Lecture XII: Basics of the DuPont Expansion

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January 12, 2018

1. Arbitrage and Conglomeration – History of the DuPont
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Arbitrage and Conglomeration – History of the DuPont

- A basic tenant in economic theory is the concept of an Arbitrage Equilibrium.
    - If it is possible to buy goods in one market and sell in another for a profit, the two markets are not in equilibrium.
    - An Arbitrageur of some variety will enter the market – buying in the low price market and selling in the high price market – until the price equilibrium occurs.
- This concept must hold in financial markets – the price of two instruments such as the rate of return on two stocks must be the same or an Arbitrageur will buy one stock and sell the other until the the rate of return on the two stocks are the same.

Stock Price Arbitrage

- In financial markets we need to add some additional development.
  - First note that the rate of return on the two stocks must be the same

$$\frac{\text{Return on Equity}_i}{\text{Average Owner Equity}_i} = \frac{R_{E,i}}{CS_i P_{CS,i}} = \frac{R_{E,j}}{CS_j P_{CS,j}} \tag{1}$$

    where $R_{E,i}$ is the return on the equity for stock i (i.e., dividends plus capital appreciation), CS_i is the number of common stocks owned in stock i, and $P_{CS,i}$ is the price of common stock.
  - If this equilibrium does not exist

$$\frac{R_{E,i}}{CS_i P_{CS,i}} > \frac{R_{E,j}}{CS_j P_{CS,j}} \tag{2}$$

    An Arbitrageur will sell common stock in company j and buy common stock in company i.

- Continued
  - As more stock in company j is sold – the price of stock in company j will fall.
  - As more stock in company i is purchased – the price of the stock in company i will increase.
  - At some point – the rate of return on equity will reach equilibrium.
- We also need the caveat that the returns to common stocks for companies i and j must have similar risk – we will broaden this concept later in the course when we develop the Capital Asset Pricing Model.

Arbitrage and Conglomeration

- The world of corporate structure is a wild and woolly place – almost a wild, wild west.
- One company may take control of another company in several ways.
    - A common way is to merge two companies – the stockholders of two companies agree to fold their companies together, giving the stockholders of each individual company a fixed number of shares in the new company depending on the perceived value of each company.
    - Alternatively, one company can choose to buy the shares of another company – here the stockholders of the purchasing company own the purchased company by proxy – through their shares in the purchasing companies stocks.

- Other possibilities include a "leveraged buy out" that takes over a company in a "hostel" takeover.
  - In this scenario an investor issues what where typically known as "junk bonds" to raise the capital required to purchase a publicly traded company.
  - These bonds pledged initially the stock, but eventually the assets of the target firm as collateral.

Why Buy Another Company

- The reasons for buy-outs or consolidations are several – one is that merging the two firms allows for economies of scale.
  - New Institutional Economics – Ronald Coase
- Another possible reason the firm is being poorly managed – in sum cases the assets are worth more than the common stock outstanding at market prices.
- A final possibility is that the acquiring firm may have excess cash – the return on acquiring an independent firm may be greater than investing in its primary line of business – **Conglomeration**.

- **E.I. du Pont de Nemours** was one such company – slightly rephrasing the forgoing discussion:
  - Because of its size and the profitability of its core businesses DuPonts cost of capital was lower than many other companies.
  - DuPont could also possibly improve profitability by its access to a better pool of management.
- In this effort to choose the best companies to purchase, DuPont is credited with the DuPont method of ratio analysis.

Return on Owner's Equity

- The most important measure of performance for the farming operation is return on owner's equity. Equity is the financial stake the owners have in the business.
- Return on equity is calculated by dividing the average of the beginning and ending owners' equity into net income.
  - Because the balance sheet is a snapshot document and the income statement is a flow document, averaging the owners' equity provides comparable numbers.
  - The average owners' equity is calculated by adding beginning and ending owners' equity and dividing by two.

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Owners}' \text{ Equity}} \times 100.0 \qquad (3)$$

$$\text{Return on Equity} = \frac{15,235}{\frac{1}{2}\left(861,121+756,886\right)}\times 100.0 = 1.9\%. \quad (4)$$