Another way in which firms raise money is through stocks. Stocks are participations in the property of a firm. They are different in at least two fundamental ways from stocks.
1. Holding a stock means bearing the risk of the business much more directly than for a bond-holder. This implies that there are participation rights for stock-holders. Bond holder only have participation when there is bankruptcy.
2. Stocks pay dividends which are decided by the firm. They come out of profits, when profits are not payed out they are called RETAINED PROFITS.

The price of a stock will be the PV of its dividends:

$$Q_t = \sum_{t=1}^{\infty} \frac{D_t}{\prod_{s=1}^{t}(1+i_s)}$$

So, in theory the price of stocks should be a good signal of how a company is doing (what the outlook for it should be). Since the people who hold the stocks have a right and interest to participate in the firm and be informed, the price should reflect the information. This mechanism does not always work so well. Stockholders are not always as well informed as we would expect and there are individuals with an incentive and position for speculating and manipulating the price by distorting information.

A common way of looking at how expensive or cheap stocks are is the PRICE/DIVIDEND ratio. Imagine a stock that produces a flow of dividends during its history. The price dividend ratio is

$$PD_t = \frac{P_t}{\{\text{Expected Dividends}\}} = \frac{\displaystyle\sum_{t=1}^{\infty} \frac{D_t}{\displaystyle\prod_{s=1}^{t}(1+i_s)}}{\displaystyle\sum_{t=-1}^{-T} \frac{\theta_t D_t}{\displaystyle\prod_{s=1}^{t}(1+i_s)}}$$
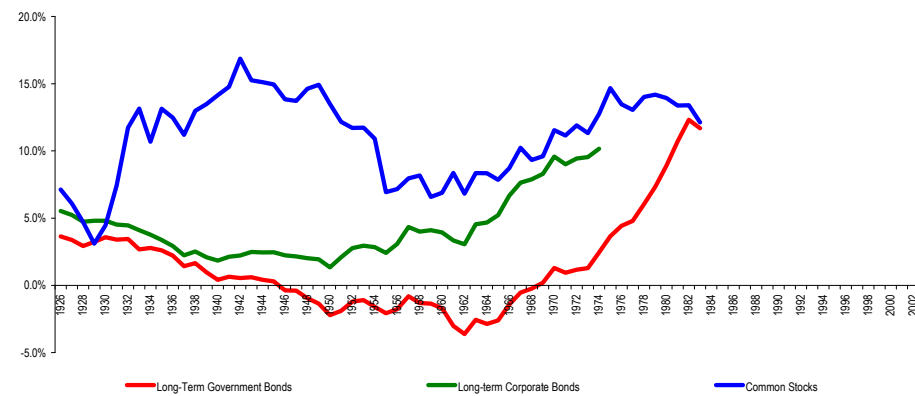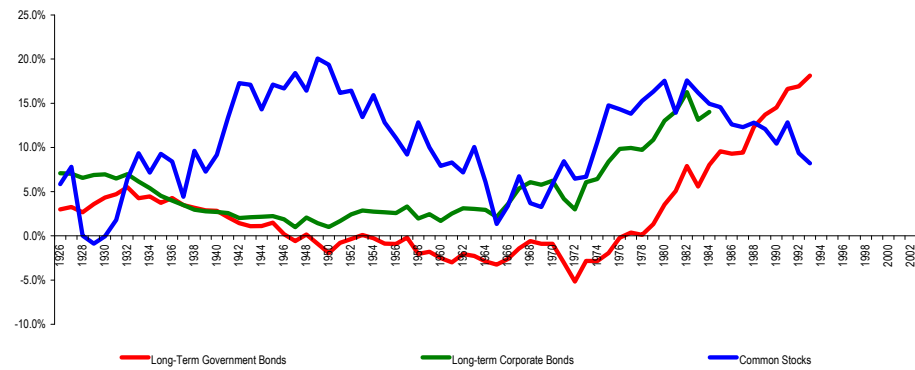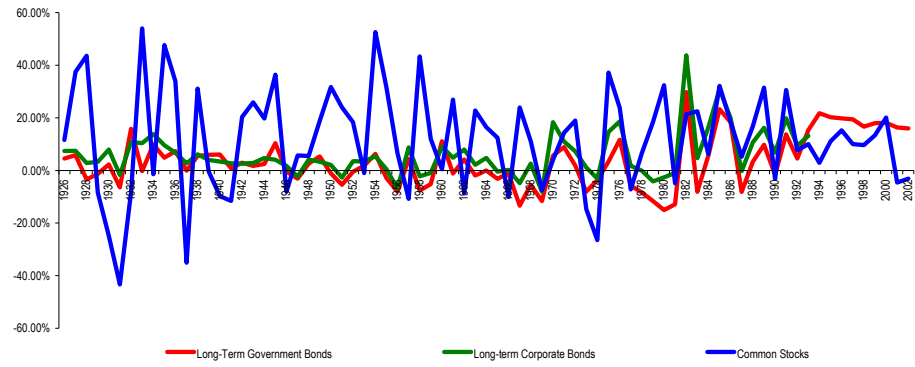
where T is some period toward the past that we choose to estimate the dividends and θ is the weights that we use to generate this number. There is always the argument against this measure that if a company has not produced in the past it will in the future because