

## Corporate Finance, Module 10: "Positive net present values"

### *Net Present Value in Competitive Markets*

(The attached PDF file has better formatting.)

*Question:* Why does a competitive market imply that new projects have zero NPV?

*Answer:* Module 8 of the Microeconomics course covers this; Brealey and Myers assume the result. In a long-run competitive equilibrium, the market price is the average long-run cost of the firms, and firms make zero economic profits. This is the *minimum* long-run average cost, so firms can not do better than the competitive equilibrium.

*Question:* The homework assignment mentions that we may want to determine the present value of a project after the initial investment is made. If the net present value of a project is zero, the present value is the cost of the initial investment.

*Answer:* For several reasons, the net present value may not be zero. The three most common reasons are

1. All firms are identical, but the first firm has two advantages: (i) It takes time for other firms to catch up, and (ii) the firm may obtain a monopoly by patent protection. Brealey and Myers deal with both of these scenarios.
2. The firms are identical, but this firm has already invested capital in the project. The sunk costs are no longer future cash flows, and the net present value of the project changes.
3. The firms are not identical. One firm may own resources that other do not have, such as large off-shore oil deposits, high quality farmland, or a government monopoly.

Landsburg's *Microeconomics* textbook discusses reasons #1 and #3 more fully. The homework assignment deals with reasons #1 and #2.

*Question:* Which of these reasons is most common?

*Answer:* Reason #1 is most common. The profits in high-tech industries, pharmaceutical drugs, consumer durables, and medical programs stem from being the first to market with a new product.

*Question:* Reason #2 seems simple. If the initial investment required is \$10 million and the net present value is zero, the value after the initial investment is \$10 million.

*Answer:* The questions concern the replacement of machinery. The firm is now using old technology and must decide whether to update its production facilities. The homework assignment concerns old vs new technology for making steel. Brealey and Myers focus on when a firm should upgrade its production processes. (When should an airline buy new aircraft? When should a hotel re-design its interior? When should a manufacturer switch to off-shore production?)

Investing in the old production process is a negative NPV investment; investing in the new process is a zero NPV investment. The firm's dilemma is whether it should continue with its old production facilities (since the initial investment is a sunk cost) or should it scrap the old facility and build a new one?

*Question:* For Reason #3, you left out differences in entrepreneurial ability. Isn't this the most important difference? Two actuaries may start consulting firms: one makes \$1 million and the other goes bankrupt.

*Answer:* Differences in ability are important, but they are hard to assess. We all believe that we are better than others, though most of us are average. The quickest way to lose money is to believe that you are better than everyone else. If you truly are better than everyone else, you will get the patent, be first to market, or develop other competitive advantages that let you succeed. Examine these signs of greater ability, not the belief in greater ability.