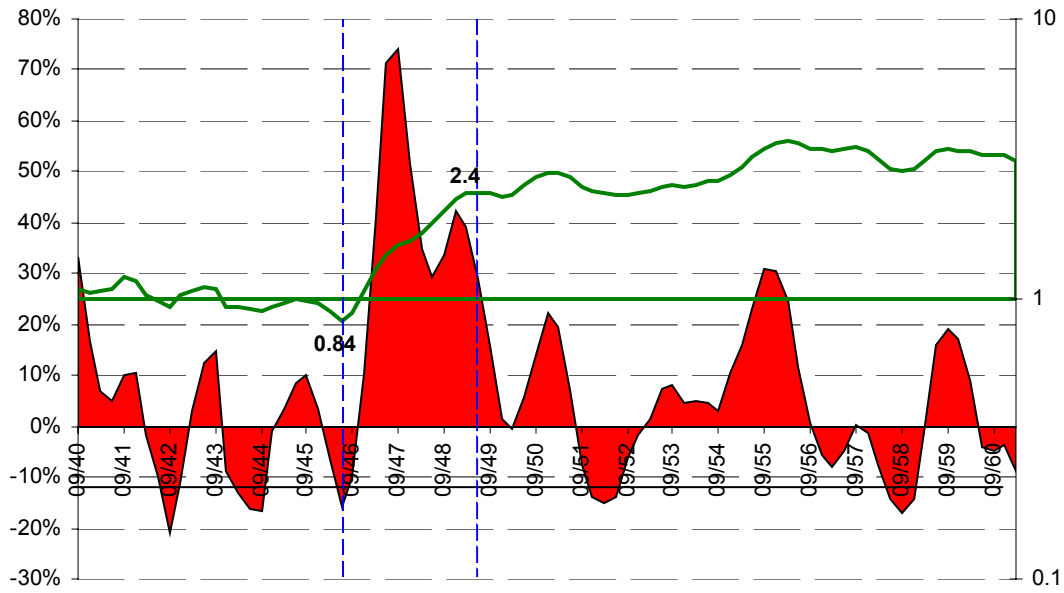


Figure 5



Source: Robert Shiller Data, Standard & Poor's

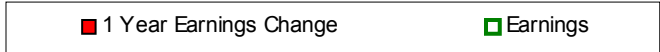
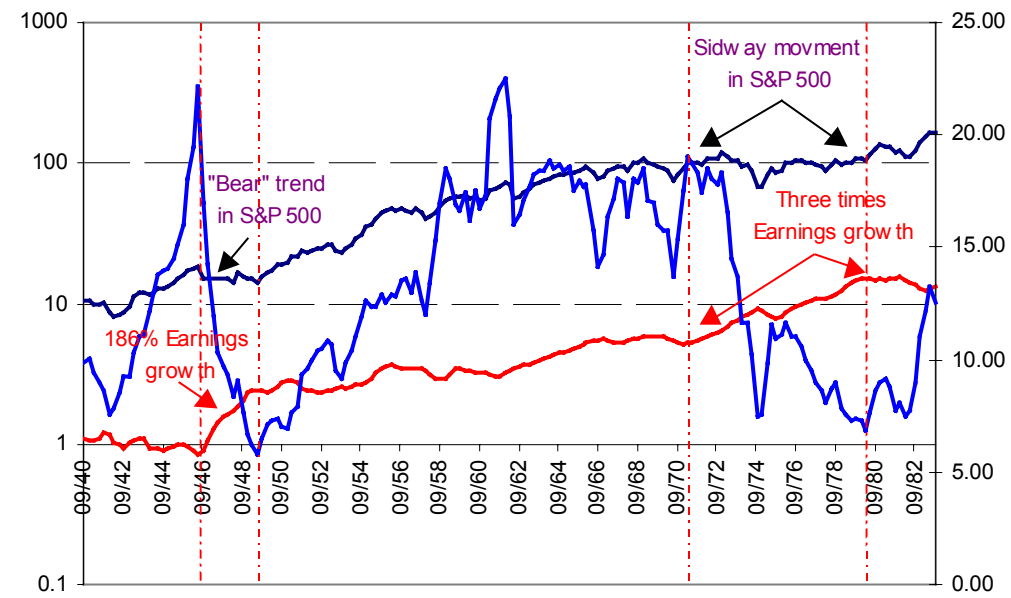