it is investing at the beginning (that was the argument arround most dotcoms). So we must choose a sufficiently long T that it is a good representation of how the firms usually behave in the economy.
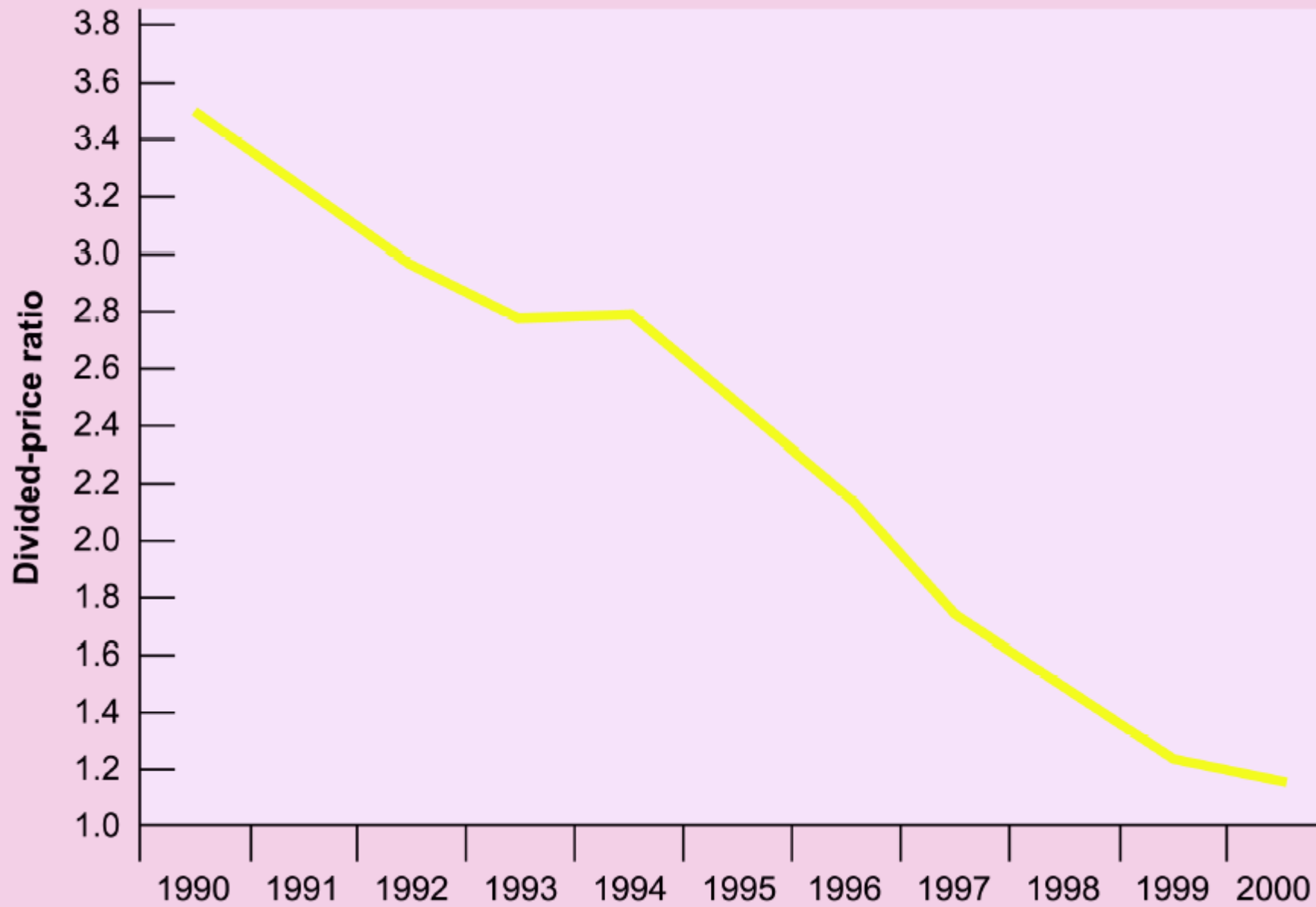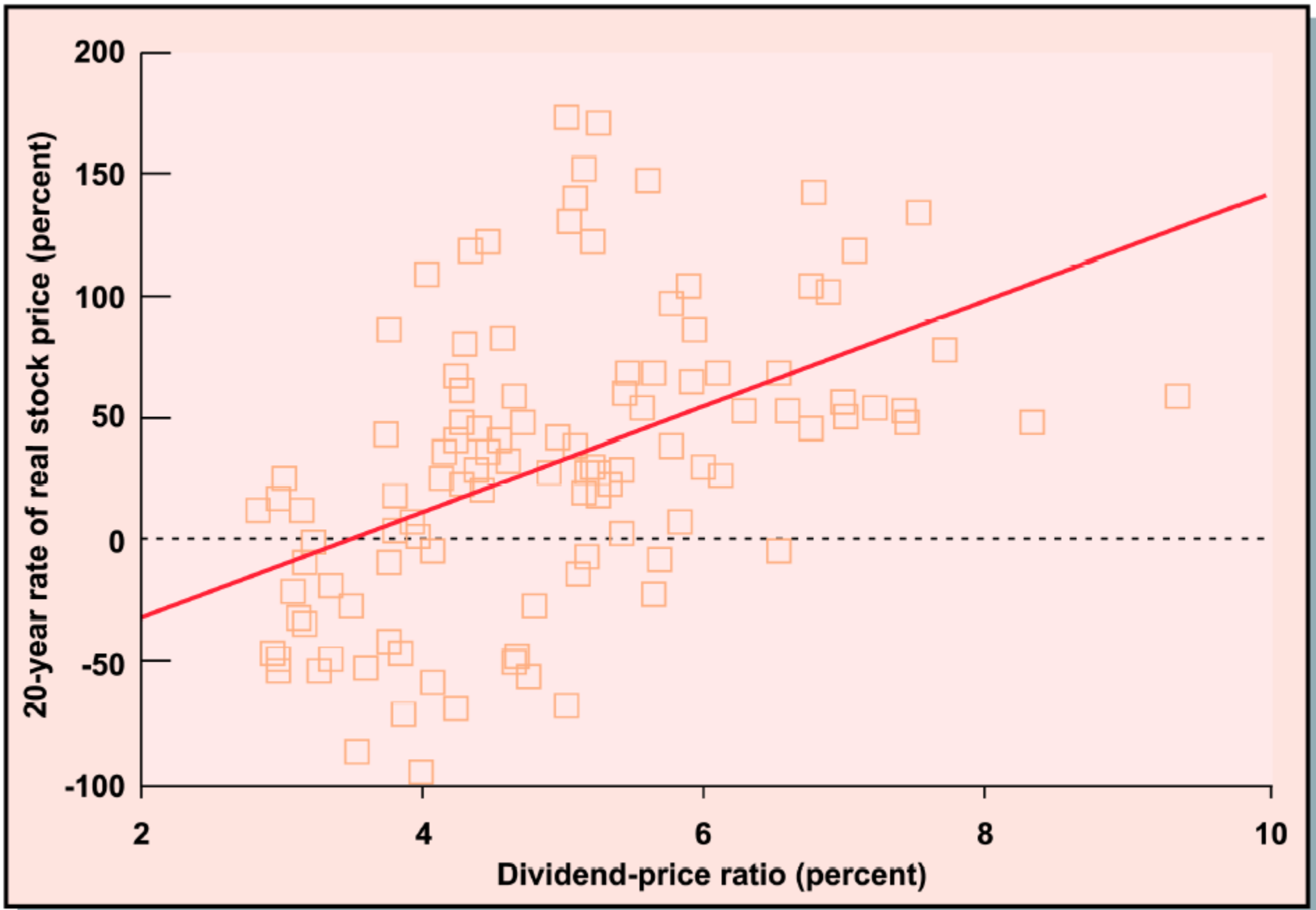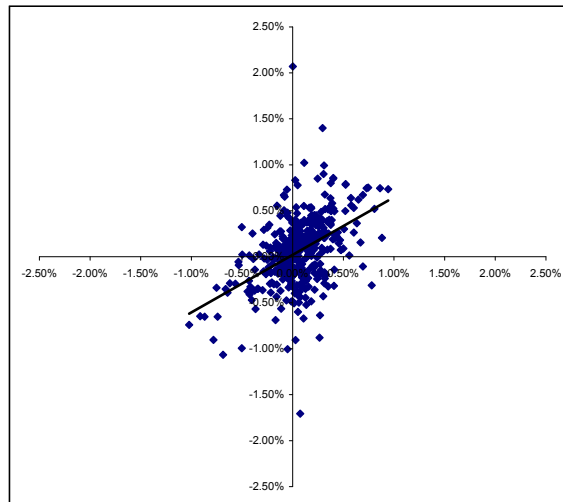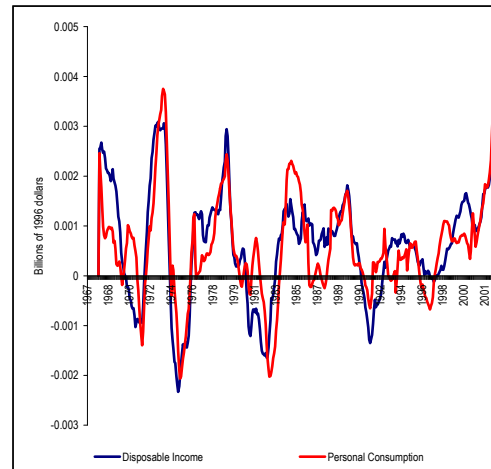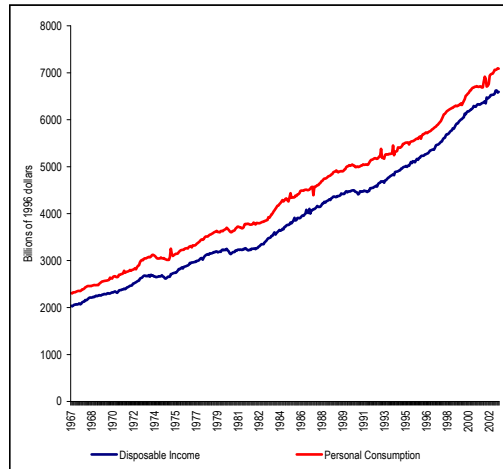
GENERAL POINTS ON STOCKS:
1. They are very hard to predict. There are many speculators trying to predict and arbitrage so it is hard to anticipate something that the market has not priced in already.
2. In the long term they are more profitable than bonds.