Figure 6



Source: Robert Shiller Data, Standard & Poor's

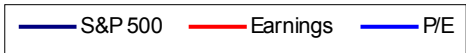
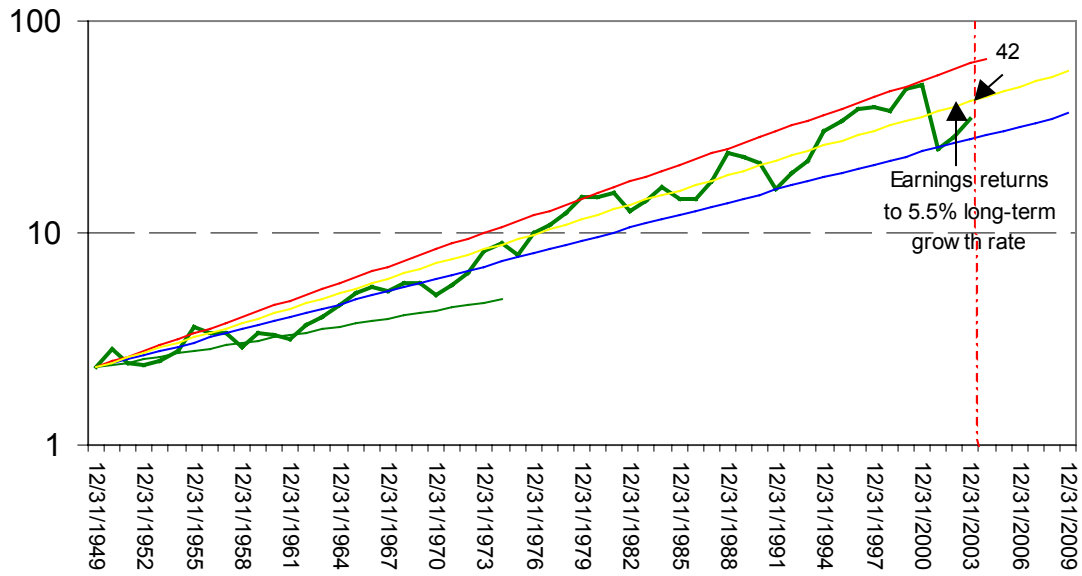


Figure 7



Source: Robert Shiller Data, Standard & Poor's

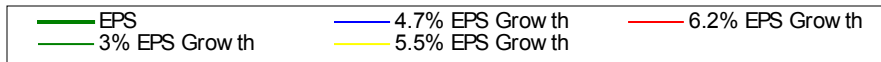
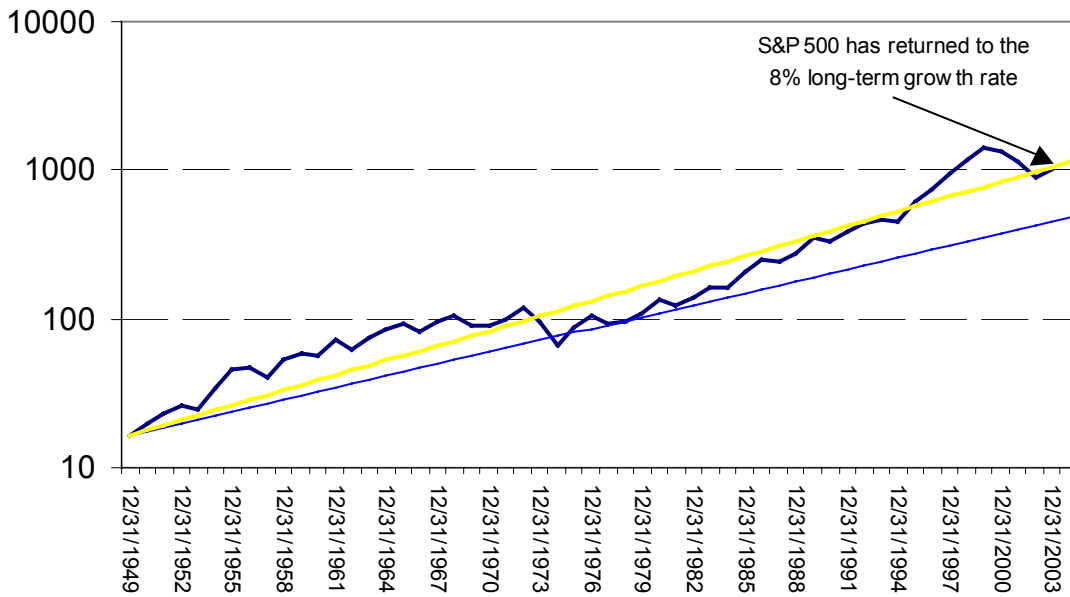


Figure 8



Source: Robert Shiller Data, Standard & Poor's



Figure 9

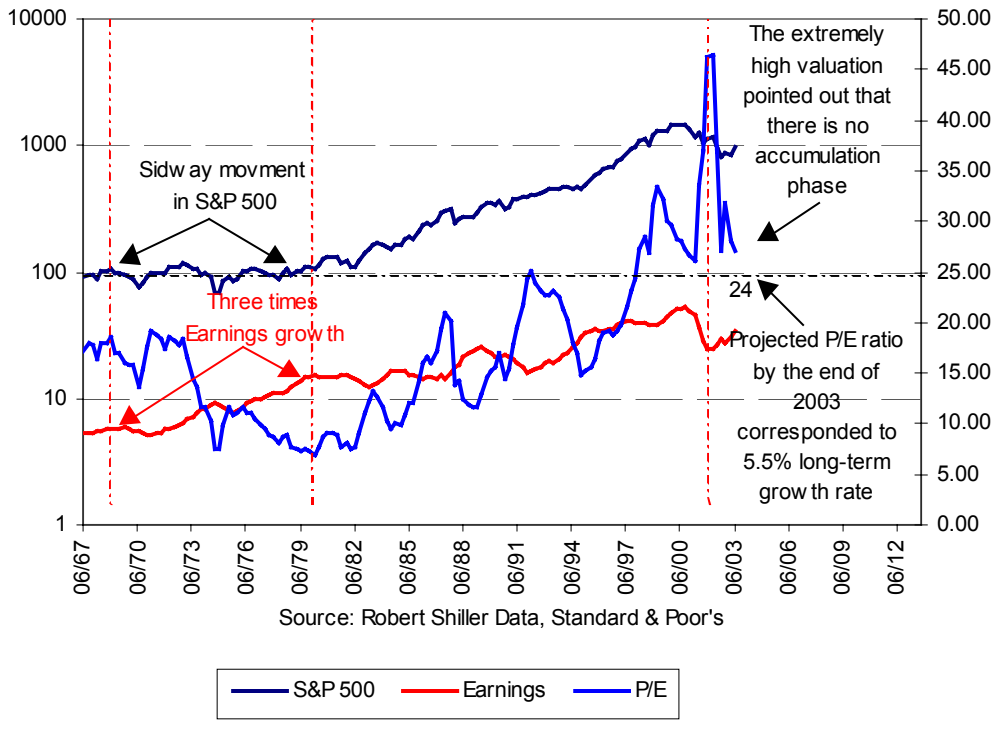


Figure 10