3. It is better for the uninformed investor to buy indexes than to speculate….alas!

4. **An unanticipated** monetary expansion should increase stock prices because it produces a fall in interest rates and an increase in potential dividends.

5. A shock to production (consumer optimism) increases dividends but also increases interest rates. It can also anticipate some anti-inflationary measure by the central bank.

Long-Term Government Bonds   Long-term Corporate Bonds   Common Stocks

Long-Term Government Bonds   Long-term Corporate Bonds   Common Stocks

Long-Term Government Bonds   Long-term Corporate Bonds   Common Stocks

Present Values and Consumption

The slope of the line on the plot diagram is approximately 0.85. This means that there is not always a complete correlation between disposable income and consumption. Why? An answer has been proposed by two theories of consumption. The **life cycle** theory of Professor Modigliani from MIT proposed that consumers were aware of the life profile of their income and tried to smooth consumption through it. The **permanent income** hypothesis of Professor Friedman from the university of Chicago proposed that consumers would estimate their average expected income profile and approximately consume accordingly.

Both theories are based on:
1. That consumers will try to smooth their consumption profile. This is based on the idea that consumers try to maximize the total utility they derive from consumption. This leads them to equalize the marginal utility that they perceive in different periods.
2. That consumers have a more complex perception of their future income profile than just the past performance.
3. That consumers have access to financial markets, that allow them to smooth their consumption profile (its always true for savings, but it is not always true for getting a loan)

Hence, we would think that the consumption function would be more like

$$C_t = f\left(\left\{\begin{array}{l} Total \\ Wealth \end{array}\right\}, \left\{\begin{array}{l} Current \\ Disposable \\ Income \end{array}\right\}\right)$$

Where

$$\left\{ \begin{matrix} Total \\ Wealth \end{matrix} \right\} = \underbrace{\left\{ \begin{matrix} Human \\ Wealth \end{matrix} \right\}}_{\substack{\text{Present Discounted} \\ \text{value of Wages}}} + \underbrace{\left\{ \begin{matrix} Non-Human \\ Wealth \end{matrix} \right\}}_{\substack{\text{Net financial and real estate} \\ \text{property value}}}$$

which involves expectations and the calculation of the present value of wages, of financial assets (dividends and yields) and of real estate (rent equivalent)

We should observe that:
1. Consumption does not respond one-to-one to fluctuations in current income.
2. Consumption may even move if income does not.
3. A relaxation of financial constraints on consumers (increased efficiency in financial markets) will increase consumption.

Investment

Firms will invest when the expected return from that investment is greater than the cost of its investment. Consider the expected present value of profits generated by a certain machine that depreciates at a rate of δ every year.

$$E\{V_t\} = \frac{\Pi_t^e}{(1+r_t)} + \frac{(1-\delta)\Pi_t^e}{(1+r_t)(1+r_{t+1}^e)} + \ldots\ldots$$

If we assume a constant profit rate and interest rate this reduces to

$$E\{V_t\} = \frac{\Pi^e}{(r-\delta)} = \frac{\left\{\begin{array}{c}\text{Expected} \\ \text{Profits}\end{array}\right\}}{\left\{\begin{array}{c}\text{Rental cost} \\ \text{of capital}\end{array}\right\}}$$
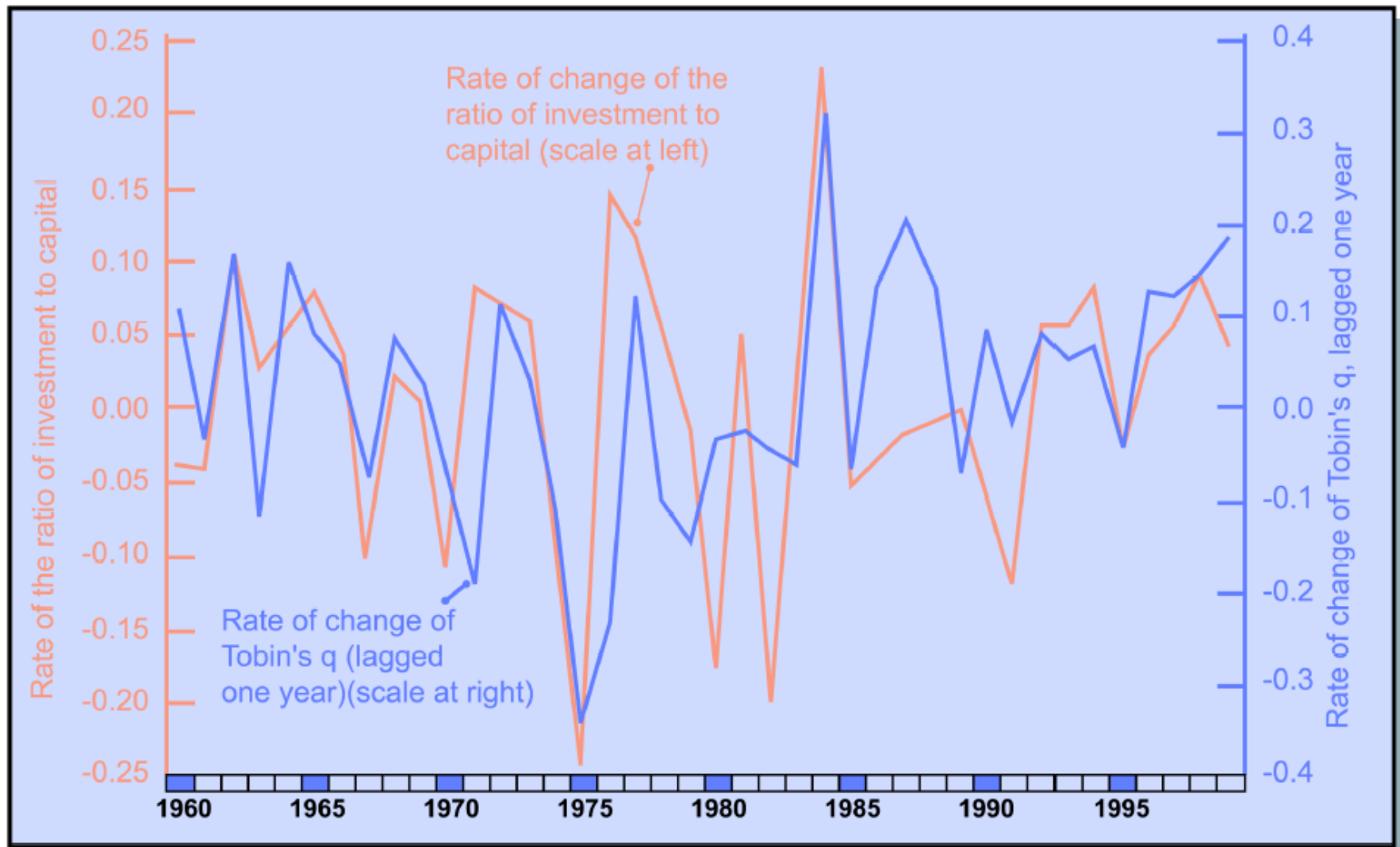
We would expect investment to depend on this forecast of profits

$$I_t = f\{E\{V_t\}\}$$

the ratio of the value of a unit of capital to its replacement cost is also refered to as Tobin's q. So assume that the cost of the machine is P_t , then the q_t is the

$$q_t = \frac{E\{V_t\}}{P}$$

so that when the q>1 we should invest.

Cash-flow matters